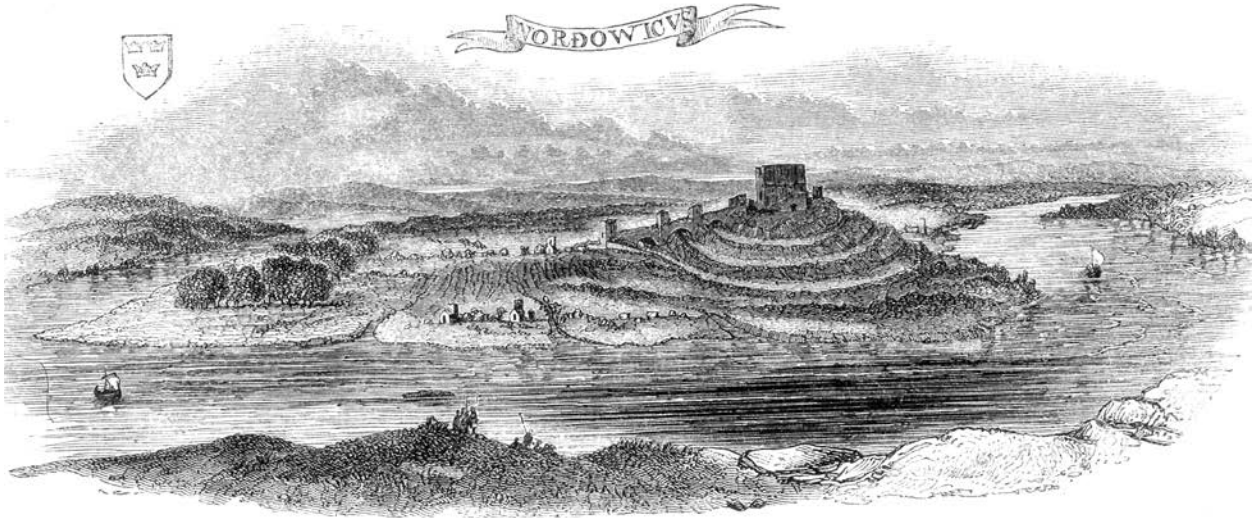


EAST ANGLIAN ARCHAEOLOGY



‘Store this brainchild of mine in this renowned mountain so that it will be discovered in due course by the one who is destined to repossess it’

(Ancient Chinese proverb; quoted by K.C. Chang, *Rethinking Archaeology* 1967, 136)

for Sue Margeson
and
Elisabeth Crowfoot

Norwich Castle: Excavations and Historical Survey, 1987–98 Part I: Anglo-Saxon to c.1345

by Elizabeth Shepherd Popescu

with major contributions from

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Cover illustration

Reconstruction of the early Norman castle, showing the timber keep on its small motte. The possible extent of the ditched Castle Fee boundary is indicated, with the church and cemetery of St John now lying just outside the castle's south gate. *Painted by Nick Arber*

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by Umberto Albarella, Mark Beech, Julie Curl, Alison Locker, Marta Moreno García and Jacqui Mulville

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Abbreviations

General

AML	Ancient Monuments Laboratory, English Heritage
BS	Environmental sample (bulk)
cat	Catalogue
D:	Diameter
EVE	Estimated vessel equivalent
Fig.	Figure
fth.	forthcoming
g	Gramme
G	Group (e.g. G1/47 = Area 1, Group 147)
GBS	Golden Ball Street site
HC	hand collected
kg	Kilogramme
L:	Length
NAU	Norfolk Archaeological Unit
n.d.	not dated
no.	Number
NISP	number of identified species
Qty	Quantity
SF	Small Find
SMR	County Sites and Monuments Record
SRS	Soil riddled sample
T:	Thickness
T	Watching brief (e.g. T100/2 = Watching Brief 100, Group 2)
taq	<i>terminus ante quem</i>
tpq	<i>terminus post quem</i>
W:	Width
Wt	Weight

XRF X-ray fluorescence

Documentary

ASC	Anglo-Saxon Chronicle (see Swanton in Bibliography B)
Cal. Chart.	Calendar of Charter Rolls
Cal. Close	Calendar of Close Rolls
Cal. Lib.	Calendar of Liberate Rolls
Cal. Fine	Calendar of Fine Rolls
Cal. Inq. Misc	Calendar of Miscellaneous Inquisitions
Cal. Mem.	Calendar of Memorandum Rolls
Cal. Pat.	Calendar of Patent Rolls
EDP	Eastern Daily Press
EEN	Eastern Evening News
HA	<i>Historia Anglorum</i> (see Greenway in Bibliography B)
NRO	Norfolk Record Office
OV	Orderic Vitalis (see Chibnall in Bibliography B)
PRO	Public Record Office
VCH	Victoria County History

Numismatic items

References cited:	
RIC vol V	P.H. Webb, 1927, <i>The Roman Imperial Coinage, Volume V</i>
BMC	H.A. Grueber, C.F. Keary, 1893, <i>A Catalogue of English Coins in the British Museum. Anglo-Saxon Series, vol. II</i> (London)

North	J.J. North, 1980, <i>English Hammered Coinage, Volume I</i>
Williamson	G.C. Williamson, 1891, <i>Trade Tokens Issued in the Seventeenth Century in England, Wales and Ireland</i> , by <i>Corporations, Merchants, Tradesmen, ETC</i> , 3 volumes (London)
Mitchiner	M. Mitchiner, 1988, <i>Jetons, Medalets and Tokens: the Medieval Period and Nuremberg</i> , Volume 1 (Seaby: London)

Plant Macrofossils (see also Appendix 7)

Abbreviations and symbols in the tables are as follows:

bri	basal rachis internodes
ca	caryopses
cn	culm nodes
co	cotyledons
cp	capsule segments
fb	floret base
flo	floret
fr	fragments
gt	glume tips (silica skeletons)
inf	inflorescence
inf. ax.	inflorescence axis
inv	involucre
le. fr.	legume fragments (Fabaceae fruits)
lvs	leaves/fragments
lk	lemma keel fragments
oo	oospores
pi	pinnules
pu/pr.fr.	plumule/primary roots fragments
rn	rachis nodes
s	seeds
sh	shoots
si. fr.	siliqua fragments (Brassicaceae)
si. sk.	silica skeletons

st	stem fragments
*	germinated cereal grains
x	fragmentary seeds or other material not readily quantifiable

Ceramic Building Material

CBM	ceramic building material
EB	Early bricks
EBA	Early Brick type A
EBB	Early Brick type B
LB	Late Brick
RT	roof tile, relating to Roof Tile Fabric Series

Pottery

DWE	Dutch White Earthenware
DUTR	Dutch-type Red Earthenware
EMSSW	Early Medieval Sparse Shelly ware
EMSW	Early Medieval Sandwich ware
EMW	Early Medieval ware
GRE	Glazed Red Earthenware
GTGW	Grimston Glazed ware
GRCW	Grimston Coarse ware
GRIL	Late Grimston ware
IGBW	Iron-glazed Black ware
King's Lynn NS	King's Lynn Norfolk Street ware
LEPM	Local Early Post-Medieval ware
LMT	Late Medieval/Transitional ware
LMU	Local Medieval Unglazed ware
MCW	Medieval coarse ware
NEOT	St Neots-type ware
TGE	Tin-glazed Earthenware
THETG	Grimston Thetford-type ware
TTW	Thetford-type ware
UPG	Unprovenanced Glazed ware
YTW	Yarmouth-type ware

Preface

John Kirkpatrick, the great Norwich antiquarian, was unequivocal in his appreciation of Norwich Castle. He stated clearly that 'The Castle is one of the great ornaments of the city' (Kirkpatrick 1847, 4), a view embellished by descriptions of the Keep and the earthworks which surrounded it. Kirkpatrick brought an archaeologist's sensibility to his observations, noting how the land lay and inferring lost features from what he could see. He was a man who was both inquisitive and passionate about his native city, always seeking to understand his everyday environment.

It is thus easy to imagine that Kirkpatrick would have been intensely interested in the Castle Mall project, a two-year excavation investigating almost the entire area of the south bailey of the fortress as well as significant areas beyond the bailey such as the extent of the Castle Fee near to Timberhill, work within the ditch of the mound and difficult watching brief operations beneath present-day Castle Meadow. An excavation which lay within what, at the time, was the largest urban development in Europe. A project designed to investigate not only large parts of the castle but also pre-castle features and,

for the post-Conquest period, areas of the surrounding medieval city.

The excavation was of unprecedented size in Norfolk and one of the largest such projects ever undertaken anywhere. It resulted from a decision by Norwich City Council to accept a design proposal for a major shopping centre which sought to utilise the topography of the city centre in a manner akin to the utilisation of the site 900 years earlier by the Norman conquerors of England. The hill which had been scarped and manipulated to form earthworks of a royal castle was now manipulated once more to provide both accommodation for, and ease-of-access to, retail units. The effects of the Norman invasion were to be removed by a modern invasion but, unlike in the 11th century, this late 20th-century redevelopment of the site was to be preceded by recording, analysis and synthesis of earlier occupation.

This report is the result of the archaeological project. It covers activity from 1987 onward although preparation for such a colossal undertaking had been underway since the mid-1980s. Planning was complex given the probable depth of major archaeological features, the fact that much

archaeology ran beneath roads which needed to be diverted, and the economic considerations which obviously dictated that two years' of archaeological work prior to any development activity was out of the question.

In consequence, the project was integrated into the development itself. The archaeological unit was part of the contract team, a sub-contractor to the main contractor in common with over twenty other sub-contractors. As such, the work was a great learning experience for those who took part, enforcing disciplines of budgets and schedules while ensuring that archaeological staff appreciated (and gained) the respect of other professionals. While acknowledgements are recorded elsewhere in this volume it is perhaps appropriate here to mark the contribution of the late Nigel Mottram of Bovis Construction. A man with many other day-to-day concerns of considerable moment, he was always a courteous and considerate colleague who treated the requirements of archaeologists with thoughtfulness and fairness.

The Preface is also the place to recognise that the fact that the archaeological project was brought to fruition at all is due in large part to two individuals. Jez Reeve was appointed in 1989 to direct the excavations. To her great credit, she brought to the task a rigour which, prior to any of the main phase work on site, ensured the re-thinking of the entire excavation and recording process. She insisted upon levels of personal equipment and standards of care for the site staff which were well in advance of requirements of the time, she introduced regular briefing sessions for those working on site and she acted as the principal point of contact with the main contractor, often arguing successfully for additional time and resources when delays elsewhere in the programme impacted upon the archaeological timetable. She drove a project which, had it not been driven, would probably not have been done at all. Sometimes she upset people but she accepted the challenges thus engendered and completed the task in hand. She deserves great credit for her clear-sightedness and perseverance.

The second individual is the principal author of this work. Liz Popescu came to Norfolk in 1991 and took on

the unenviable role of co-ordinating not only the mass of data generated by the excavation but also the wide range of specialists necessary to enable a synthesised report to appear. She did this despite not having seen the excavation itself nor having influenced the recording methodology. She has also had to work within a rapidly changing environment: the data itself has grown as further development within the Castle Mall site and at neighbouring locations engendered further excavation; publication in the *East Anglian Archaeology* series needed to be re-thought as the possibility of using the Occasional Papers format became available; and the structure of the report itself has mutated to accommodate a pioneering approach to publication which mixes both printed formats and selected digital archive. Liz has grappled with all of this as well as the necessity to present the results of an exceptionally large project in as concise and useable a format as possible. She has shown great dedication and has persevered over many years to produce both the report and its supporting archive.

Kirkpatrick was an inveterate recorder of the historic environment of Norwich. He exhibited all the attributes of the modern archaeologist — consulting documents, noting oral tradition, drawing buildings and monuments, observing the results of excavations, commenting upon recovered artefacts and, most importantly (if posthumously and helped by others, notably the Reverend William Hudson) publishing his work. His observations and conclusions were made nearly 300 years ago but they still inform the study of his city. This report follows in his tradition, noting, commenting upon and presenting observations and discoveries. It too informs the study of Norwich and, given the scope of the data presented, that of other towns and their hinterlands. It is a fine and complex work, concluding a fine and complex project.

Brian Ayers
July 2003

Summary

This research examines the great institution of Norwich Castle and its Fee, tracing their impact on existing settlement, their rise and eventual decline, as well as gradual encroachment by the surrounding city. Norwich Castle was one of over forty Norman urban fortifications founded before 1100 and overlies a substantial part of what had become one of the dominant towns in England by 1066. By the mid 14th century, it lay at the heart of a walled city larger than London. Norwich was to remain the only royal castle in Norfolk and Suffolk for nearly a century and was one of the finest Norman fortifications in England, serving as the administrative centre of an extremely wealthy area. A substantial precinct of Crown land (*Feodum Castellii*: Fee or Liberty of the Castle) was defined immediately around it and royal jurisdiction was maintained over the enclosure until 1345. Within the Fee, two large baileys were laid out to the south and north-east,

the latter being known as the Castle Meadow. A barbican was added in the 13th century.

Redevelopment for a shopping centre complex — named Castle Mall — entailed the archaeological excavation of the castle's south bailey, its barbican and part of the Castle Meadow, along with the fringes of the adjacent urban settlement. The investigation was carried out by the Norfolk Archaeological Unit (NAU) between 1987 and 1991, with supplementary work undertaken at Golden Ball Street in 1998. This was the largest archaeological project ever undertaken in Norwich and remains one of the largest urban excavations in Europe.

This volume is Part I of the Norwich Castle report, forming the first part of a two-volume monograph which presents a synthesis of all the results from the excavations and associated historical and documentary research. Part I spans the Anglo-Saxon period to c. 1345 and includes the

background to the project. Part II spans the period c.1345 to modern and includes chapters on finds analysis, the development of the castle and overall conclusions. (The division at c.1345 was selected since, as well as being convenient in terms of binding, it is also a key point in the development of the site: the castle baileys were released to the city in this year.) Although Parts I and II both contain summary accounts of the faunal remains, setting them into their wider context and including additional information on craft activities, the scale of the data required the production of a separate and more specialised report on the faunal remains (Part III, Albarella *et al* 2009). The final volume (Part IV, Tillyard 2009) provides documentary evidence that supplements the substantial data presented in the first two volumes. This fourth volume is published separately both as a result of the scale of the data and because it forms a rounded resource in its own right. It provides additional data on medieval and later properties around the entire circuit of the Castle Fee, permitting ease of access to information that might otherwise have been obscured within the complexity of the integrated monographs.

The project studies in microcosm a millennium in the life of one of England's major cities, demonstrating the complex process of urbanisation. The publication concerns far more than just a 'castle site': the castle is itself a route into a wide array of social and economic issues. For the first time it has been possible to investigate

a large part of the landscape fossilised by the imposition of the castle and for the Anglo-Saxon period the project offers major contributions to church and cemetery studies, the Middle Saxon origins of Norwich, Viking influence and development of the Late Saxon town. Contributions to castle studies are equally substantial, permitting investigation of the great fortification of Norwich Castle over its long history. The layout and sequence of the castle's great defensive network are elucidated. Previous theories of the castle area's development are reviewed, indicating how the new findings support, alter or enhance these earlier hypotheses. Newly discovered elements of the defences include complex ditchwork, a collapsed masonry gate and a deep castle well at the foot of the extant castle bridge (which was also examined in the course of the project).

For urban studies more generally, the opportunity to investigate the social, economic and historical context of an urban royal castle, set within the framework of the Castle Fee, is currently unparalleled in England. The Castle Mall excavations produced the largest material assemblages thus far recovered from Norwich, providing extremely useful information on the city's history and the economy of Late Saxon, medieval and post-medieval England. There are implications for population movement, immigration, trade contact, craft and occupations, including key new evidence for a possible early Thetford-type ware pottery industry beneath the later castle.

Résumé

Il s'agit d'une recherche qui porte sur le Norwich Castle et sur son Fee. L'impact sur l'emplacement actuel, le développement, le déclin final de cette grande institution ainsi que l'empiètement progressif par la ville environnante ont été analysés en détail. Plus de quarante fortifications urbaines de type normand ont été fondées avant 1100 et Norwich Castle fut l'une d'entre elles. Le château s'étend sur une partie importante de ce qui est devenu l'une des villes dominantes de l'Angleterre de 1066. Au milieu du quatorzième siècle, il se trouvait au centre d'une ville fortifiée plus grande que London. Norwich allait rester le seul château royal dans le Norfolk et le Suffolk pendant près d'un siècle et il fut l'une des plus belles fortifications normandes de Angleterre. Il joua également le rôle de centre administratif d'une région très riche. Une importante enceinte de terres appartenant à la Couronne (*Feodum Castelli* : Le Fee du château (également appelé Liberty) fut immédiatement établi autour de celui-ci et la juridiction royale fut maintenue sur l'enceinte jusqu'en 1345. À l'intérieur du Fee, deux grandes basses-cours furent définies vers le sud et le nord-est, la seconde étant connue sous le nom de Castle Meadow. Une barbacane fut ajoutée au treizième siècle.

L'extension d'un centre commercial, appelé Castle Mall entraîna la fouille archéologique de la basse-cour sud du château. Ces recherches portèrent également sur la barbacane et la partie de Castle Meadow ainsi que sur la périphérie de l'implantation urbaine voisine. Les fouilles furent conduites par la Norfolk Archaeological Unit (NAU) entre 1987 et 1991 auxquelles s'ajoutèrent des

recherches complémentaires sur le site de Golden Ball Street en 1998. L'ensemble représente le plus grand projet archéologique entrepris à Norwich et il reste l'une des fouilles urbaines les plus importantes en Europe.

La partie I du rapport sur le Norwich Castle forme la première partie d'une monographie en deux volumes. Celle-ci présente une synthèse de tous les résultats tirés des fouilles ainsi que de la recherche documentaire et historique qui leur est associée. La partie I couvre la période anglo-saxonne jusqu'à environ 1345 et elle expose le contexte du projet. La partie II couvre la période allant d'environ 1345 à l'époque moderne et elle comprend des chapitres sur l'analyse des découvertes, le développement du château et les conclusions générales. (La date de 1345 a été choisie car elle constitue un moment essentiel dans le développement du site ; elle est également pratique car elle permet de diviser le rapport en deux volumes d'une longueur sensiblement égale. Les basses-cours du château furent en effet cédées à la ville cette année-là.) Bien que les parties I et II contiennent chacune des résumés sur les restes de la faune, qui les placent dans un contexte plus large et apportent des informations supplémentaires sur les activités artisanales, la taille des données nécessite la production d'un rapport distinct et plus spécialisé sur les restes faunistiques (Partie III, Albarella *et al* 2009). Le volume final (Partie IV, Tillyard 2009) fournit des preuves documentaires qui complètent la masse importante des données présentées dans la monographie. Ce volume est publié séparément en raison de la taille des données et parce qu'il s'agit d'une

ressource qui forme réellement un tout. Ce volume fournit des données supplémentaires sur les propriétés du tour complet du Castle Fee à l'époque médiévale et à des périodes ultérieures. Il devient ainsi possible d'accéder facilement aux informations qui autrement auraient été obscurcies par la complexité de la monographie pluridisciplinaire.

Le projet étudie la vie d'une des principales villes anglaises considérée comme un microcosme pendant un millénaire, démontrant ainsi la complexité du processus d'urbanisation. La publication concerne donc bien plus que le simple « site d'un château » : le château est en lui-même une voie qui conduit à un ensemble de questions sociales et économiques. Pour la première fois, il a été possible d'étudier une grande partie du paysage fossilisé par l'imposition du château ; en ce qui concerne l'époque anglo-saxonne, le projet apporte d'importantes contributions aux études sur les églises et les cimetières, les origines de Norwich pendant la période saxonne moyenne, l'influence des Vikings et le développement de la ville pendant la période saxonne tardive. Les contributions aux études sur les châteaux sont également importantes car elles ont permis d'effectuer des recherches sur les grandes fortifications de Norwich Castle au cours de sa longue histoire. La disposition et les étapes du grand réseau défensif du château sont élucidées. Les théories antérieures concernant le développement du

château font l'objet de révision car les nouvelles découvertes confirment, renforcent ou modifient les hypothèses précédemment émises. Parmi les éléments défensifs nouvellement découverts, on trouve un ensemble complexe de fossés, une porte en maçonnerie effondrée et un profond puits de château au pied du pont du château encore existant (qui fut également étudié pendant le projet).

Si l'on envisage les études urbaines sur un plan plus général, la possibilité d'effectuer des recherches sur le contexte social, économique et historique d'un château royal urbain dans le cadre du Castle Fee représente à l'heure actuelle un cas unique en Angleterre. Les fouilles du Castle Mall ont permis de dégager les plus grands ensembles de matériaux découverts jusqu'à présent à Norwich. Nous disposons ainsi d'informations extrêmement utiles sur l'histoire et l'économie de la cité dans l'Angleterre des périodes saxonne tardive, médiévale et post-médiévale. Nous pouvons en tirer des conséquences pour les mouvements de population, l'immigration, les contacts commerciaux, l'artisanat et les occupations du lieu. Nous disposons également d'une nouvelle preuve essentielle pour la présence éventuelle d'une industrie précoce de poterie de type Thetford ware sous la partie ancienne du château.

(Traduction: Didier Don)

Zusammenfassung

Die vorliegende Studie untersucht die bedeutende Burg Norwich Castle mitsamt ihrem Lehnsgelände und betrachtet dabei die Auswirkungen, die die Burg auf die bereits bestehende Siedlung hatte, den Aufstieg und Niedergang der Burg sowie das allmähliche Näherrücken der umliegenden Stadt. Norwich Castle war eine von über vierzig noch vor dem 12. Jh. gegründeten normannischen Stadtfestungen, die einen Großteil der Ansiedlung überlagert, die schon vor 1066 zu den bedeutendsten Städten Englands zählte. Mitte des 14. Jh. lag die Burg im Herzen einer befestigten Stadt, die größer war als London. Norwich Castle sollte fast ein Jahrhundert lang die einzige Königsburg in Norfolk und Suffolk bleiben. Sie zählte zu den erlesensten normannischen Festungen in England und diente als Verwaltungszentrum für eine außerordentlich wohlhabende Gegend. Rund um die Burg wurde ein ausgedehntes Krongelände zum Burglehen (*Feodum Castelli*) erklärt, das bis 1345 der königlichen Gerichtsbarkeit unterlag. Auf dem Lehnsgelände entstanden im Süden und Nordosten zwei große Vorburgen; die letztere ist als Castle Meadow bekannt. Im 13. Jh. wurde zudem ein Vorwerk angefügt.

Zu den Erschließungsarbeiten vor dem Bau eines Einkaufszentrums — namens Castle Mall — zählte die Ausgrabung der südlichen Vorburg, des Vorwerks sowie von Teilen der Castle Meadow und von Rändern der angrenzenden Stadtsiedlung. Die Untersuchung wurde zwischen 1987 und 1991 von der Norfolk Archaeological Unit (NAU) durchgeführt, 1998 fanden zusätzliche Arbeiten an der Golden Ball Street statt. Es war das größte

archäologische Projekt, das je in Norwich unternommen wurde, und eine der größten Stadtgrabungen in Europa.

Dies ist Teil I des Berichts über Norwich Castle – erste Teil einer zweibändigen Monographie, die die Ergebnisse der Ausgrabungen und der zugehörigen historischen Forschungen und Quellenstudien dokumentiert. Teil I umfasst die angelsächsische Periode bis ca. 1345 und gibt einen Überblick über den Hintergrund des Projekts. Teil II, der mit der Zeit von ca. 1345 bis heute befasst ist, enthält neben Kapiteln zur Auswertung der Befunde und zur Entwicklung der Burg auch allgemeine Schlussfolgerungen. (Das Jahr 1345 wurde als Trennlinie gewählt, da es sich zum einen aus buchbinderischen Gründen anbot, vor allem aber da es ein Schlüsseljahr in der Entwicklung der Stätte darstellt: Es war das Jahr, in dem die Vorburgen der Stadt übergeben wurden.) Obwohl Teil I und Teil II Übersichten über die gefundenen Tierreste enthalten und diese in den Gesamtkontext einbetten sowie mit Zusatzinformationen über die zugehörigen Handwerkstätigkeiten versehen, machte das Datenausmaß die Produktion eines separaten Detailberichts zum Thema Tierreste erforderlich (Teil III, Albarella *et al.* 2009). Der Schlussband (Teil IV, Tillyard 2009) enthält Belegmaterial, das die umfangreichen Daten der Monographie ergänzt. Er wird aufgrund der schiereren Datenmenge und der Tatsache, dass er ein in sich geschlossenes Nachschlagewerk darstellt, separat veröffentlicht. Der Band liefert zusätzliche Daten über mittelalterliche sowie spätere Anwesen rund um das gesamte Burglehen und erleichtert damit den Zugang zu

Informationen, die andernfalls in der komplexen Monographie womöglich untergegangen wären.

Das Projekt untersucht in mikrokosmischer Form tausend Jahre im Leben einer der bedeutendsten Städte Englands und verdeutlicht dabei den komplexen Prozess der Urbanisierung. In der Publikation geht es um weit mehr als »nur« ein Burggelände: Die Burg dient als Einstieg in zahlreiche soziale und wirtschaftliche Themen. Zum ersten Mal konnte ein großer Teil der unter der Burg „eingefrorenen“ Landschaft untersucht werden. Mit Bezug auf die angelsächsische Periode trug das Projekt zudem in hohem Maße zur Erforschung von Kirchen und Gräberfeldern, der Ursprünge von Norwich in der Mitte der angelsächsischen Zeit, des Einflusses der Wikinger sowie der Entwicklung der Stadt in spätangelsächsischer Zeit bei. Auch die Burgenforschung wurde stark bereichert, da es möglich war, die bedeutsame Festung Norwich Castle über ihre lange Geschichte hinweg zu untersuchen. So werden zum Beispiel die Anordnung und die zeitliche Sequenz der Verteidigungsanlagen der Burg erläutert. Die bisherigen Theorien zur Entwicklung des Burggeländes werden überprüft, und es wird aufgezeigt, wie die neuen

Ergebnisse die früheren Hypothesen stützen, verändern oder erweitern. Einige Verteidigungsstrukturen wurden neu entdeckt, darunter komplexe Grabenanlagen, ein eingestürztes Mauertor und ein (ebenfalls im Rahmen des Projekts untersuchter) tiefer Burgbrunnen am Fuß der erhaltenen Burgbrücke.

Die Gelegenheit zur Untersuchung der sozialen, wirtschaftlichen und geschichtlichen Hintergründe eines in der Stadt angesiedelten königlichen Burglebens ist im Bereich urbanistischer Studien in England bislang ohne Beispiel. Die Ausgrabungen an der Castle Mall förderten die bisher umfangreichsten in Norwich geborgenen Materialkomplexe zutage, die nützliche Informationen über die Stadtgeschichte und über die Wirtschaft im spätangelsächsischen, mittelalterlichen und nachmittelalterlichen England liefern. Es wurden Hinweise auf Bevölkerungswanderungen, Einwanderer, Handelskontakte und handwerkliche Tätigkeiten gefunden, wie etwa wichtige neue Erkenntnisse über eine mögliche gewerbliche Herstellung von Tonwaren im Thetford-Stil unter der späteren Burg.

(Übersetzung: Gerlinde Krug)

1. Introduction

‘The castle is one of the great ornaments of the city ... conspicuous ... not only to travellers who were coming to the city, at some miles distance from it, but also in the Market Place, and in many streets of the city, above the tops of the houses’

J. Kirkpatrick, *History of the Religious Orders and Communities of the Hospitals and Castle of Norwich ... Written about the year 1725*, 1845, 241

I. ABSTRACT

(Plates 1.1–1.3)

Norwich Castle was one of more than forty Norman urban fortifications founded before 1100. By the mid 14th century, it lay at the heart of a walled city that covered an area larger than intramural London (Plate 1.1). The castle overlies a substantial part of what had become one of the dominant towns in England by 1066 and was to remain the only royal castle in Norfolk and Suffolk for nearly a century. This was one of the finest Norman fortifications in England, serving as the administrative centre of an extremely wealthy area. A substantial area of Crown land (*Feodum Castellii*: Fee or Liberty of the Castle; Plate 1.2) was defined immediately around it and royal jurisdiction was maintained over the whole enclosure until 1345. Two large baileys were laid out to the south and north-east. The latter was known as the Castle Meadow throughout the medieval period and beyond, perhaps serving a similar function from its outset. A barbican complex was added to the defences in the 13th century. At its largest extent, the entire castle precinct encompassed about 9.3 ha (23 acres).¹

Recognition of the castle site as one of national importance led to its scheduling in 1915, the protected area being extended in 1983 to enclose much of the Fee. Despite being landscaped for a Cattle Market in the 18th century, most of the south bailey had remained open space since

the laying out of the castle’s defences (Plates 1.2–1.3). In response to the threat of its redevelopment for a retail centre — named Castle Mall — a large scale excavation was undertaken by the Norfolk Archaeological Unit (NAU) between 1987 and 1991. The development area amounted to 2.3 hectares (5.7 acres), of which 2 hectares (5 acres) were archaeologically investigated. The total cost of the new development, which was completed in 1993, amounted to £145 million and provided a gross built area of a million square feet. The subsequent addition of a large cinema complex to the centre led to further excavations at Golden Ball Street in 1998, the archaeological evidence from which also appears in this publication. Funding for the archaeological work amounted to less than 1% of the total development cost.

At the time of the redevelopment, various schemes for the layout of the castle defences were current, drawing from antiquarian work, documentary and historical sources, limited archaeological exploration, consideration of the local topography and speculation (*e.g.* Green 1966; Carter *et al* 1974, fig.7; Campbell 1975, 8 fn 89, maps 2 and 3; Carter 1978b, fig. 7; Green 1990, fig.2). A single small archaeological trench had been excavated within the south bailey in the 1960s (Site 60N, Green 1964), with larger scale excavations carried out within the north-east bailey in 1973 (Site 150N, Carter *et al* 1974, 65–66) and 1979 (Site 416N, Ayers 1985). Limited



Plate 1.1 This aerial view of Norwich (taken in 1917), shows the continued dominance of the castle at its central position within the visible medieval walled circuit, the latter being reflected in the modern street pattern. The sinuous line of the River Wensum gave the city its characteristic shape. (RFC036; reproduced by courtesy of Norfolk Museums & Archaeology Service)



Plate 1.2 Aerial view of Norwich from the south-west, taken in 1986. The line of the Castle Fee circuit remains visible in much of the modern street pattern. In the foreground (left) lies the market place (a Norman foundation) with its distinctive striped awnings, adjacent to the great church of St Peter Mancroft. The valley of the Great Cockey stream is concealed beneath a block of buildings between the market and the castle (Norfolk Aerial Photographic Library: TG2308/ACG/DDJ14)

observations and small scale interventions had been made elsewhere within the castle precinct.

The existence of the two baileys was well-known, their likely position first being illustrated by Harrod (1857, 133; see Fig.12.5.C). Much speculation had taken place over the relationship of the positioning of the castle in relation to the Late Saxon town and various interpretations of the pre-Conquest settlement of the area had already been published (summarised in Chapter 4.I). It had long been postulated that the castle overlay part of the pre-Conquest settlement known as *Needham*, one of the five small hamlets or villages founded in the 8th to 9th century that had, by the 11th century, coalesced to form the town of Norwich. *Needham*, it was believed, would have lain at the end of a natural ridge overlooking a river valley (now the Wensum) to the east with a small stream running to the west (the Great Cockey). Its position was predicted from both place name evidence and pottery findspots (although a subsequent review questioned this interpretation; see Chapter 4.I). Prior to the Castle Mall excavation, project documentation predicted the strong possibility of encountering Middle Saxon features with potential opportunities to investigate contemporary life and economic development in the context of the Middle and Late Saxon nucleus of *Needham* (Ayers 1980; Ayers 1987a).

In the event, although the archaeological discoveries clearly supported the hypothesis of Middle Saxon activity in the general vicinity — particularly when combined with surrounding sites— there was little evidence for activity on the site itself. A single Early Saxon brooch was retrieved, along with a few sherds of contemporary pottery. Several artefacts of Middle Saxon date included an 8th–9th-century brooch worn by an individual in a cemetery found beneath the castle’s south bailey rampart, while only seventeen sherds of Middle Saxon pottery were recovered from the site. During the excavation and initial stages of post-excavation analysis, therefore, the apparent absence of early features led to the supposition that settlement in this area did not commence until the Late Saxon period. It was only with a programme of radiocarbon dating in 1996 that this view was contradicted. The dating indicated that some of the burials recorded at the site are attributable to the Early to Middle Saxon period. One such grave, apparently dating to the 7th century, was recorded near Timberhill beneath a later cemetery. Further north, the graves of more than forty individuals which had been disturbed by later pit digging within the castle barbican proved to originate in the 8th to 9th centuries.

In contrast, evidence for subsequent Late Saxon occupation was plentiful, providing circumstantial evidence for the local street pattern. Several types of pre-Conquest



Plate 1.3 Aerial view of the south bailey during its use as a car park in 1989 (looking south-west). The Castle Meadow (or north-east bailey) lies in the right foreground. The surviving church of St John the Baptist, Timberhill is visible in the top left corner of the image, adjacent to which are the initial excavations in Castle Mall Area 1 (Norfolk Aerial Photographic Library: TG2308/ACG/DDJ14)

building were recorded; these were some of the 98 houses or properties that Domesday Book (1086) relates were swept away by the castle's construction. Nearly three hundred Late Saxon pits associated with the buildings were found and were up to 5m in depth. Their fills indicate a wide range of activities including the disposal of waste associated with pottery manufacture, contributing to growing evidence for an early ceramic industry beneath the castle area.

As many as five active pre-Conquest cemeteries may have been subsumed by the castle earthworks, providing important new evidence for the genetic composition of the Norwich population derived from DNA analysis. One cemetery of late 9th to mid 11th century date lay sealed beneath the later southern bailey rampart and over a hundred skeletons were recovered from it. No associated church has been confidently identified, due both to the proliferation of timber structures in the area and uncertainties over dating. The cemetery appears to have remained in use until, or just before, the castle's construction.

More pre-Conquest and later burials (probably spanning the late 10th to early 14th century) were recorded in the northern part of the churchyard of St John at the Castle Gate (later St John de Berstretre, now St John the Baptist, Timberhill). Encroachments into the cemetery began in the late 13th century, although the line of its northern boundary ditch continues to influence property layout in the modern period. The earliest reference to this church dates from 1157 and the extant structure is one of five in Norwich to have been stylistically dated to the

Saxo-Norman period (Taylor and Taylor 1965, 471–5), leading to a suggested foundation date of 1066–1087 (Carter 1978b, 194, fn4). A reconsideration of architectural details, taken alongside radiocarbon dates from human bone, suggests that the building's origin stretches back into the Late Saxon period. The church, which is said to have been built by Wodowin the priest, was given to Norwich Priory. A total of 265 individuals from its graveyard were excavated, of which a significant proportion showed evidence of leprosy. Leper hospitals or 'lazar houses' are generally believed to have been a Norman introduction and the unexpected presence of this group of burials is one of the major findings of the excavation.

The church of St Martin-in-Balliva (St Martin at Bale; lying near the later castle's south gate) may also have been a Late Saxon foundation. Another pre-Conquest cemetery and its associated timber church have been recorded beneath the subsequent defences of the north-east castle bailey (Site 416N; Ayers 1985). The presence of human bone elsewhere in the castle area suggests the possible location of other pre-existing burial grounds.

With the Norman Conquest, Norwich's urban topography changed forever. Substantial parts of the southern part of the town were obliterated by the construction of the cathedral and castle, with a large new French Borough implanted on what had been largely fields to the west. The city's first castle, probably a timber tower with surrounding earthworks, may have been established in the late 1060s and was certainly well-fortified by the mid 1070s. A ditch, probably delimiting the Castle Fee, was recorded across the southern part of the Castle Mall

site and at Golden Ball Street, effectively cutting off the end of the natural headland. To the south, a causeway led across the ditch into the defended enclave. Later, the Fee boundary may have been marked by posts or a palisade bearing plaques depicting the royal arms (Green 1965; Shepherd Popescu *et al*, 2004). Within the enclosed area, two crescentic ditches defended a bridge landing, with an inner set of ditches attesting to an unexpectedly complex arrangement. The defences were first tested by a prolonged siege in 1075.

A masonry great tower or donjon (often previously termed the 'keep') probably replaced its timber forerunner on an enlarged motte between *c.*1094 and *c.*1121–22 and the castle's earliest use as a royal residence is documented in the early 12th century. The donjon's constructional details and contemporary stylistic comparisons have recently been re-examined, with its ostentation examined in terms of social context (Heslop 1994). As well as the stunning new great tower, the extended motte housed other structures, including a chapel dedicated to St Nicholas. Important new evidence for the construction and alteration of the motte has recently been recorded by the NAU during excavations in advance of refurbishment of Norwich Castle Museum and will be detailed in a separate report (Wallis in prep.). The large size of the motte has led to the suggestion that some of the buildings normally housed in the bailey may have been placed on its summit, such as the constable's house (Green 1966, 3). Other buildings, including the kitchen, Great Hall (probably rebuilt at the top of the mound in the 1260s) and gaol, may either have lain on top of the mound or within the south bailey.

New ditchwork attributable to this period included the insertion of the south bailey ditch and associated rampart. As before, a causeway led the southern approach road into the redefined bailey. Construction of a stone bridge between the south bailey and motte may also have been contemporary with the erection of the masonry donjon. Surprisingly, excavation has proved that the Norman bridge is substantially intact beneath refacing. The 'king's bridge' was first documented during repairs in 1172–3, invasion from France being threatened. Excavations at Castle Mall adjacent to its footings indicate that it was founded nearly 5m below the present-day base of the motte ditch. A series of nine chamfered plinths was recorded, these and the exposed original bridge facing being dressed in Caen stone.

Lying within a small courtyard at the foot of the bridge a substantial well was discovered, construction of which may also date to the 12th century. Its upper part was formed by a masonry shaft, surviving to a depth of nearly 10m. Two timber frameworks were represented by putlog holes, one forming an access ladder and the other probably acting as constructional scaffolding. The shaft held back deposits of natural sand and gravel, although from the point at which natural chalk was reached an unshored circular well shaft was dug. The total depth of the well was about 30m (98 ft). Another major finding was the substantial remnants of one of the castle gatehouses, originally positioned at the southern end of the bridge adjacent to the well. This structure eventually collapsed into a large post-medieval quarry pit.

A massive barbican ditch, replacing an earlier smaller ditch, was excavated during the 13th century, the donjon and upper bailey (*i.e.* on top of the motte) apparently being

maintained as a fortress. Similar developments took place at many castles at this time, with a barbican or outwork added to defend the castle gateway, culminating in the gatehouse/barbican complexes of the 14th century (King 1991, 156). At the time of the excavation, it was believed that the enlargement of the ditch may have been made in response to the capture of the castle in 1216 by Louis the Dauphin of France (Reeve 1992, 23). The actions of the Dauphin are held responsible for similar alterations at other castles such as Oxford (Hassall 1976, fig.1). Analysis of the results from the Castle Mall excavations indicate that the ditch may have been enlarged during the period *c.*1220 to *c.*1250. The last occasion on which the castle was threatened by military action was during the rebellion of the Disinherited in the 1260s. The southern bailey appears to have declined in defensive significance during the second half of the 13th century, a contributing factor being the construction of the city ditch, excavation of which began in 1253, and latterly its replacement by a walled circuit between 1297 and 1344.

The donjon was used mainly as a prison by *c.*1300, a role which was to continue until its conversion to a museum in 1886. Prisoners had been held there, however, since the reign of Henry I (1100–1135), considerable expenditure on the gaol (the location of which is uncertain) having been made in the late 12th and early 13th centuries. Encroachment by the townspeople into the castle precinct began, initially illegally.³ This encroachment increased with the granting of the baileys to the city by Edward III in 1345. From this date, the city was free to lease or sell unusable land around the perimeter of the Fee, a process which was completed in 1397.

A wealth of documentary evidence exists for the development of medieval properties in the excavated area, over seventy being studied as part of the current project. The sequence of property deeds and records begins in 1297. The site yielded evidence of a variety of crafts and industries relating to these plots, notably bell-founding and other forms of metalworking, as well as the normal range of domestic refuse. The evidence for bell-founding is of particular importance, Norwich having been prominent in the associated technology. A bell pit excavated to the east of the Timberhill cemetery dated to between 1250 and 1400, although mould fragments from mid to late 15th- to early 16th-century fills of the barbican well indicate that founding continued on or close to the site at a slightly later date.

The late medieval to post-medieval periods saw the decline of the castle and the further growth of the city. In the documentary record the decline of the castle is represented by court cases, many of which involved the unlicensed dumping of refuse, the erection of booths selling food and drink while the assizes were in session and the grazing of animals in the southern bailey. A number of these activities were represented archaeologically, notably the continued disposal of refuse and the exploitation of the castle ramparts as quarries, providing building materials for the expanding city. The castle ditches became increasingly infilled and the city encroached deeper into the former precinct.

Dramatic evidence for the castle's decline was visible in the backfilling of the deep well in the barbican. This feature was excavated to a depth of over 18m and was sampled by augering for a further 11m. The majority of the excavated fill had accumulated during the second

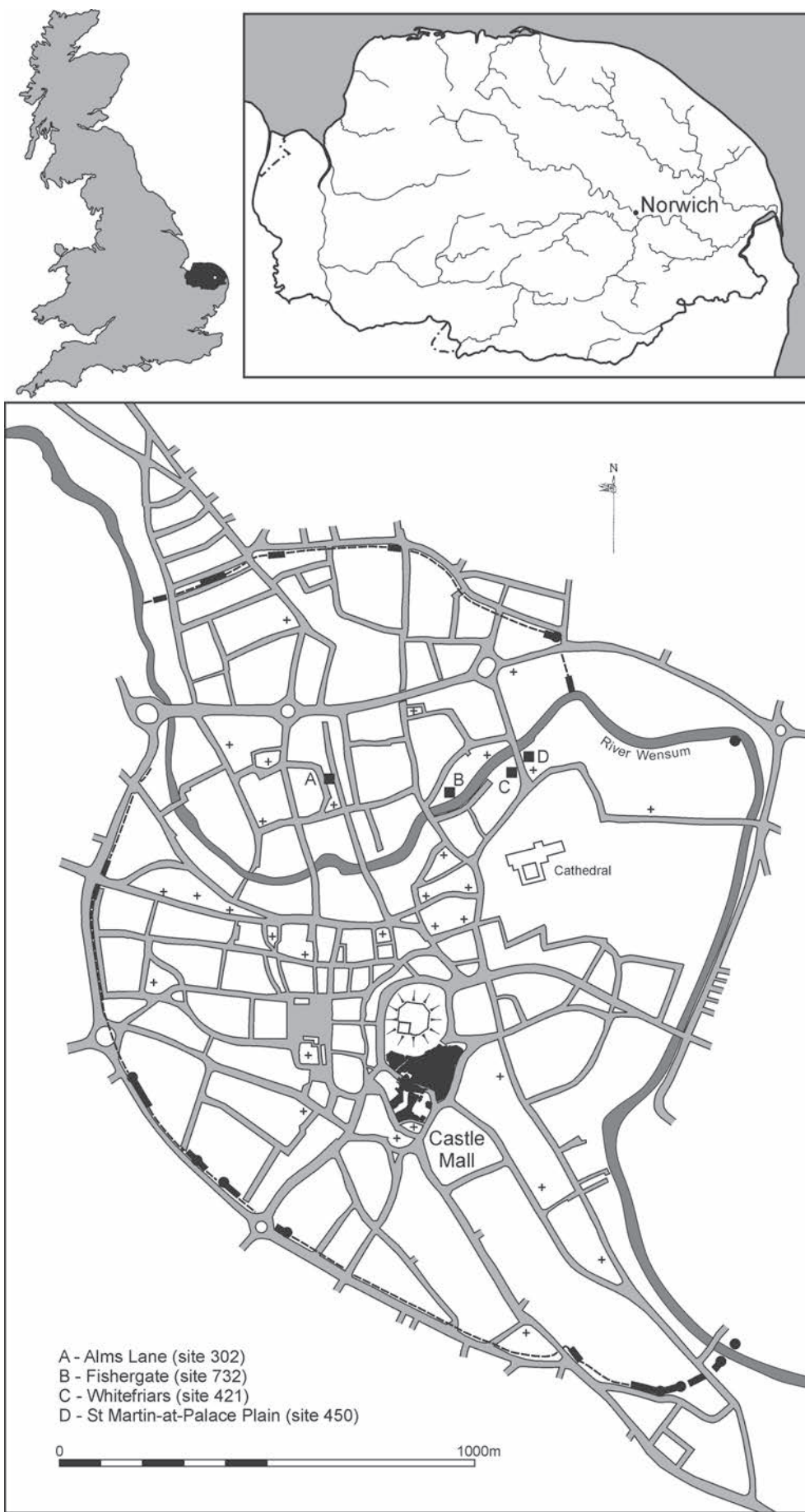


Figure 1.1 Location of Norwich, Norfolk, England and of the Castle Mall and Golden Ball Street sites, Norwich, showing sites mentioned in the text

half of the 15th century and yielded a finds assemblage of great significance. Over three thousand pieces of ironwork were recovered, the group being dominated by small annular buckles. The fills from which they came also contained a high proportion of spurs and spur fittings and it is possible that the buckles related to the refitting of spur leathers. The large quantity of leather waste appears to represent the dumping of debris from a

workshop, probably of a spurrier or lorimer. Other ironwork includes mail, arrowheads, fragments of armour and offcuts from the production of dome-headed mounts. The substantial number of copper alloy finds included numerous mounts and studs (many gilded) which may have served as harness mounts. The significant bird bone assemblage included an unusually large number of goose wings. Norfolk was famed for its geese throughout the

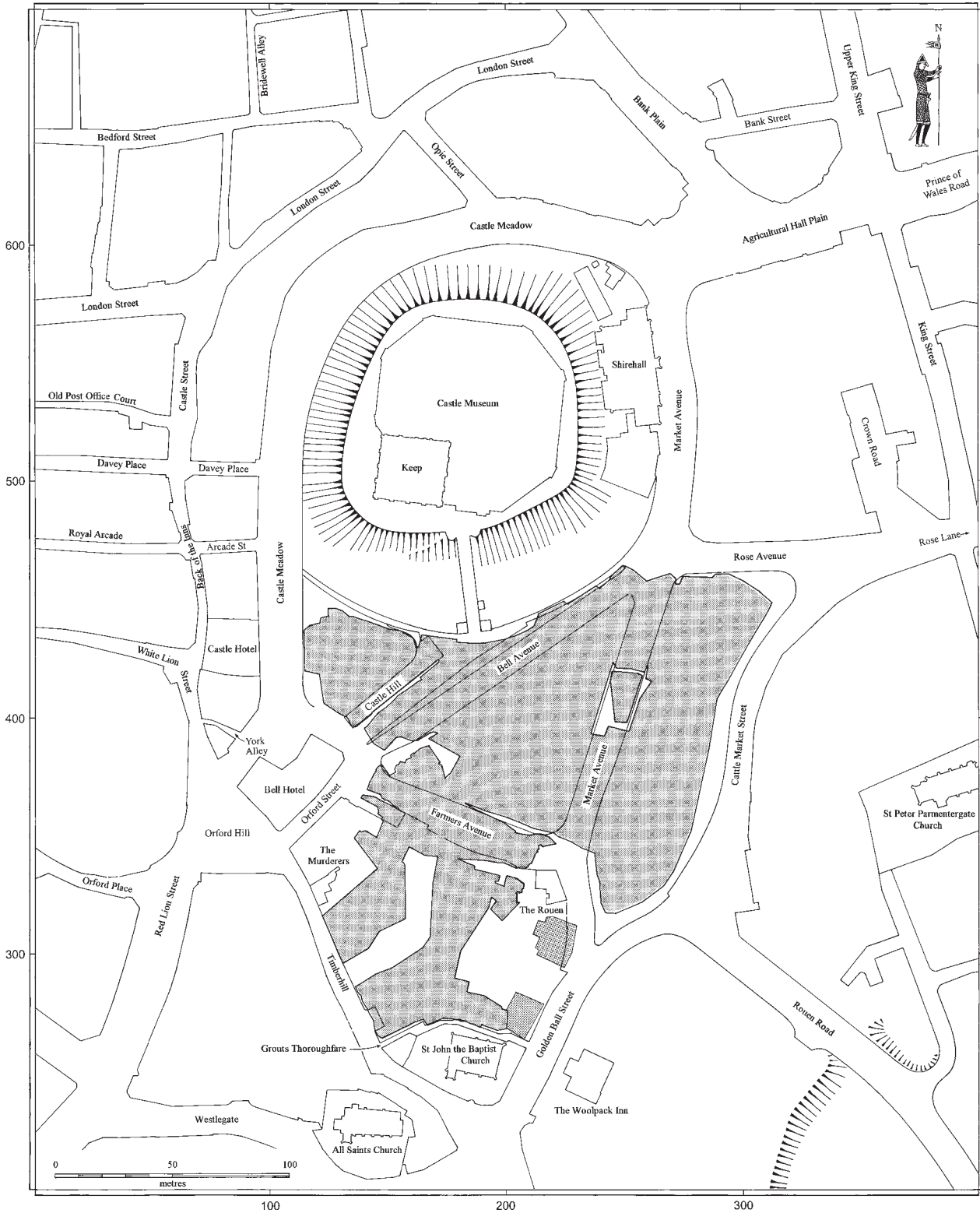


Figure 1.2 Plan of excavated areas at Castle Mall and Golden Ball Street, showing modern street names. Scale 1:2500

medieval period and it is probable that the presence of these bones related to the manufacture of either arrows or quill pens. It seems likely that these various types of debris from Norwich Castle's barbican well came from a workshop or workshops repairing armour and weaponry, as well as being a designated rubbish dump for some of the city's butchers. Overall, this constitutes the single most important assemblage from the site with implications which reach far beyond the city of Norwich itself.

From 1564, Dutch and Walloon families — the 'Strangers' — were invited to Norwich to produce draperies and textiles. Contacts with the Netherlands are attested at the Castle Mall site by the presence of quantities of Dutch-type pottery and other artefacts including sledge runners made from the jaw bones of two horses, recovered from fills of the barbican ditch. Few other fragments of such sledge runners are known from archaeological sites, although the sledge is paralleled in 16th-century Dutch and Flemish paintings, such as those by Pieter Breugel the Elder. Documentary evidence for the Strangers in the parish of St John to the south of the castle demonstrates the range of trades they practised and provides a social aspect that supplements the archaeological data.

Norwich's Mayor's Court spent much of its time during the 17th century in dealing with unlicensed quarrying and continued dumping of refuse within the castle ditches. Many people were imprisoned in the Bridewell for digging sand, thirteen people being accused of this offence in 1633. Perhaps the most unusual find of post-medieval date was a parrot, bones of which were found in a 17th-century refuse pit. This appears to be the first

archaeological site in England at which such bones have been recovered.

A small group of burials was recorded at the top of the castle mound, comprising the remains of seven prison inmates (six adults and a child) who had been buried with little ceremony during the 17th century. Prisoners had previously been interred at the Church of St Martin-in-Balliva. This church, however, was demolished in 1562 and at a later date this piece of ground on the western side of the motte was enclosed for burials.

While infilling of the barbican ditch during the late 16th and 17th centuries had been fairly haphazard, it became more organised in the early 18th century. This may indicate deliberate levelling prior to the construction of the Cattle Market in 1738. In one part of the ditch a plank and post revetment was inserted to facilitate access. A considerable proportion of the total site pottery assemblage (over 270kg) came from this ditch and included a range of local post-medieval wares as well as regional, English and continental imports. The ditch fills also contained a huge assemblage of animal bones, offering the opportunity to examine aspects of animal husbandry during the agrarian revolution of the 18th century. In addition the occurrence of articulated remains of animals can be related directly to documentary references to the burial of horses, dogs, cats and pigs in the ditch. This disposal occurred both on a haphazard basis and, in a more organised fashion, during outbreaks of plague such as that in 1666.

The continued success of Norwich as a centre of marketing and retailing led to organised attempts to level the remaining elements of the castle's defences, culmi-

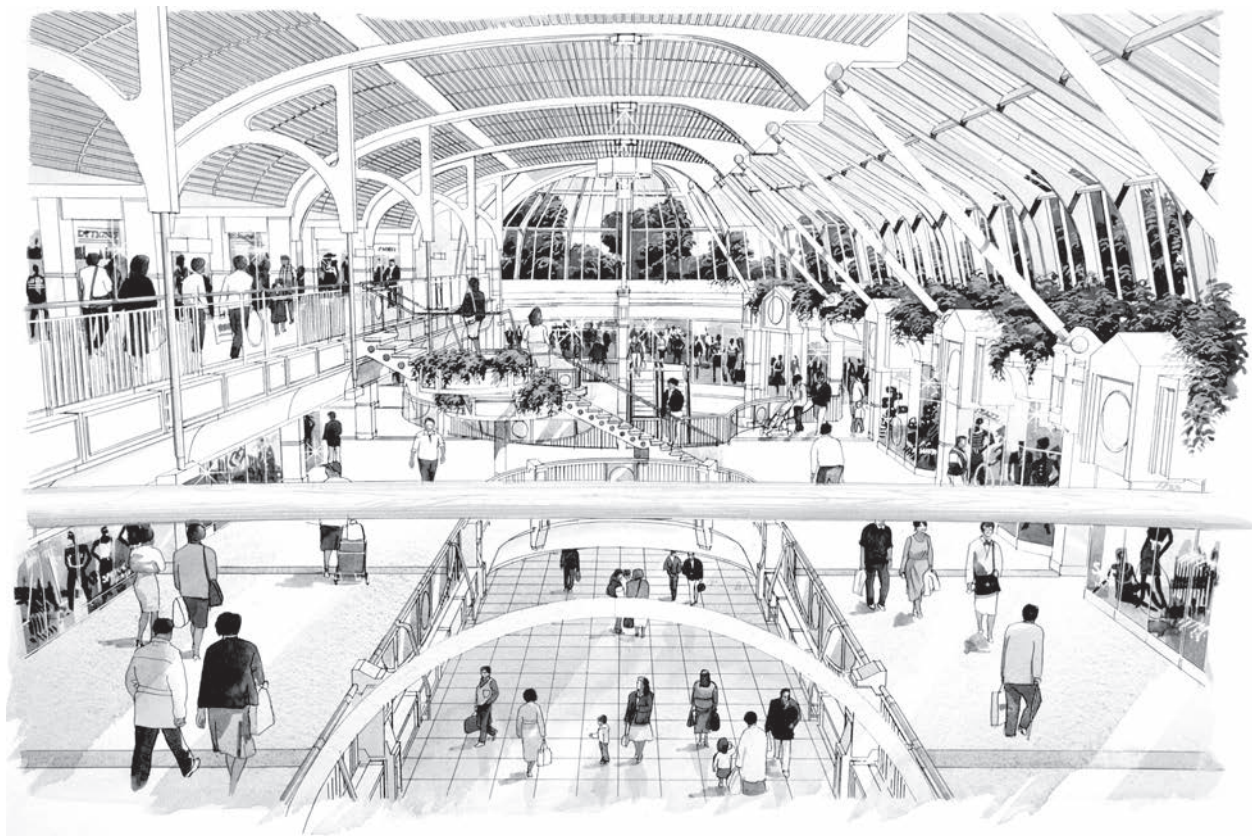


Plate 1.4 Architect's drawing of the interior of the Castle Mall shopping centre (courtesy of Lambert, Scott & Innes: see note on p.xxvi)

nating in the remodelling of the livestock market in 1862. Air raid shelters were constructed across the northern part of the site in 1939. The area continued to serve as a Cattle Market until 1960, when it became a car park following the removal of the market to a new location.

There was general agreement amongst the city's inhabitants that the area 'must not indefinitely remain a desert of tarmac and parked cars' (Norwich Society, n.d.). Following years of discussion, argument and planning, the pressing need for redevelopment of the castle baileys and surrounding area was eventually resolved. A discussion document produced by the city's planners considered redevelopment of the whole area from Agricultural Hall Plain to the north to Westlegate to the south (Norwich City Council 1979). A substantial area of the castle's north-east bailey was redeveloped for the Anglia Television premises in 1979 and in the 1980s work began on construction of the vast underground Castle Mall shopping centre within the south bailey. This was a colossal engineering venture and the associated archaeological excavation was at the time the largest of its kind in northern Europe.

II. PROJECT BACKGROUND

by Elizabeth Shepherd Popescu, Brian Ayers, Jez Reeve and Andy Shelley
(Figs 1.1–1.2, Plates 1.3–1.5)

The construction of the Castle Mall complex was a turning point in the modernisation of Norwich as a regional commercial centre. Norfolk's inhabitants watched the process of planning for change closely during the years it took before the 'First sod turned at Castle Mall Dig' was reported in the *Eastern Daily Press* (EDP) on 1 December 1987. The impact of the project has been enormous, touching the lives of thousands of Norfolk people and Norwich visitors.

The long-standing need for redevelopment of the 6 acre city centre area comprising the Cattle Market car parks and surrounding buildings (principally between Market Avenue and Timberhill; Fig.1.3; Plate 1.3) was finally addressed when various schemes were put forward on behalf of development companies. One such, ultimately successful, scheme by local architect Michael Innes was first presented in 1981 (Plate 1.4). It entailed the construction of subterranean links in order to provide access to the entire site beneath existing highways. By utilising the slopes of the hill it was possible to propose a development which obviated the need for major surface building in this sensitive area of the city. A huge underground space was designed to house both retail outlets and car parking space. In a reversal of the usual development process, the scheme was put forward before a client had been found. The latter proved to be Estates and General plc, subsequently supported by Friends Provident plc who eventually took over the entire project.

English Heritage was involved in planning decisions from the outset as Norwich Castle was a designated Scheduled Ancient Monument (Norfolk 5; originally scheduled 8 February 1915) and therefore protected by statute (1979 Ancient Monuments and Archaeological Areas Act; see Fig.2.1). Costs for the archaeological work at Castle Mall amounted to over £1 million (less than 1% of the total development cost), of which 69% was

sponsored by the developer and the remainder by English Heritage (excluding publication costs). The Golden Ball Street project was entirely funded by Friends Provident plc.

In preparing for the scheme the NAU excavated four trial trenches, where access could be achieved in the functioning car park. These were designed to establish the impact of the air raid shelters on the assumption that most of the medieval banks and ditches had been scoured out in the landscaping of 1738 and the 19th century to provide the city with a central Cattle Market. The existence of warehouse buildings and other structures on the Timberhill part of the site meant that no exploratory archaeological work was undertaken prior to designing the excavation strategy. Along with an extensive borehole and trial shaft survey (see below), the evidence from these trial trenches and previously published archaeological evidence provided the basis for the discussions with the developer in designing a workable timetable to facilitate the archaeological excavation alongside the actual development.

In advance of redevelopment, an extensive borehole and trial shaft survey of the relevant area (Fig.3.2) was conducted by Ove Arup and Partners, a report being produced in 1990. This information has subsequently been used in conjunction with archaeological evidence to enhance understanding of the natural geology and topography of the area (see Chapter 3). In addition, some of the information relates to the position of made ground and in particular the position of castle earthworks.

Major engineering challenges were to be faced during construction work. One of the main problems was the presence of fissures or cavities in the natural chalk (known as swallow holes or 'solution features'). In an attempt to define the location of such features, a trial geophysical survey using ground radar was conducted in April 1989 by Geospace Consultancy Services Ltd. Results were compared with the borehole data and indicated that the ground radar technique was not a useful tool in this enquiry. The swallow holes were eventually stabilised by having grout pumped into them, at considerably lesser expense than conventional filling with concrete.

Since the new shopping centre was to be placed largely below present day ground level, it was raised from a ground slab at the base of a large hole. The initial phase of construction therefore involved lining the perimeter of the site with a pile wall. This was constructed from a total of 820 contiguous piles (each 900mm in diameter) cast on site by pouring concrete around reinforcement within a bored hole. The piles were inserted by Expanded Piling and extended up to 46m deep. Each bore was sunk into natural chalk level to act as a 'toe' for the pile. Once a stretch of wall was in place the ground level within the site could be lowered. To prevent the piles from inclining into the area of the development under lateral force, beams were constructed along the inner face of the wall. These were then tied into the geology outside the pile wall with an innovative scheme (designed by Ove Arup) of 1,200 ground anchors: long cables, inserted into shallow-inclined bores, which were stressed. At the maximum depth of the excavation there were four levels of waling beam and ground anchors.

Excavation of the vast underground construction site, up to 20m deep, took place in layered stages. A total of 420,000m³ of spoil was removed from the site



Plate 1.5 Architect's model of the Castle Mall shopping centre, which contains a vast underground retail space (courtesy of Lambert, Scott & Innes)

The new scheme was designed to integrate the development into the surrounding conservation area, without prejudicing the skyline. By way of addressing this issue, a much-needed public park was provided above the underground shopping centre *inter alia* restoring much of the open space of the castle's south bailey which has been a feature of the area since medieval times (Plate 1.5). Pedestrian access through the development now joins various parts of the city's retail centre.

III. THE EXCAVATIONS

Expectations and Realities

by Jez Reeve
(Plate 1.5)

by May Gurney and was dumped at Costessey Tip and Keswick Mill. A single entrance to the site, combined with constant washing down of both vehicles and the ground surface, ensured that mud was kept to a minimum on the surrounding roads. When the excavation was at its maximum depth a substructure was formed, over which the superstructure was constructed. Once in place the superstructure acted as support to the piles and the ground anchors were de-stressed (but remain radiating from the site).

Access provision was required to permit movement into the site and later to provide access between areas of the development, which necessitated constantly changing haul routes to maintain an efficient traffic flow through the city.

This was to be the largest archaeological excavation Norwich had ever known and was the largest urban excavation of its time in Europe (Plate 1.6). It was clear from the outset that systematic and accountable recording procedures must be implemented to ensure that the potential of the archaeological remains was maximised.

The project was to introduce new methodologies to the county which are now commonplace in the design and execution of archaeological investigation. The single context recording method, for example, was relatively new to Norwich archaeology (see below). In view of the fact that access for excavation was to be piecemeal in numerous different excavation areas, in a sequence which reflected construction needs rather than archaeological imperatives, computerised survey equipment was utilised from the beginning. Walkie-talkies were used

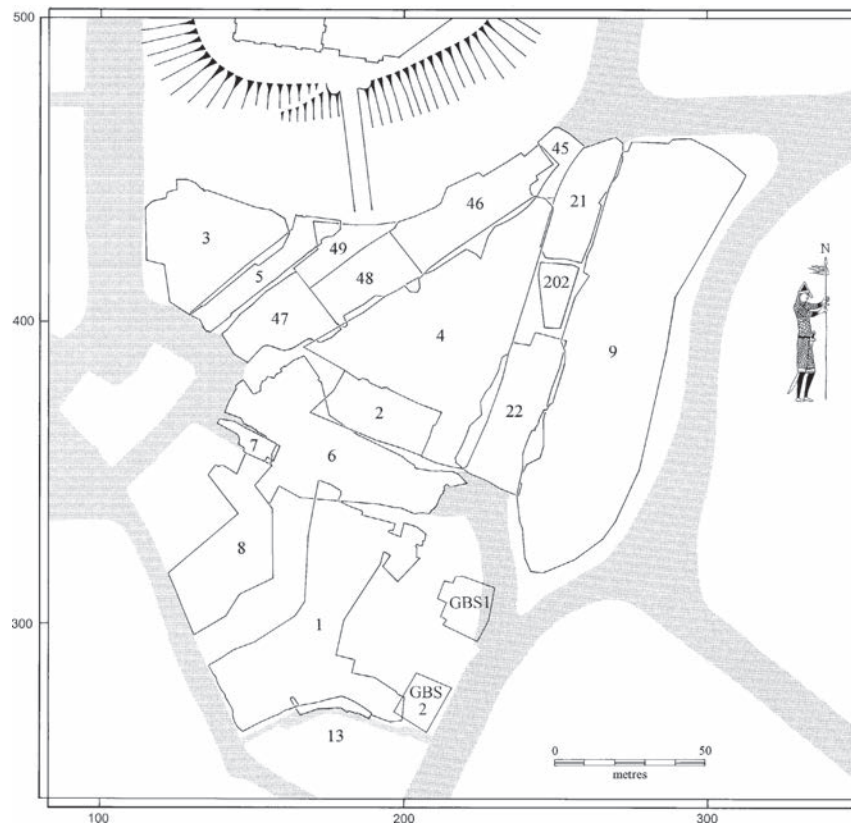


Figure 1.3 Excavation Area numbers. Scale 1:2500

<i>Area</i>	<i>Start Date</i>	<i>End Date</i>
Trial Hole 1	December 1987	January 1988
Trial Hole 2	January 1988	February 1988
Trial Hole 3	March 1988	March 1988
Trial Hole 4	April 1988	May 1988
Area 1	May 1989	October 1989
Area 2	September 1989	October 1989
Area 3	September 1989	October 1989
Area 4	October 1989	November 1989
Area 5	January 1990	February 1990
	September 1989	
	November 1989	January 1990
Area 6	May 1991	August 1991 (well shaft)
	November 1989	December 1989
Area 7	February 1990	February 1990
Area 8	February 1990	April 1990
Area 9	February 1990	October 1990
	December 1990	April 1991
Area 13	January 1990	March 1990
Area 21	November 1990	December 1990
Area 22	November 1990	December 1990
Area 45	October 1990	October 1990
Area 46	December 1990	January 1991
Area 47	February 1991	May 1991
Area 48	January 1991	May 1991
Area 49	March 1991	May 1991
Area 202	October 1990	October 1990

Table 1.1 The excavation sequence

to combat the incredible engine noises of the construction site (Plates 1.7 and 1.8) in another new departure for Norwich's archaeological approach. As a result of the close working relationship with the main contractors (Bovis), surveying was facilitated through use of the same survey stations as those used by the developers. This was one of the many ways in which the two components of the Castle Mall project formulated co-operative ways of achieving potentially conflicting targets.

The archaeologists met the senior construction team on a weekly basis to discuss priorities, agree method statements for each component of the archaeological and construction work and confirm site protocols and targets. These meetings provided crucial assistance to the archaeological effort. There were many occasions when technical solutions were engineered by the Bovis team to address practical difficulties faced by the archaeologists which were, at the time, beyond their own abilities. These included the design and execution of the massive barbican ditch cross-section by machine in January 1990.

It was the first time many NAU staff had seen a Gantt chart and the team had to think rapidly and critically about archaeological targets, both physical and intellectual. Nigel Mottram, Bovis' Senior Project Manager for the scheme, succeeded in ensuring that every effort was made to find mutual solutions by appointing a designated liaison officer, Mark Manwaring, whose active help-

ness and skills intercepted and converted many potential problems into practical solutions.

Although the logistics of access and site movements were envisaged to be complex at the outset, the true nature of the delicate balance between archaeology and construction only became clear after the first area was nearly completed and co-occupancy of the site began. Initial ideas for using archaeological volunteers, many of whom had been stalwarts of the Norfolk Archaeological Rescue Group (NARG) for years, soon had to be changed because of the time pressures and health and safety constraints inherent in running such a difficult site. This caused some dissatisfaction amongst these champions of Norfolk archaeology as expectations of hands-on excavation could not be met (Robins 1990). It was, however, only due to the continued and generous commitment of NARG members and other volunteers that the supervising and running of the Visitors' Centre (see below) and much of the finds processing was achieved. It was the first time that the dynamic relationship between professional archaeologists and amateur archaeologists was tested in Norwich.

Programme of Works

by Elizabeth Shepherd Popescu

(Figs 1.3–1.6, Plates 1.6–1.8, 1.10, 1.11, 5.12 and 6.16)

Introduction

The new development entailed the destruction of a large part of the castle's south bailey and its fringes. The extensive excavation was undertaken by the NAU between 1987 and 1991 (Site 777N; TG 2320 0837 centre) and the excavation sequence is fully detailed in Appendix 1. Trial work began at the end of 1987, with the main excavation taking place between May 1989 and August 1991. Subsequent work in the form of watching briefs continued until the end of 1992. Additional excavations in the area included several evaluations, as well as additional work on the castle bridge (Site 874N), an excavation at Golden Ball Street in the winter of 1998 (Site 26496N; TG 2321 0828 centre) and excavations linked to the Castle Redevelopment Scheme in 1999–2000 (Site 429N). Information from these additional sites is summarised within this report, with the exception of the Golden Ball Street excavations. Selected evidence from the latter is published here as the site lay within the confines of the Castle Mall development, linking directly to important features recorded during earlier work.

Trial Work (Site 777N)

Prior to the main excavation four trial trenches were excavated between Bell Avenue, Market Avenue and Cattle Market Street, the first of which was inaugurated by the Lord Mayor of Norwich on 30 November 1987 (Plate 1.9; Fig.1.5). Trial Trenches 1 and 3 were situated with the objective of revealing the plan of what was then termed the Castle Bailey ditch (later the barbican ditch). Trial Trench 2 lay further to the south, near Farmer's Avenue. Trial Trench 4 was situated to prove or disprove the theory that all archaeology in this area would have been removed in 1862. The trenches were positioned in air raid shelters and areas of landscaping and the results

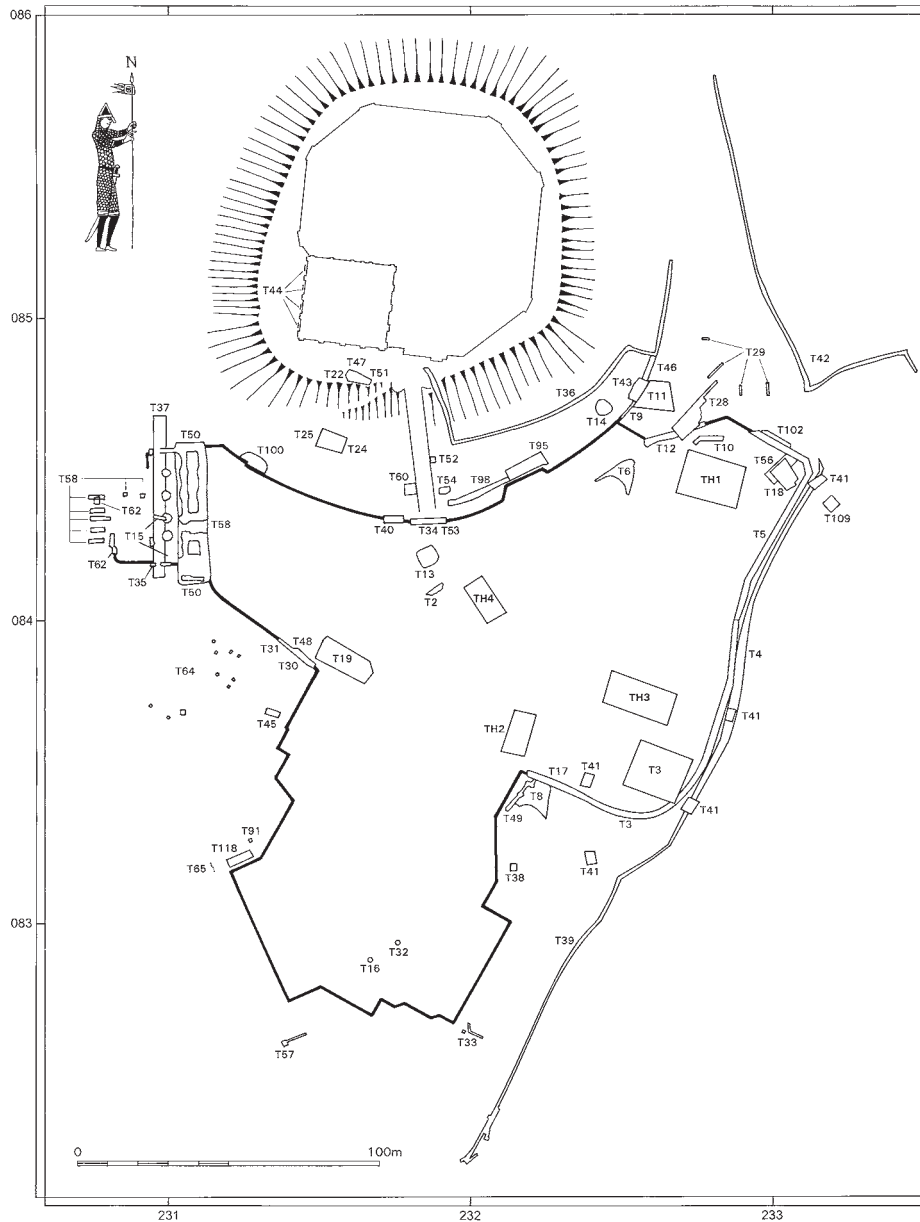


Figure 1.4 Watching Brief locations. T = watching brief number; TH – trial hole number. Scale 1:2500

of the trial work were presented in a summary report (Ayers 1988b).

All four trial trenches yielded large quantities of finds, largely resulting from more intensive excavation and finds retrieval than was possible during subsequent excavations. Ditch fills, for example, were almost entirely dug by hand during trial work: in most of the areas excavated between 1989 and 1991, the size of the excavation areas through major features necessitated recording by machined sections alone (samples being taken for finds and environmental recovery).

The results of each trial trench have been synthesised within the main body of the excavation report and context numbering revised so that the original four digit context numbers have been assigned five digit numbers by relevant site area (see below).

Trial Hole 1 was located within the line of the barbican ditch, in what was later the northern end of Area 9. It measured 20.5 by 14m and was excavated to a depth of 7m (using shoring, Plate 1.10). The ditch fills investigated proved to be post-medieval in date (Period 6, Chapter 10).

Deposits adjacent to the ditch were thought during trial work to have been the remnants of an associated rampart, which it was postulated had survived as a result of having been buried during landscaping in 1862, levelling the former ground slope. This 'rampart', however, was not located during the main excavation and may in fact have been the western face of the ditch. A wooden fence ran across the ditch, forming a causeway or boundary marker (described in Period 6.2). The area examined by trial work was later subsumed within the machine-cut stepped excavation through the ditch.

Trial Hole 2 was placed over what was initially taken to be a ditch around the medieval Shirehouse, although it later proved to be the outermost of two concentric ditches defending a bridge landing in the early south bailey of the castle (Ditch 8, Period 2.2, Plate 5.12). Other features located in this trench were pre-Conquest pits (Period 1, Chapter 4) and air raid shelters (Period 7, Chapter 11). The excavation measured 24 by 22m and was 2m+ deep. It was not re-excavated during later work in Area 2 in 1989.

Trial Hole 3 was located immediately to the east of Market Avenue, south of Trial Trench 1, and again was placed to locate the line of the barbican ditch (in fact the ditch ran further to the north; Period 4, Chapter 7). This trench had dimensions of 29 by 16m and was 2m deep. A variety of features was uncovered, including pits, all of which have been subsumed into the main report. The features located contained significant numbers of ceramic wasters and large quantities

of Thetford-type ware pottery (Plate 1.11). During the main excavation the area of this Trial Trench was used to locate site accommodation.

Trial Hole 4 proved to be located over the boundary between the north edge of the barbican ditch and a post-medieval quarry (Period 6, Chapter 10). The trench, which measured 14.5 by 7m and was 4.5m deep, located two fragments of a rampart gatehouse (see Period 3.1, Chapter 6 and Period 6.3, Chapter 6; Plate 6.16) and the north-eastern edge of the quarry which had caused its collapse.

Main Excavation (Site 777N)

In order to minimise disruption to the city, development of the Castle Mall area was conducted whilst archaeological excavation was underway (Plate 1.5). The excavation was divided into eighteen areas (Fig. 1.4; Table 1.1), the size of each being determined by the construction timetable. The programme of construction (detailed in Appendix 1) was itself determined by the provision of access and traffic flow since arterial public roads crossed the site, together

<i>Watching Brief</i>	<i>Location</i>	<i>No. contexts</i>	<i>Watching Brief</i>	<i>Location</i>	<i>No. contexts</i>
T1	Fencing hole in Castle Gardens	1	T40	Pile line, Area 5	1
T2	NCC trench in Bell Avenue	1	T41	Area 9 survey trenches	0
T3	Pile line around Area 9	3	T42	BT trench, Shirehall Plain	26
T4	Stripping between Area 9 pile line and Cattle Market Street	0	T43	Capping beam work	0
T5	M2 Pile line	0	T44	Post-hole in Castle Mound	4
T6	Corner of Bell Avenue and Market Avenue	0	T45	Boston's kerb replacement	0
T7	Elm tree trial hole in Castle Gardens	1	T46	Shirehall Plain retaining wall	4
T8	Road works north of <i>La Rouen</i> public house	39	T47	Castle Mound, bailey bridge	51
T9	M5A (N) Pile line	8	T48	Traffic lights, Castle Approach/Farmer's Avenue	3
T10	Pile trench at N. end of Area 9	1	T49	Water trench, La Rouen	29
T11	M5A (N) wheelwash	0	T50	Castle Meadow piles	6
T12	M5 (N) pile line	0	T51	Castle Mound, bailey bridge	0
T13	Trench around elm tree, Castle Gardens	0	T52	Ove Arup, Castle Gardens	4
T14	Replanting hole for elm tree, Castle Gardens	0	T53	Pile obstruction	1
T15	Trenches around piles at Castle Hotel	0	T54	Castle gatehouse trench	1
T16	Well in Area 1	2	T55	Farmer's Avenue	0
T17	Piling trench, S. end of Market Avenue	0	T56	M2 slab level	16
T18	NE corner of Area 9	0	T57	Electricity, Timberhill	0
T19	King post excavation, Bell Avenue	30	T58	Castle Meadow, trenches for bridge formwork	18
T20	Section, N. end of Bell Avenue	47	T59	Grout's Thoroughfare capping beam	13
T21	BT trench around Area 9	0	T60	Castle Gardens trial hole	0
T22	Top of mound for insertion of bailey bridge	0	T61	Anglia TV wall	0
T23	Well in Area 9	1	T62	Castle Hotel underpinning	0
T24	Bailey bridge trial hole 1A, Castle Gardens	28	T63	Averills Garage	0
T25	Trial hole 1B, Castle Gardens	0	T64	Bell Hotel	0
T26	Pile line proving trench	0	T65	Timberhill	1
T27	Castle Hotel	0	* T67	Masonry in M4	1
T28	Rose Avenue/Bell Avenue junction	62	T86	Well in Area 9	1
T29	Shirehall Plain trenches	0	T91	Spoils, Orford Street	0
T30	Pile line proving trench, Bell Avenue	1	T95	Castle Gardens Fire Escape	40
T31	Piles, Castle Approach	0	T98	Castle Mall/Bell Avenue	0
T32	Lower part of well, Area 1	2	T100	Castle Gardens shelter	14
T33	Grout's Thoroughfare BT junction box	1	T101	Timberhill Triangle	0
T34	Pile line proving	0	T102	N. of Area 9 pile line	43
T35	Castle Meadow ground inspection	22	T103	Anglia Water, Castle Bridge	0
T36	Castle Gardens water trench	9	T105	Well outside main gates of Castle Mall development	0
T37	Castle Meadow services	0	T106	Manhole, La Rouen	1
T38	La Rouen electricity	0	T109	Cattle Market Street, Anglian Water	0
T39	Gas trench, Rouen Triangle	0	T118	Timberhill, <i>Murderer's</i> public house	106
					643

* T67 was the last watching brief to be undertaken during site work, at which point the watching brief numbering system was briefly used for watching briefs on other sites, hence the apparently random sequence of numbers for later work on the Castle Mall site.

Table 1.2 Watching briefs (located in Fig. 1.4)

with the installation of a contiguous pile wall (described above). The complex development sequence meant that archaeological excavation was tied to each of the piling, waling beam and bridge construction programmes, as well as to the sequence of spoil removal from the development area. It was envisaged from the outset that all of the development area would be archaeologically

investigated, with decisions on the intensity of localised excavation being taken as the project progressed.

Watching Briefs (Site 777N)

Eighty-one watching briefs were conducted as part of the Castle Mall project, both during the two years of the main excavation and afterwards (Fig.1.5 and Table 1.2).



Plate 1.6 Aerial view of the Castle Mall excavations in progress, showing the stepped excavations across the barbican ditch in Area 4 photographed in February 1990 (Norfolk Aerial Photographic Library: TG231083)



Plate 1.7 Excavation in progress at Castle Mall, showing the general character of working conditions on this joint occupancy urban site



Plate 1.8 Construction work in progress, showing surviving buildings along Timberhill in the foreground and Norwich Castle Keep to the left of the picture

Most were the result of unscheduled additional works on the part of the developers, often taking the form of new service installations, or small areas outside the original brief which were to form part of the development. Watching briefs were recorded using standardised site records (context numbers in the 12000 series) and a watching brief form. Each was assigned an individual 'T' number (for example T102 = watching brief 102).

Some watching briefs were recorded under difficult conditions, such as the sequence of ditches that lay to the west of the site beneath the Castle Hotel (T58). Here, the insertion of a walkway beneath the modern road known as Castle Meadow necessitated recording below the groundslab, much of the archaeological informa-

tion being preserved as ditch profiles adhering to piling. Similar observations were made to the east of the site.

Golden Ball Street (Site 26496N)

The area either side of No. 18 Golden Ball Street was excavated by the NAU in November and December 1998, in advance of redevelopment for a multiplex cinema within the Castle Mall centre. The site lies immediately to the west of the castle approach road, in the vicinity of the south gate. Two trenches were opened, each being positioned to overlie known ditches. Area 1 to the north measured 19m by 12m, while Area 2 to the south measured 17m by 13m. The trenches lay adjacent to a listed building at No. 18, constructed c.1600 (formerly a home,



Plate 1.9 Inauguration of the excavations by the Lord Mayor of Norwich 1987



Plate 1.10 Insertion of shoring into Trial Hole 1 across the barbican ditch in 1987

then a sweet shop and latterly an antique shop; see Plate 11.7) that was preserved during construction and has now been refurbished. An architectural study of the building was undertaken as part of the pre-planning application report (Smith 1997).

Castle Mound Redevelopment (Site 429N)

The NAU was also commissioned to undertake further archaeological excavation and recording necessitated by the redevelopment works at Norwich Castle Museum during the period July 1999–July 2001 (Fig.1.6). The work was co-ordinated with the development programme which was undertaken in two main phases (summarised in Chapter 2). The results of these excavations are fully reported in a separate volume by Wallis (in prep.). Given that the implications are essential to the interpretation of the earthwork sequence recorded at Castle Mall (which also recorded trenches on and immediately adjacent to the mound) they have been taken into detailed consideration throughout this report.

Excavation Methodology and Site Recording

by Jez Reeve and Elizabeth Shepherd Popescu

During the course of the excavation, modern overburden was stripped by machine and an initial plot of major features recorded before detailed excavation strategies were developed for each area depending on the period and nature of the tangle and anticipated archaeological remains. Given that the timetables for each area had



Plate 1.11 Excavation of Thetford-type ware pottery in Trial Hole 3 in 1988

Area	No. contexts (excavation)	No. contexts (post-excavation)	Total no. contexts	No. sections
1	1,950	335	2,285	194
2	108	65	173	9
3	71	0	71	23
4	863	66	929	21
5	306	78	384	14
6	889	23	912	19
7	141	7	148	5
8	786	56	842	38
9	2,780	306	3,086	179
12	643	0	643	42
13	284	0	284	2
21	131	0	131	5
22	551	19	570	10
45	244	1	245	3
46	890	2	892	16
47	1,174	14	1,188	41
48	351	16	367	44
49	379	40	419	15
202	41	0	41	2
Total	11,971	1,028	*13,610	682

* A total of 13,744 entries are given in the context index dbase, 134 more than shown here (these derive from late post-excavation additions).

Table 1.3 Quantification of site records at Castle Mall

already been set based on the locational information in previously published evidence, in particular the map of the Norman defences as presented in the *Historic Towns Atlas* (Campbell 1975, maps 2 and 3), pressure on time and resources was exerted when unexpected features were revealed. These included the unexpectedly southerly location of the south bailey ditch and the discovery of an Anglo-Saxon cemetery in an area for which only a few weeks excavation time had been timetabled.

Full details of the methodologies employed in excavation and site recording are detailed in Appendix 2. A single-context recording system was employed, utilising *pro forma* record sheets. Nearly 14,000 contexts were recorded, including many which were assigned during post-excavation work (Table 1.3). An additional 480 contexts were recorded at the Golden Ball Street site, using a single running sequence of three digit numbers. Context numbers at Castle Mall were assigned using a five digit number, reflecting the excavation area (e.g. Area 1 began with 10000). Exceptions to this were some of the numbers for Area 1 assigned in post-excavation (14000) and Area 47 (some of the latter beginning with 57000). Unstratified finds were usually assigned to the first number in an area (e.g. 20000), although there were some exceptions.

Each excavator was delegated the responsibility for recording and data collection within the customised methodology adapted for the Castle Mall excavation. New staff received training and could rely on prompt sheets and word lists to assist them in the course of their work. All staff (consisting of about 30 professionals at any one time) were included in duty rotas for surveying, environmental flotation processing, record checking and

computerisation in order to acquaint everyone with the variety and complexity of the site recording process as a whole. The system sought to build confidence and improve standards across the site as everyone was involved in all aspects of the implementing of research strategies for each area and were encouraged to interpret and feedback ideas about the archaeology at the weekly team meetings and site walkabouts.

Extreme weather conditions applied their own pressures on the timetable. In the summers of 1989 and 1990 temperatures rose as high as 32°C, whilst heavy rain and wind hampered work in November 1989 and September 1990 and snowfall and freezing conditions delayed work in February 1991. Although most of the main excavation was conducted during the hours of natural light it was necessary to work under artificial light in winter and into the night, when schedules had to be met.

In line with the main contractor's health and safety policy the NAU introduced regular health and safety training sessions to ensure that health and safety awareness was uppermost in planning and executing normal tasks, from the safe use of ladders, working with machines to emergency procedures. Trained First Aiders proved their worth on more than one occasion ensuring that accidents did not turn into major incidents.

There was an iterative programme of finds and environmental processing and analysis running in parallel to the field excavation programme. Although this necessarily lagged slightly behind the archaeological excavation process the presence on site of appropriate specialists ensured that spot dates could be offered to the excavators, to assist in designing sampling strategies and for refining excavation techniques, where necessary. The opportunity was taken to invite a series of experts to the weekly team meetings to give seminars on specialist topics and to answer questions. This also provided the practical opportunity for specialists who would be working in detail on different aspects of the archaeological analysis to experience the excavation in all its noise and glory. The advice and regular visits of Peter Murphy, the regional archaeological environmental archaeologist, were invaluable to developing the changing excavation strategy on site. Wendy Brinded's voluntary commitment of hundreds of

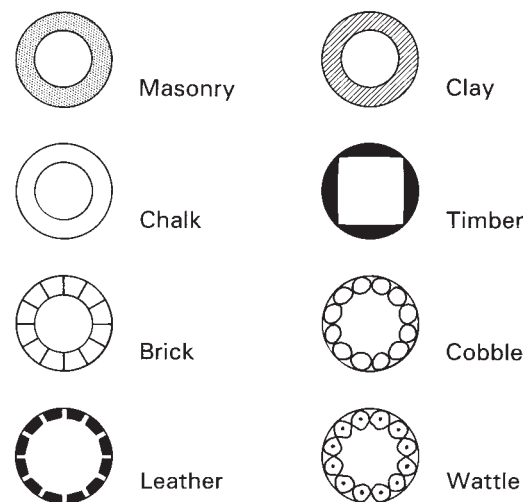


Figure 1.5 Key to pit linings

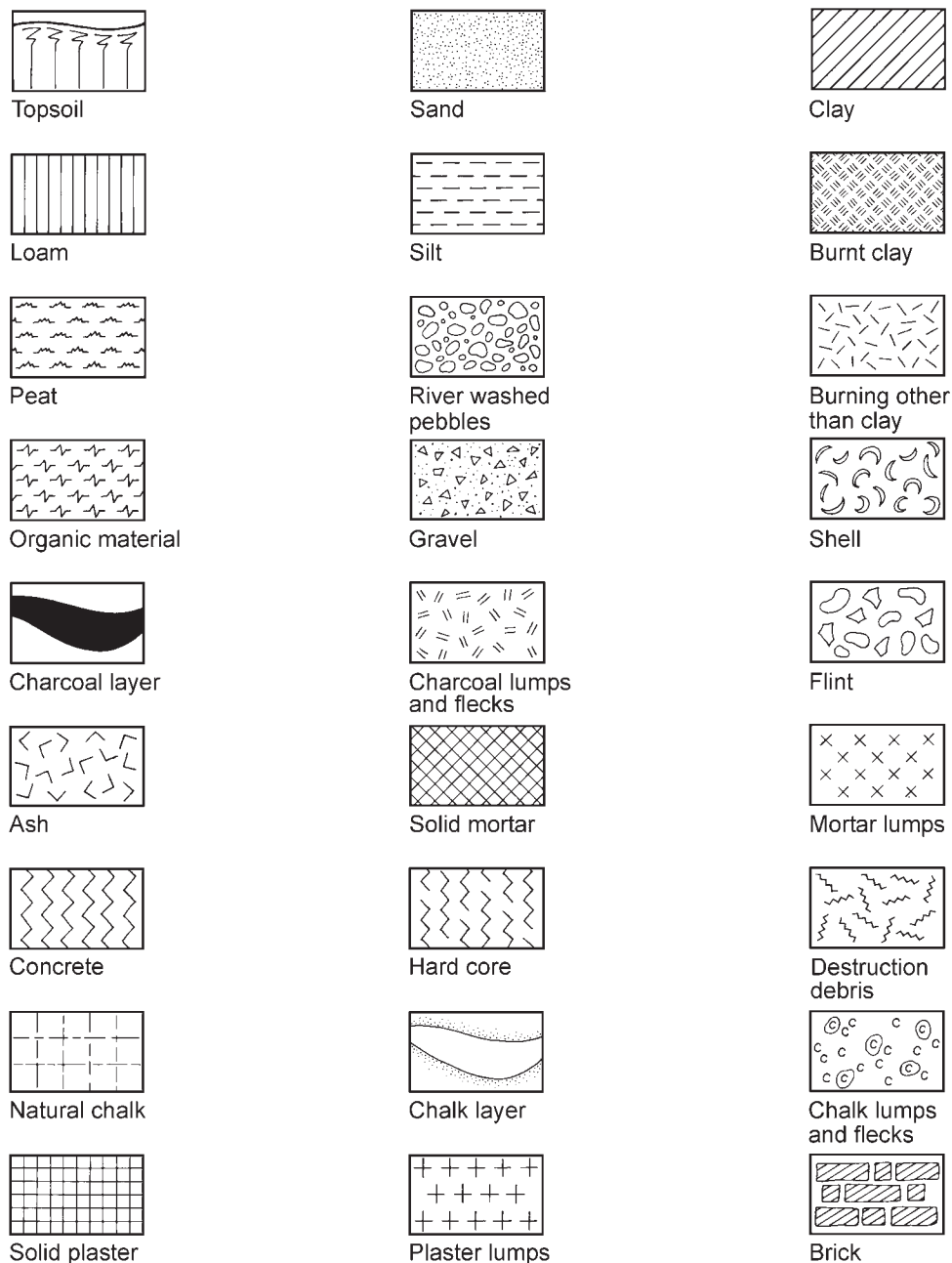


Figure 1.6 Drawing conventions

hours of metal detecting, working alongside excavators, also contributed to the design and effective development of both generic and specific recording and excavation strategies.

IV. OPPORTUNITIES AND INVOLVEMENT

by Jez Reeve, Brian Ayers and Elizabeth Shepherd Popescu
(Plate 1.12)

Visitors' Centre

Throughout the Castle Mall excavation, opportunities were seized wherever possible to involve communities,

groups and interested individuals in the project. Strong local interest led to the early provision of viewing platforms, with regular updates being provided for the public, councillors and the Castle Mall construction team throughout the duration of the project. The opportunity to use the excavation as an educational resource was incorporated into the design and management of the Visitors' Centre which opened in summer 1989 (Plate 1.12). An education liaison officer, Lyn Stazcewska, was seconded from the Norfolk Education Service. Her contribution as a trained teacher was vital to developing the educational materials and events which drew on the results of the excavation. The first public interactive video in Norwich was developed for the Visitors' Centre helping to increase the popularity of the Castle Mall visitor experience (see below).



Plate 1.13 Following the unexpected discovery of the deep well shaft (50108, Period 3.1, Chapter 6) at the base of the castle bridge (Area 5), its upper part was hosed down by the White Watch of the local Fire Brigade

Eight-year old Alexander Barnett-Naghshineh received a surprise on 5 August when he was acknowledged as the 10,000th visitor just one month after the centre was opened ('Young Visitor's Surprise', *Eastern Evening News* (EEN, 5 August 1989). By December 1989, 30,000 visitors had used the Centre coming not only from every part of East Anglia, but also from every part of the world (Norfolk Archaeological Unit 1990). When the Visitors' Centre finally closed, c.73,000 people had visited and a multitude of school parties had been catered for. Many of these visitors will have some souvenir of the experience besides their own photographs and memories. As well as the free bulletins, especially designed merchandise was available in the form of mugs, rubbers, pencils and badges. The site team even produced their own T-shirt depicting a pastiche of the popular image of archaeologists entitled 'Castle Mall Jones and the Ditches of Doom, Norwich 1989–1991'.

The Visitors' Centre (housed in a stacked pair of mobile cabins) was staffed largely by volunteers. It was at first sited at the western end of Area 1, moving to the northern end of Area 2 (which was not excavated) and finally to Shirehall Plain.

Special Events and Fund-Raising

Popular events focussed on the archaeological investigations at Castle Mall, such as the burial of time capsules, open days and fund raising events for charity. On one occasion, when the logistics of machine excavation proved too difficult for the archaeologists, the local White Watch of the Fire Brigade brought a high pressure hose to assist in the cleaning of a stone-lined pit (Plate 1.13), which later proved to be a 30m deep well ('Mysterious pit is unearthed', EEN 13 December 1989).

In February 1990 — at the initiative of locally-born weapons engineering mechanic, Robert Charles — a squad of sailors from the HMS Collingwood (based in Hampshire) undertook a sponsored dig for two days to raise money for the Jenny Lind Unit of the Norfolk and Norwich Hospital.

The local art college, Norwich School of Art and Design, used the archaeological excavation for a student photography project and local artist, Kay Olsten, based a number of her watercolours on the interface between the construction works and the archaeological investigations (see Chapter 2).

Media Coverage and Project Videos

The public had been involved in the development scheme since its inception. Whether it was for or against, opinions were expressed which reflected the strength of identity felt by Norwich and Norfolk people to their changing city. The local newspapers, the *Eastern Daily Press* (EDP), the *Eastern Evening News* (EEN) and the *Norwich Mercury* were the key organs of dissemination alongside Norwich-based Anglia TV, BBC Radio Norfolk and independent radio stations. In 1981 the expectations for the site were recorded in the EDP in a piece entitled 'Big dig on the Timberhill redevelopment site' (EDP 2 May 1981). More than 100 local newspaper articles covered the 'High hopes on the Castle Mall dig' (EDP 13 May 1988) for the 'Digging in the city centre' (EEN 7 Feb 1990) as well as many of the national papers.

Press clippings of all media entries concerning Castle Mall, including occasional mentions in the national press, were kept for the project archive. In addition items appeared frequently on local radio, mainly BBC Radio Norfolk but also independent radio, as news items, studio interviews and feature presentations recorded on site. The excavation also featured on the *Today* programme of Radio 4.

Five project-based programmes and videos were made, relating both to the archaeology and the new development. These captured the earthy side of the work, particularly the extremes of weather and physical constraints with which the excavation team battled to do their job. The earliest, in 1987–8, was made by the University of East Anglia Audio-Visual Centre and covered initial stages of the trial work (*i.e.* Trial Hole 1 and the start of Trial Hole 2). A BBC2 documentary entitled *Stories of Invasion* was broadcast in 1989 following filming in both Norwich and Normandy. Brian Ayers gave the academic background to the project and drew attention to architectural parallels for the donjon in Caen, Rouen and Falaise as well as those of lesser-known Norman sites such as La Ferté en Bray and Arques La Bataille.

In 1990, the NAU produced a video entitled *Excavations at Castle Mall* which was later to be shown on a continuous loop in the rotunda of Norwich Castle Museum. Anglia Television produced a documentary called *Digging Deep* in 1993, when the shopping centre was nearing completion. Finally, a video providing an outline of the project background and the progress of the development (as well as its archaeological background) — *One Man's Vision: The Castle Mall* (a reference to the architect, Michael Innes) — was produced in 1999 by Marsh, Bovis and Friends Provident, in conjunction with Lambert, Scott and Innes, Bovis Construction and the NAU.

V. ARTEFACTS, ECOFACTS AND SAMPLING

The Castle Mall excavations produced the largest artefact assemblage so far recovered from Norwich, ranging in date from Anglo-Saxon to post-medieval, with a few residual earlier objects. Details of the collection policy (including metal detecting), preservation, quantification and treatment of artefacts and ecofacts are given in Appendix 3. Analytical methodologies are given in Appendix 4 and the accompanying Occasional Paper on zooarchaeology (Part III).

A total assemblage of over 10,500 Small Finds was recovered, with a further 417 objects coming from the Golden Ball Street site. Substantial groups of bulk finds were also retrieved. Research areas identified during the assessment stage were fully articulated in the project Post-Excavation Assessment Report (Shepherd 1994a and b) and the results of analysis are articulated throughout this report, with overview discussion presented in Chapter 13.

Almost 950kg of pottery was recovered from stratified contexts at Castle Mall (with an additional 40kg of being retrieved from the Golden Ball Street site). Over 40% of the Castle Mall pottery can be dated within the range 10th to early 12th century; while medieval fabrics account for almost 6%, late medieval/transitional pottery for nearly 10% and post-medieval ceramics for a further 40%. This represents a large corpus of material defining the wares and forms in use throughout eight centuries. Analysis of the fabrics and forms in contemporary use has produced a ceramic sequence to assist in chronological dating which can be tested by future research.

The physical remains of over 400 people were recorded at the Castle Mall site, falling into four main skeletal groups which range in date from Anglo-Saxon to post-medieval. A single human jaw bone was recovered from the excavations at Golden Ball Street. Of the excavated groups, those buried beneath later Farmer's Avenue (Cemetery 3) are important both because they are of a category infrequent in the archaeological record generally and because many of the graves lay undisturbed. This cemetery also formed a useful comparator with other urban and rural Late Saxon groups. The burial group from the cemetery of St John the Baptist, Timberhill (Cemeteries 1 and 4) provided the opportunity for comparison with the Farmer's Avenue cemetery, introducing a physical anthropological aspect to the analysis. At the time of the assessment, all of these burials were believed to be post-Conquest in date, although this interpretation was subsequently questioned by radiocarbon dating (see Chapter 4.V). This cemetery proved particularly significant due to the high proportion of leper burials within it. The small group of prison burials from the Castle Mound (Cemetery 5) provided some interesting traumatic pathological features, providing insights into the treatment of prisoners during the post-medieval period.

The excavations yielded a significant faunal assemblage which provides extremely useful information on the history of Norwich and on the economy of Late Saxon, medieval and post-medieval England. A total assemblage of 937kg of mammal and avian bone was recovered. Additional material was obtained from 1,898 sieved samples (Site Riddled Samples producing 764 measurable bones and Bulk Samples accounting for a further 561

measurable bones). Over 14,000 fish bones were identified. An additional 54kg of mammal and avian bone and 0.322kg of fish bone was retrieved from the excavations at Golden Ball Street. Overall, this is the largest zooarchaeological sample from the city with the greatest, most continuous chronological spread. Furthermore, analysis of the assemblage has produced a substantial amount of data against which other Norwich and East Anglian sites can be compared, offering opportunities for regional research.

Given the circumstances of excavation, systematic or probabilistic environmental sampling was impossible. Only rarely were all features within a given site area visible simultaneously and it was not usually possible to excavate them all. As excavation proceeded rapidly, many deposits were removed between site visits by the environmentalist (Peter Murphy) and decisions on whether or not to sample had to be made by the excavators. Sampling was therefore undertaken within the general framework established by the research objectives. Priority was given to sampling features which appeared to be of early date, while other samples were collected to address particular questions. A total of 1,928 samples was taken, comprising 408 Site Riddled Samples (SRS) and 1,520 Bulk Samples (BS). Site Riddled Samples produced artefacts and larger ecofacts, while the Bulk Samples were processed to retrieve plant macrofossils and other small remains by flotation. Selected Bulk Samples were assessed for plant macrofossils. (Further details are given in Appendix 4 and the project archive.) Micromorphological samples were taken from fills of the north-east bailey ditch.

At Golden Ball Street, samples of approximately 160 litres in volume were taken from each of the major fills of the Castle Fee ditch, primarily for the retrieval of artefacts in order to provide the most accurate dating evidence possible. Approximately 120 litres of each fill from the south bailey ditch were retained as SRS samples (except the two lowest silting layers where only 60 litres could be physically recovered).

VI. ANALYSIS AND PUBLICATION METHODOLOGIES

Project Documentation

At the outset of the post-excavation programme, the assessment timetable was established (Shepherd 1992), in accordance with current guidelines (English Heritage 1991a). Both the Assessment Report and Updated Project Design were submitted to and approved by English Heritage in 1994 (Shepherd 1994a and b). The preliminary publication synopsis was completed in 1995, with the Full Synopsis submitted and approved two years later (Shepherd 1995b and 1997b). A variation document was prepared in 1997 (Shepherd 1997c). Some time later, the implications of radiocarbon dating human bone from the site led to the production of a new Project Design entitled *Norwich: Cemeteries, radiocarbon dates and the ceramic sequence* (Shepherd and Lentowicz 1998). Three subsequent project designs were produced, reviewing the remaining work in relation to an English Heritage-led proposal to disseminate elements of the project digitally via the Archaeological Data Service (ADS) (Shepherd

<i>Period</i>	<i>Site Context</i>	<i>Chronology</i>	<i>General Period</i>	<i>Monograph Part/Chapter</i>
Period 1	stray early finds; pre-Conquest settlement and cemeteries	c.5th to c.mid 9th centuries late 9th to 11th centuries	Early and Middle Saxon Late Saxon	Part I, Chapter 4
Period 2	Norman Conquest/ timber castle and defences	c.1067–70 to c.1094/early 12th century	Norman ('early medieval')	Part I, Chapter 5
Period 3	masonry castle and revised defences	c.1094 to 12th century	Norman ('early medieval')	Part I, Chapter 6
Period 4	excavation of barbican ditch. transfer of castle baileys to city in 1345	late 12th century to c.1345	medieval ('mid medieval')	Part I, Chapter 7
Period 5	castle decline and encroachment of tenements; use of baileys for craft/industry and grazing	c.1345 to mid/late 16th century	late medieval/transitional	Part II, Chapters 8 and 9
Period 6	tenement development; first Cattle Market 1738	late 16th to 18th centuries	post-medieval	Part II, Chapter 10
Period 7	tenement development; revised Cattle Market 1862	19th to 20th centuries	modern	Part II, Chapter 11

Table 1.4 Concordance of site periods and monograph chapters

<i>Period/ sub-period</i>	<i>Date Range</i>
1.1	5th to 9th century
1.2	late 9th to early 11th centuries
1.3	11th century
1.4	mid to late 11th century
2.1	c.1067–70 to c.1094/early 12th century
2.2	c.1067–70 to c.1094/early 12th century
3.1	c.1094 to 12th century
3.2	c.1094 to 12th century
4.1	late 12th to 13th centuries
4.2	13th century to c.1345
5.1	c.1345 to 15th century
5.2	mid/late 15th to mid/late 16th centuries
6.1	late 16th to mid 17th centuries
6.2	mid 17th century to c.1738
6.3	post-c.1738 to c.1800
7.1	19th century (to 1862)
7.2	1862 to 20th century

Table 1.5 Periods and sub-periods

Popescu 2001; Shepherd Popescu *et al* 2001; Shepherd Popescu and Hardman 2002). A related digital publication synopsis was submitted to EAA in 2002 (Shepherd Popescu 2002).

Assessment and Analysis

The methodologies and terminologies employed during the assessment and analysis of the site are presented in Appendix 5. Methodologies used during study of artefacts and ecofacts are detailed in Appendix 4 and, for the faunal remains, in Part III.

The site was phased into seven chronological periods (Table 1.4), each subdivided as indicated below (Table 1.5). There are chronological overlaps between some of the periods which, due to the nature of both the site and the dating evidence, are essentially unavoidable.

The phasing structure links to historical dates and documented events in the first instance, rather than accepted chronological boundaries (1345, for instance, being a key date in the life of the castle baileys; see below). Some of the problems encountered in phasing the site reflect the practical difficulties of analysing historically well-documented castle sites (see, for example, Hurst 1962–3).

As these tables demonstrate, the general approach to phasing the site was to link stratigraphic evidence with documented events, despite the dangers of preconception such an approach inevitably entails: the paucity of well-stratified sequences meant that attempting to achieve an 'objective' phasing without reference to these historical assumptions would not have been realistic. While to a degree some of the historical events were evident in the field, sealing horizons were generally absent (with the notable exception of remnants of the south bailey rampart). The fluidity of the stratigraphic sequence and the general lack of securely stratified sequences was particularly problematic for the early periods, although scientific and artefact dating was utilised where possible. Those features assigned to Period 1.4 may either pre- or post-date the Conquest and, as noted where appropriate throughout these volumes, there are other features included in both Periods 1 and 2 for which the dating remains equivocal.

The following sub-divisions of centuries were used (note that attribution to the mid 11th century is **not** taken as an indicator of post-Conquest date):

early	<i>e.g.</i> 1000–1033
middle	<i>e.g.</i> 1033–1066
late	<i>e.g.</i> 1066–1099

Publication

The aim of this publication is to provide a synthetic and chronological account of the archaeological sequence, integrated with all other relevant information. As its title indicates, this report is in part an historical survey of the Norwich Castle area. The survey is, however, limited to its direct relevance to the archaeological and topographical evidence, providing sufficient background detail to place the study into its contemporary setting. The historical,

documentary and pictorial resource for both Norwich and its castle in all its guises is truly monumental. The historical work included here is not intended to be all-inclusive and there are significant elements that are only alluded to. The information presented in subsequent chapters is not an exhaustive account and is limited almost exclusively to previous research into Norwich Castle and its origins. Although the great tower itself is dealt with in general terms in relation to the development of the castle as a whole, this report does not include detailed consideration of certain aspects of its documented history (such as constables and castle guard services) which lie beyond the remit of the current project. Observations and references to topographical context and the origins and development of the city are dealt with at appropriate points throughout.

The report forms a two-volume *East Anglian Archaeology* monograph (Parts I and II) with important zooarchaeological and documentary information provided in two occasional papers (Parts III and IV; see below). The two-volume monograph divides the archaeological sequence at *c.*1345. This date was selected because it allows a reasonable balance in terms of volume size and also because it is a key point in terms of the development of the site. After this date, when the baileys were granted to the city by Edward III, the main focus turns from the castle to Norwich itself.

Part I contains the historical and archaeological background to the project, outlining antiquarian evidence in summary form (Chapter 2). Consideration is then given to the natural topography, alongside prehistoric and Roman activity in the area (Chapter 3). Part II includes two overview chapters, one considering the overall development of the castle (Chapter 12) and the other aspects of trade, industry, technology and economy (Chapter 13). General discussion and conclusions appear in Chapter 14. Each of the chronological period chapters (Chapters 4–11) consists of the historical and documentary background to the period (Section I), the archaeological sequence (Section II), contemporary artefacts and ecofacts (Sections III–IV and V in the case of human bone) and, finally, a period discussion (Section V or VI). The latter sets the site into its wider context, providing considerations of evolving and altering land use patterns, the function of buildings and contemporary town/city developments. The vast finds assemblage from the late medieval/transitional infilling of the barbican well is detailed in Chapter 9 (see footnote 4). Other than noteworthy residual or intrinsically interesting objects, finds from modern contexts (Chapter 11) are not detailed.

The archaeological sequence sections of the report are a synthesis of a substantial site archive. Over a thousand pits were recorded, for example, and are not detailed exhaustively. Detailed description of pit infill processes is only given for those which are illustrated in section and/or those which are particularly significant. Ditch fills are also dealt with summarily. Details of the illustration methodology are given in the project archive, while conventions used in the presentation of archaeological deposits, pits and their linings are given in Fig. 1.7.

Documentary analysis for the Castle Mall project was undertaken in two parts. The initial stage encompassed the production of historical and documentary text covering the period 1066 to the present day: this has been incorporated into the background sections of

each relevant chapter within the monographs, set within its wider archaeological context. The second stage entailed detailed analysis of the properties surrounding the castle, specifically those within the Castle Fee and the Timberhill block during the period *c.*1397 to *c.*1626 and, in some cases, earlier and/or later. These tenements are indicated in Table 1.6 which correlates geographical block number⁴, parish and Castle Fee Property number, with cross-references to Beecheno's unpublished tenement maps (Beecheno MS 1908; Plate 7.1). The Castle Fee property numbers, taken from rent payment records, have been used to identify medieval and later properties (see Fig. 7.2). In addition, property letters are used for tenements in the Timberhill block lying outside the Castle Fee (*e.g.* Property (a)). The Castle Fee tenement data is fully detailed by Margot Tillyard in Part IV, with selected elements replicated in the monographs in relation to those properties examined during excavation. Full use of the data relating to all properties has been made in consideration of the individuals working and living around the Fee, providing an additional dimension to study of the social and economic context of the site.

Documentary research undertaken for the Golden Ball Street site, relating to the parish of St John's on the Hill (formerly St John at the Castle Gate or de Berstrete, now Timberhill) forms part of an ongoing study by Nancy Ives of the Strangers in Norwich from the late 16th century. Again, this is fully detailed in Part IV, with cross-references throughout Part II of this report.

Alongside the documentary research, over sixty other specialist reports were produced in association with the Castle Mall project, the results of which have been integrated into the monographs (see Archive Index, Part II). Summaries of specific finds assemblages are given alongside the archaeological evidence (Section II of Chapters 4–10) and are presented in more detail in the appropriate section (Section III) of each chronological chapter.⁵ The published report provides a fully illustrated catalogue of selected finds (specifically key assemblages, examples of each category and intrinsically interesting items). Within the appropriate sections of Chapters 4–10 the finds are organised by functional category/material type, broadly using the classifications adopted by Margeson (1993).

Pottery is summarised by assemblage (quantity, fabrics and date) at the appropriate point in the archaeological sections of the monographs, along with full details of illustrated material, including forms. Those groups illustrated on CD are detailed in Appendix 6, along with the remainder of the ceramic assemblage which is described by fabric and form on a feature by feature basis in the same order as the archaeological text. Overviews by period are presented in Section III of each of the archaeological chapters, while a broader discussion of the assemblage as a whole appears in Chapter 13.

Ceramic building materials are not detailed exhaustively by feature, but are summarised in the relevant sections of each period chapter, as is metalworking debris. The terms used in the sections on metalworking presented in Chapters 4–10 are defined as follows:

Hearth bottoms are the plano-convex cakes of slag that accumulate in a blacksmith's hearth. In addition amorphous lumps of similar material are often found and are described as *smithing slag*; they are not truly diagnostic slags but are most probably further evidence for smithing, especially when they are found in an assemblage like the Castle Mall group where smithing appears to have been the major metalworking process represented. A further indicator of smithing is the presence of

Block no.	Parish	Castle Fee Properties	City Properties	Beecheno Map (MS 1908)
Block I	St Martin at Bale (-in-Balliva; united with St Michael at Thorn in 1562)	38–46		F and G
Block II	St Martin at Bale (-in-Balliva) and St John de Berstrete (Timberhill)	47–51	(a)–(h)	J
Block III	St John de Berstrete (Timberhill) and St Peter Mancroft	52–55		K
Block IV	St Peter Mancroft	1–5		L
Block V	St Andrew	6–14, 60–63, 70–71		A
Block VI	St Michael at Plea	15–23, 57–59, 66–69		B and C
Block VII	St Cuthbert	24–29, 64, 65		D
Block VIII	St Peter Parmentergate	30–37		E

Table 1.6 Documented Properties from Castle Fee Rent Lists (1397–1626)

hammer scale, a micro-slag which is produced when the oxide scale on the iron being hammered flakes off. This is normally in visible on site and is only recovered if soil samples are sieved, so it was probably far more widely distributed than the restricted number of recorded finds spots suggest. Other slags which contain less iron but probably also formed in the blacksmith's hearth include hearth lining, fuel ash slag and cinder. *Hearth lining* formed when the clay hearth structure reacted at high temperatures with the ash from the fuel being burnt. The surface in contact with the fire is vitrified but further from the heat it is just well fired. Lumps of this material that become detached and other silica-rich material also become vitrified, forming *fuel ash slags*. Material that is intermediate in composition between smithing slag and fuel ash slag is described as *cinder*. Some fragments of hearth lining carry traces of a *tuyere*, the small, circular opening where the air blast from the bellows entered the fire. The hottest part of the hearth was immediately in front of the tuyere so the lining there often became vitrified. A small amount of *tap slag*, evidence for iron smelting, was also identified. A further group of finds are fragments of *'bell' mould* and *copper alloy spillages* which suggest copper alloy melting and casting on site. The *crucible* fragments are further evidence of non-ferrous metalworking.

Zooarchaeological and botanical evidence is summarised by assemblage in Section II and by period in Section IV of Chapters 4–10, with discussion in Chapter 13. Mammal, avian and fish bones are fully detailed in Part III, which includes analytical information and discussion by species. The Latin and common names for plant remains used throughout this report are detailed in Table 1.7 (on CD), with botanical terms used summarised in Table 1.8 (on CD). Abbreviations used in related tables are given at the front of this volume, with further details in Appendices 7 and 8.

Human bone and related analysis is presented by cemetery or provenance in the appropriate chronological chapters of Parts 1 and 2 (Chapters 4.V, 9.V and 10.V), with associated archaeological evidence in the same chapter and overviews at appropriate points in discussion sections.

Digital Research Archive

The academic significance of the cemeteries excavated at the site has already engendered considerable interest and requests for more detailed data than will appear in this volume. This interest led to the decision to disseminate selected elements of the research archive digitally (see 'Project Documentation' above) in a project which seeks to extend the availability and life span of the cemetery

data recorded during the Castle Mall excavations, providing a supplement to the printed account.

For the purposes of dissemination, a new relational database has been created, incorporating each of the excavated cemetery groups. This integrates data from the original site context database with data from relevant specialists, cross-referring to illustrations. The data consists of cemetery plans, context data by grave, skeletal catalogues, skeletal data, diagrams and scanned photographs, each of which is accompanied by an appropriate health warning. The digital archive for the human remains is hosted by the Archaeology Data Service in York (<http://ads.ahds.ac.uk>).

VII. SUMMARY OF RESEARCH OBJECTIVES

by Elizabeth Shepherd Popescu and Brian Ayers

Although the main excavation at Castle Mall pre-dated the introduction of English Heritage's *Management of Archaeological Projects* (MAP2; English Heritage 1991a), the project was conducted within a developing archaeological research framework for the city which had been evolving since the early 1970s. Much of the groundwork for this framework was laid by the late Alan Carter of the Norwich Survey, an interdisciplinary organisation established in 1971 as a partnership between the Department of the Environment, Norwich City Council and the University of East Anglia in order to explore the archaeological, standing building and documentary resource of the city.

Carter explored the concepts of both urban sampling (1978a) and urban development (1978b). With colleagues, he developed key areas for study: the origins and early development of settlement; problems of late medieval and early post-medieval urban growth; and the functions and usage of post-medieval buildings. These themes were further developed after 1979 when responsibility for archaeological work in Norwich passed to the Norfolk Archaeological Unit. While key areas of earlier work (such as an emphasis on increasing understanding of settlement origins and development) were maintained, the Unit took note of the concept outlined by the Norwich Survey that work on medieval and post-medieval sites was necessary despite the 'almost embarrassingly rich sources' of buildings and documents (Carter 1978a, 263).

It sought to explore these in terms of the economic and social development of the city within a framework which encompassed topography and land use, public works, defences, trade and industry, and communications. These themes were subsequently set out for the post-medieval period within an overall research framework which, as well as targeting topics of inquiry, was also concerned with processes governing economic and social dynamics (Ayers 1991).

Work at Castle Mall was thus formulated within a developing urban research agenda, one which has only recently received formal articulation as a regional initiative (Ayers 1997; 2000). The research criteria for Castle Mall is perhaps best summarised by the statement concerning potential which noted that ‘if, at the end of the day, all we succeed in demonstrating is the extent of pre-conquest occupation and the scale of the post-conquest castle defences, I believe we will have failed ... Castle Mall has provided us with an opportunity to examine urban development within an historical framework which is the envy of many other archaeologists’ (Ayers 1993, 125).

Excavation at Castle Mall was designed to study the processes of urban development by analysis of urban forms, institutions and functions. The archaeological opportunities as envisaged in the early 1980s (Ayers 1980) were:

1. examination of Middle and Late Saxon nucleus of *Needham*;
2. examination of the effect of the construction of the castle on settlement, with special reference to the position and nature of the Castle Fee boundary as well as settlement within the Fee itself;
3. examination of medieval settlement on the Timberhill frontage and in the Fee;
4. examination of encroachment of the churchyard of St John the Baptist with implications for medieval settlement patterns and churchyard studies;
5. location of site and plan of the Shirehouse;
6. location of site and plan of St Edmund chapel and graveyard⁶
7. location and nature of castle earthworks;
8. examination of pre-Norman deposits;
9. possibility of determining aspects of the pre-Norman route system.

Other research possibilities were noted: for instance, ‘It has recently been pointed out ... that medieval Jewish properties can probably be recognised from animal bone assemblages (Izjereef 1989, 45–8) and here is an area where careful statistical analysis of material from the current Castle Mall project, particularly near Timberhill which was close to the Jewish quarter and synagogue, may provide useful results’ (Ayers 1993, 125). In this instance, such information did not prove to be forthcoming.

The topics outlined at the initial planning stage were refined in the light of excavation and assessment. Other study areas were identified later, such as the relationship of the castle to its hinterland. More specific targets related to artefactual and ecofactual evidence. The research objectives were refined into seven broad research areas, each with constituent study themes, at the Updated Project Design stage (Shepherd 1994a and b) as follows:

1. urban development
2. castle morphology
3. castle and hinterland
4. transition from late medieval to post-medieval traditions
5. trade, industry, technology and economy
6. population analysis
7. finds analysis

As is detailed in Chapter 12, the holistic approach adopted for the project reflected the statement of intent issued by the Castle Studies Group (1987, 2), which stressed the importance of:

1. the study of castles in all their forms and by all possible means: documentary studies, architectural history, fieldwork and excavation;
2. the study of castles as resources for a more widely-based appreciation of medieval society, emphasising their social and political history, their defensive and domestic evolution, their role in settlement development and their value as a source for the reconstruction of landscapes and economic environments.

In addition to the above, individual research objectives were established for each of the major categories of finds. As outlined in Part III, a three-fold approach was adopted for examination of the faunal remains:

1. to contribute to understanding of human activities in the area of Norwich Castle in different periods. In more general terms to see how animals contributed to the economy of Norwich, how they influenced (or were influenced by) the environment of the site, and how these relationships developed through time;
2. to contribute to understanding of more general issues, such as husbandry practices, economic development and use of the environment at a regional and national level;
3. to review how methodological approaches and problems can contribute to address and improve future zooarchaeological research.

Specific objectives were also established for the plant remains. Clearly, the location of the excavation in central Norwich, where major land-use changes had occurred, led to the expectation of evidence relating to the main periods of urban development. Prior to the excavation, the decision was made to focus attention on the earlier periods. This was considered necessary because previous excavations in the city had produced only limited evidence for the urban environment and economy prior to the 12th century (Ayers and Murphy 1983; Murphy 1987b; 1994), and much of that related specifically to waterfront sites. The basic objective was to provide data on the economic status of early Norwich. For example, to what extent was the town ‘urban’, receiving processed foodstuffs from outlying farms, to what extent were the inhabitants engaged in agricultural activities? How important were imported ‘exotic’ foods at this early date? Analogous questions related to fisheries (fish and shellfish): was the early town reliant on local resources, and to what extent to the imported products of coastal fisheries? In the event, the relatively poor survival of later deposits reinforced

the need to focus attention on the early ones. Besides these wider questions, it was envisaged that sampling for biological remains would be necessary to provide information on the functions of particular features or contexts, deposit taphonomy and particular activities associated with biological materials.

Each of the topics mentioned above is addressed where appropriate throughout the present publication, including the two thematic chapters dealing with specific research issues (Chapters 12 and 13). More general comments on urban development are given in Chapter 14. Having discussed the logistical and methodological background to the project, it is appropriate to move on to consider its wider archaeological and historical context in the following chapter.

Endnotes

1. Wilkins calculated a similar acreage on the basis of a different understanding of the layout of the defences (1796, 146); Ayers' figure of 14 acres/5.6 hectares does not include the Castle Fee (1994a, 43).
2. In accordance with current castle terminology, the words 'donjon' or 'great tower' are used throughout Part I to describe what was previously often termed the 'keep', with the exception of quotations

in which the original wording is maintained. The term 'keep' is used where appropriate throughout Part II, it being the name used for the castle's great tower by antiquarians, historians and others until recent times.

3. The date at which development first occurred along the banks of the castle is not known, but was clearly well established by the time of a documentary reference in 1221.
4. The tenements have been allocated to eight such blocks (Blocks I–VIII), running clockwise around the motte and starting with Block I at the north-eastern point of the Castle Mall excavation.
5. Note that Small Finds are catalogued and illustrated in their correct chronological position, rather than necessarily where they were found archaeologically (e.g. a Late Saxon brooch found in a post-medieval context would appear in the Late Saxon artefact section, with a cross-reference at its provenance point). The only exception to this methodology is in Chapter 9, where the important barbican well assemblage is detailed in toto; cross-references to residual finds within it are made in the appropriate period chapter.
6. This reference to the Chapel of St Edmund in connection with the castle is a misconception apparently arising from Kirkpatrick's study of the castle-guard rents due from the Abbey of Bury, which made considerable reference to the 'Abbot of St Edmund' (Brian Ayers, pers. comm.). While it is possible that a chapel did lie within one of the baileys (see St Martin-in-Balliva, Chapter 5.V), the only documented chapel in connection with the castle is that of St Nicholas which lay adjacent to the Keep (see Chapter 6.I).

2. Archaeological and Historical Background

‘There are few valleys in the maritime counties of England but have traces of the strongholds of the aboriginal inhabitants, which in numerous instances have given rise to our principal cities ... That the Castle of Norwich was erected on the site of one of these strongholds there can be little doubt.’

S. Woodward, *The History and Antiquities of Norwich Castle*, 1847, 1

‘As I was born in the Castle Fee in that part of London Street in the parish of St Andrew ... I have taken much interest in the question of the surroundings of the Castle, particularly in reference to the form and line of its earthworks.’

F.R. Beecheno, *Notes on the Ditches of Norwich Castle*, MS 1908, 1

I. ANTIQUARIANS, HISTORIANS AND ARCHAEOLOGISTS

by Elizabeth Shepherd Popescu, with Margot Tillyard
(Plate 7.1)

Norwich Castle and, in particular, its origins have been the subject of academic enquiry and speculation for several centuries. Commentators at first believed that references to the construction of a castle at *Guenta* early in 1067 made by William of Poitiers or Pictaviensis, author of the *Gesta Guillelmi*, referred to Norwich (Foreville (ed.) 1952, 238; Colvin 1963, 754 and fn.1). Similar implications were drawn from references in Orderic Vitalis (OV ii.166–167; Chibnall (ed.) 1969, 195–197) and other sources. Later scholars of the 1950s and early 1960s, however, revised this interpretation and *Guenta* is now generally accepted to refer to Winchester (summarised in Davis and Chibnall 1998, 164, fn1). In 1969, however, Allen Brown refuted the interpretation of *Guenta* as Winchester, arguing again for the Norwich suggestion (1985, 161, fn 221). Confusion over this issue still occasionally arises. Further comments relating to the probable date of construction of the castle are given in Chapter 5.I.

The first antiquarian accounts of Norwich Castle are those of William Worcestere and Henry Caius, although both are ‘essentially mythological’ (Carter 1978b, 175).¹ Worcestere’s volume is the *Itineraries* (Harvey (ed.) 1969, 211), although Caius’ was probably a manuscript which was plagiarised by Alexander Neville in 1575. Both of these early writers suggested a prehistoric origin for the earthworks and both confused Norwich with the Roman town of *Venta Icenorum* (see Chapter 3.III). In c.1600, Sir Henry Spelman wrote his *Icena Sive Norfolkicae descriptio topographica* (‘A topographical survey of Icena or Norfolk’, published 1698), *inter alia* discussing the origins of the name *Northwic* with the assumption that the castle preceded the town (Carter 1978b, 176).

Many later antiquarians took an interest in Norwich Castle. John Kirkpatrick (who died in 1728) wrote his works on the castle, as well as on the city’s hospitals, religious orders and its streets and lanes, in around 1700–1725, although his work was not published until the 19th century. His *Notes concerning Norwich Castle* (1845) mark the beginning of a lengthy sequence of reports on archaeological observations within and around the castle

area. Kirkpatrick saw the remains of the castle’s perimeter wall and towers, noting the cracking of the donjon and removal of the battlements. He criticised construction of a carriage-way up the north-east side of the mound. As well as describing the state of the castle ditches before systematic roads were made across them, he inspected masonry in the outer ditch (*i.e.* the barbican) now known to have formed the remains of the gate-tower on the north side (see Chapters 6 and 10). He postulated the existence of a second bridge, the absence of masonry suggesting a timber structure. In addition to much factual archaeological evidence, Kirkpatrick provided an interpretation of the antiquity of the castle, quoting extensively from Neville’s publication. Although supposing that the castle earthworks were probably Saxon, he believed that ‘certain it is, the building [castle] now remaining is no work of the Britains, nor much, if at all, antienter than the Conquest’ (Kirkpatrick 1845, 246). In his interpretation of the antiquity of the castle, he made extensive use of documentary evidence including castle-guard services, fees and rents payable to the ward of the castle and its wardens and constables. He also made consideration of the Castle Fee and its handover to the city in 1345, as well as the Shirehouse which he placed on high land beyond the outer ditch near the ‘hollow road’.

Thornaugh Gurdon in his *Essay on the Antiquity of the Castel of Norwich* written in 1728 considered that ‘the old Foundations and remaining Ruins’ in the outer bailey previously noted by Kirkpatrick were the remains of a Grange for the Constable (1854, 46). His map showed paths across the inner ditch on both its north and north-east sides. In 1738, during the construction of the consolidated Cattle Market, the area between Golden Ball Lane and Castle Bridge was levelled by pushing the centre of the bank of the barbican ditch into the ditch (see Chapters 7 and 12 for comments on the probable position of ramparts). Human bones were found², although their location was not recorded. In the same year, the Buck brothers depicted considerable ruins still standing on what appears to be the counterscarp of the barbican ditch. Perhaps seeing the masonry lying within the ditch about to be covered they ‘re-erected’ it to form the foreground of the picture (see Plate 6.2).

Probably the best-known 18th-century work on the history of Norwich is that of Francis Blomefield, the rector of Fersfield. As well as dealing with the origins

of the city, Blomefield's *Essay Towards a Topographical History of the County of Norfolk Containing The History of the City of Norwich* (1745, reprinted 1806) provided evidence for the origins and layout of the castle and its defences, the Shirehouse and the churches of St Martin-in-Balliva and St John the Baptist Timberhill (the nave of which he described as thatched). Again suggesting a Saxon origin for the castle, he realised the rare nature of the bridge over the inner ditch and noted that the gate on it was in ruins. He also stated that the ruins of a second bridge (*i.e.* the collapsed gate noted above) remained "til the Ditches were lately levelled by the City, for to keep their market for all manner of Cattle, Swine *etc.*" (Blomefield 1806, II, 124). Placing the Shirehouse further west than Kirkpatrick, Blomefield believed that recently built stables were sited on part of its ruins.

William Wilkins made a detailed architectural survey of the donjon, published in 1796, accompanied by a series of engravings of the façades prior to 19th-century refacing (*e.g.* Plate 10.2.C; these were later used as the basis for a series of watercolours produced by Francis Stone in the early 19th century). These, however, should be treated with caution: 'Wilkins was involved in producing an imaginative reconstruction since many details had already been lost at the time he wrote rather than making independent drawings, Stone seems to have used Wilkins' engravings as a basis for his own watercolour drawings, sometimes making subsequent alterations' (Heslop 1994, 15). Wilkins also focused his attention on the castle's earthworks, producing a series of maps. Again, he followed earlier historians in his belief that the castle donjon was Saxon in origin. His plan of the earthworks shows three concentric rings (Wilkins 1796, 146 and plate XXIII; see Fig. 12.5.A), which he describes in conjunction with archaeological evidence and folk memory. He remembered vestiges of a ditch levelled in Castle Meadow thirty years before, but gave no precise location. He believed there to have been a barbican ditch beginning at Orford Street and curving round for 220 yards, stating that foundations of the bridge over the middle ditch were still visible in some places on a line between Golden Ball Street and the inner bridge. Vestiges of the middle ditch were to be seen in a south-easterly direction and towards the north-west, where some yards descended 18–20 feet. Access to Pottergate (now Bedford Street) from London Lane had been by steps only until a few years before. Wilkins notes that 'workmen were employed some years since to destroy these foundations [over the middle ditch]. Their progress was so slow, from the materials being so strongly cemented together, that their employers desisted from the undertaking, and they still appear in some places, a few inches above the surface of the ground' (Wilkins 1796, 148).

In 1785, Browne published a short document drawing heavily from Blomefield's account 'to put into the hand of strangers' who visited the castle and its liberties (Browne 1785). This was followed by further work in 1814, when Browne suggested that the Shirehouse formed part of a gate outside the middle ditch. In his time this was the place of execution. It was described as a guard-house, with a steelyard at the northern end. He notes that the ground from the Castle Inn to the site of the second bridge had been levelled 'thirty years before' when foundations of the bridge were 'not to be cleared away without much labour'. Measurements given are as follows: inner bailey

9–28ft wide, second ditch 30ft wide, outer bailey 40ft wide, barbican³ 40ft wide (quoting Wilkins). North-western access to the inner bailey was now by a footpath, with steps at the top.

The publication of Blomefield's work in 1806 'effectively marks the end of the first phase of largely historical investigations into the origins of Norwich' and its castle (Carter 1978b, 177). Later research, beginning with Woodward's work in the 1820s, was essentially topographical. Interest in the castle and its ditches increased from the early 19th century, successive writers often demolishing the theories of those who had gone before. The evidence they used, however, indicates what survived in their time and is still relevant today. Most may be learned from Woodward (posthumously published in 1847), Harrod (published 1857) and Beecheno whose seminal work *Notes on the Ditches of Norwich Castle* remains unpublished (Beecheno MS 1908).

Woodward was a local antiquary and geologist, much of whose work focused on his interpretation of sea-level change and the width of Norwich's river valleys. His *The History and Antiquities of Norwich Castle* (written in the 1820s) provided a romantic view of the castle standing on a peninsula surrounded by water. His interpretations are accompanied by a series of maps and plans of the castle defences (*e.g.* Fig. 12.5.B) and their influence on the development of Norwich, as well as a cross-section of the earthworks from north-to-south. Woodward attributed the construction of the earthworks to the ancient Britons, while maintaining earlier suggestions that the donjon itself was constructed by Canute in *c.* 1020, replacing an earlier structure. His work on the topography of the area, the castle defences, the Shire House and the Castle Fee is referred to extensively throughout this publication. Of note amongst his observations are his report that when roads across the ditches were remodelled in 1822, a large mass of masonry faced with flint was found below the surface, which had to be removed to bring the road to the desired level. Woodward described the rebuilding of the inner arch of the Castle Bridge in 1830. The dungeons connecting with the tower on the west side at the top of the bridge had been used until thirty years before. He saw a palisade wall foundation at the north-east corner in 1807.

Harrod's *Gleanings among the Castles and Convents of Norfolk* (1857) was based on documentary research as well as on visual evidence. In a reconsideration of the date of the castle earthworks, Harrod called into question earlier interpretations of their layout made by Wilkins and Woodward. His extensive work on the positioning of the ditches and the supporting evidence has been used here in conjunction with the recently excavated evidence. His revised plan (1857, 133) shows two horseshoe-shaped baileys to the north-east and south, rather than the concentric rings of ditches postulated earlier (Fig. 12.5.C). An excavation conducted by Harrod is described below (II). In his day, parts of the Castle Meadow ditch could be traced among surrounding gardens: in Bank Street, in the Griffin Yard and in the garden between that and the large house then recently built opposite the Shirehall. It had been difficult to get a good foundation for this because of the ditch, which appeared again on the south side between the houses in Pump Street and Mr Wells' stables. It was obvious to Harrod that the Shirehall Inn was actually built in the ditch (Harrod 1857, 139). It appears from the

1809 prospect (see below) to be lower than the building to the east. A flight of steps is shown on a map of 1836 at the centre of the western front (N/EN/20/184).

Beecheno was a native of the Castle Fee and his passion for Norwich Castle is evident in his writings. His *Notes on Norwich Castle* (1888) reviewed earlier interpretations, maintaining a Saxon origin for the ditches. This work was 'largely rendered obsolete and of little value by reason of discoveries made when the keep was converted into a museum' (Beecheno MS 1908, 1). A revision in 1896 again contained inaccuracies, particularly in terms of the date assigned to the earthworks: 'At the time of the publication of my notes, all the best authorities were agreed that the form of the earthworks at Norwich exclusively showed that they had been raised by the Saxons or Danes, but within the last few years a theory has been started that this class of earthwork must be assigned to the Normans' (Beecheno MS 1908, 1). Crucial changes in the understanding of castle chronology were taking place at this time, when it was realised that they were not attributable to the pre-Conquest period (*e.g.* Round 1902; Armitage 1912). Beecheno concurred wholeheartedly with the new dating theory.

His detailed work on all aspects of *Notes on the Ditches of Norwich Castle* (written in 1908; Plate 7.1) was based on documentary evidence and his own observations, dealing not only with the ditches but also with the properties surrounding the castle and their relationship with the Castle Fee. He produced a plan of the Fee, sub-divided into the seven parishes which met at the castle. The documented evidence for the plots within each were then mapped. As noted in Chapter 1, his work forms the basis for much of the property information reproduced here and provides invaluable data on the castle earthworks. Beecheno remembered the widening of the lower part of London Street in 1876 when the former office of the *Norwich Mercury* was still on the north-western corner of Castle Street. It was to the west of this that the Great Cockey stream ran underground on its way to Little London Street (Beecheno MS 1908, 10; Burgess and Burgess 1904, 210). In his boyhood the Golden Ball public house still stood on its old site opposite the Plough Inn and Harvey and Hudson's bank, on the east side of King Street opposite the end of Bank Street. Along the south side of this street ran the Castle Meadow ditch, for the builders of the new *Royal Hotel* in 1897 had to go down 16 to 20ft there to get a good foundation (Beecheno MS 1908, 25, 50, 60). Beecheno described the three doorways remaining in his time on the south side of London Street and dated them all from documentary evidence to the first half of the 16th century (Beecheno MS 1908, 37).

The Revd William Hudson made a major contribution to the study of the origins of Norwich and its castle, although the latter were hampered by contemporary changes in the understanding of castle chronology (noted above). His early work included *Leet Jurisdiction in the City of Norwich* (1892) and consideration of the position of the Jews in the medieval city (1896b). He directed himself to an understanding of the local topography (including watercourses), street pattern, gates and bridges. In his article *How the City of Norwich Grew into Shape* (1896a) he produced a series of maps showing the

development of the locality from primitive times to the middle ages (*e.g.* Fig.12.5.D). Although the central tenet of his work at this time (*i.e.* the date of establishment of the castle) may have been erroneous, his work on the street pattern retains its value. His later work, carried out in conjunction with John Cottingham Tingey, consists of two volumes on *The Records of the City of Norwich* (1906 and 1910). These summarise important documentary evidence and include discussion of Norwich's leets and subleets in the 13th and 14th centuries.

Further work on the castle and related records carried out by Walter Rye included the proposition that the ditches were filled with water and he postulated the diversion of the Great Cockey for this purpose (Rye 1921). His later work includes consideration of the date of construction of the surviving castle bridge, summarising earlier evidence (Rye 1926). He interpreted the date as probably similar to that of Norwich's Bishop Bridge, refuting the suggestion of a Saxon or Norman origin as 'absurd'. The latter, however, appears to have been confirmed by recent archaeological work (see Chapter 6). In the same essay, Rye discussed documentary evidence for Norwich's Jewry. Rye noted that 'the only trace now [of the northern part of the motte ditch] is a deep depression forming the areas of several houses facing the tram lines near the County Police Station which look like an outer ditch' (Rye 1921, 10).

Later in the 20th century, study of Norwich Castle and the surrounding city was continued by historians and archaeologists, the latter including members of the Norwich Survey and NAU (see below). Key figures in this endeavour include Col. Johns, Barbara Green (publishing several texts from the 1960s to the present day), James Campbell (1975), Alan Carter (throughout the 1970s and early 1980s), Malcolm Atkin (from the 1970s to the present day) and Brian Ayers (from the late 1970s to the present day) (see Fig.12.5.E–G). Analysis of the donjon has included archaeological investigation by the NAU, as well as architectural studies including those by Faulkner (1971), Drury (2002 a and b), Heslop (1994 and unpublished) and finally Dixon and Marshall (2002).

As noted at the outset, this section has provided only a glimpse of the huge quantity of the background information concerning Norwich Castle and its environs. Chapter 12 considers the varying interpretations of the origin of the castle and its defensive layout in more detail, drawing inferences from the archaeological evidence presented in Chapters 4–11.

II. CARTOGRAPHIC AND PICTORIAL EVIDENCE

Only a précis of the most pertinent cartographic and pictorial evidence for Norwich Castle is appropriate here. Norwich Castle Museum's Archaeology and Art Departments hold a large collection of relevant material (see Bibliography A. and below), while other sources include the Norfolk Record Office and the Norfolk Local Studies Library.

Maps, Plans and Views

Norwich maps and plans dating from the 16th to the early 20th century are summarised by Chubb and Stephen (1928), updated and expanded by Frostick (2002). Specific maps used throughout this report include: the Sanctuary Plan (1541; NWHCM: 1954.138, Todd 5, Norwich, 172: F), other 16th-century maps and views (such as Cuningham 1558, Frostick 2002, 1–4) and Braun and Hogenburg 1581 (Frostick 2002, 4–7 and plate 1), Cleer's four-sheet plan 1696 (Frostick 2002, 20–23), numerous 18th-century maps and views (including Kirkpatrick 1723, Frostick 2002, 29–33; Corbridge 1727, Frostick 2002, 36–39; King 1766, Frostick 2002, 50–53; Hochstetter 1789, Frostick 2002, 59–61) and the 1883–4 Ordnance Survey map. Several of these include small insert views of the castle and the castle bridge. Numerous plans of the castle area include many relating to the surrounding tenements, as well as the Cattle Market (see Chapters 10 and 11). A selection of these maps and images is reproduced in Part II.

Norwich Castle Seals

(Fig.12.4)

The earliest pictorial representation of Norwich Castle is made on two seals, although these are in the standard three-tower gatehouse form and not actually representative of the castle in question. An impression of the earliest of the two, dating to 1356, is held at the British Library. This example is attached to Additional Charter

27370 (British Library Catalogue of Seals, Department of Manuscripts, Volume II, under Norwich Castle) and measures $1\frac{1}{8}$ inches. It depicts a triple-towered castle, masoned and embattled with a round-headed doorway. In the field, on each side a wavy sprig of flowers is the legend *SIGILLVM. CASTRI. NORWYCI*. [seal of Norwich Castle] (Add. Ch.27370). The second example, held in the Norwich Castle Museum collection, is a 15th-century copper-alloy seal matrix (Fig.12.4) measuring approximately $1\frac{1}{4}$ inches in diameter, engraved with an image of Norwich Castle, with leaves between the words of the inscription *S'CASTRI NORWYCI* (NWHCM: 1952.176; Site 4413). It was found in a garden in Wereham in 1952 (Rainbird Clarke 1957, 415) and its discovery was noted by the media (e.g. Daily Telegraph, 23 October 1952). The image was used as the logo for Castle Mall merchandise sold at the Visitors' Centre, as was reported in a local paper at the time (EDP 2 August 1988). No document bearing the seal has yet been found, although it would have been used by the sheriff and his officials. Further discussion of the two seals can be found in Chapter 12.

Paintings and Other Artwork

(Plates 2.1–2.3, 6.2, 6.35–6.36, 10.2 and 11.1–11.4)

Norwich Castle has naturally been the focus of artistic and architectural attention over the centuries. The Norwich Castle Museum Art Department holds a substantial collection of paintings, engravings, prints, plans and sketches relating to the castle, which have been consulted in the course of the production of these volumes. One of

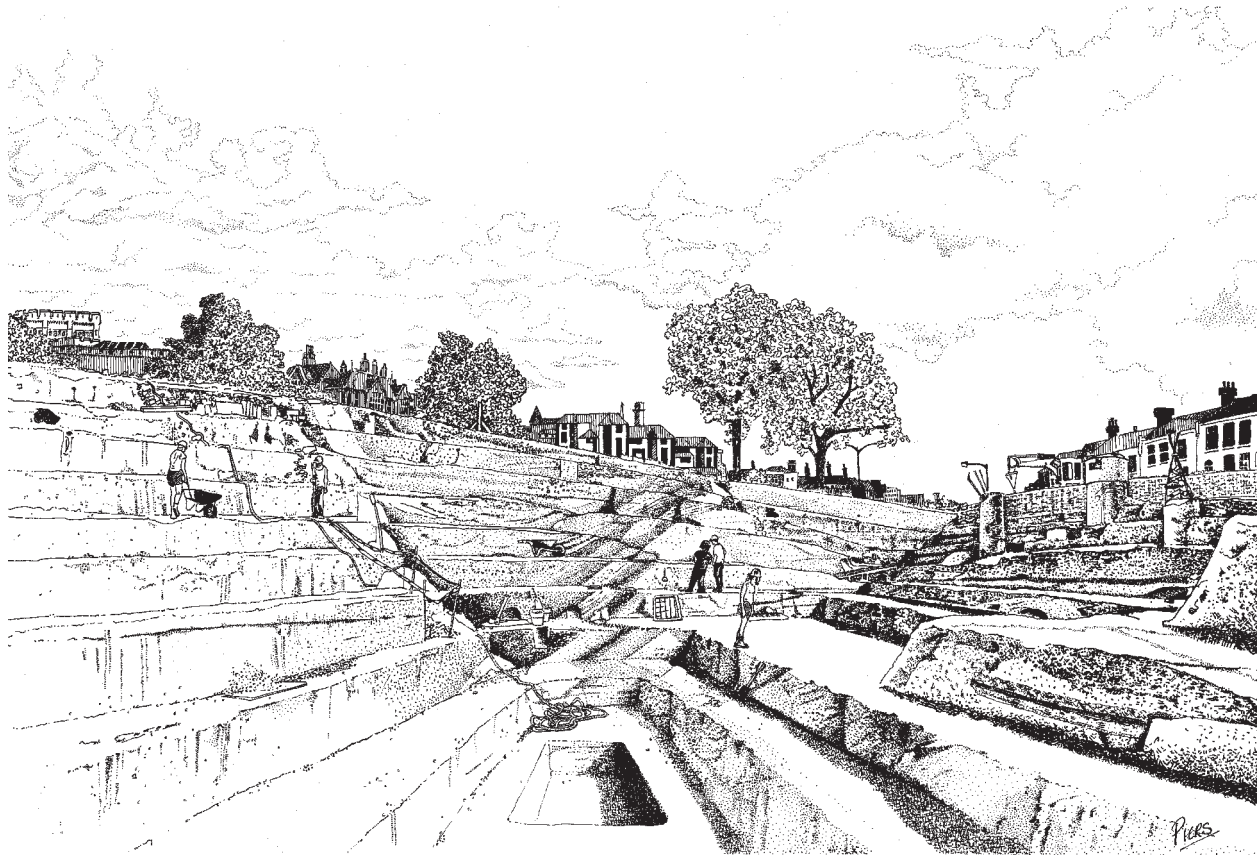


Plate 2.1 View of the barban ditch during excavation at Castle Mall, Area 9. Deposits relating to the defences of the Castle Meadow (north-east bailey) are also evident (by Piers Millington Wallace)



Plate 2.2 Child's drawing of archaeologists at work at the Castle Mall site (by Eleanor Robins, aged 6; Town Close Pre-Prep. School)

the best-known images in the collection is that of Samuel and Nathaniel Buck (1738; Plate 6.2). The engravings of the donjon by Wilkins (1796) have also been much reproduced and the dominance of the structure over the Norwich skyline, even from considerable distances, is evident in many depictions. These include an anonymous painting of 1707 in Anglo-Dutch style (published in Ayers 1991, fig.3) and another showing Norwich from the south-east by Alfred Priest in 1849 (Norfolk Museums Service). A number of images particularly pertinent to this report are reproduced here, including a *Panorama of City from Castle mound* (1809), which gives an accurate view of buildings round the edge of the baileys at this time (Plate 11.1).

A number of new artworks were created during the NAU excavations, either as part of the project or independently. An on-site view of the barbican ditch during excavation was drawn by Piers Millington Wallace (Plate 2.1). Many images were produced in connection with the Visitors' Centre, including numerous display panels. Some charming images of archaeologists at work were drawn by a visiting party of school children — then aged 6–7 (Plate 2.2). A series of paintings of the site during excavation was executed by Kay Olsten, a noted East Anglian Contemporary painter. These were donated to



Plate 2.3 Part of the mural commissioned by the client, now housed in the Food Court of the Castle Mall shopping centre (by Piers Millington Wallace)

the Norfolk Museums Service and are now held in the Art Department. A sequence of reconstructions was commissioned for this publication (Chapters 4–10) from Nick Arber, a local artist with a particular interest in the castle. He also produced early interpretations of the defences — now outdated — for the Visitors' Centre and museum guides (Green 1990, fig.1; Reeve 1992, 22; Ayers 1994a, plate 9; Margeson *et al* 1994, fig.81). In addition, the developer commissioned a mural from the NAU depicting the sequence of castle development which now runs around the interior of the upper level of the new shopping centre (Plate 2.3).

Some years ago, the Castle Mall team worked closely with model maker James Main to produce a large model of the castle defences for display at Norwich Castle Museum (Plate 6.35 and 6.36: latter on CD). Although the interpretations are now outdated (and the surrounding city of Norwich is sadly absent due to financial constraints), the model still gives a real sense of the scale of Norwich Castle at its apogee.

Photographs

(Plates 1.2–1.3, 11.11)

In addition to the large photographic archive specific to the NAU excavations, numerous other photographic sources exist, some of which are reproduced within this report. Many images were collated for use in the Visitors' Centre and are now held in the project archive. Aerial photographs of the development site were taken before, during and after the excavations (*e.g.* Plates 1.2–1.3) and are held at the county's Aerial Photography Library (ref: TG2308). Other sources include the collection of George Plunkett, which includes photographs of the excavations prior to the insertion of air raid shelters on the site (Plate 11.11). The Plunkett website (<http://www.the-plunketts.freereserve.co.uk>) holds a collection of images specifically relating to the Castle Mall development. Many photographs survive of the Cattle Market (see Chapters 10 and 11) and a mass of images on various aspects of the site are held in local and national newspaper archives, as well as those of the developer and architects.

III. SUMMARY OF PREVIOUS EXCAVATIONS AND OBSERVATIONS

Introduction

The numerous observations and excavations around and to a lesser extent within the castle precinct are depicted on Fig.2.2, using county Sites and Monuments Record (SMR; now Historic Environment Record) numbers, although some observations have not yet been entered into this system. The most pertinent results are summarised below using a geographical/thematic framework, with sites presented in numerical order within each block for ease of reference.

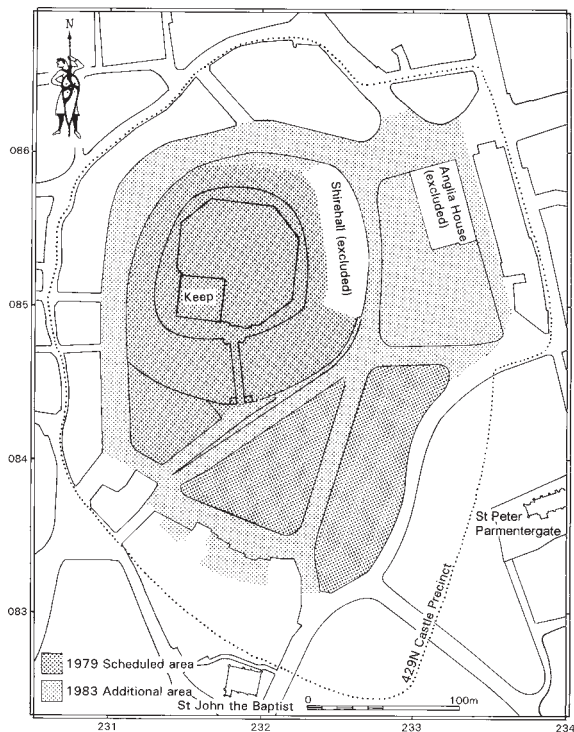


Figure 2.1 Norwich Castle: areas scheduled in 1979 and 1983. Scale 1:5000

Norwich Castle

(Figs 2.1–2.2)

Norwich Castle keep and its precinct are designated as a Scheduled Ancient Monument (Norfolk 5) and therefore protected by statute (original scheduling 8 February 1915; 1979 *Ancient Monuments and Archaeological Areas Act*). The 1979 scheduling covered the castle motte and donjon, as well as areas of the south and north-east baileys (Fig.2.1). Scheduling was extended in 1983 to cover additional areas within the precinct, including ground within the Fee to the west and north of the castle (Department of the Environment, letter to Peter Wade-Martins 20 January 1983). The Shirehall Chambers remained excluded from scheduling.

The whole precinct was allocated SMR number 429N.⁴ At the time of writing, more than fifty archaeological interventions or observations have been made within the castle precinct, most of them small-scale. These, together with other observations surrounding the precinct, are shown in Fig.2.2. A selection of the most relevant sites and observations are summarised below, drawing evidence from published reports and the county SMR. Observations of additional sites to the east and north of the castle are summarised in Appendix 8.

Norwich Castle Donjon

Historical and architectural research into Norwich Castle donjon has been supplemented by survey and limited archaeological excavation. During conversion into a museum between 1888 and 1894, substantial archaeological deposits are known to have been removed from its interior. In 1982, an architectural survey of the interior led to a subsequent small excavation within the donjon

basement in 1986 (Site 30N; Ayers 1986 and 1987b, 21; Drury *et al.*, unpublished). A recent photogrammetric survey of the exterior of the donjon carried out in conjunction with NAU staff indicated that remnants of the original Caen stone survive (see below), despite the refacing, primarily with Bath stone, of the early 19th century (Whitmore 1999; Shepherd 1998, 10).

Site 30N: Norwich Castle Donjon

In 1967, a specimen of Caen stone was found while the Rotunda was being built. In 1972, medieval and later pottery and animal bones were recovered from trenches below the floor of the donjon basement. Wall footings were identified and much medieval and post-medieval material was retrieved from trenches through the dungeon.

Work by the NAU in 1986 included an excavation and survey of the donjon which revealed evidence for a more detailed phasing of the building. The spine wall proved to be supported by an offset flint foundation, except at the western end. Another wall was recorded, running east-west between the spine wall and the south wall of the donjon, providing a linking foundation between piers. Excavation adjacent to the north wall showed that it had been subject to massive failure. Artefacts recovered during the work include a 13th-century gold ring set with a garnet.

Between 1997 and 1998, scaffolding of the four faces of the donjon for repairs facilitated access to and detailed recording of the exterior stonework, based on a photogrammetric survey (Whitmore 1999). A lion's head corbel (presumably a royal symbol) had been reinstated into the south face during rebuilding works and a substantial arch at the donjon's north-east corner was retained in its original form. Other original stonework survives in the window recesses, garderobe chutes and chimney flue linings. The refacing operation entailed the replication of earlier architectural details and included the use of large masonry blocks sub-divided by mock joints.

Castle Mound and Ditch

Until recently, archaeological work at the top of the motte had been limited to a few minor observations including those made during the construction of new museum galleries in the 1950s. Excavation includes watching briefs undertaken as part of the Castle Mall project (detailed in later chapters; Fig.1.6), an evaluation in 1998 and substantial excavations in 1999–2001 (Wallis, in prep.). Work at the base of the mound and to a limited extent within its ditch was undertaken at the Shirehall in the early 20th century (Site 135N).

Sites 31–33N: Castle Mound

During construction of the Crome Gallery in 1950 (Site 32N) finds included Late Saxon and medieval pottery, iron tools, a bone pin, a schist hone, human bone and a stone capital. In the same year, 15ft of spoil was removed during construction of the Colman Gallery (Site 33N). No trace of timber buildings was recorded, the 19th-century prison lying directly above 14th-century deposits. Finds included 11th to 14th century pottery, a pillar capital, a hone, a kitchen flesh hook and a buckle, as well as animal bone and shellfish. No information about Site 31N appears to be included in the SMR.

Site 135N: Shirehall Extension

In 1905, it was decided to enlarge the Shirehall, necessitating the cutting away of some of the mound and fills of the motte ditch. The work was carried out in 1906 (Tench 1910). Trial holes were sunk to the motte ditch, obtaining levels at its base. The greatest depth was about 74ft below the level of the top of the mound (about 37ft OD). The base of the ditch had been cut into solid chalk. The remains of several 'buildings' were recorded (presumably post-medieval cellars), the finds from ditch fills suggesting post-medieval refuse. A section through the mound was also recorded and is described further in Chapter 6. A number of pits were revealed beneath the motte, the largest of which was 5 ft square and 27 ft deep below the original ground level. Its extreme depth suggests that this may have been a well or solution feature into which refuse was later deposited. Fire waste had evidently been deposited into the pits which also contained charred wood, bones and pottery fragments (Tench 1910, 42–45). The description of the pottery from the pits suggests that it was Thetford-type ware and a number of possible wasters were recovered from the site (see below).

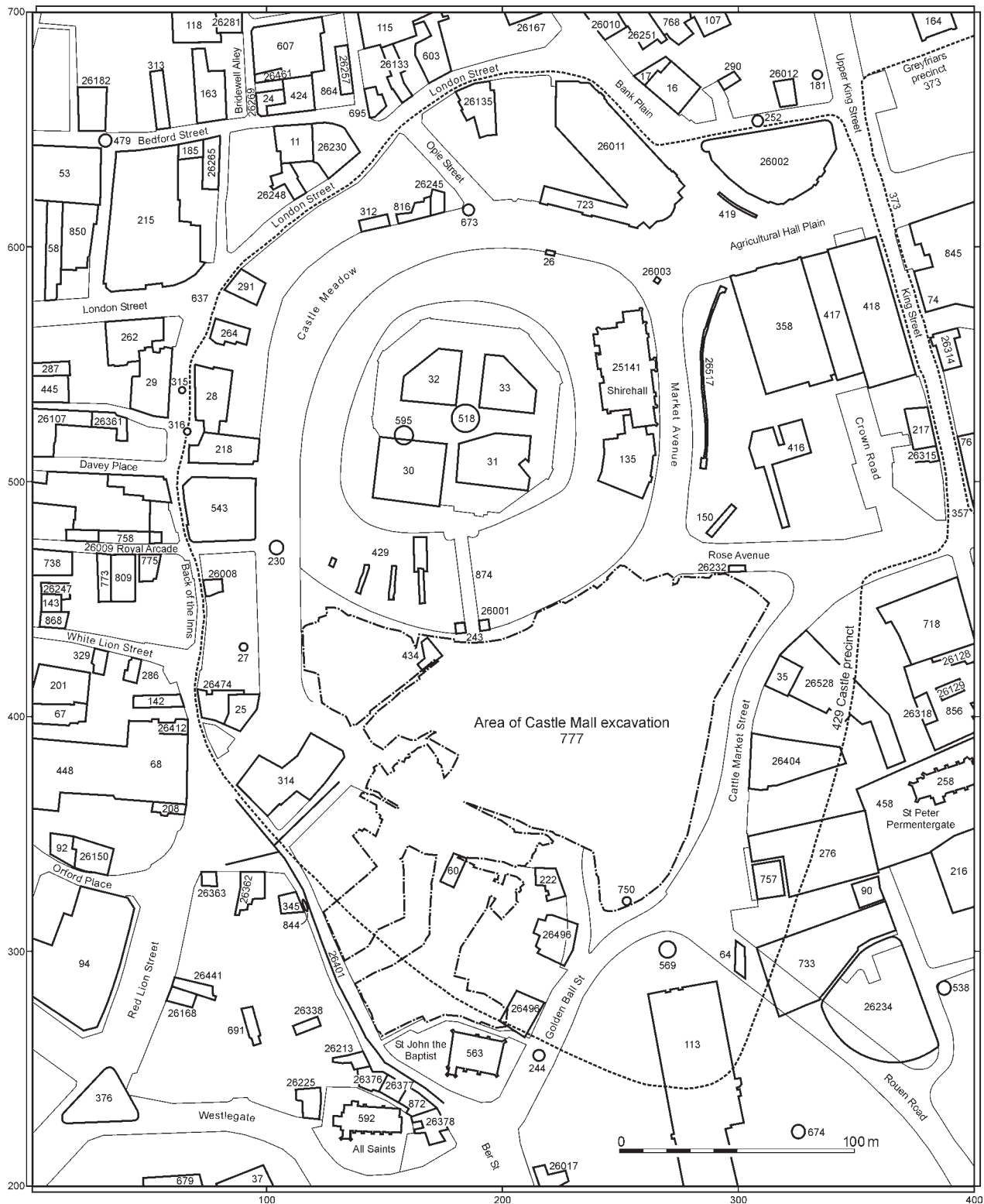


Figure 2.2 Previous excavations and observations in vicinity of the Norwich Castle area, showing County Sites and Monuments Record (SMR) numbers. Scale 1:2500

Site 429N: Norwich Castle

Further details from the following observations have been integrated into this publication text at relevant points.

Castle Mound

In 1824, during excavation of a trench on the mound, a gold finger ring was recovered along with human bones. Further human bones were found in more trenches in 1888. A medieval gaming board was recovered in the 1890s.

Castle Mound Railings

Remedial work to a wall and railings encircling the top of Norwich Castle Mound exposed made ground which proved to be modern dumps rather than part of the Norman motte (Shelley 1995).

Castle Mound Evaluation (1998)

In 1998, four trenches were excavated during an evaluation excavation investigating deposits on the eastern side of the motte, in advance of construction work linked to a redevelopment of the museum

(Penn 1999a). Two trenches were at the top of the mound, revealing evidence for a series of low banks, an encircling foundation wall and post-medieval features. Augering indicated that the original top of the mound lay about 2m below the modern surface. Two trenches were dug at the base of the mound, one of which revealed two Late Saxon pits, with a surviving maximum depth of 0.80m.

Castle Mound Excavation (1999–2001)

The NAU was commissioned to undertake further archaeological excavation and recording necessitated by the redevelopment works at Norwich Castle Museum during the period July 1999–July 2001 (Fig.1.6; Wallis, in prep.). The work was co-ordinated with the development programme which was undertaken in two main phases. The first included interventions on the east side of the monument for the construction of a link between the Castle Museum and the Shirehall buildings. The investigations focused in three areas, two on the top and side of the mound and the third at its base. The second phase included major interventions on and to the south of the mound and within the donjon. Many areas of more minor work taking place on the top of the mound were also monitored and recorded. Four trenches were excavated in the Castle gardens, through the upper (modern) fills of the motte ditch. Removal of the current road surface from the top of the bridge and the area in front of the Castle was monitored.

The results provide important new evidence for the construction of the motte, which can now be asserted to have been constructed in two clear phases. When the initial motte was enlarged to the north and east, a chalk bank was built to form an outer rim, with a deep hollow at the centre. This hollow was subsequently infilled with thick dumps of imported soil, with intermittent activity in the form of post-holes, beamslots and a substantial hearth, which may indicate the presence of temporary shelters. During enlargement of the mound, a new ditch was dug around its base. The implications for motte construction are considered further in Chapters 5 and 6.

Site 518N: Castle Mound

During the construction of prison buildings in 1824, pottery and coins — alleged to be Romano-British — were found.

Site 595N: St Nicholas' Chapel

A chapel, dedicated to St Nicholas, lay on top of the motte, the earliest documentary reference being made in the mid 13th century (see Chapter 6.1).

The Castle Bridge

The single-span stone bridge connecting the motte with the southern castle approach was probably constructed at the same time as the donjon and a masonry well at the foot of the bridge. It comprises two arches with solid piers dividing the internal length of the structure into three compartments. Only the southern compartment would have been backfilled, the middle and upper spaces being covered by timbers. Despite extensive alterations, including later brickwork, this remains substantially a 12th-century structure. Further details of its construction and excavations conducted as part of the Castle Mall project are given in Chapter 6, while the numerous antiquarian and other observations of the bridge are considered in Chapter 6.1.

Site 874N: Norwich Castle Bridge

A trench was excavated along the bridge in 1991/2 when construction of the Castle Mall shopping centre necessitated the closure of the castle bridge and its temporary replacement with a bailey bridge (Shelley 1992). This provided an opportunity for Norwich City Council engineers to examine the structure of the bridge and make an informed weight restriction. The NAU excavated three trenches on top of the structure (Plate 6.10). One intervention at the south-eastern end of the bridge examined the nature and depth of the one of Stone's (1811) gatehouse foundations. A medieval road surface and masonry were revealed, as well as evidence for Wilkins' (c.1825) refacing work and modern alterations.

A second trench was placed directly above the northern wall of the southern bridge pier in order to determine whether it continued upwards beyond the springing of the arch to meet the road. Norman/medieval masonry was encountered 0.65m below the modern road surface. Again, evidence for Wilkins' work was also apparent.

The third trench was placed to locate both the northern bridge pier and the keystone of the brick arch, as well as to investigate the possible presence of a drawbridge pit. Substantial elements of the Norman/medieval bridge were recorded, as well as evidence for timber cross beams. The keystone was exposed and read 'May 19 1830'. The findings have been summarised (Shelley 1996), with a more detailed account given in an NAU Client Report (Shelley 1992).

In 1993 a trench was excavated in order to identify the source of a water leak (Forrest 1993). This was recorded by the NAU during a watching brief which exposed a section of the internal face of the eastern arch of the bridge. Two large putlog holes were revealed, proving that the original bridge existed as two masonry arches with a timber surface covering the void between.

Site 26001: Norwich Castle Bridge and entrance lodges

The medieval bridge was altered in c.1825 and the stone lodges added in 1811 by Francis Stone. The cast iron railings were added in 1825 by Dixon and Sons of Norwich, between square stone posts. Each lodge is single storey with a square ground plan and blind semi-arched windows. The door on the bridge facade has double order semi-circular arches. Each lodge has a crenellated parapet with corner lamp turrets.

Other Sites within the Castle Precinct

Prior to the 1987–98 interventions at Castle Mall and Golden Ball Street, limited archaeological excavation had taken place within the south bailey. The NAU has subsequently undertaken a number of small archaeological evaluations and watching briefs within the castle precinct (particularly to the west of the castle).

Minor observations were made during road and service improvement schemes, which revealed masonry on a number of occasions. Harrod conducted an archaeological investigation into the nine foot square mass of flint masonry exposed during road repairs in spring 1856, 80ft (24m) from the eastern lodge at the foot of the castle bridge. Fragments of wall appeared to lead away from it in a westerly direction, but he could find nothing to the south, though he had a trench cut nearly to Golden Ball Street, 13 or 14ft deep in some places. Harrod concluded that it was 'an advanced work for the protection of the entrance to the bridge' (Harrod 1857, 129). It is possible that what Wilkins described broken up (see p.26 above) was the western part of this feature, which later proved to be the remnants of a castle gatehouse (see Chapter 6).

Beecheno observed the digging of a trench 3ft wide and 5–6ft deep for a new gas main (MS 1908, 237). From near the inner ditch (*i.e.* the motte ditch) south of the Shirehall extension it cut across to Panks' (formerly Holmes') premises in Cattle Market Street through sand which was found immediately below the road surface. From there, turning in the direction of Golden Ball Street for 70 to 100ft the trench was cut through earth. Then there was twenty feet of sand and another twenty feet of earth, though the sand below was visible. As it neared the top of Golden Ball Street there was more sand at the end of which, just before reaching the street two worked stones were found and a mass of flint rubble. After turning left round the old Golden Ball site there was 50ft of earth containing evidence of former houses, then sand again, followed by a long stretch of earth. Finally, nearly opposite St John's churchyard sand was encountered yet again.

The following year, a lidless stone coffin containing a skeleton was found four feet down near the kerb opposite (*i.e.* to the north) of the *Plough Inn/Le Rouen*⁵ (Beecheno MS 1908, 238–239). This stone coffin was summarily reported (*Fishers Almanac and Annual* 1911) and further details are given by Ashley in Chapter 4.III (Plate 4.54).

The suggested date of manufacture for the coffin could, fall anywhere within the 10th to 12th (and possibly 13th) centuries, although its position indicates a pre-Conquest origin.

During the construction of air raid shelters in 1938, five blocks of shelters were placed in the vicinity of the barbican ditch and gatehouse (see Chapter 11.I). Observations of the south bailey ditch were made in 1934 and 1938.

In 1963, a small trench was dug at 7 Farmer's Avenue (Site 60N) by the Norfolk Research Committee. This recorded part of the south bailey rampart (Wilson and Hurst 1964). Other observations carried out at this time included minimal recording of the development of the Eastern Counties Newspapers building, the site of the church of St Martin-in-Balliva and its associated cemetery (Site 569N and 113N).

Major Victorian building works had been undertaken within the north-east bailey at Agricultural Hall and Hardwick House and a ditch was recorded beneath the latter in 1866 and again beneath the southern end of the Royal Hotel in 1902 (Carter *et al* 1974, fig.7; Ayers 1985, fig.2).⁶ Further comments on the position and interpretation of this earthwork are given in subsequent chapters. During the 1970s, the Norwich Survey carried out a small excavation within Shirehall Car Park (Site 150N) as a result of proposed redevelopment of the castle's north-east bailey (although, in the event, planning permission was withdrawn — see below). Part of what was at the time interpreted as the south bailey ditch was recorded (Carter *et al* 1974; Atkin 2002a). The NAU excavated a pre-Conquest church and its cemetery in 1979 along with evidence for the castle earthworks in this area (Site 416N; Ayers 1985).

Site 28N: 11–17 Castle Street

During excavations for foundations in 1963 (at Nos 11–17 Castle Street and behind No. 19), medieval pottery sherds and a spindle whorl were found. Sections were obscured by cellars, although where earth was visible it appeared to be made up ground (?castle ditch), but no sections were cut deep enough to be certain. The castle bank was cut into.

Site 60N: 7 Farmer's Avenue

The Norfolk Research Committee undertook the excavation of a trench at 7 Farmer's Avenue in 1963 (Wilson and Hurst 1964; mistakenly labelled as 99N (14 Pottergate) on Carter *et al* 1974, fig.7). At the northern end of the trench was a rubble flint and mortar wall cutting diagonally across it, beneath which were layers of gravel and sand. At c.4ft 10inches was a dark layer of mixed sand and humus which contained Thetford-type ware and a sherd of St Neot's-type ware, daub and charcoal. Leached grey sand and gravel lay beneath this layer and above the old soil layer at 5½ft which dipped to the south following the natural slope of the ground. It contained considerable quantities of Thetford-type ware. The gravel bank was interpreted as the counterscarp of the bailey ditch which it was suggested at the time ran beneath Farmer's Avenue (in actual fact, the bank lay to the north of the ditch, the line of which ran further south. See Chapter 6.V).

The section was abruptly interrupted at 14½ft from the northern end of the trench by a 19th-century cellar, on the other side of which (at 22ft south) the section was quite different. Excavation through late medieval deposits here was abandoned at a depth of 10½ft before the natural subsoil was reached. This area was not built over in the late 17th and 18th centuries and this may be a large rubbish pit of that period. It was noted at the time that the recorded abutments of properties do not support the existence of a castle ditch in this area (although this was in fact the position of the south bailey ditch). The approximate location of this trench is indicated in Fig.2.2 on the basis of the SMR plot, implying that it should have been located within the northern part of Castle Mall Area 1 (although this was not the case; see Chapter 6.V).

Site 64N: Globe Lane

(See 'Cemeteries ..' below.)

Site 113N: Rouen Road/Ber Street (ECN Building)

(See 'Cemeteries ..' below.)

Site 150N: Shirehall Car Park, Market Avenue

In 1973 planning permission was granted for a redevelopment on the Shirehall car park, to the west of Anglia House (Carter *et al* 1974). A large scale excavation was planned, although planning permission was withdrawn before this was undertaken. Excavation was restricted to a small trench in the south-west corner of the car park. This recorded part of what was interpreted as the south bailey ditch (but was probably the barbican ditch — see Chapter 7), cutting into a number of Late Saxon ?quarries. Medieval and post-medieval infilling of the ditch was succeeded by cellars, then landscaping relating to the construction of the Cattle Market.

Site 218N: 18 Davey Place

Archaeological observations were made during the digging of foundations for new offices for the Legal and General Assurance Society Ltd. Sherds of medieval glazed pottery (13th century) and unglazed pottery (12th century) were recovered from the southern part of the excavation nearest to Castle Street. Infilling of a ditch was recorded, the ditch being at least 30ft wide and 14ft below modern road level. Refuse pits of probable 16th-century date had been cut into the ditch after infilling. An undated human skull was retrieved from a refuse pit lying 6ft below street level (cutting into fills of the ditch). Pottery included a Thetford-type ware rim, as well as medieval and late medieval fabrics.

Site 243N: Castle Mound, Castle Hill

(See 'Cemeteries ..' below.)

Site 264N: 1–3 Castle Street

Excavations in 1974 extended c.8 feet into modern make up for the previous building. No sign of the anticipated castle ditch was recorded, although medieval pottery was recovered.

Site 291N: 30 London Street

In 1973, deep test holes were sunk in the basement and near the London Street and Castle Meadow street frontages. Medieval pottery, animal and fish bones came from what may have been part of the castle's outermost ditch. Other finds were post-medieval. Further work in 1976 yielded no additional information.

Site 314N: Bell Hotel

Field observations were made in 1976 by Malcolm Atkin and a survey was conducted by Robert Smith in 1990. In February 1991, a series of dynamic probe tests were carried out inside the Bell Hotel and were recorded as a Castle Mall watching brief (T64). The results suggest that the northern part of the building overlies 4–6m of made ground, while only 1–3m of made ground lies beneath the southern part. This suggests the presence of the barbican ditch (see Chapter 7). Two wells were also recorded.

Site 358N and 416–418: North-East Bailey/Agricultural Hall and Plain/Crown Road

(See 'Cemeteries ...' below.)

Site 429N: Shirehall Plain

In 1997, the NAU undertook the monitoring of the placement of three trees in large pits on Shirehall Plain, the open grassed area to the west of Market Avenue (Percival 1997). Finds included a redeposited architectural fragment; a door jamb fragment with two parallel rebates. This may originally have formed part of the central pillar of two doorways set side by side. The deposits recorded may have related to landscaping during the mid 19th century, or to the realignment of Rose Avenue in 1990. Much of the southern half of Shirehall Plain appears to have been covered by 0.80–1.2m of Victorian or modern landscaping deposits, with cellars having been recorded during the Castle Mall and other excavations in the area (*e.g.* Site 150N).

Site 543N: Castle House/Davey Place

Before 1847, at the south side of Davey Place, during digging of new house foundations, several Roman coins were found. Excavation by the NAU in 1996 was undertaken in advance of underpinning work. Evidence for medieval occupation and deposits relating to the infilling either of a castle-related ditch or the Cockey stream were recorded. Pottery included Late Saxon and medieval sherds.

Site 569N: ECN Building

(See 'Cemeteries ...' below.)

Site 26474N: 20 White Lion Street
(See 'The Cockey Valley ...' below.)

Cemeteries Beneath/Within the Castle's Defences

As many as six cemeteries may have lain across the area of the later castle defences, with a seventh just to the south of the Fee boundary (St John at the Castle Gate/de Berstrete/Timberhill; see below). Evidence for both churches and cemeteries comes from surviving remains, excavated evidence and documentary sources. One of the cemeteries, that of St Martin-in-Balliva (now destroyed, Site 569N), was not recorded until 1254–75 although may have been a pre-Conquest foundation. It acted as the burial ground for the castle prison.

Site 64N: Globe Lane

During the construction of Rouen Road from King Street to Cattle Market Street in 1962, inhumations (unquantified) probably relating to the cemetery of St Martin-in-Balliva were recorded.

Site 113N/569N: Rouen Road/Ber Street (ECN Building)

Redevelopment of the former site of the church and cemetery of St Martin-in-Balliva in the 1967 was only minimally recorded, although a number of human skeletons came from both the south-west and northern parts of the site. Medieval and post-medieval pottery included a witch's bottle (see Chapter 10). Further discussion of the church and cemetery is given in Chapter 4.VI.

Site 243N: Castle Mound, Castle Hill

In 1807, during removal of the stone facings of the southern end of the castle bridge, two human skulls were found three feet below the surface. Barbara Green suggested that these may have been at the northern end, relating to prison inmates buried on the mound, although it now appears that they may relate to the possible 8–9th century cemetery recorded within the barbican on the Castle Mall site (Cemetery 2; Chapter 4). Human skulls were again found at the southern end of the bridge in 1934.

Site 358N: Agricultural Hall/Crown Road

Test holes were excavated in the basement of Agricultural Hall in October 1958. The remains of at least three disturbed human burials were found, two young females and one young male. One of the females was noted to have had large OS *inac.* (bipantium). Two sherds of medieval pottery were recovered, although not associated with the burials. Drilling struck chalk at 20ft below the level of the floor of the main hall.

In 1977, fragments of two burials were found during the excavation of a pile hole in the basement of Anglia House (former Agricultural Hall). One grave contained two sherds of medieval pottery. The burials were aligned east-to-west at a depth of c.0.70m below the basement floor. One was female, the other male.

Site 416N: North-East Bailey (Anglia Television)

A trial trench and subsequent area excavation were carried out by the NAU in 1979, prior to the redevelopment of Anglia Television offices (Ayers 1985). A previously unknown pre-Conquest church and associated cemetery were recorded (130 individuals). Three successive phases of the church were apparent, the last perhaps destroyed to make way for the castle's north-east bailey. Features within the church included a font soakaway. A well and possible detached baptistry were recorded within the graveyard. Part of a ditch (6m wide, surviving to 2m deep) was recorded and interpreted as the boundary to the north-east bailey, with further smaller ditches interpreted as drainage features within the bailey. Further discussion of the site occurs throughout this report.

Site 417N: Agricultural Hall/Crown Road

In 1979, many trenches were recorded along the length of the road at the top of Prince of Wales Road, between Anglia House and Hardwick House. A large quantity of post-medieval finds was recovered and some medieval. Other finds included antler and a large quantity of human bone.

Site 418N: 2 Agricultural Hall Plain (Hardwick House)

In 1979, internal alterations were made to the building. Medieval and post-medieval finds were recovered, including fragments of human bone.

Site 673N: Opie Street/Castle Meadow

In 1958, the fragmentary remains of seven human skeletons (found mixed with animal bones in made ground) were found at a depth of 4–5ft beneath the pavement at the western corner of Opie Street and Castle Meadow.

Sites Around the Castle Precinct

(Fig.2.2)

Sites to the south and west of the castle with details relevant to the development of the site in question are described below, including those which provide evidence for pre-Conquest pottery manufacture in the vicinity. Other sites to the north and east of the castle are summarised in Appendix 9.

Sites to the East

Little of archaeological interest has yet been recorded just outside the Castle Fee along Cattle Market Street (Sites 35N, 26404N, 276N and 757N). Early medieval quarries and other features were, however, recorded at the former Averills Garage, along with tenements of later medieval and post-medieval date (Site 26528N). The results indicate that much of the area was in use for quarrying during the 11th and 12th centuries, with a high status building apparently constructed soon after the transfer of the baileys to the city in 1345 (Trimble and Shelley 2000, 13). Details of others sites to the east of the castle area, including the Greyfriars precinct, are given in Appendix 9.

Sites to the South

Evidence drawn from several sites along Timberhill, summarised below, has been used throughout this report.

Site 563N: Church of St John at the Castle Gate (later de Berstrete, now St John the Baptist, Timberhill)

This church may have been pre-Conquest in origin and the northern part of its cemetery was excavated as part of the Castle Mall project (Chapter 4). Details of the development of the church and its related parish are given throughout this report. The surviving building has probable 11th century long-and-short work in its east wall. The remainder of the building is 15th century (?), of flint with stone and brick dressings. The north vestry is 19th century, at which time all of the windows were renewed or refaced. The west tower collapsed in 1784. A fine chandelier of c.1500 survives.

Site 592N: All Saints Church, Westlegate

The church of All Saints' Berstrete/Timberhill/Westlegate appears in the documentary record from the mid 13th century (Sandred and Lindström 1989, 34), although it may have originated in the pre-Conquest period. The extant church has elements dating to the 14th and 15th centuries (Messent 1932), although the bulk of the flint building with stone and brick dressings is 15–16th century. The living of the church went with St Julian's King Street, although in 1930 they were divided and All Saints was united with St John the Baptist, Timberhill. The parish of All Saints has the decayed parish of St Winwaloy or St Catherine Newgate associated with it — which was almost totally depopulated by plague in 1349. The register of All Saints dates to 1573. This former parish church is now redundant and used as a community centre. The laying of heating pipes in 1982 disrupted c.6 disarticulated burials and two *in situ* at the eastern end. A series of eight trenches were recorded in 1989, revealing evidence for an earlier floor. Further work in the churchyard in 1995 revealed evidence for the local topography (Emery 1995).

Site 872N: 37–39 Timberhill

Prior to redevelopment, the NAU undertook a small-scale excavation at 37–39 Timberhill (Shelley 1991), adjacent to the church of All Saints. Five phases of activity were identified, spanning the early medieval to modern periods. The earliest feature was a ditch containing Thetford-type ware, although its exact date and function remains uncertain — it

may have formed an early boundary ditch to the church. Work at No. 35 Timberhill suggests that the ditch may have continued around the church. Graveyard deposits were apparent and some redeposited human bone was recovered. A number of possible graves were recorded, although the burials had been removed. This may have related to a contraction of the cemetery boundary (represented at least in later stages by a wall) although a similar boundary contraction which freed building land to the north of the church of St John the Baptist, Timberhill had not resulted in the clearance of burials (see Chapter 4). A yard with associated well was laid out in the late medieval period, along with a sequence of walls. Barrel-type cellars were inserted during the post-medieval period.

Site 26401N: Timberhill pipeline

In February–April 1993, the NAU undertook a watching brief along Timberhill during the installation of a mains water pipe (Shelley 1993). Road metalling up to 0.9m deep was recorded along much of its length, although no dating evidence was recovered and the hypothesis of a pre-Conquest road could not be proved. The early road may have run closer to All Saints Church than it does at present, along the present line of post-medieval cellared buildings. The road's eastern extent could be suggested at the junction with Orford Street where a boundary wall overlaid an early road surface. Much ditch fill beneath Orford Street was evident (adjacent to the Bell Hotel, Site 314N) although it was not possible to ascertain within which ditch or ditches this lay.

The Great Cockey Valley and Sites to the West

The largest of Norwich's southern streams — the Great Cockey — is referred to in documentary sources from 1285 and perhaps as the *Kokeye* as early as 1277. It rose at 'Jack's pit' in modern-day Surrey Street, running northwards to the Wensum in its own valley which later separated the castle precinct and the Norman market place to the west, at the same time defining much of the eastern edge of the Jewish Quarter (south of Sadelgate). Sites and observations to the west of the castle provide evidence for the location of the stream and its associated valley (see Chapter 3).

Site 29N: 2–4 Castle Street

Four bronze plaques, which may have served to demarcate the limit of the Castle Fee were recovered from this site by workmen in 1964 (Green 1965; Shepherd Popescu *et al* 2004). Further discussion of these markers is given in Chapters 6, 7 and 12. An almost complete large lava gritstone was also found, along with medieval and post-medieval pottery.

Site 53N: 2–4 Bedford Street

Observations relating to pottery manufacture at this site lay on the western edge of the Great Cockey stream (see below).

Site 54N: Post Office, 9 Davey Place

During excavations of foundations for the new Post Office in 1957, refuse pits and hearths were revealed. Occupation dated from Late Saxon to medieval and later periods. Notable finds included a bone draughtsman. Fifteenth-century bronze scale came from a hearth 10 ft below street level.

Site 68N: 7–9 Haymarket/25–31 White Lion Street

An archaeological watching brief was carried out in March 1998 by the NAU, at the former Littlewoods Store during installation of a new lift shaft. No evidence for the line of the Cockey stream was recorded.

Site 94N: Red Lion Street/Orford Place

Work was carried out beneath the footway on the eastern side of Curls' shop during sewage excavation in 1953. A flint and brick lined well contained 16th-century pottery, quantities of bronze slag (?from bell founding) and much charcoal. During construction of a new shop for Curls in 1954, seven medieval and later wells were recorded, as well as other structures. Pottery dated mainly to the 12th and 17th centuries.

Site 201N: 3–4 Haymarket (Curat's House)

This is a timber-framed house dating to 1531, above a 15th-century undercroft. Work in 1972 revealed floors, as well as the former north-to-south course of the Great Cockey stream and Late Saxon and

medieval pottery (spanning the 12th to 17th centuries). Further work was undertaken after a fire in 1989.

Site 329N: 9 White Lion Street

On this site stood the Abbot of Sibton's house in 1363. Sibton was an abbey in Suffolk.

Site 448N: 7–10 Haymarket

This was the possible site of the Norwich Synagogue, demolished in 1286.

Site 543N: Castle House, Castle Meadow

During renovation work at Castle House in 1996–7 (Moss *et al* 1999), observed medieval occupation included a rammed chalk surface, cut into by a mid to late 14th-century pit. A sequence of thick deposits may have related to a castle-related ditch or to infilling of the diverted section of the Cockey stream.

Site 637N: London Street

In 1858 or earlier, a stone moulding depicting the Massacre of the Innocents was found, dating to the early 13th century on the basis of the helmets shown. In 1962, an iron axe head was recovered from a depth of 10 feet.

Site 738N: 12–13 Royal Arcade

In 1985, underpinning was carried out to a depth of about 8ft. Finds were post-medieval.

Site 758N: Royal Arcade

Small-scale excavations by the NAU at the Royal Arcade in 1988 were dug in Units 4/5 and 10 (Pritchard 1989). The site lies within the valley of the Great Cockey stream, which on its original course ran approximately down Westlegate, along Red Lion Street, across the Royal Arcade, along Little London Street to the River Wensum. The valley is still marked in places by an area of low ground between Castle Meadow/Castle Mall to the east and the Market Place/City Hall to the west. At Royal Arcade, up to 4m of archaeological deposits were evident, reflecting the position of the stream which may have originally run roughly through the centre of the Arcade. It may then have been diverted along Castle Street, around the corner into London Street (or Cockey Lane). A considerable force of water was encountered in Castle Street in 1960s. The excavated trenches suggest a dramatic drop of slope down to the west. The natural sand was sealed by a sequence of infilling and deposition into the stream valley, overlain by 1.5–2m of modern deposits. The earliest deposits probably dated to the 12th century, with the bulk of infilling dating to the medieval period (the exact date is unspecified in both the stratigraphic and pottery reports; see Chapters 7 and 8). A series of post-medieval and early modern stable floors were also recorded. In the 19th century, stables and outhouses for the Royal Hotel would have been present, demolished and converted into the Royal Arcade at the turn of the century.

Site 809N: 20–21 Royal Arcade

During a watching brief in 1986, a trench was excavated to a depth of c.2.80m. The lowest deposit (which was not bottomed) was analysed by Peter Murphy (UEA), although there was no indication of how it had formed. It may have been fluvial loam or inwashed material from eroded castle earthworks (although the site lies some distance to the west of the nearest ditch/bank). Another pit of similar depth revealed only disturbed deposits.

Site 26474N: 20 White Lion Street

In April 1998, the NAU observed three small, deep stanchion base pits inside the ground floor of 20 White Lion Street (Percival 1998). Infilling of what was interpreted as the Cockey valley was recorded, although the position of the site indicates that this was more likely to be a castle-related ditch. A subsequent demolition deposit may relate to an historically attested phase of redevelopment in the 17th century.

Pottery Manufacture and Sites to the North-West

Late Saxon/early medieval pottery kilns have been recorded to the north-west of the castle precinct, several lying within the suggested confines of the southern Late Saxon burh (see Chapter 4). A waster pot came from a site further to the south-west (Site 135N) and a possible drying kiln and large quantities of wasters were recorded

at the Castle Mall site (see Chapter 4). Further discussion on pottery production is given in Chapters 4.VI and 13.

Site 11N: 20 Bedford Street

Fragments of a possible kiln were found on a building site in 1961.

Site 24N: 1 Bridewell Alley

Pottery recovered in 1971 included possible wasters from a nearby kiln.

Site 53N: 2–4 Bedford Street

Part of a kiln was discovered in 1964 during the construction of a service basement, immediately to the west of the line of the Great Cockey. The junction of the stoke pit and combustion chamber was revealed and a large quantity of wasters was found in the area around the kiln.

Site 59N: 8–10 Exchange Street

A possible kiln and wasters were found during internal building alterations in 1970.

Site 98N: 12–16 Pottergate

Possible kiln lining and wasters were found on a building site in 1963.

Site 101N: 2–4 Pottergate/Dove Street/Guildhall Hill

Possible wasters were found during building work.

Site 135N/429N: Shirehall Chambers

A waster pot was recovered in 1905. This Thetford type ware cooking pot is sufficiently distorted and split to preclude its ever having been used. Further evidence comes from recent work associated with refurbishment of Norwich Castle Museum, during which further wasters were recovered (Goffin in prep.c).

Site 163N: 21 Bedford Street

The fragmentary remains of a kiln and associated clay floor were found at 21 Bedford Street in 1973 during commercial redevelopment. Further finds were recovered in 1975.

Site 215N: 13–25 London Street

Large quantities of wasters were recovered during building work in 1962 and the 1970s. This was probably a waste heap from a nearby kiln. This assemblage has the highest percentage of roulette decorated vessels of all the surrounding ceramic groups. A small hoard of William I type 1 pennies (dated 1066–8) was recovered from the same site (see Chapter 5.1). These probably indicate an accidental loss and may have

come from an ash deposit containing Thetford-type ware waster pottery (Clough 1973).

Site 336N: 5 Lobster Lane

During redevelopment in 1977, a number of fragments of fired clay were found, later interpreted as the disturbed lining of a pottery kiln. A trench was subsequently excavated, revealing part of a kiln's stoke pit and combustion chamber. The kiln sealed two earlier pits, both containing wasters from an earlier kiln.

Site 424N: 27 Bedford Street

Following a fire which gutted Hovel's shop in 1978, refurbishment began in 1979 and numerous sherds of Thetford-type ware including wasters were recovered. Two kilns were later disturbed by underpinning work. A small-scale excavation by the NAU followed. This focused on the key-hole shaped kiln in the north-eastern corner of the site. Examination of the pottery indicated the earliest kiln of those in the surrounding area.

Site 479N: Bedford Street/Little London Street

A white polished flint axe was recovered in 1938.

Endnotes

1. A chronological précis of the antiquarian and historical accounts of the castle is given by Rye (1921, 1–4) and covers the period 1067–1910. A more detailed critique of early work on Norwich's origins, including information about the castle, is given by Carter (1978b, 175ff).
2. 'I hear that the Workmen employ'd in Levelling the Castle Ditches, a few Days ago found some human Bones that had long lain there; probably of some persons formerly Executed, and buried in that Place' (Norwich Gazette, Saturday 10 June 1738). The exact place at which the bones were found (and their current whereabouts) is unknown.
3. At this time, it was believed that a barbican lay outside the sequence of three ditches (cf. Wilkins 1796, pl.XXIII).
4. The SMR numbering system for the castle area is somewhat confusing as a number of pieces of work within the precinct have been allocated the number 429N, while others have been assigned their own number.
5. Although occasionally named 'La Rouen' in various sources including earlier versions of the Public House sign (Plate 11.7), the grammatically correct 'Le Rouen' is used throughout this report.
6. Neither observation has yet been entered into the county SMR.

3. The Natural Landscape and Early Activity

‘Very flat, Norfolk.’

N. Coward, *Private Lives*, Act 1

‘It will be seen on looking at a map of the city, that a bold hill rises at Bracondale and extends along the west side of the river, Ber Street (Berg or Hill Street) running along the crown of it, until at its northern extremity it rises still higher (and has probably been also cut and shaped by art) and then abruptly descends. The north and west sides descend somewhat precipitately ...’

H. Harrod, *Gleanings among the Castles and Convents of Norfolk*, 1857, 130

I. GEOLOGY AND TOPOGRAPHY OF CENTRAL NORWICH

Overview

(Fig.3.1)

Contrary to popular opinion Norfolk, and more particularly Norwich, are not flat. The city is dominated by two areas of high ground: Mousehold Heath to the north-east and the long stretch of the Ber Street ridge to the south. Norwich lies about 32km (20 miles) from the sea, at the lowest fording point of the River Wensum, just above its confluence with the River Yare (Fig.3.1). Alluvial flats extend to its east and were extensively used for grazing by the time of Domesday. Lighter soils lie to the north, while to the west and north-west the heavier and more fertile soils were probably densely wooded in antiquity (Campbell 1975, 1). Campbell notes that, until the 18th century, there was ‘a contrast between the largely pastoral agriculture of this ‘wood and pasture’ area and the largely arable agriculture of the lighter soils of the ‘corn and sheep’ area to the north’. The city developed on a series of gravel and chalk plateaux and ridges, surrounded by extensive areas of marsh along the river margins. The surface geology is of sand and gravel, forming well-drained terraces. The Norman castle was placed at the end of the Ber Street ridge, where the underlying geology is Beeston chalk overlain by Norwich crag (a Pleistocene deposit of sands, gravels and clay). Despite the masking effects of modern buildings, steep natural slopes still exist around the site to the north-east and west, with much of the southern area forming a relatively level plateau.

The Yarmouth Hutch map (dating to the late 16th century and held in Great Yarmouth Town Hall) presents an interpretation of east Norfolk in around 1000AD, depicting Norwich as a sea port adjacent to a large estuary. Blomefield considered that ‘the Sea (... or rather an extensive Arm of it) ... (came) ... hither [*i.e.* to the castle] ‘till the Conqueror’s Time, when the Sand at the Mouth of the River on which Yarmouth now stands ... grew fletter, and the Water did not cover it as heretofore it had done’ (Blomefield 1806, I, 2). Woodward maintained the argument that the ancient Yare and the Wensum would have been considerably wider than their modern counterparts, ‘making that part of the present City Liberty in which the Castrum is placed a peninsula ... to add to its security, the spot itself was in a corner, surrounded on all

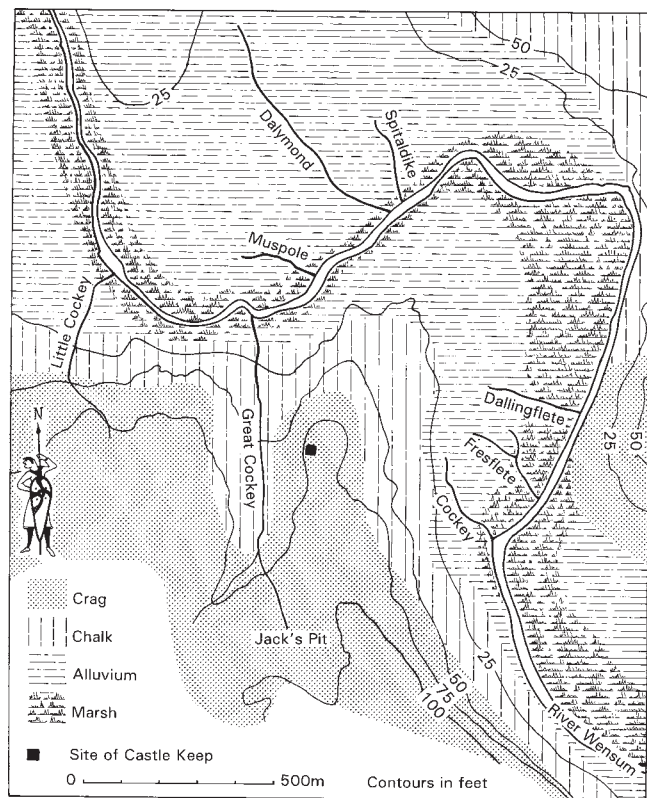


Figure 3.1 Contour and geological map of central Norwich and the castle site, showing the location of streams. Scale 1:20000

sides by water’ (1847, 9 and plate III; see Frontispiece). By the late 19th century, Woodward’s interpretation ‘had been questioned on geological grounds and there is good reason to suppose that by AD500 ... [the permanent level of Norfolk’s rivers] could not have been very different to the present, though the tidal changes were much more marked’ (Hudson 1896a, 3). Hudson postulated that Norwich and beyond would have been subject to flooding along the river margins (*op.cit.* 11).

The Great Cockey Stream

(Figs 3.1, 3.5, 3.6 and 5.57)

At least eight watercourses (known locally as ‘cockeys’) fed into the River Wensum within Norwich, five of them

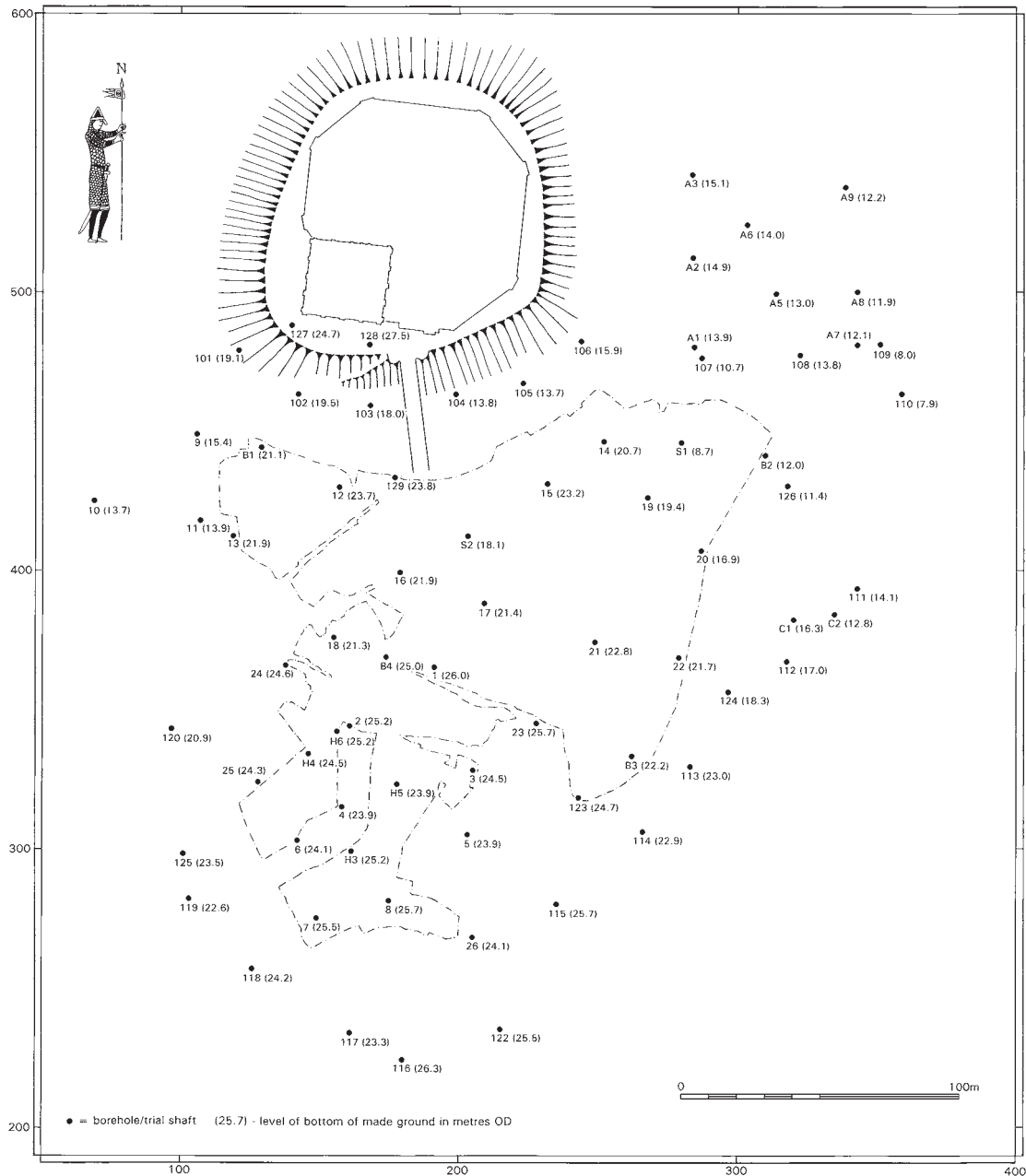


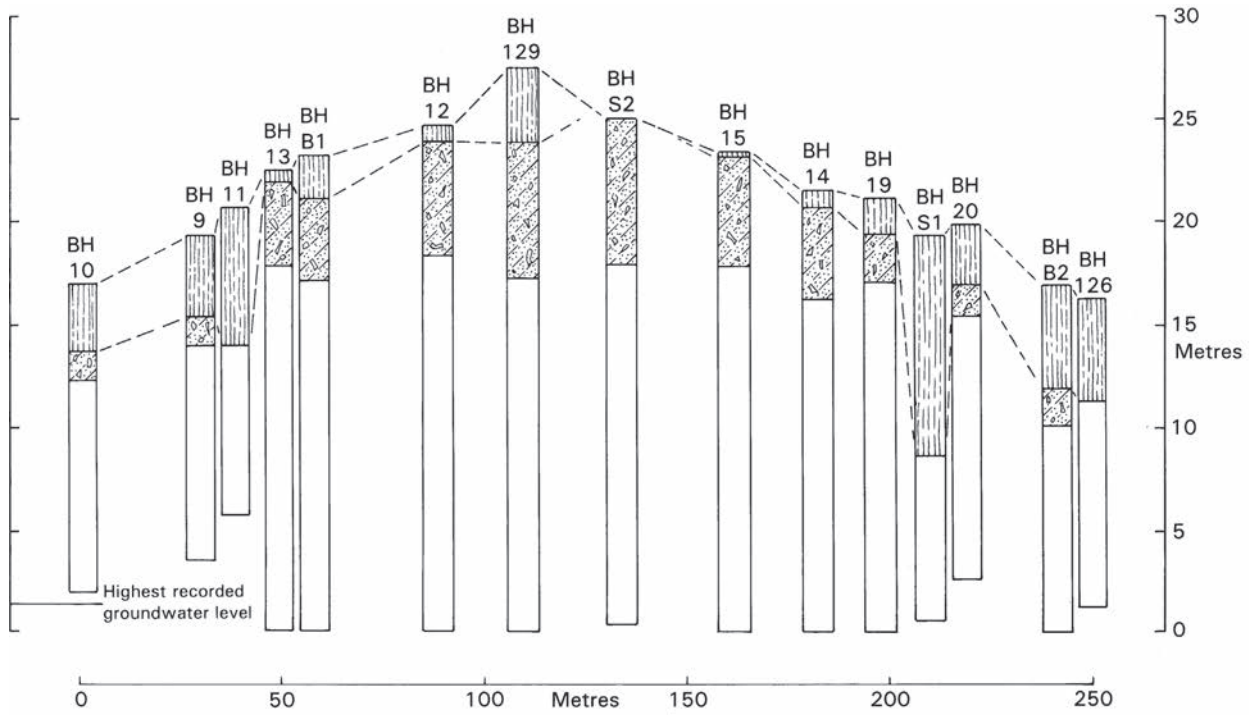
Figure 3.2 Numbered and lettered borehole locations (as used in the original survey). Scale 1:2500

lying in the southern part of the later city (Figs 3.1 and 3.5). The word ‘cockey’ is used as a generic term both in Norwich and East Anglia in general (Sandred and Lindström 1989, 6–7). Various origins for the name have been suggested, including the suggestion that the word may have a Scandinavian origin such as the Old Norse *kók* (‘gullet’) or Norwegian *kok* (‘throat’). In Norwich, the cockeys were used as sewers, industrially and for domestic water consumption and were eventually vaulted over.

The largest of the southern streams — the Great Cockey — is referred to in documentary sources from 1285 and perhaps as the *Kokeye* as early as 1277. It rose at ‘Jack’s pit’ in modern-day Surrey Street, running northwards to the Wensum in its own valley which later separated the castle precinct from the Norman market

place to the west, at the same time defining much of the eastern edge of the Jewish Quarter (south of Sadelgate; see further discussion in later chapters). Both Jack’s Pit and Needham Slough formed natural reservoirs (Rye 1921, 10). Needham Slough was a marshy area in the valley of the Great Cockey stream. ‘The slough (*OE sloh*) referred to the wide northern end of ... [St Stephen’s Plain], which was a deep, muddy place caused by ‘the conflux of the Water of several Kennels before the streets were paved with stone’ (Kirkpatrick 1889, 14). The local contours indicate that a tributary of this stream may indeed have run along St Stephen’s Street, joining the Great Cockey at its junction with Rampart Horse Street (Penn 1999b, 2).

Early work on the route of the Cockey and its influence on later urban development was undertaken by



-  Made ground
-  Norwich Crag
-  Upper Chalk

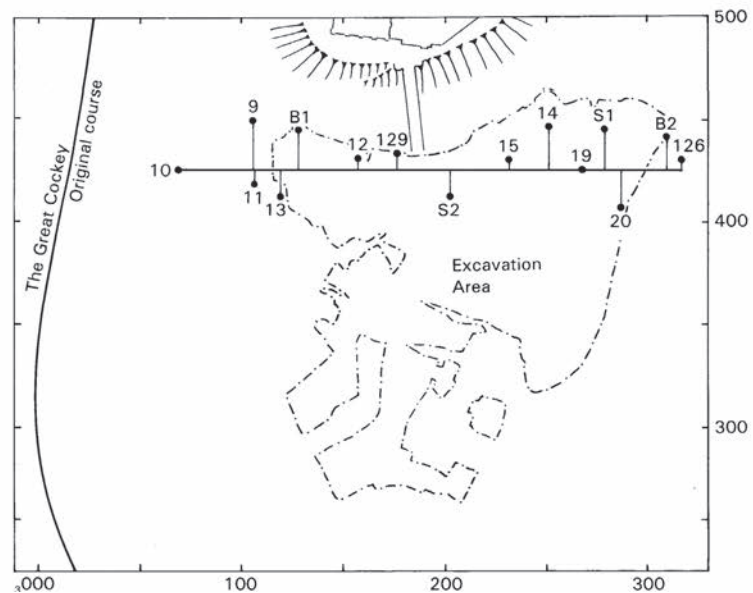


Figure 3.3 East-to-west borehole profile of the northern part of the Castle Mall site, showing the location of relevant boreholes in plan

antiquarians, particularly Harrod (1857, 130–133)¹ and Hudson (1896a, 7 and map 1; see Fig.3.6). Stephenson believed that the Cockey, along with the Ber Street ridge would have provided ‘an early line of fortification’ for the early borough (Stephenson 1933, 198). On its original course, the stream ran roughly down Westlegate, to the west of Red Lion Street, across the Royal Arcade, along Little London Street to the River Wensum (see associated SMR entries, Chapter 2 and Fig. 5.57). Harrod suggested that it joined another stream to the north, before meeting

the river (Harrod 1857, 130). Several different interpretations of its course have been argued (including Campbell 1975, map 2; Ayers 1994a, map 2) and stretches of it may have been diverted on more than one occasion.

Building on the work of Wilkins (1796), Woodward suggested that the cockey fed into the outermost castle ditch (1847, 10 and map; see discussion in Chapter 12, ‘Wet or Dry Ditches?’). Harrod subsequently corrected Wilkins’ positioning of this ditch which ‘was the outer bank of the ... stream’, basing his interpretation on 13th

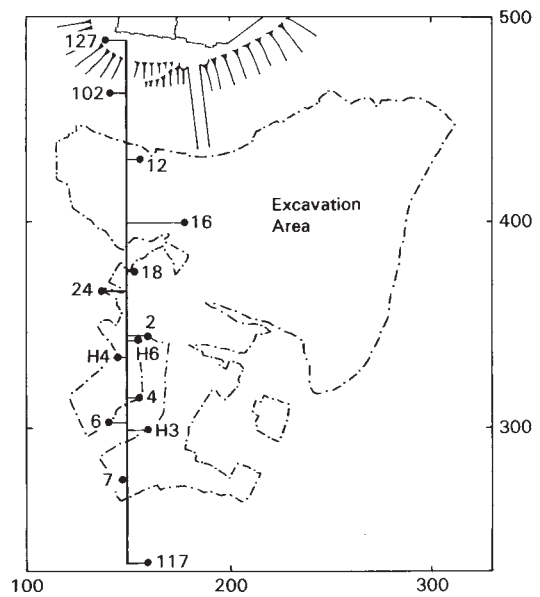
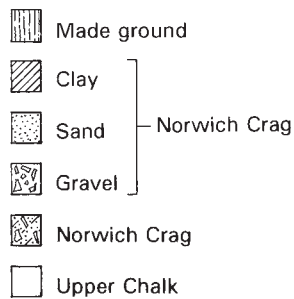
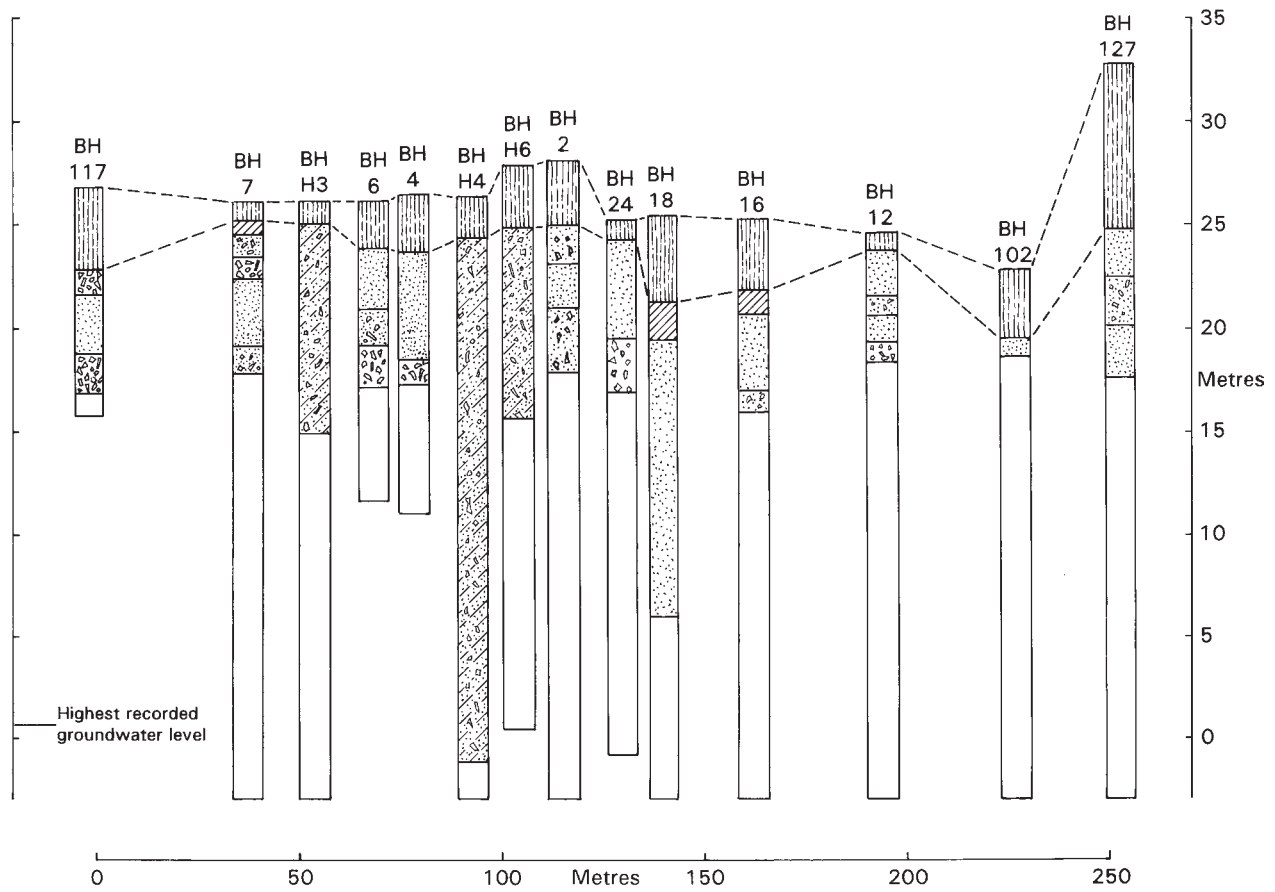


Figure 3.4 North-to-south borehole profile across the western part of the Castle Mall site, showing the location of relevant boreholes in plan

and 14th century references to its location (Harrod 1857, 131–132 and fn; see further discussion in Chapter 7.1 which indicates that parts of the stream were built over and therefore must have been culverted by 1285). On the basis of documentary evidence, Beecheno (MS 1908,

10–11 and map; see Plate 7.1) placed part of the stream further east than Harrod, although archaeological evidence now indicates that his mapped line reflects its later diversion and that Harrod's interpretation was a more accurate reflection of its natural course. Beecheno's

line indicates that the stream turned eastwards along the line of Royal Arcade. Campbell shows it continuing further north before turning, while Ayers continues it from the western side of Red Lion Street directly northwards along Back of the Inns and Castle Street (although this is at variance with the course indicated in his map 33, which is in turn based on Lipman's work on the Norwich Jewry; Lipman 1967). Harrod's research indicated that in the reign of Henry V (1413–1422), much of the stream had been arched over, from which time it was referred to as 'Cockey Lane' rather than 'the Common or King's Ditch called the Cockey' as had previously been the case (Harrod 1857, 131). The stream had certainly been diverted by the later 15th century (see further discussion in subsequent chapters).

Parts of the stream's course are reflected in the modern street pattern and such influences have been traced in several areas of Norwich (Ayers in prep.a; Emery 2007). It has been suggested that streams may have been diverted to form roadside drains (see Chapter 14) and this may have been the case here. Cockey Lane (now lost) appears to have followed the upper course of the Great Cockey: the same name was applied to London Street in the late 17th and 18th centuries (Sandred and Lindström 1989, 98, 116). The Great Cockey valley is still marked by an area of low ground between Castle Meadow/Castle Mall to the east and the Market Place/City Hall to the west. Although completely culverted by the 18th century, its outflow was until very recently still visible near St George's Bridge. Harrod noted that the culverted stream ran 'in some places thirteen feet beneath the pavement of the street' (Harrod 1857, 131).

The presence of the Cockey valley clearly influenced the pattern of local settlement, although there remains some uncertainty over its exact width and contours, as well as the extent of its associated marsh (the likely presence of which was indicated by several observations made by the Norwich Survey; Green and Roberts 1974, 64). Rye carried out preliminary investigations into the valley's surface contours (1921, 10 and accompanying figure), which indicate that the stream dropped from a level of *c.* 30.50m OD (100ft OD) at Jack's Pit to *c.* 22.55m OD (74ft OD) at Orford Hill, down to around 13.40m OD (44ft OD) at the point at which it ran into Little London Street (see Figs 2.2 and 5.57). Building works on Castle Street in 1963 were disrupted when the diverted section of the stream was hit. Excavations at 3–4 Haymarket (Site 201N) provide evidence for its original course. An archaeological excavation within the Royal Arcade (Site 758N; Pritchard 1989; Gaimster *et al* 1989, 203) also sought evidence for the Cockey valley, the stream running across the central part of the Arcade. Deposits up to 4m deep were encountered, perhaps infilling the valley. A dramatic slope down to the west was noted. Archaeological observations elsewhere along the line of the stream valley have been hampered by confusion over sitings which a) reflect the line of the stream valley and its subsequent infilling, b) relate to its diverted course and c) which link to a ditch (or ditches) running along the eastern side of the stream (see Fig.5.57). Relevant sites include minor works at Castle House (Site 543N) and 20 White Lion Street (Site 26474N), with thick dumping sequences infilling the upper part of a major feature being recorded on both sites. Further deposits of uncertain origin were recorded at Site 809N, again within

the Royal Arcade. Similar difficulties in identification are apparent in antiquarian observations: Harrod notes that Wilkins (1796, plate XXIII) confused the eastern bank of the stream with the outermost castle ditch (Harrod 1857, 131).

Undoubtedly, the stream would have provided a local water supply and no pre-Conquest wells were recorded on the Castle Mall site. The positioning of later wells, however, may suggest the presence of a spring line. Further consideration of the local water table and its influence on the positioning of wells is given in later chapters.

Other streams to the south of the Wensum included the Little Cockey to the west and the Dallingfleet and Fresflete to the east (Figs 3.1 and 3.5). At least one other stream ran off the Ber Street ridge eastwards to the river. The Little Cockey rose from a spring and its course down a steep slope is followed by present-day Willow Lane (Ayers in prep. a). This stream, at least in part, may have served a defensive role, perhaps related to the layout of the Anglo-Saxon town (see Chapter 4.VI). All of Norwich's streams were subsequently to effect its topographical development, in the formulation of boundaries (including parishes) and street alignment. Later developments of the Great Cockey and antiquarian/historian interpretations of its use are detailed throughout this report.

II. GEOLOGY AND TOPOGRAPHY OF THE SITE

(Figs 3.2–3.6)

The Ber Street Ridge

As has been noted, Norwich Castle is located on a spur of high ground; a chalk ridge running into the city from the south and commonly known as the Ber Street escarpment or ridge after the present day road which runs along it. Its dramatic height in relation to the local topography is demonstrated in both cartographic and pictorial sources. The first schematic cross-section of the castle's topography (relating to the postulated water table) was produced by Woodward (1847, plate X). An engineer's cross-section through the ridge (produced by Rowley in the 1960s; City Engineers section G324/1; Fig.6.2) indicates that the ridge stands at a level of *c.* 36.90m OD (121ft OD) at a high point on current Bracondale, falling to *c.* 27.70m OD (91ft OD) at the bottom of Ber Street. Rowley's section shows the ground rising slightly to a level of 92ft OD (28.00m OD) at the foot of the castle bridge, although the recent archaeological work indicates a level here of *c.* 25.90m OD, once modern overburden at a level of 27m OD had been removed. The ground drops to the north and east, towards the River Wensum, and to the west where it slopes less dramatically into the small valley of the Great Cockey stream. To the north, Rowley showed a drop in ground level to around 17m OD (56ft OD) at London Street, reaching a level of 10.40m OD (34ft OD) at St Andrew's Hall Plain. These slopes continue to influence the development of the urban core (Fig.3.5; Plates 3.1 and 3.2).

The ridge-top location of the Castle Mall site would have provided a relatively easily defensible location, with the Cockey stream to the west forming a natural

boundary that may have been utilised to define the extent of this part of the Late Saxon town (see Chapter 4.VI). The ridge would have been exposed to the elements and there is no archaeological evidence for the presence of tree cover. This high ground clearly became the focus

for considerable numbers of burial grounds during the Anglo-Saxon period (see Chapter 4).

Prior to redevelopment of the Castle Mall site, an extensive borehole² and trial shaft survey of the relevant area was conducted (Fig.3.2; see Chapter 1.II). This was used to produce a series of geological cross-sections of



Figure 3.5 Contour map of the Norwich area, showing the influence of the Great Cockey stream valley, the Ber Street ridge and the River Wensum. Scale 1:12500



Plate 3.1 The natural ground-slope to the west of the castle, viewed from the steps leading up from Davey Place (former King's Head Yard), which now runs between former Castle Fee Properties 4 and 5 linking Back of the Inns and modern Castle Meadow

the site, running along Ordnance Datum lines. These can be used to reconstruct local ground-slopes, demonstrating the relative levels of the layers of Norwich crag and the underlying chalk. The first section, running from east-to-west across the northern end of the site (grid line 308425N; Fig.3.3), reflects the slopes to the west and east. The borehole furthest to the west indicates the slope down towards the Cockey stream (BH 10, bottom of made ground at 13.70m OD). On the other side of castle-related ditches (the fills of which were recorded in BH 11), the top of Norwich crag within the later barbican area was recorded at 23.70m OD (BH 12). Further east, the ground begins to drop away fairly sharply, from a level of 23.20m OD (BH 15) to 12.00m OD (BH 2), just to the east of the outermost of the castle ditches.

The second section runs the length of the southern defences from north-to-south across the western side of the site (grid line 623150E; Fig.3.4), from the motte to the site boundary at Timberhill. This clearly demonstrates the impact of the castle earthworks on the local topography. The southernmost borehole (BH) lies to the south of the church of St John Timberhill (BH 117) and indicates the top of gravel at 23.30m OD. This rises to a level of 25.50m OD at the southern end of Area 1 (although natural deposits were recorded here *c.*0.80m higher during archaeological work, see Appendix 9). The natural ground level beneath the south bailey rampart (BH H6 and 2) was recorded at 25.20m OD (but was recorded at *c.*27.00m OD during the excavation). On the northern side of the barbican ditch another borehole (BH 12) recorded the top of natural sand at 23.70m OD. Beneath the motte, it was recorded at an upper level of 24.70m OD (BH 127; although immediately adjacent BH 128 recorded the base of made ground here as at 27.50m OD). Levels derived from archaeological investigations of the motte are given in Chapters 5 and 6.

The borehole survey also extended into the area of the north-east bailey, where the natural ground to the west lay at around 15.00m OD (BH A3), sloping down to the east to about 12.00m OD (BH A7-9). Excavations within the north-east bailey in 1979 indicate that the land



Plate 3.2 The natural ground-slope to the east of the castle, viewed from former Castle Fee Property 34 (now the Steam Packet public house) in the medieval Castle Meadow (north-east bailey). The premises of Anglia Television appear in the right of the photograph

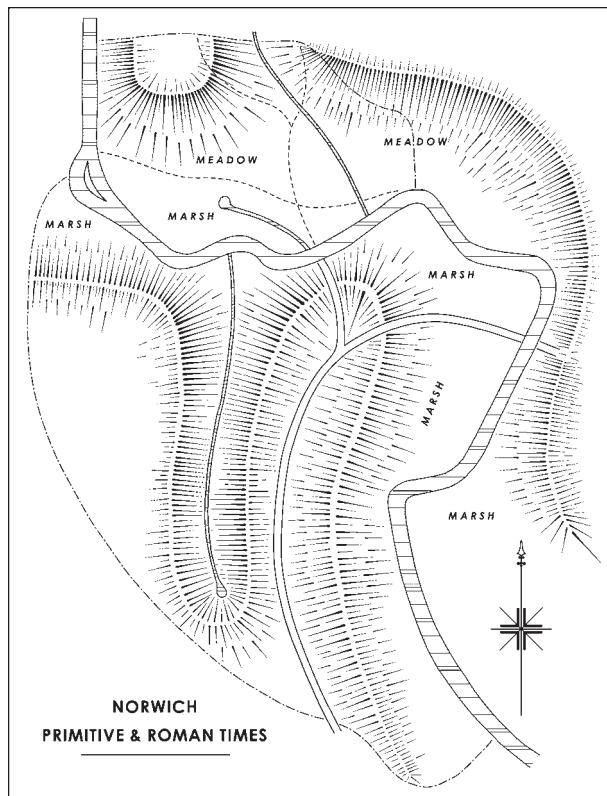


Figure 3.6 'Norwich in primitive and Roman times' (after Hudson 1896a, map I)

to the east of the castle mound may have been scarped deliberately some time after the Conquest, effectively increasing the height of land to the west (Ayers 1985, 21). Sloping surfaces recorded within the bailey included a possible buried ground surface and similar observations were made across the Castle Mall site.

Further details of the natural features and deposits recorded at both the Castle Mall and Golden Ball Street sites are given in Appendix 10. Further discussion of the issue of landscaping in connection with the construction of the castle, as well as the later impact of quarrying and landscaping relating to the construction of the Cattle Market, is given elsewhere in this report.

Swallow Holes

One of the main engineering problems encountered during redevelopment of the Castle Mall site was the presence of fissures or cavities in the natural chalk (known locally as swallow holes or 'solution features'; see Chapter 1.II). During the archaeological excavation, eight of these natural swallow holes were recorded. Numerous others were observed on exposure of the natural chalk during ground-reduction and it is likely that many more went unrecorded or unobserved during the excavation. These features are a common occurrence in Norwich and their origin has been summarised as follows; 'chalk is easily soluble in rain water containing carbon dioxide, and solution hollows are formed, following lines of weakness, and along joints, often vertical. These hollows are locally termed *pipes*. The overlying later deposits may collapse

into the pipe, particularly during periods of heavy rainfall, so that the chalk proves a treacherous foundation for buildings. Where the chalk level approaches the land surface, saucer-shaped hollows, often of considerable size, are thus formed' (Sainty 1951, 161).

Many of the recorded sink holes were excessively deep, extending beyond the range of the auger (*i.e.* over 4m) and contained redeposited/collapsed natural sands. In one place (Area 45) the features appeared to conform to a regular alignment, perhaps the result of an underlying fissure in the chalk. Another possible natural solution feature lay beneath the north-west corner of a subsequent sunken-featured building (Building 11, Chapter 4) and would have caused structural problems.

In the northern part of Area 9, the interface between the chalk and crag was marked by a small number of solution holes up to 1.5m wide (recorded within a large stepped machine trench through the barbican ditch, Chapter 7). These appeared to be vertical-sided, although only the top lip was visible, and were filled with natural silt. In one, the gravel crag lined the side of the feature. Other solution features were also visible in the same area at a lower depth. In profile, these were almost bottle-shaped, with the sides undercutting the chalk, one example actually occurring within the chalk. In only one case does a solution feature appear to have been of considerable size and could easily have been mistaken for a ditch.

Some of the features contained prehistoric flints and pottery, along with a few very abraded animal bones. The deliberate deposition of artefacts into such natural holes is discussed below.

III. PREHISTORIC AND ROMAN

Prehistoric

by Elizabeth Shepherd Popescu and Trevor Ashwin

Prehistoric occupation in central Norwich can be predicted on the basis of factors such as the local geology and topography. The area is the focus of river valleys forming natural routeways, with light, free-draining soils on hillsides and plentiful wetland food resources in the valley bottoms. There is abundant evidence for Late Upper Palaeolithic/Mesolithic occupation from the Wensum valley in particular. Neolithic and Bronze Age ceremonial sites lie immediately to the south-east of the modern city, such as Arminghall Henge and the barrows excavated during construction of the Norwich Southern Bypass (Ashwin and Bates 2000). Numerous Iron Age occupation sites were also recorded during construction of the new city bypass. The Southern Bypass excavations may provide an analogue for the prehistoric landscape on the hills of Norwich itself: Neolithic and Bronze Age barrow groups are located on hilltops and valley-edge 'false crests' which would have provided skylines from the valley floor. There is also evidence for widespread but ephemeral Bronze Age occupation (in the form of pit groups) probably representing constantly shifting settlement in the 3rd and 2nd millennia BC. Early to Middle Iron Age sites are concentrated on hilltops and south-facing slopes. The location of the Castle Mall site, on an area of well-drained sandy high ground, is therefore one that might have been expected to have attracted

prehistoric settlement. In this context, the small number of prehistoric artefacts recovered from the site is striking, particularly in consideration of the very large size of the excavated area. It is of course possible that evidence for prehistoric activity was removed during later terracing, scarping and ditch excavation.

Many antiquarians suggested a prehistoric origin for the Norwich Castle's earthworks, the earliest being Worcestre writing in the 15th century (see Chapter 2). Five Iron Age 'hillforts' have been recorded in Norfolk and the existence of a sixth was once proposed as lying beneath Norwich's castle. The known examples are from the central and western part of the county at Thetford Castle, Narborough, South Creake, Warham and Holkham (Davies *et al* 1992). Of these, only South Creake is classifiable as a true hillfort. The others are located on valley sides (Warham), placed to supervise river crossings (Thetford and Narborough) or are marshland 'bolt-holes' (Holkham). Thetford Castle, constructed by Roger Bigod or Ralph Guader soon after the Conquest, made use of the Iron Age defences (Davies *et al* 1992, 1) which took the form of an enclosure cutting off the end of a meander loop in the River Thet. This was remodelled to form the Norman castle bailey (*op. cit.*, 29 and fig.27).

Until relatively recently, the existence of Iron Age defences at Norwich Castle continued to be postulated, despite the fact that this interpretation was based on slight circumstantial evidence (summarised by Green and Roberts in Carter *et al* 1974, 64 and fig.7; see Fig.12.5.F), reflecting a contemporary trend in archaeological thinking. The presence of an early defensive circuit at the northern end of the Ber Street spur was suggested as one explanation for the road alignments to the north of the castle which, it was implied, were defined by the presence of ditches. One reason suggested by Green and Roberts for the location of such a 'hillfort' in this position was sea-level change; 'During the late Iron Age the sea level was probably at least ten feet higher ... than it was in the late 11th/12th centuries'. This, it was suggested would have meant that Castle Meadow marked the edge of an area of dry land, the end of the Ber Street ridge providing an obvious location for such a stronghold (*ibid*). The Castle Mall excavations provide no evidence to support this hypothesis. Further discussion on the issue of sea level change is given in Section I above.

Little artefactual evidence for prehistoric activity at Norwich Castle and the surrounding area has been recovered. A barbed and tanged arrowhead of probable Bronze Age date (*c.*2600 to 1800 cal BC; Kinnes *et al* 1991) came from the north-east bailey (Ayers 1985, 33, fig.29), having been found in the fill of a pit interpreted as a soakaway for the font of a timber church. Polished flint axes were found at King Street (Site 254N) and Bedford Street/Little London Street (479N), a few other sites producing low numbers of worked flints and occasional sherds of pottery. Larger quantities of finds, along with Bronze Age and Iron Age features including probable quarries, have recently been excavated at the new library site (now named The Forum; Site 26437N) in the market place to the west of the castle (Percival and Hutcheson, in prep.). These include a Mesolithic axe, struck flint and 13 sherds of Iron Age pottery, along with an articulated pig skeleton of possible Bronze Age date. This raised, well-drained area may have been taken into cultivation

during the Bronze Age. Fields had certainly been laid out here by the Iron Age.

A few of the prehistoric artefacts from the Castle Mall site were recovered from swallow holes, a similar feature on the new library site also contained large quantities of struck flint. Such occurrences are well-documented (Healy 1986, 57–58; Ashwin and Bates 2000) and, although some may be mere coincidence, others (such as the complete Beaker vessels recovered from Eaton Heath) may have been deliberately placed. This is interpreted as a religious and/or superstitious response to the opening up of new holes, perhaps linked to agricultural change during the Neolithic period.

The Finds

Worked Flint

by John Wymer

A total of sixteen worked flint objects was recovered from the Castle Mall site, the low frequency reflecting the Anglo-Saxon to modern date of the features excavated. With one exception, it is clear that the flint artefacts are redeposited, apart from some undiagnostic flakes which could be debitage from the knapping of flint for architectural purposes. Those of medieval/post-medieval date are described further in later chapters. Those considered to be prehistoric may have been brought in with other transported material by accident, but could equally relate to activity on the actual site or nearby. The presence of a few micro-blades and blades which almost certainly are products of Mesolithic or Neolithic knapping gives some support for the latter. A sandy hilltop such as the Castle Mall site would be a typical place to find traces of Mesolithic activity and, as noted, such flints would fit in well with this period. An edge-polished knife (SF6524, not illus.) is the only diagnostic object of any one prehistoric period (Neolithic). This was made from a flake from a flint axe, traces of polish surviving. A small flake with a hinge fracture (SF6867, not illus.) was recovered from a swallow hole in Area 9 and two cortical flakes from another swallow hole in Area 45 (SF6502, not illus.).

A notable concentration of worked flint (28 struck flints and 10 burnt fragments) came from the Golden Ball Street site, although these have not been examined by a specialist.

Pottery

by Sarah Percival

Only two sherds of miscellaneous prehistoric pottery (8g) were recovered from the site, both from natural features in Area 9. As noted above, these shaft-like solution features or swallow holes often contain examples of Beaker or Bronze Age pottery (Ashwin and Bates 2000, 15). The sherds found at Castle Mall may, however, have become incorporated into soil slumping into the feature from the surface.

The grog and quartz-sand tempered sherd has a flat, inward sloping top and appears to be from a vessel with a straight of slightly flared neck. It is decorated with horizontal bands of fingernail impressions. The form and decorative style of the sherd suggest that it dates from the end of the Beaker period, which spans a period from approximately 2600–1800 cal BC (Kinnes *et al* 1991).

Roman

(Fig.4.1)

The Roman town of *Venta Icenorum* (now Caistor St Edmund), founded in the 1st century AD, lies some 5km south of Norwich. Early antiquarians supposed Norwich Castle's defences to have originated in the ancient British or Roman periods (the first being William Worcestere and Henry Caius, reworked by Alexander Neville and published in 1575)³. It was first suggested here that Norwich was itself *Venta Icenorum*, an hypothesis that was to be propounded by antiquarians until the 19th century: 'the immense natural strength of position anciently possessed by Norwich, surrounded as it was on three sides by an arm of the sea, ... has induced a general belief that here was the *Venta Icenorum*' (Beecheno 1888, 2). While refuting the interpretation of Norwich as *Venta*, Hartshorne considered that 'the importance of holding such a position [*i.e.* as that on which Norwich Castle now stands] was hardly likely to escape the eye of the Roman looking out from his stronghold at Caister [*sic*; referring to Caister-on-Sea]' (1889, 261). Further consideration of antiquarian hypotheses on the origins of the castle and its defences is given in Chapter 12.V.

Antiquarians postulated an early road leading from *Venta* northwards to run directly towards the castle motte (*e.g.* Wilkins 1796, plate XII). The suggestion of a road here, lying actually beneath the motte and leading northwards, was expounded by later authors (Hudson 1896a, 19). Hudson suggested that the road continued onto a 'fan-shaped piece of more level ground, not much elevated above the river' (now Tombland; Hudson 1896a, 10) at the northern end of the ridge, where it bifurcated eastwards towards to Bishop's Bridge and northwestwards towards Fye Bridge (Hudson 1896a, 19 and map 1). In 1784, what were interpreted as the remains of such a Roman road beneath the castle mound were located during excavations for a well in the basement of the donjon. When workmen 'came to the level of the ground without the ditches [they] found a regular and beaten footpath used before the hill was thrown up' (Fenn's notes in Gough 1789⁴). The possibility that this was a later routeway is considered further in Chapters 4 and 5. Hudson suggested, on the basis of the 'Street' element, that Ber Street was of Roman origin (Hudson 1896a, 16–18). Further comments on the street name are given in Chapter 4.

Earlier ideas were developed by members of the Norwich Survey during the 1960s and 1970s, with the suggestion of the presence of an east-to-west road, mirroring the line of the river and running towards Thorpe. The presence of either one or two early north-to-south roads, which would have bisected the east-to-west route, had long been suggested, although there is no archaeological evidence for the origin of either at this date (see below). The first of these routes corresponds to the southern part of modern Ber Street, altering the antiquarian interpretation of its northerly route (Fig.4.1). The revised route would take it to the south-west of the Castle Mall site down Timberhill, across the valley of the Cockey stream to run north-westwards, crossing the east-to-west road just south of the River Wensum to continue on its northern bank on the line of Oak Street (Carter 1978b, fig. 8A). This interpretation remains current (Ayers 1994a, fig.8; Ayers in prep. a), although is a matter

for further study. Excavations across the line of Ber Street are limited. Rainbird Clarke examined a cross-section of the road in the 1940s, revealing an undated metalled surface across its entire modern width (Jope 1952, 292). Work by the NAU along Timberhill (Site 26401N; Fig.2.2) revealed further undated road surfaces, although indicated that these lay along a slightly different line than their more recent counterparts (see Chapter 2.III). It has recently been suggested that Ber Street may in fact have been a planned, post-Conquest development, although the evidence from Castle Mall appears to confirm that it was in place at the time of the Conquest (see Chapter 4.VI). Only 8 sherds of Roman pottery came from the recent excavations at The Forum (26437N; Percival and Hutcheson, in prep.), with a larger assemblage from Castle Mall itself (see below). Significant new evidence in the form of a system of Roman ditches relating to a possible farmstead has recently been discovered in Chapelfield Road (Whitmore pers comm; Site 26527N).

The second proposed north-to-south road is King Street, which runs along the base of the eastern side of the Ber Street ridge, between it and the river: 'Conisford, Konigsforth, or King Street, is clearly one of the most ancient ways in the city, if not the most ancient' (Harrod 1857, 142). Excavations by the Norwich Survey in 1963–4 across the line of the street to the south of St Etheldreda's church, recorded twenty layers of surfacing dating to the 13th century, although the presence of earlier surfaces was not discounted (Carter *et al* 1974, 65). Despite extensive recent excavations by the NAU alongside the southern stretch of King Street, no Roman features have been recorded and only a limited range of Roman objects and pottery has come from the area. Fourteen interventions of various type have been conducted along King Street by the NAU in recent years, yielding a total of only 7 sherds of Roman pottery, including one which had been fashioned for re-use as a spindle whorl (from 70 King Street; Site 26452N; Shelley and Smith 2001). Another Roman spindle whorl came from 51–53 King Street (Site 26460N; Shelley and Brennand, forthcoming). Further north, at the site of Norwich Greyfriars, recent work on the eastern side of King Street has yielded 69 sherds of Roman pottery and a shale bracelet (Emery 2007).

There is thus still no conclusive evidence for the position of either of these two proposed Roman routes, although the corpus of artefactual material continues to grow. In topographical terms, a route along King Street is perhaps the most likely, although the newly discovered settlement further west may support the argument for the Ber Street route. It has often been suggested that the presence of Roman material across the city results from robbing and/or re-use, as well as agricultural activity (*i.e.* manuring processes). Re-used Roman building materials, for example, are commonplace both in built structures and archaeological deposits.

The Finds

Pottery

by Alice Lyons

A small assemblage of 57 sherds of Roman pottery was recovered from the Castle Mall site (0.489kg). The fabrics present are quantified in Table 3.1 and comprise a range of coarse and fine wares spanning the 1st to 4th centuries AD. The majority of this material was undiagnostic body

<i>Fabric</i>	<i>Qty</i>	<i>Wt</i>
Misc. Roman wares	36	0.304
Roman grey ware	16	0.131
Roman oxidised ware	2	0.047
Roman colour coated wares	2	0.006
Samian	1	0.001
Total	57	0.489

Table 3.1 Roman pottery

sherds. Forms were not collated for the purposes of this report, but are recorded in the project archive.

Although Norwich itself was not a Roman settlement, Romano-British pottery has been recovered across the whole area covered by the modern city. Recent work on its distribution in relation to the proposed early road layout indicates that find spots in Late Saxon and medieval deposits are so frequent that there is no discernible depositional pattern.

Coins

by John Davies

Four late Roman issues, spanning the period *c.*260–378AD, were found residually at Castle Mall. Most of the examples found during excavations in the city tend to be common late Roman bronze issues, as are regularly found on sites of Roman activity. Small numbers of such coins regularly appear on excavations in Norwich (Williams 1987c, 63; Margeson 1993; 206–8; Gregory and Metcalf 1994 13. Another example has recently been recovered from excavations at Norwich Cathedral Refectory; Adrian Popescu pers. comm.). Several Roman coins were recovered from Castle House (Site 543N) to the immediate west of the castle and other alleged examples were recovered from the top of the mound (Site 518N). These, together with similar finds from the Castle Mall site, may have been deposited or redeposited either as rubbish or stray finds, some perhaps being lost by travellers along the postulated Roman roads.

SF406 Deified Claudius II. Antoninianus AD 270
Obv: [DIVO CLAVDIO]
Rev: CONS[ECRATIO]: altar
RIC V: 261. Wt: 1.50g
20149, fill of outer crescentic ditch 20129, Period 2.2, Group 2/2

SF1011 House of Valentinian. AE3.

AD 364–78
Obv: and Rev: Illegible
Wt: 0.79g
unstratified

SF1025 Illegible. AE3

AD 260–378
Wt: 0.99g
20037, pit 20037, Period 2.1, Group 2/5

SF5764 Constantine I. Irregular follis

AD 341–6
Obv: CONSTANTINOPOLIS
Rev: Victory on prow
Diam: 14mm. Wt: 1.02g.
40453, barbican ditch fill, Period 6.2, Group 2/32

Ceramic Building Material

by Irena Lentowicz

As noted above, fragments of Roman building materials are recovered throughout the city. Roman tile accounted for almost 3% of the Castle Mall ceramic building material assemblage (6.774kg). Five individual fabrics were recorded and these can be paralleled with Drury types R1 and R3. The assemblage is dominated by Type R1 which are bonding tiles/tegula; Fabrics 120, 127, 135 and 138 produced 5.697kg accounting for 84.1% of the Roman material. One fragment of Fabric 138 tile was recorded as an imbrex tile, but the specific imbrex tile type R3 (Fabric 132) produced 1.046kg, making up the remaining 15.4% of the Roman assemblage. The occurrence of Roman tile is often interpreted as a residual element imported as a result of agricultural activity; however, as much of the material is made up of bonding tile, Drury interprets their presence as more likely to result from re-use as hearth pads/surrounds or as rubble for building construction (1993, 163). *Venta Icenorum* (Caistor St Edmund) to the south is an obvious source. Roman farmsteads to the west and north of the city may also have been robbed.

Endnotes

1. Harrod's work on documentary evidence for the position of the Cockey and its influence on the development of parish boundaries is detailed elsewhere in this report.
2. The borehole survey logs the base of made ground, although there are some variations between the levels recorded with those observed during the archaeological excavations. The differences in relative levels recorded in the boreholes, however, provide a broad base for the understanding of the local terrain.
3. For a summary of early interpretations, see Carter 1978b, 175–177.
4. Sir John Fenn's annotated copy of the Norfolk section of Gough's translation of Camden's *Britannia* is held by the Norfolk and Norwich Archaeological Society.

4. The Anglo-Saxon Period (5th century to c.1067–70)

‘And the same year [866] a great heathen raiding-army came to the land of the English and took winter-quarters from the East Anglians and were provided with horses there, and they (*i.e.* the East Angles) made peace with them’

Anglo-Saxon Chronicle (E) *sub anno* 866; trans. M. Swanton 2000, 69

‘Gracious giver of mighty gifts, you made corslets red in Norwich. You will lose your life before your courage fails.’

?c.1016, from the *Knútsdrápa*; D. Whitelock, *English Historical Documents c.500–1042*, 1955, 308

I. ARCHAEOLOGICAL, HISTORICAL AND DOCUMENTARY BACKGROUND

Early Saxon (5th century to c.650)

(Fig.4.1)

The influx of new peoples into East Anglia in the centuries following the Roman withdrawal from Britain has left little archaeological trace in the area that was to become Norwich. A 5th- to 6th-century cremation and inhumation cemetery was discovered to the north of the River Wensum at Eade Road in the late 19th century (Site 165N; Fig.4.1). Just to the north of the castle, part of a cremation urn was found adjacent to the church of St Michael at Plea (Site 425N) and Early Saxon pottery was also recovered from the northern side of the Cathedral Close (Sites 44, 46 and 280N). More recent discoveries are detailed in Chapter 4.VI. This lack of evidence at the time excavation began meant that there was no expectation of Early Saxon remains at the Castle Mall site.

Middle Saxon (c.650–c.850)

(Fig.4.1)

Two hypotheses have been put forward for the urban origins of Norwich. The first suggests the ‘nucleation’ of five small discrete settlements; *Westwick*, *Coslany*, *Conesford*, *Needham* and *Northwic* (Fig.4.1). These were largely identified by place name evidence (summarised by Carter 1978b), tentatively supported by scattered archaeological finds such as 8th- to 9th-century material from the Cathedral Close. Green suggested that *Needham*, thought to lie beneath the later castle defences, was the largest of these settlements, all of which probably consisted of no more than a few homesteads (Green and Young 1981, 10).¹ It was suggested that, by the mid 9th century, there would have been a local market — perhaps even at *Needham*. The place name may suggest a ‘poor meadow’ or ‘poor homestead’. Sandred and Lindström interpret it as ‘the needy or poor homestead’; *v. nēd* (*Angl*), *nīed* (*WSax*) and *hām* (1989, 140–141). The same name occurs several times in East Anglia, as well as in Cambridgeshire and Derbyshire. Different derivations have been offered. Kirkpatrick suggested an origin in the Old English *nēat*

‘cattle’ and *hām* (Kirkpatrick 1889, 14), leading Atkin to suggest an emphasis on stock-rearing in the area (2002a, 74). Carter, suggesting that *Needham* and *Cowholm* could perhaps be equated, took the second element to derive from the Old English *hamm* or ‘water-meadow’ (Carter 1978b, 199). Sandred and Lindström accept that the latter interpretation is possible, the name then perhaps meaning ‘the poor meadow’ (1989, 140). The earliest forms of the Norwich place name refer to the parish and sub-leet of St Stephen (on the western side of the postulated Roman road, now Ber Street), St Stephen’s Street itself being referred to as *vicus de Needham* throughout the medieval period. Needham Slough was a marshy area in the valley of the Great Cockey stream, at the point at which it may have been joined by a smaller stream running along the line of what is now St Stephen’s Street (see Chapter 3.I).

During the 1970s, the hypothesis of a Middle Saxon settlement in the castle area appeared to be supported by a series of sites surrounding its precinct which produced Ipswich-type ware (Sites 16, 76, 88, 54, 146 and 262; Carter 1978b, figs 5 and 8a). It was suggested that ‘Middle Saxon occupation was largely restricted to the street frontages of Ber Street and King Street and that possibly only in the 11th century did settlement spread along cross-streets such as those further south’ (Carter 1978b, 198). At the time that the Castle Mall excavation began, it was still anticipated that evidence for Middle Saxon *Needham* would be forthcoming (see Chapter 1.VII). The interpretation of its scale was, however, later questioned when a re-evaluation of the evidence recognised that the plot of findspots of the fifteen pottery sherds in question had produced an over-impressive plan (Atkin 1993, 131). Indeed, ‘the problems caused by movement of soil and rubbish around the city really make nonsense of attempts to use these types of distribution maps in urban settings’ (Atkin and Evans 2002, 236).

The second hypothesis for Norwich’s origins proposes a more traditional form of early settlement with colonisation of river margins in ribbon development, although not necessarily precluding the dominance of one area (Ayers 1994a, 24). This suggestion is again based largely on pottery distribution and place name evidence, although currently has little direct evidence to support it. Middle Saxon pottery and other finds occur well away from the river (for instance at the new Norwich library site:

Date	Event
c.720	probable presence of small villages on both banks of the River Wensum
c.850	probable dominance of one settlement — <i>Northwic</i>
c.870–917	probable Danish occupation; possible construction of defensive earthwork on the north bank of the River Wensum, perhaps later re-used to for a 10th-century burh
917	re-conquest of East Anglia by Edward the Elder. Probable use of Norwich as an administrative centre
924–939	reign of Aethelstan. Coins minted in Norwich
c.980	first documentary reference to Norwich (in <i>Liber Eliensis</i>)
1004	sacking of Norwich by the Danes
1066	Domesday Book entry suggests Norwich had at least 25 churches as well as 1,320 burgesses

Table 4.1 Key events: Anglo-Saxon

The Forum; Site 26437N) and — on balance — the first suggestion remains the most likely at time of writing.

Analysis of the early growth of Norwich (and Danish influence in particular; see below) continues to be recognised as an important research area (Ayers 1997, 59). In regional terms, the limited evidence for its Middle Saxon origins contrasts dramatically with Ipswich where settlement was established in the early 7th century and grew rapidly in the 9th century when a new gridded street system was established (Wade 1993, 145).

Viking and Late Saxon (c.850 to c.1067–70)

(Figs 4.2 and 12.2)

Although Vikings had begun to raid England's coast in the latter years of the 8th century, the Danes first arrived in East Anglia in 866: 'And the same year a great heathen raiding-army came to the land of the English and took winter-quarters from the East Anglians and were provided with horses there, and they (*i.e.* the East Angles) made peace with them' (ASC (E) *sub anno* 866; Swanton 2000, 69). The Danes had effectively conquered the region by 870, after the defeat and murder of Edmund, the East Anglian king and from the late 9th century, the county was part of the Danelaw.

Norwich's emergence as a town may well be rooted in the probable period of Danish occupation c.870–c.917 and in the Anglo-Scandinavian period that followed re-conquest by the West Saxon kings. To date, however, the archaeological evidence is limited and 'the fancy that the city first became important as a Danish base has certain charms, and accords with what evidence there is, but the positive evidence in favour of this view would hang no dog' (Campbell 1975, 7). Although a defended burh may have been established on the north bank of the River Wensum in the late 9th to early 10th century, the town's major period of growth appears to lie in the 10th century when it acquired a mint. Despite the fact that the region was re-conquered by Edward the Elder in 917, Viking raids began again in the 990s. The Anglo-Saxon Chronicle states that in 1004 King Swein of Denmark 'came with his fleet to Norwich, and completely ravaged and burnt the town' (ASC (E) and (F) *sub anno* 1004, Swanton 2000, 134–135), the event also being described by Henry of Huntingdon (HA, Greenway 1996, 343). In c.1016 a battle at Norwich in which Cnut was involved may be the same as that described in a poem in praise of

the king: the *Knútsdrápa* (above) (Whitelock 1955, 308; Carter 1978b, 202, fn 7).

At both Norwich and Ipswich, defences of Danish origin may have been reused to form 10th-century burhs (Ayers 1997, 59). Several Norwich churches have Scandinavian-influenced dedications, including St Olaf (Hudson 1896a, 27). Further evidence comes from street names with Danish formations such as those ending in 'gate', derived from the Old Norse *gata* or *street* (Hudson 1896a, 27; Campbell 1975, 5; examples include Fishergate and Pottergate): many of these routes, however, were founded long after the period of Danish occupation. Several lost street names also had Scandinavian elements, including examples along the Ber Street ridge to the south of the excavation site. These included 'Holgate' or 'street in the Hollow' (now Mariner's Lane) and 'Skygate' or *skeidgata* meaning 'way on the ridge' (now Horn's Lane; Margeson 1997, 27; Sandred and Lindström 1989, 112, 118). Both streets run eastwards from Ber Street, off the edge of the ridge (Penn 2000b, fig.1).

Despite its evident importance, only five documentary references were made to Norwich before the Norman Conquest, including those already noted above. Another appears in the *Liber Eliensis* (Book of Ely) in the 980s when the Abbot of Ely was purchasing land in Cambridge and was assured 'that Cambridge and Norwich and Ipswich and Thetford were of such liberty and dignity that if anyone bought land there he did not need witnesses' (Blake 1962, 100). This implies that Norwich had acquired considerable status by the late 10th century. The other two documents are wills (Campbell 1975, 3).

This lack of references is curious, given the probable size of Norwich's population at the time of the Conquest. Domesday Book (1086) records a figure of between 1,320 and 1,518 inhabitants, suggesting a real figure of between five and ten thousand. Domesday also records between forty-nine and fifty-four churches and chapels, while sixty-one churches appear in 13th century records, excluding a few destroyed at the Conquest (Campbell 1975, 3). Of these, a substantial number may have been early. Domesday Book itself named seven churches and a pre-Conquest will another (one of the All Saints; St Martin (?at Palace); St Michael, Tombland; Holy Trinity; St Laurence; SS Simon and Jude; St Sepulchre. The will mentions a St Mary and Christ Church). Architectural evidence, excavation and dedications suggest many more that may have had a pre-Conquest origin and the prox-

imity of churches to each other demonstrates the density of settlement. The King, the earl and the bishop, as well as the abbots of Bury and Ely, all held land in Norwich before the Conquest.

Domesday Book describes the settlement of the relevant area of Norwich prior to the construction of the

castle (see Chapter 5.I) and indicates a total of 98 properties on the selected site, suggesting that the castle was built upon a fairly densely settled part of the pre-Conquest town (Fig.4.2; although see further comments in Chapter 4.VI). The phrase 'in the borough' may imply that these properties lay within an earlier defensive enclosure (see

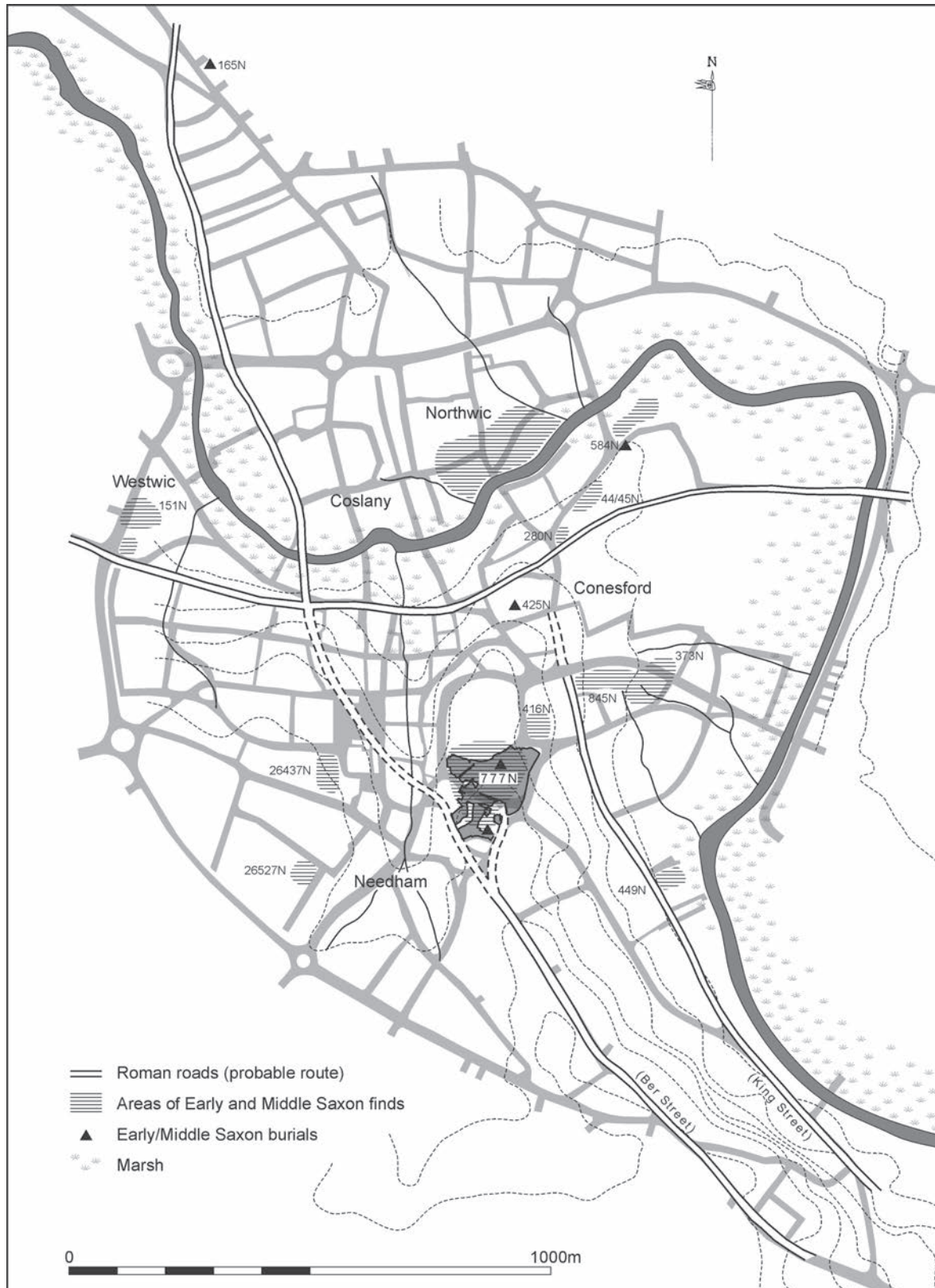


Figure 4.1 Map of Middle Saxon Norwich, showing the possible major routes and the location of Early and Middle Saxon burials. Scale 1:12500

Chapter 4.VI). Domesday Book also describes part of Norwich as 'utterly devastated .. partly because of fires' (Brown 1984, 117b, (1.63)), although this is more likely to be a reference to the results of Earl Ralph's rebellion of 1075 than the impact of the Conquest (Carter 1973, 446; see Chapter 5.I).

During the Late Saxon period, Norwich had a large and densely populated hinterland. The Domesday survey highlights the fact that, although Norfolk had the largest number of inhabitants in the English counties, towns were few (Campbell 1975, 6). Campbell suggests that this situation had a political origin: in contrast to many

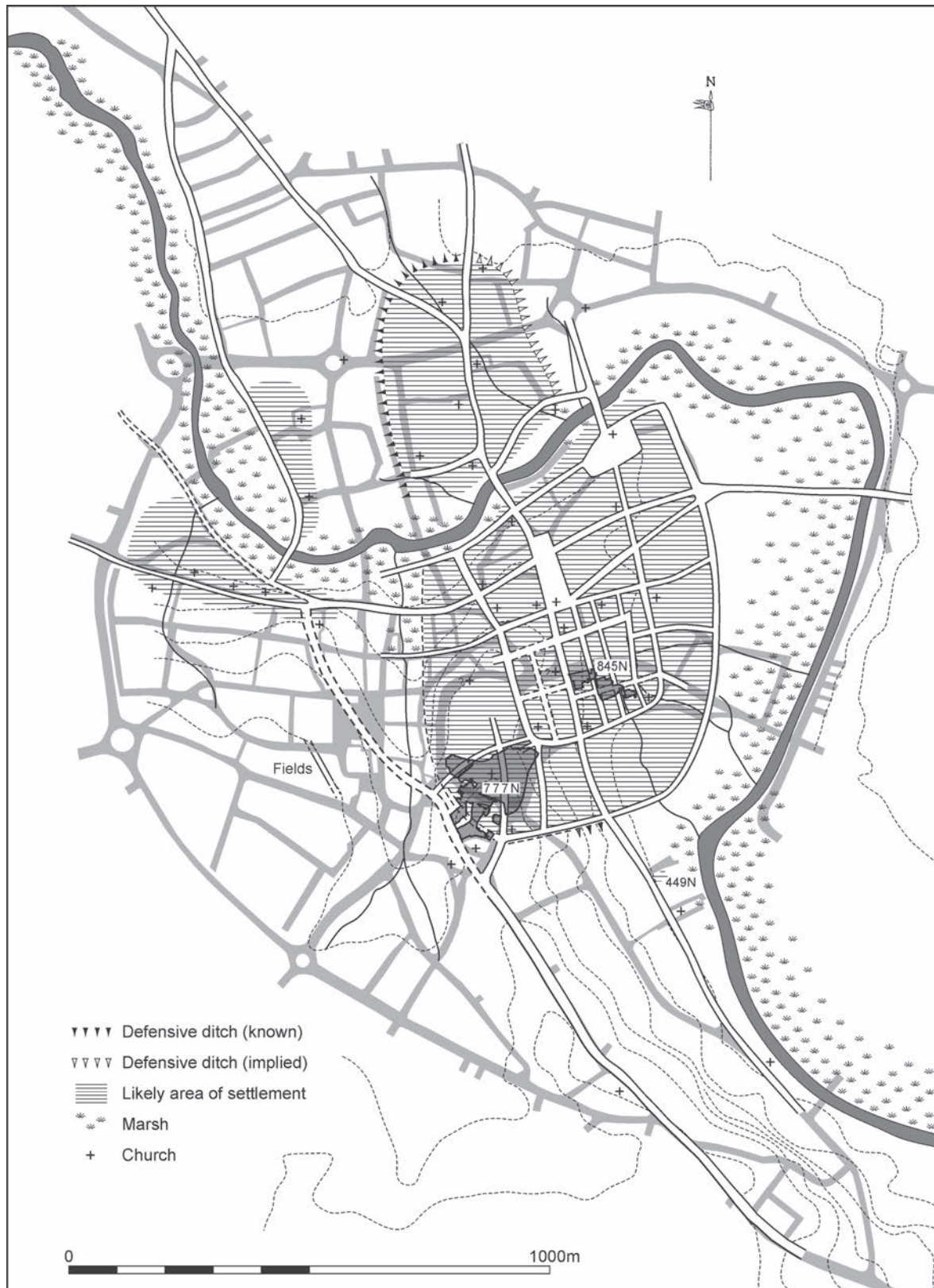


Figure 4.2 Map of Late Saxon Norwich, showing a reconstructed street pattern and the location of probable pre-Conquest churches. Scale 1:12500

other areas, East Anglia had been ‘conquered too quickly by the Danes for a burghal system of defence to have been organized there ... In short, there would have been no need for the establishment of burhs at regular and fairly close intervals as there was in bitterly contested areas’. At Norwich, it is possible that two ‘burhs’ opposed each other across the River Wensum. Similar defensive earthwork arrangements around burhs are indicated in the *Anglo-Saxon Chronicle* at Ipswich, Thetford and Cambridge. Double burhs, each side of a river, are also known at Hertford (founded 912), Buckingham (914), Bedford (915), Stamford (918) and Nottingham (repaired 918) (Biddle 1976a, 136).

At Norwich, the presence of a defended area on the north bank of the River Wensum was originally postulated on the basis of a topographical analysis of the surviving street pattern (Carter 1978b, fig.7), suggesting a D-shaped enclosure. This may have been Viking in origin, of similar character to those recorded elsewhere (such as Bedford, Lincoln and Repton). Although there is a general lack of archaeological information for the northern part of the Anglo-Saxon town at Norwich, parts of a 10th-century defensive ditch and associated bank were excavated in 1975, 1976 (Sites 281N and 284N; Atkin *et al* 1985) and 1989–90 (Site 840N; Calvert Street; Shelley in prep.a). Smaller scale observations were made at other sites along the western line of the ditch (Sites 302N, 173N and 22N). In its earliest form, the ditch was about 6m wide by 2m deep. After silting, it was recut at least twice, with a final width of about 9m (Atkin *et al* 1985, Site 281N, fig.27). The ditch had apparently been allowed to silt up fairly rapidly, leading to the need for recutting (Davison and Evans 1985, 116). Its form was noted to be similar to the 10th-century ditch excavated at Thetford (Rogerson and Dallas 1984, for example ditch 141, fig.94). Three radiocarbon dates² were obtained from bulk collected bone retrieved from the Norwich ditch and its recut, providing results of: 1090 ± 60 BP, cal AD780–1030 (HAR2701); 1260 ± 90, cal AD 610–980 (HAR2702) and 1190 ± 70, cal AD660–1000 (*op.cit.*, 116). Dating evidence for this and other parts of the defensive system is not good, although it has been suggested that the northern enclosure dates either to the period of Danish occupation (Ayers 1994a, 27) or to the English reconquest of 917 (Atkin 1993, 132). Other possible catalysts for these defences may have been later Danish raids in 993, 1004 and 1016.

A second settlement on the south bank has long been suggested — although the date of its establishment and its location have been the subject of numerous interpretations. Woodward, in the mid 19th century, mapped his interpretation of the development of Norwich (although he believed the castle itself to be of Saxon origin). His interpretative maps of 1050 and 1100 show the burh lying to the east of Burg Street; in the later map dividing the Old Burg to the east from the New Burg to the west (*i.e.* the Norman French Borough). In 1912, in addition to summarising previous interpretations, Ella Armitage stated that ‘there can be little doubt that ... [Ber Street] ... marks the line of the burh or enclosing bank by which the primitive town of Norwich was defended’ (Armitage 1912, 174). The name of Ber Street has been interpreted in various ways and as already noted the ‘Street’ element has often been taken to indicate a Roman origin (see Chapter 3.III). One obvious suggestion is an origin dating

back to the limit of the Saxon burh (Armitage 1912, 174) although another suggestion is that it derives from the Old English (WSax) **beorg** or Angle **berg** meaning ‘hill’ or ‘mound’ (Sandred and Lindström 1989, 88). Hudson took it to mean ‘street on the berg’, taken from the Danish word for ‘hill’ (Hudson 1896a, 17).

In 1933, Stephenson reiterated the theory of a ditch running northwards from the Ber Street gates to the river, along Ber Street and to the east of the Cockey stream (Stephenson 1933, plate VI; see Fig.12.2). He suggested that, although the exact limits of Saxon settlement were unknown, they would probably have included the hill upon which the castle motte was later constructed and would have excluded the marshes to the east. ‘If not originally demanded, an embankment to defend the entire loop would be necessitated by such a population as that described in Domesday. And the natural line of fortification would be the ridge of Ber Street and the small stream known as the Cockey’ (*op.cit.*, 198). This theory sought in part to explain the curious line of the later medieval walls at Ber Street Gates, which it was thought might reflect an earlier defensive boundary. Excavations on the eastern side of Ber Street in 1948 unsuccessfully sought the line of such a bank and ditch, to the south of St Bartholomew’s church (Jope 1952, 292–293). A section across the street was examined by Rainbird Clarke, which revealed undisturbed gravel. The possibility of the presence of a ditch on the western side of the street was dismissed as unlikely. Jope and Whittingham accepted that the line of Ber Street marked the limit of the southern part of the Saxon town, which they presented as undefended due to the lack of archaeological evidence (Carter 1978b, 180).

These ideas were further developed in the 1960s by Rainbird Clarke and Barbara Green (Green and Young, 1963, revised 1981). At this time, it was suggested that *Northwic* (postulated as lying to the north-east) was selected as the site for the burh rather than *Needham* due to geographical reasons; it lay close to three important river crossings. The possible limit of *Westwick* was suggested as running along the line of the Little Cockey stream, although excavation suggested that the stream actually ran further east (Carter 1978b, 200). A communal defensive work in the western part of the city was referred to in 1155–8 and could imply that the western side of *Westwick* was indeed defended. It may relate to the line of the Little Cockey stream, although this has yet to be proved archaeologically (Ayers in prep. a).

It was often suggested that the castle’s defences incorporated those of the burh (Baggs 1963, 3). Baggs postulated that the most suitable location for Norwich’s burh would be that of the castle bailey, which may have reused some of its defences: ‘This would explain the reference in the Chronicle of William of Poitiers to the Castle being built *intra moenia*’ [within the defences] (Hudson and Tingey 1906, vi, 1). This reference, however, is now understood to relate to Winchester, rather than Norwich (see Chapters 2 and 5.I).

During the 1970s, Carter (1973, 444–8) proposed that the southern part of the town consisted of a roughly rectangular enclosure of some 35 acres: ‘Within the area of Domesday Norwich the optimum site for a trading settlement would be not on the Ber Street spur, later the site of the castle, but on the flatter ground between the spur and the river marsh’. The presence of relatively small-

scale 10th-century defences was proposed on the basis of topographical indicators such as street lines, property and parish boundaries. Excavations along the proposed line of the eastern element (Sites 156 and 300N) failed to produce evidence for the ditch, although its presence in the locality still remained possible (Carter 1978b, 199). It was suggested that the curving lines of Elm Hill, Redwell Street and Bank Street indicated the line of the southern burh's western defences (Carter 1978b, 192 and fig. 7). This interpretation was thought to be supported by the odd kink in the line of the defences of the north-east bailey (for further discussion on this issue, see Chapters 4.VI and Chapter 12).

In 1985, it was suggested during a reassessment of the evidence (Atkin 1985b, 34; Atkin and Carter 1985, fig. 2) that settlement to the south of the river may have developed 'in the very late Saxon period as an undefended, but planned, town in the area of *Needham* above the 20 ft contour' (Atkin 1993, 132). Atkin developed this idea, which was based on pottery distribution, the linear alignment of 'pre-Conquest' churches and street alignments. The latter focused on north-to-south and east-to-west arterial roads and river crossings. It was suggested that the settlement was confined to the west by the Cockey stream and to the east by marshes. Small suburbs may then have begun to develop along approach roads. At this time, there had been no opportunity to establish the presence or absence of a defensive circuit around this part of the town: 'South of the river no defences have yet been located, but almost all possible locations other than that now suggested have been ruled out through investigation by excavation or on building sites' (Carter 1978b, 201). This, however, is not actually the case, as recent archaeological work has demonstrated (see Chapter 4.VI). Following earlier writers, Atkin postulated a 10th-century defended core to the north of the river (*Northwic*).

Prior to the excavations at Castle Mall, there was limited archaeological evidence for the nature of settlement across the castle area. The most intensive work had been carried out to the north-east, beneath the later defended Castle Meadow (Sites 150 and 416N). At Site 150N, a series of large pits had been dug through sand and gravel into the natural chalk and were apparently quarries. Some had been cut into by a later castle ditch (Carter *et al* 1974, 69). Excavations took place in 1979 in advance of the development of new offices for Anglia Television (Site 416N; Ayers 1985). The work uncovered a previously unknown Late Saxon church and cemetery, the remains of the timber church lying to the south of the excavated graves. The church and its cemetery were eventually to be enclosed by the defences of the castle's north-east bailey (Castle Meadow), although the precise date at which this occurred is unclear. It is possible that the bailey may have been added in 1075 (Ayers 1985, 63), following a siege — although the boundary of the Castle Fee may already have encircled the area at this date (see Chapter 5.V). Pre-dating the cemetery were eleven Late Saxon pits, one of which may have acted as a kiln (Ayers 1985, 7 and fig. 5). Further comments about the church and cemetery in relation to those found at Castle Mall are given in Chapter 4.VI, with wider discussion in Chapter 12, 'Castle and Ecclesiastical Landscape' and Chapter 14, 'The Urban Church'.

Observations of deep pits pre-dating the construction of Norwich castle mound were made in 1905 during

alterations to the Shirehall (Tench 1910; Site 135N, see Chapter 2). The description of the pottery recovered from the pits suggests that it comprised late Thetford-type ware forms, including lamps, dating to the 11th century (Irena Lentowicz, pers. comm.; see also Goffin, Chapter 4.III and Chapter 13, 'Pottery Production and Associated Waste'). Further evidence for activity eventually sealed by the castle mound comes from earlier work at its top. Three trenches were dug into its south-eastern quarter in 1911 (City Engineer Plan 1911; see Plate 6.5), all of which indicated the presence of a layer of 'black earth' (presumably pre-Conquest) at a level of between 83.8 and 88.95ft OD (25.54 and 27.11m OD), in one area dipping down as if to suggest the presence of a pit. This deposit sealed earlier layers of burnt 'brickearth' overlying dirty sand, before natural deposits were encountered at between c. 80.9 and 83.8ft OD (24.66 and 25.54m OD).

In summary, understanding of the pre-castle area was speculative and the excavation of such a large area at Castle Mall would offer the opportunity to examine the date, character and density of settlement and the impact of the construction of the castle upon it.

II. ARCHAEOLOGICAL SEQUENCE

Period 1.1: The Earliest Anglo-Saxon Activity (5th to 9th century)

Summary (Fig. 4.3)

A single Early Saxon brooch was recovered from the Castle Mall site, along with five sherds of contemporary pottery. Three of the earliest recorded features were linear 'hollows' — either natural or anthropogenic — running on quite different alignments to each other. Little pre-Conquest activity was recorded to the west of the line of the westernmost hollow, perhaps suggesting that it acted as a settlement boundary. Its infilling may have begun in the (late 9th/ 10th century and it was heavily pitted during the 11th century, before being sealed by deposits associated with the castle. A radiocarbon dated grave from a cemetery to the south (Cemetery 1), outside the line of the westernmost hollow, unexpectedly yielded a mid 6th to 7th century date, although is probably attributable to the 7th century. A second cemetery (Cemetery 2), for which the only evidence is the presence of disarticulated human bone and one partially articulated child burial, lay in the northern part of the excavated area, its main focus lying just to the east of the easternmost hollow. This group was radiocarbon dated to the 8th to 9th century. Scattered finds of Middle Saxon date also attest to activity in the vicinity during this period.

Linear Hollows

Three extensive linear 'hollows' (Hollows 1–3) eventually became infilled with redeposited natural mixed with refuse (Period 1.2) and a long sequence of refuse pits was dug into these fills (Period 1.3). Subsequently (Chapter 5.II, Period 2.1) the westernmost hollow was filled with refuse, overlain by consolidation dumps (Period 2.2) prior to the construction of the south bailey rampart (Chapter 6.II, Period 3.1). The presence of these hollows

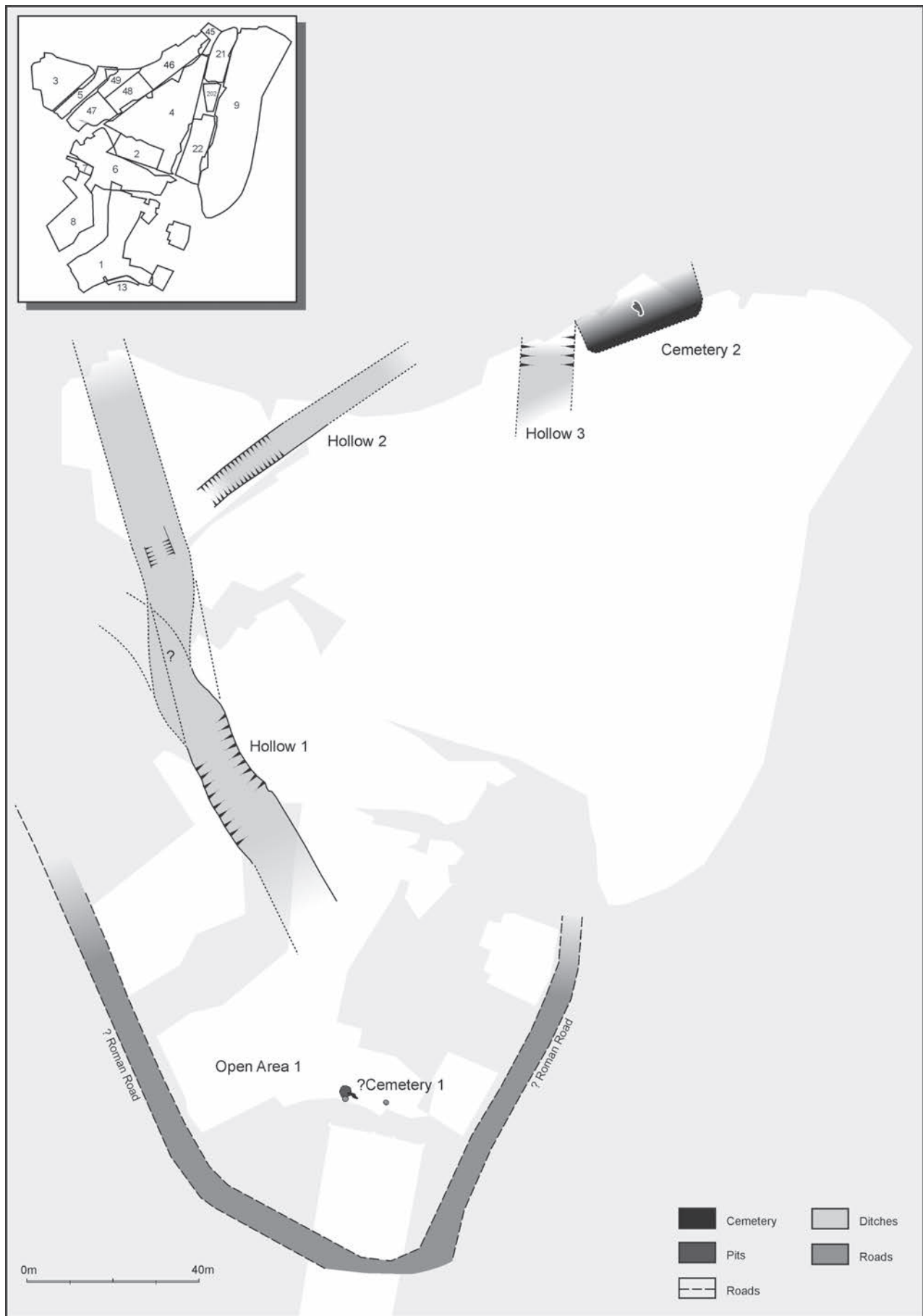


Figure 4.3 Period 1.1: Phase plan — Early/Middle to Late Saxon (7th to late 9th/10th century). Scale 1:1250

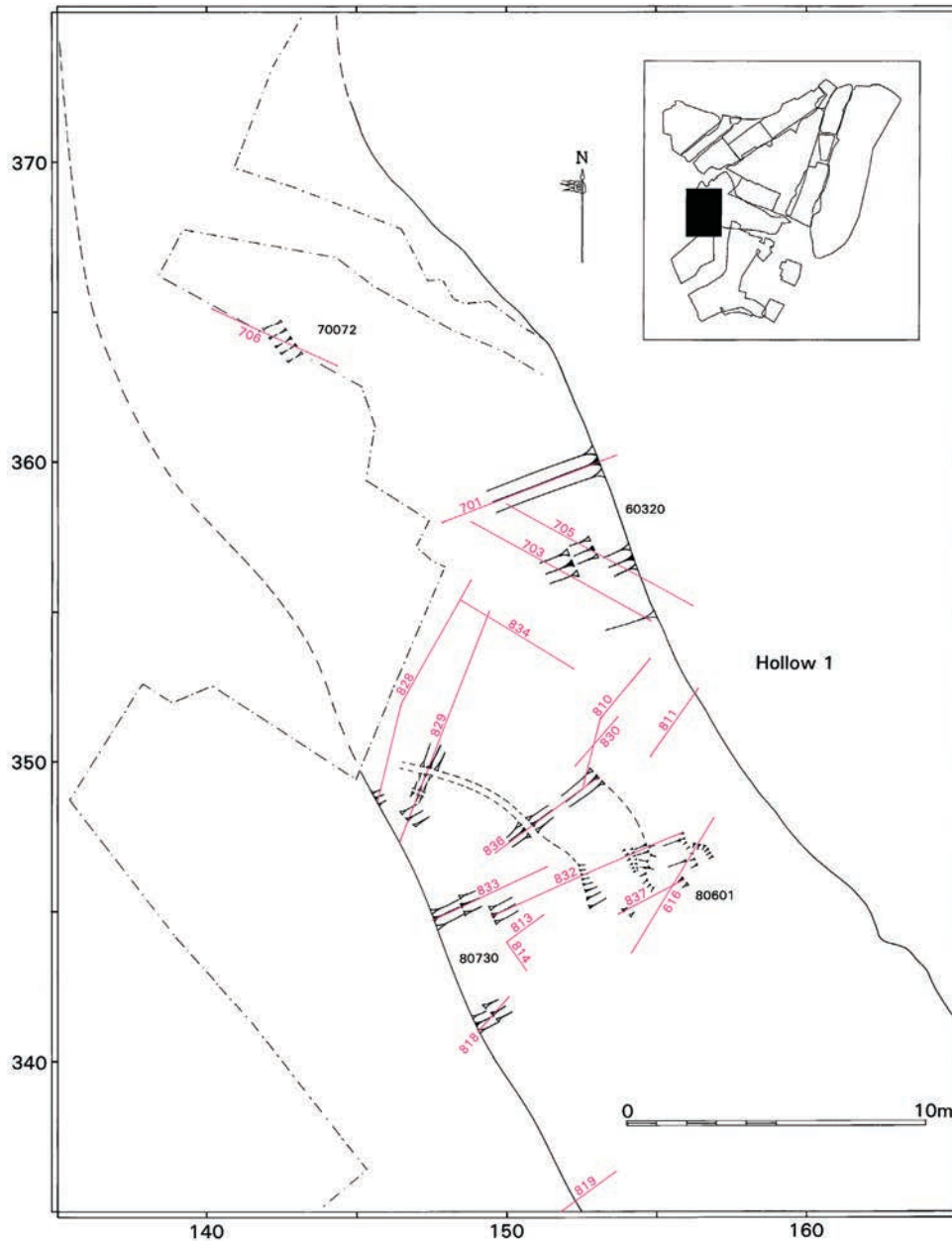


Figure 4.4 Period 1.1: Plan of Hollow 1 (Areas 6–8). Scale 1:250

in a landscape that was later heavily truncated permitted the survival of small pre-Conquest features, such as a multitude of post-built structures, that would otherwise have been obliterated.

Hollow 1, Phase 1
(Figs 4.4–4.5, Plates 4.1–4.4.3)

The widest and most extensive feature ran from north-west to south-east across the eastern part of the site, cutting into natural deposits (Figs 4.4 and 4.5). It was recorded in Areas 6, 7 and 8 and the same feature may have been traced northwards, on the other side of the subsequent barbian ditch (in Area 5, Figs 4.6 and 4.7). If this equation is correct, it gives an overall recorded length of over 65m. Any extension southwards into Area 1 was probably obliterated by the later insertion of castle ditches (although see further comments in Chapter 4.VI). The base levels recorded in Areas 8 and 5 suggest a

groundslope of the feature downwards towards the north of between 1 and 2m over its entire recorded length. Its width as recorded in Areas 6 and 8 was 11 to 12m, with the surviving depth ranging from 2.20m in Area 7 to 0.75m in Area 5. This was the earliest feature in this part of the site.

The feature was not excavated in plan for any distance and a reconstructed profile has been produced using section drawings plotted at varying angles along its length (Fig.4.5). Although schematic, this indicates the possible profile prior to disturbance by pit digging and perhaps vegetation (see below and Plate 4.1). There appears to have been a ridge of ‘undisturbed’ natural running along its base, just to the south-west of the centre. This may indicate that the feature was deliberately cut but was not fully bottomed during the excavation or that this was a natural hollow, subsequently utilised for refuse disposal when the area was settled.

Detailed Description

Area 8: In Area 8, the feature (80730, Fig. 4.4) survived to 1.30m deep and was about 15–16m wide, allowing for its continuation into Area 6 to the north-east. Given the survival of the overlying south bailey rampart and the existence of small pre-Conquest features in this area (especially to the north), the feature is unlikely to have been truncated horizontally, thus providing evidence for the original ground level (at 25.60m OD on its southern edge). A series of sections was drawn at various levels and angles (Fig. 4.5; S.828, 829, 809, 810, 836, 811, 818, 832, 833, 813, 831 and 837, Plate 4.1): taken with the plans they indicate that the feature had gently sloping sides and an undulating base. To the south-west what was recorded as a large pit (80601), perhaps a quarry or series of them, which may actually have formed part of the same hollow.

Area 6: The feature ran across the western end of Area 6 (60320, S.616). Although not fully excavated it was augered to a depth of c.1.50m and was recorded over a length of 12m. Although not recorded in plan at the western end of Area 6, site photographs suggest that it ran north-westwards where it was eventually cut by the barbican ditch. The upper level of its northern edge lay about a metre higher than its recorded southern edge in Area 8. This difference probably results from the local natural topography which appeared not to have suffered truncation prior to the construction of the south bailey rampart in the late 11th or early 12th century (Chapter 6, Period 3.1).

Area 7: The recorded stretch of the hollow in Area 7 (70072) was about 7m wide, cutting through natural deposits of sand and clay. Two slots were excavated through its fills (S.701 (Plate 4.2), 703 and 705), while another section to the north (S.706) shows the base of the feature. Its approximate north-eastern edge has been reconstructed from evidence recorded in section. It ran for about 15–16m across the area. The sides of the hollow here were much more regular than those observed elsewhere, leading to the on-site interpretation as a ditch.

Area 5: To the north, what may have been part of the same feature was recorded in section and plan (50097, Fig. 4.6, Plate 4.3). Two sections were recorded across it; one ran across its surviving width (S.313, Fig. 4.7) and the other at approximate right angles to this (S.312), centrally within the feature. The base was gently concave with a surviving depth of 0.75m. Infilling here dated to the mid 11th century and is described in Period 1.3.

Discussion

Clarification of the line of the hollow both to the north-west and south-east is problematic. To the south, the area had been disturbed by the line of later castle ditches, although a curving boundary here would mirror both the postulated limit of Late Saxon settlement and the position of a road to the west of the site (see further discussion in Chapter 4.VI). Three possible options for its northern course are shown on an accompanying figure (Fig.4.3);

1. the first line shows the hollow continuing north-westwards towards the downslope into the Great Cockey valley (*i.e.* not equating with the Area 5 observation);
2. the second line curves northwards at the north-western end of Area 6 to link with the observation in Area 5 (which lay at a lower level and was considerably narrower, perhaps the result of truncation which left only the central part or one side of the base surviving);
3. the third line continues in a curving line from the Area 7 observation. This interpretation assumes that the north-western part of the Area 6 observation is misleading (having been reconstructed from photographic evidence). Again, this would link with the Area 5 feature.

Another alternative is that the feature simply petered out. Its line (running from north-west to south-east) was reflected in structural/pit alignments recorded to the east, at least in those immediately adjacent to it. Subsequent encroachment into the hollow began with three sets of posts along the north-eastern edge (see Period 1.2), possibly acting as revetting or coincidentally placed. The addition of these posts might suggest that adaptation of



Plate 4.1 Section across Hollow 1 beneath the south bailey rampart (S.832, Area 8) showing the effects of Late Saxon pitting, viewed from the south-east (Period 1.1)

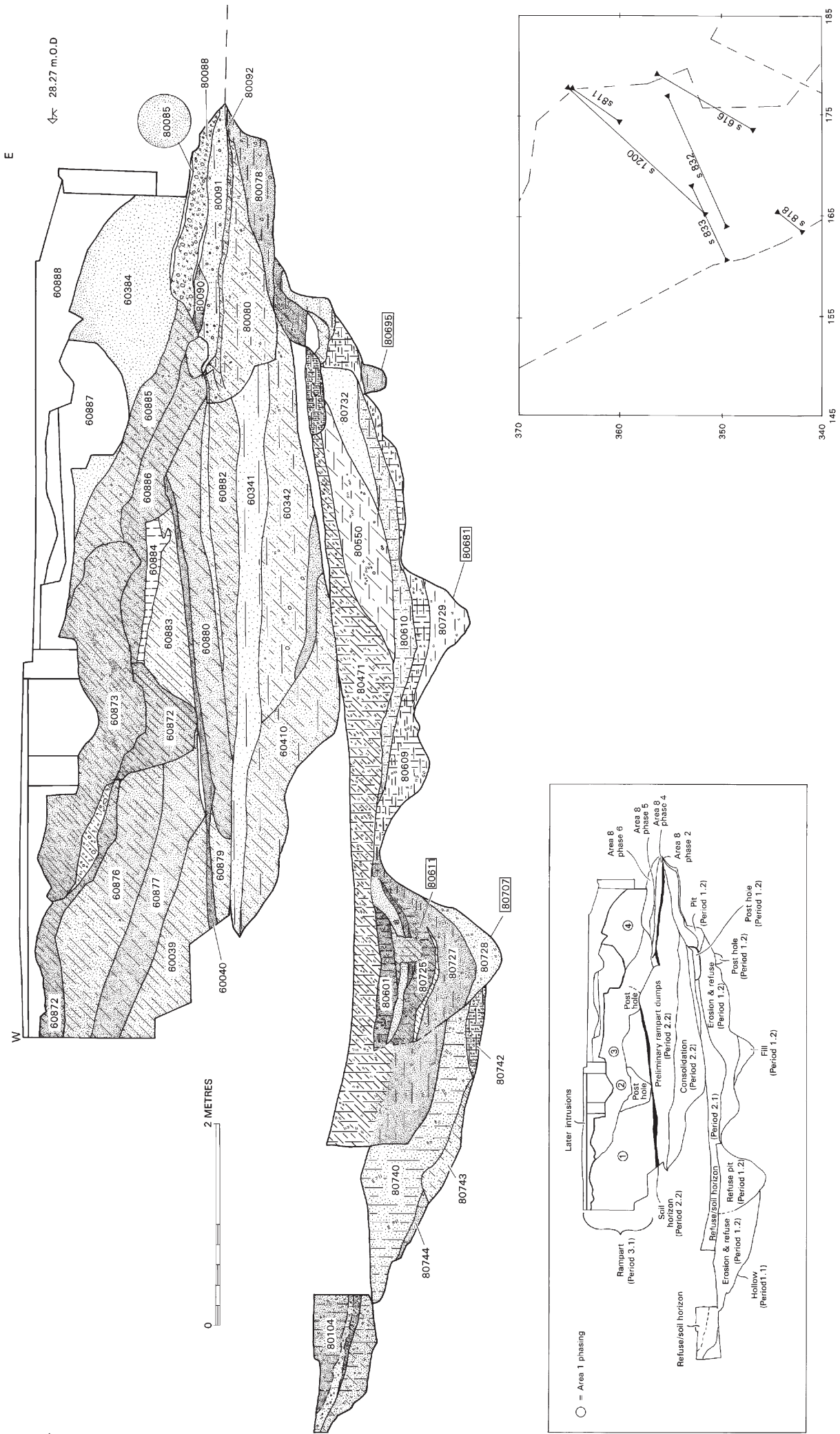


Figure 4.5 Period 1.1: Composite section across Hollow 1, showing overlying features and deposits including the south bailey rampart (Areas 6-8). See Fig. 4.4 for feature location. Scale 1:50

a natural feature for a defensive/boundary purpose. The hollow was eventually used for the disposal of refuse/cess and may have been partially overgrown by scrub/small trees. Slots and posts were also placed within it, although topographically it seems unlikely that these represent the remains of domestic buildings.

This feature was apparently too shallow and irregular (both in profile and plan) to have been created as a defensive ditch. There was no evidence to suggest that it had served as a hollow way. It is possible that it marked the westernmost limit of Saxon activity, coinciding with the apparent cessation of early activity (although to some extent this may be due to the effects of later truncation). A single mid 11th-century pit (G1/137, Period 1.3) lay to the west of its line as did an early ditch (Ditch 1, Period 1.4), the latter possibly acting as a field or other boundary marker. By the time that a cemetery (Cemetery 4) extended above Ditch 1, however, the hollow had been substantially infilled.

Hollow 2, Phase 1

by Elizabeth Shepherd Popescu and Andy Shelley (Figs 4.6–4.8)

A second linear feature ran from south-west to north-east across the north-western part of the site (Fig.4.8), lying about 12m away from Hollow 1 to the west and c.50m from Hollow 3 to the east (see below). It was identified principally in section (S.316, 317 (Plate 4.4) and 319), although a sequence of deposits within it were recorded in plan (see Period 1.2). The feature had a recorded length of c.25m, with its width varying from 5.5m to the south-west to 6.30m to the north-east. It was almost flat bottomed, with its base being approximately 1.80m wide. Its maximum recorded depth was 0.86m. The hollow did not appear to respect the topography of the area as it existed in 1989, but rose slightly from the south-west (S.319) to its recorded centre (S.316), before dipping down slightly to the north.

Infilling is described in Period 1.3 and Period 2.1 (Chapter 5.II). Again, interpretation of the feature is problematic. This was by far the smallest of the three recorded hollows and lay at an awkward angle between the other two. Its regular profile and possible surfacing within it may suggest that it served as a hollow way, although the evidence is inconclusive. The initial phase of deposits within it were undated (Period 1.2), although were cut by an 11th-century pit (Period 1.3). Subsequent infilling may have related to the levelling of the area during the establishment of the castle, a similar phenomenon to that observed in the hollow to the west (Hollow 1) which was infilled with extensive consolidation dumps.

Hollow 3

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.9)

The presence of a third hollow towards the centre of the site (Area 46) is suggested by three, largely circumstantial, pieces of evidence:

1. photographs of Area 46 under excavation indicate distinct differences in soils after machining. A wide band of light brown sandy silt is evident within the usual clean orange sands and gravels. This dark band was between 14 and 16m wide with ran almost north-to-south;

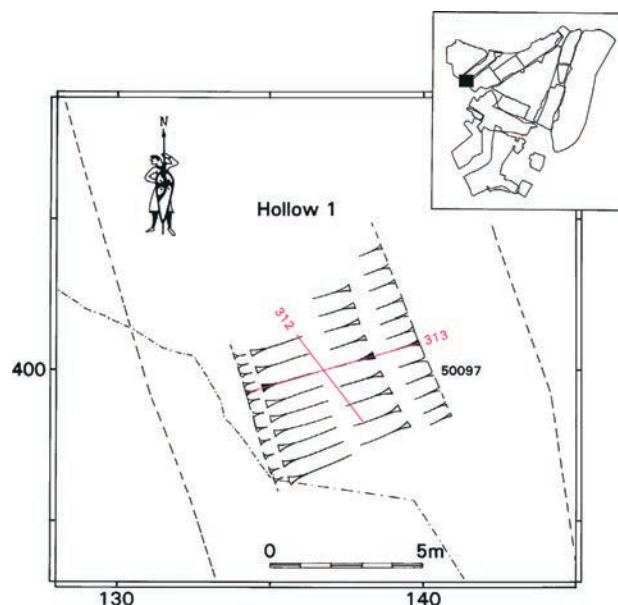


Figure 4.6 Period 1.1: Plan of Hollow 1 (Area 5). Scale 1:250

2. the same feature may have been inadvertently recorded in a watching brief just to the north (12821, T20/13, S.128–5, Fig.4.9), which ran along the northern edge of Area 46 and shows natural silting within a large feature up to 9.5m wide;
3. a composite plan of features recorded in Area 46 shows a very clear band of surviving early features, the perimeters of which correspond well with the both the changes in soil colour and the position of the possible features shown in the watching brief section. A minimum length of 25m is suggested by this observation.

When combined, the evidence points to the presence of a third hollow, slightly wider than the similar feature recorded to the west. Its surviving depth is unknown, although must have exceeded the depth of 0.80m of fill which was recorded in section. The western edge of the cut was poorly defined, largely as a result of later truncation. The lowest recorded fills consisted of relatively clean sandy and gravel (12848, 12822 and 12845), only the uppermost of which contained occasional charcoal flecks. A subsequent fill (12817) was darker with a higher silt content and charcoal flecking.

As noted, the presence of this dip in the landscape permitted the survival of early features (particularly post-holes) from the subsequent landscaping activities which truncated much of the rest of the surrounding area. This would imply that the ground to either side of the hollow was originally more densely settled than appears in the archaeological record, with only very deep pits surviving truncation. The presence of post-holes suggests that buildings/structures lay within the dip. A possible interpretation as a hollow-way/trackway can unfortunately never be tested. Further comments are given in Chapter 4.VI.

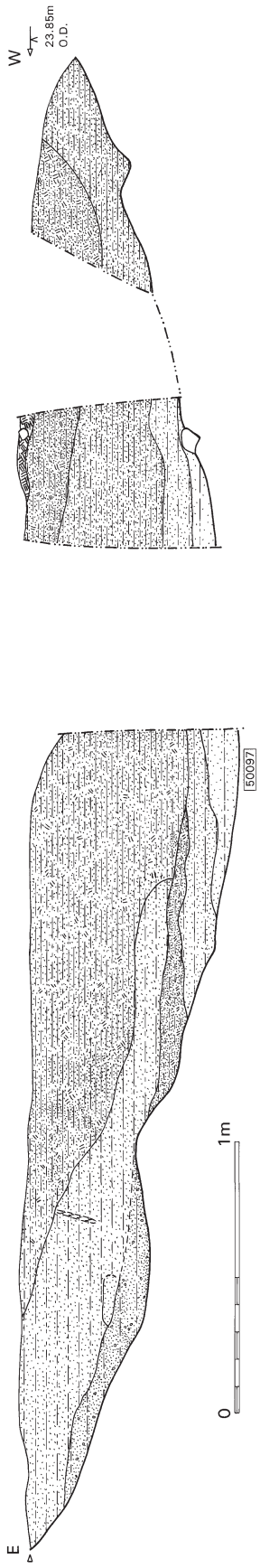


Figure 4.7 Period 1.1: North-facing section across Hollow 1 (Area 5, S.313). See Fig. 4.6 for section location. Scale 1:25

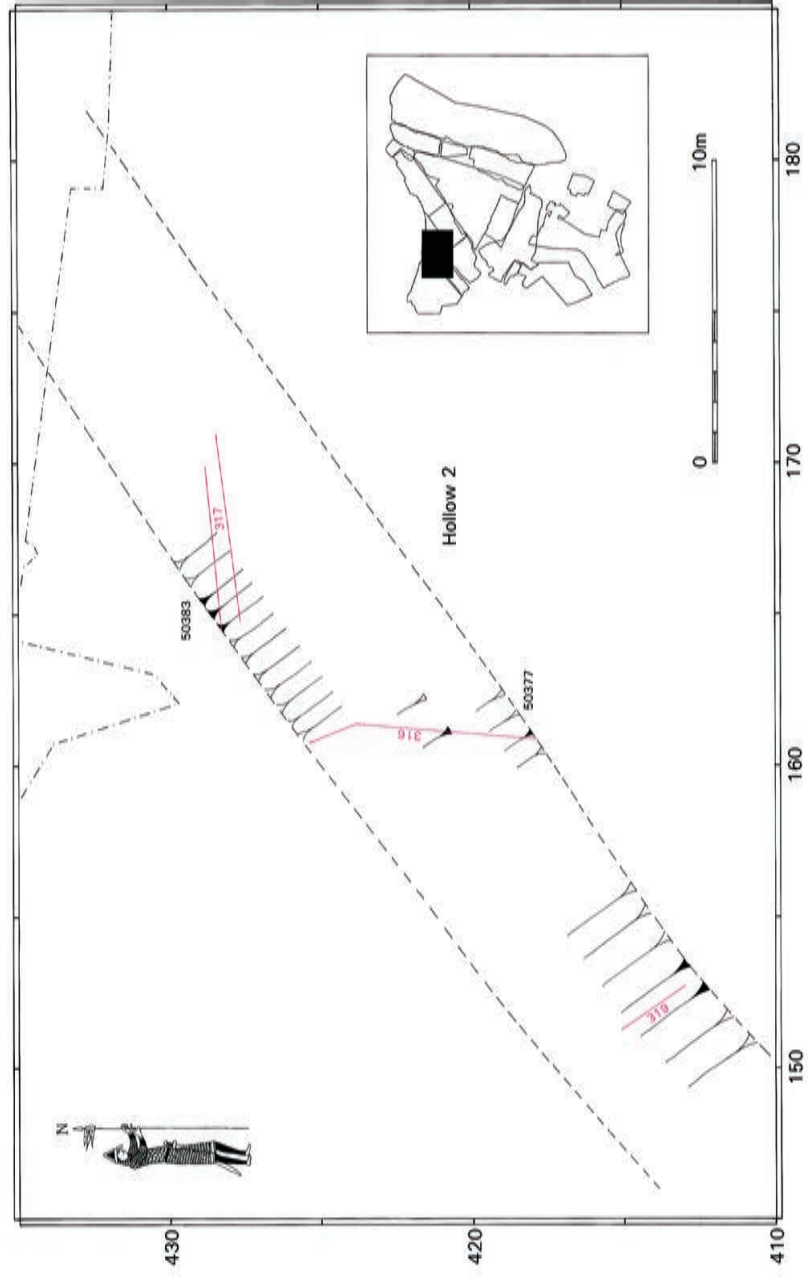


Figure 4.8 Period 1.1: Plan of Hollow 2 (Areas 3 & 5). Scale 1:250

Cemeteries

The high ground that was later to house the Castle Mall development clearly became the focus for considerable numbers of burials during the Anglo-Saxon period, although the exact chronology and density of burial at any given time, and whether each set of burials had an associated church, is a matter for discussion (see Chapter 4.VI). Two of the excavated cemeteries/skeletal groups provide radiocarbon dates which suggest an origin in the Early to Middle Saxon period. One was preceded by a number of undated pits. The temporal relationship of these burials to the hollows described above remains unproven.

Open Area 1: pits

In the south-eastern part of Area 13 was a large feature, 1.20m deep, which may have served as an early quarry or the butt end of a ditch (13247, G1/60). By implication, this feature pre-dated two possible early graves (Cemetery 1 below) which it would otherwise have truncated. The pit was filled with weathered, redeposited natural. Above it was a small ?pit (13154) which had been heavily truncated by later graves, while another small pit (11479) which contained two nails lay to the east. No other finds were recovered. The features were eventually sealed by a possible path and associated deposits (Period 1.3), prior to the encroachment of later burials into this area (Cemetery 4, Period 1.4).

Cemetery 1 (7th century)

A sequence of radiocarbon dates from the cemetery of St John (Cemetery 4, Chapter 1.4) indicated that the majority of burials measured were made in the Late Saxon period, although one skeleton (13156; OxA-6382) produced a date of *cal AD540–690* (Bayliss *et al*, Chapter 4.V). Statistically, the dated burial is likely to have originated in the 7th century: its dating might imply a similarly early

origin for an underlying burial (grave 13170, sk.13169) and another (sk.13035) showing similar skeletal traits ('Family 8', Anderson, Chapter 4.V). This latter burial was, however, stratigraphically later with a number of other burials in the strand (graves 13011, sk.13018 and sk.13009 and grave 13131, sk 13130). See further discussion in Chapter 4.V and VI.

Cemetery 2 (8th to 9th century)

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.10, Plate 4.5)

The presence of disarticulated human remains across the northern part of the excavated area, unassociated with other cemeteries on the site, indicates the presence of another cemetery (or possibly two) beneath the later castle barbican. This would have lain roughly equidistant between the pre-Conquest cemetery beneath the subsequent south bailey rampart (described in Cemetery 3, Period 1.3) and a Late Saxon cemetery recorded beneath the north-east bailey (Site 416N, Ayers 1985). Radiocarbon dates from the human bone at Castle Mall indicate an 8th- to 9th-century date (OxA-6386 and OxA-6387=6388; Bayliss *et al*, Chapter 4.V). The bone was recovered from a variety of features (generally pits and post-holes) ranging in date from pre-Conquest to modern. Two foci are clearly evident from the spatial distribution: the northern part of Areas 45 and 46 and, to the west, the northern parts of Areas 3, 5 and 49. Other scattered bone came from Areas 4, 9 and 21. The western focus lay more than 70m from the main distribution in Area 45, making it perhaps unlikely that these came from the same cemetery. A total of five adults and six children are represented here, their remains coming from deposits overlying and adjacent to Hollow 2.

A single feature (45211, G45/13) contained a partially articulated burial (Fig. 4.10 and Plate 4.5). This irregular sub-rectangular cut, aligned roughly north-to-south, lay in Area 45. It survived to a depth of 0.47m and contained mid grey loam from which no finds were recovered. The burial (skeleton 45210) was that of a child aged *c.*2–3 years (Anderson, Chapter 4.V) which had been placed or redeposited into the southern end of the feature in a contorted manner. This deposition indicates either that this was a secondary burial, or that the body had been relatively carelessly disposed of. The former interpretation is supported by the fact that the feature was much too big for the burial that occupied it. Further comments

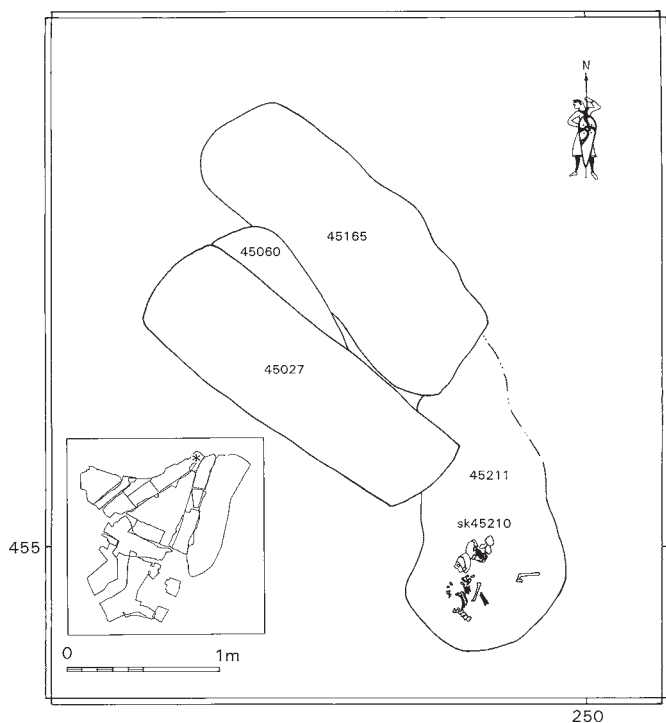


Figure 4.10 Period 1.1: Cemetery 2, reinterred child burial sk.45210. Scale 1:50

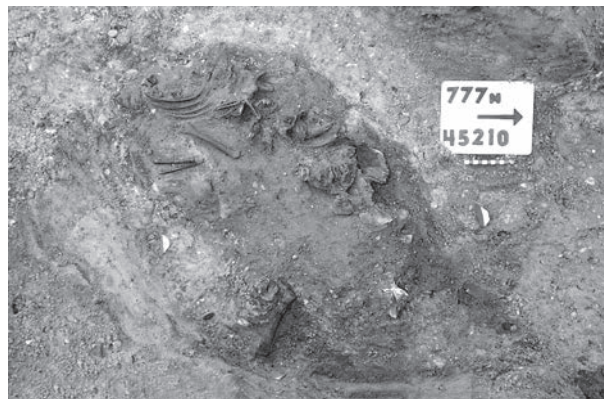


Plate 4.5 Middle Saxon child burial 45210 (Cemetery 2; Period 1.1)

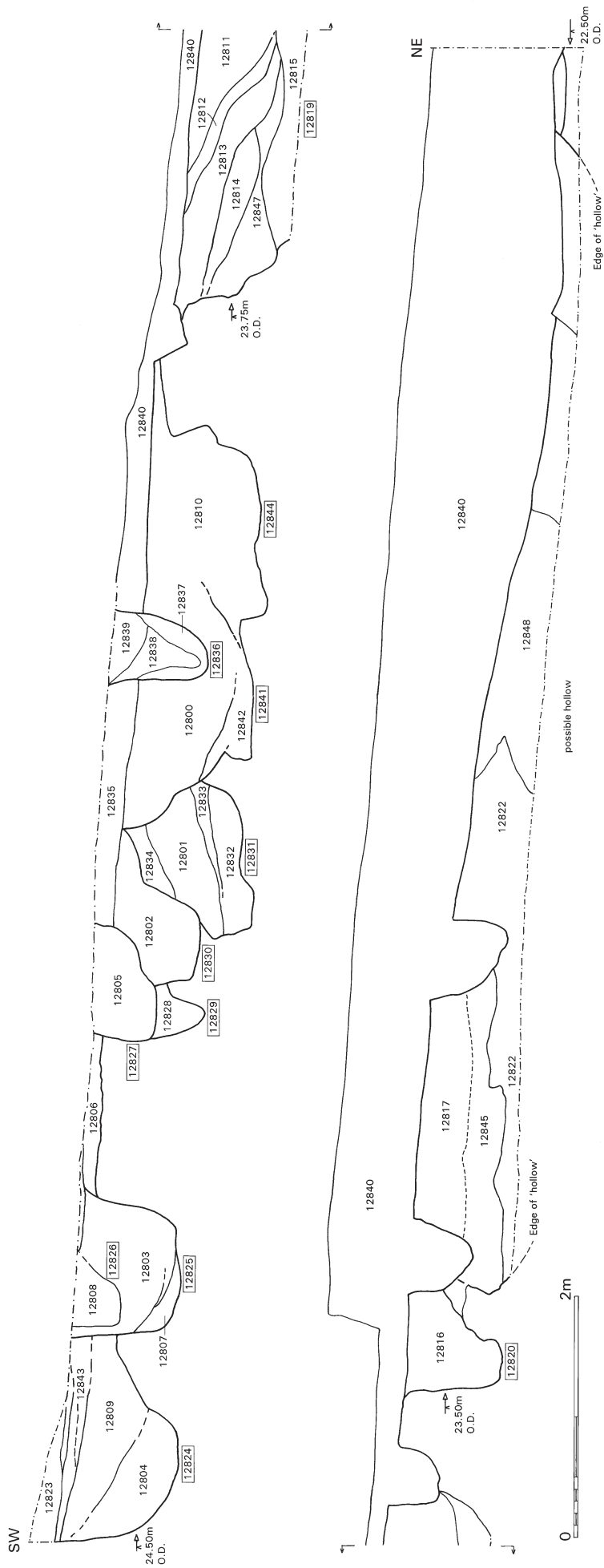


Figure 4.9 Period 1.1: Section recorded in a watching brief to the north of the site, showing the possible location of Hollow 3 (T20, S.128-5). See Fig. 4.27 for location. Scale 1:50

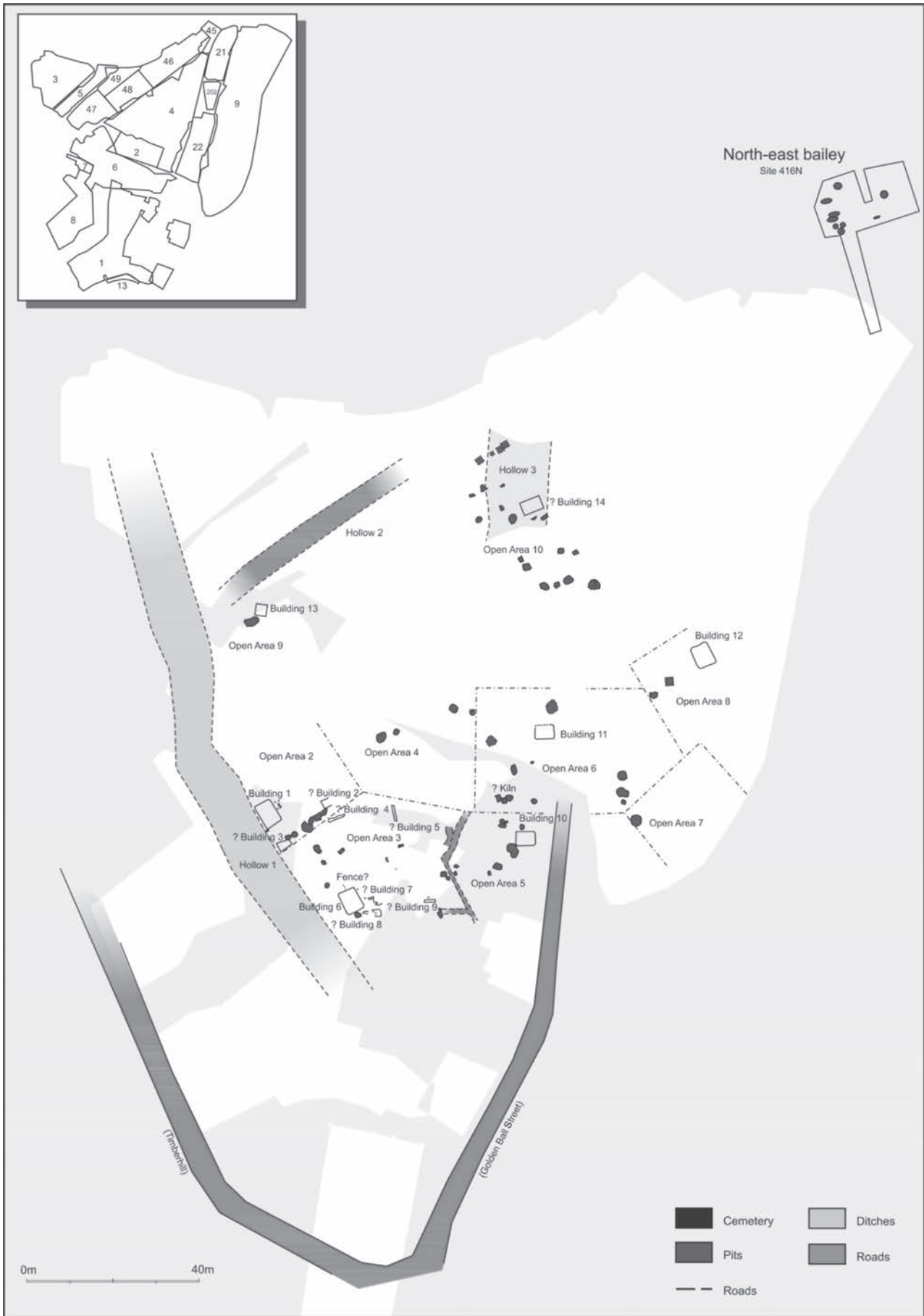


Figure 4.11 Period 1.2: Phase plan — Late Saxon (late 9th to early 11th century). Scale 1:1250

on the likely decomposition rate and reburial of the body are given by Black in Chapter 4.V and explored further in Chapter 4.VI.

The possible grave was truncated by intercutting pits (45185 and 45165, G45/8), the latter another grave-like feature aligned north-west to south-east, 0.53m deep. More pits followed (45147 and 45060), while the last feature in the sequence was also grave-like (45027) and 0.84m deep. The interpretation of these features remains problematic and their date is uncertain. Each was filled with pebbly clay and sand containing redeposited human bone. It is possible that some were graves that had been cleared at an unknown date between the Anglo-Saxon and post-medieval periods.

The lack of early features in the area of most concentrated bone deposition to the east is noteworthy, despite the later effects of truncation. Any graves here would presumably have been of similar depth to those found beneath the south bailey rampart (Cemetery 3), which were on average 0.60m deep. The absence of pre-Conquest pits in the immediate vicinity could indicate an area set aside for burial.

Small Finds

As noted above, the finds within the features described here are likely to be intrusive, having been introduced by pit digging and other activities during the post-medieval and modern periods. Cut 45185 contained two leather fragments (SF6551), while cut 45027 contained a nail (SF6513).

Pottery

A single sherd (12g) of TTW was recovered. It is perhaps noteworthy that nine of the seventeen sherds of Ipswich-type ware from the site came from the immediate vicinity of Cemetery 2 (Areas 9 (from the barbian ditch), 21 and 49).

Period 1.2: Anglo-Saxon Settlement (late 9th to early 11th century)

Summary

(Fig.4.11)

This period saw the establishment of widespread settlement on the site, although no definitive evidence for routeways was uncovered. Infilling of the earlier hollows (Period 1.1) partly resulted from erosion and, in the westernmost hollow at least, partly from refuse deposition. Nine areas of pitting ('Open Areas') have been defined, either loosely associated with excavated structures or with no surviving evidence for related buildings. Six main structures/buildings are represented, together with the fragmentary remnants of eight others. More than a hundred pits were present. Specific activities identified include small-scale metalworking (see Chapter 4.III) and grain storage and/or processing. A possible pottery kiln or drying oven was recorded and substantial ceramic waste dumps suggest that pottery manufacture took place in the vicinity.

Activities to the West of the Site

A sequence of activities was recorded in the hollow to the west of the site (described below as Phases 2–5), including the placement of posts along its northern edge and infilling within it, much of which may be the result of erosion. Numerous posts and pits were dug within its confines, although why this occurred (when the whole hollow was apparently available for refuse disposal) is

unclear. Later use of the area is described in Periods 1.3 and 1.4, before it was finally sealed by deposits underlying the castle's south bailey rampart.

Hollow 1, Phase 2: posts and other early features (Fig.4.12)

Four clusters of posts and stakes lay along the north-eastern edge of Hollow 1 (Fig.4.12). Seven examples to the north were of varying shape (square, circular and oval; G7/3; 70104, 70106, 70033, 70108, 70035, 70037 and 70028). Their depths ranged from 0.25m to 0.10m and two at least appeared to have decayed *in situ*. Two other clusters (G6/3) lay 10–12m to the south-east and again the posts were of varying shape and size. The northernmost group consisted of three intercutting examples (60324, 60326 and 60322), their depths ranging from 0.05 to 0.19m. To the south four more posts (60390, 60375, 60373 and 60407), the latter c.0.50m deep. Just to the south-west was an area of small stakes or the remnants of root activity (60406), perhaps suggesting the presence of vegetation at the base of the hollow. Prior to excavation, these appeared to form three pairs of circular features, similar to other groupings to the south and north. A sample of fill was x-rayed and proved to be naturally formed iron pan around wood (?roots).

These post groupings may have formed a revetment/palisade along the northern side of the hollow or may indicate a crossing point(s). Alternatively, their location in relation to the hollow may have been completely coincidental. Their stratigraphic relationship with fills of the hollow which they were recorded as underlying is questionable and they may have been cut from a higher level.

Roughly at the centre of the hollow (G8/3, not illustrated) were two features dug into natural and apparently sealed by the earliest hollow fills. Again, these may have been cut from a higher level. They were a pit (80588), eventually used for the disposal of refuse, and an isolated gully (80525). The latter ran north-west to south-east for a distance of c.4.00m (truncated to the south by a later pit), curving slightly to the west at its northern end. It was 0.12m deep and its fills may represent weathering and erosion or deliberate backfilling.

Small Finds

Finds from fills of the post-holes included iron nails and shanks (SF6784 and SF6744) and lead token blanks (SF6605); the latter intrusive.

Pottery

A total of 0.494kg of pottery was recovered, comprising TTW, NEOT, EMW and EMSW. Some of the rim types present were long-lived and broadly date to the 10th to 11th centuries, although see discussion on the possible revision of the date of some forms to the 10th century discussed by Goffin in Chapter 4.III. Amongst the TTW forms was type AB11, which corresponds to Dallas 'high' level type from Thetford and was also recovered from 11th-century contexts from Fishergate. As noted, this feature may have been cut from a higher level and surrounding features indicate that intrusive material is present. The presence of 10th- to early 11th-century forms may give a more accurate date, particularly in consideration of the ceramic assemblage in relation to the stratigraphic sequence in this area. See Appendix 6.

Hollow 1, Phase 3: primary fills (Figs 4.5 and 4.12)

Primary fills of the hollow were recorded in several places. To the north (G7/4) was weathered, redeposited natural, up to 0.80m thick. At the base of the hollow was a similar deposit containing occasional flecks of charcoal

and lumps of burnt clay and daub. A single small stake lay at the side of the hollow just to the south-east (0.14m deep) and may have decayed *in situ*. Three distinct deposits of redeposited natural and silts were recorded above (S.703 and 705), the last forming a fairly thick sequence along the northern edge.

Deposits to the south (G8/4) were generally again of redeposited natural sand, especially along the southern edge and at the base. These fills were overlain by mixed deposits, clearly indicating the disposal of human sewage and including charcoal and finds. The depth of deposits here ranged from 0.20–0.90m and may again indicate both natural weathering and refuse disposal, the hollow being left open during adjacent activity.

It is difficult to determine just which surrounding activity may have been contemporary with the deposition of these early fills. The accompanying composite section (Fig.4.5) shows the approximate effect of the initial infilling process, deposits accumulating or being dumped either side and just over the central ridge. There have been considerable difficulties in establishing the levels from which pits within the hollow were cut and some may have been dug before or during this accumulation.

Small Finds

Finds from fills of the hollow in Area 8 include a casket/book fitting with non-ferrous inlay (SF5915; Fig.4.99, Plate 4.37), comparable to examples from Anglo-Scandinavian deposits at York (Mould, Chapter 4.III). Two similar items were recovered from a post-hole within the hollow (see phase 4 below).

Pottery

The assemblage of pottery (0.129kg) consisted of TTW and NEOT. Forms included a TTW cooking pot (type AB6), a spout from a spouted pitcher of probable 10th-century date. See Appendix 6.

Hollow 1, Phase 4: posts and slots (Fig.4.12)

There was some indication of possible structural activity within the hollow, although its function is uncertain (G8/5; Fig.4.12). Posts, possible beamslots and gullies were present, some of which clearly pre-dated pits (see below and Period 1.3), although others may be contemporary with or post-date them. Areas of possible root activity may suggest scrub growth. Many features cut into the very base of the hollow (*cf.* the posts along the northern hollow edge described above), while others cut into early fills (Phase 3 above).

To the north was a possible structure consisting of a fence line of tiny double stakes (13 in all; 80770 *etc.*) forming a right-angle aligned north-west/south-east and north-east/south-west and reflecting the alignment of surrounding pits and beamslots/gullies. Six other post-holes of varying size lay at the north-western end of the line (80709 *etc.*). Across the central part of the hollow were scattered posts, stakes and gullies/beamslots in no obvious pattern. One slot (80598 and associated post-hole 80600) was a curving gully of unknown function. The others may have been structural. The deepest of the posts (*i.e.* those over 20cm deep) lay in a rough line running south-west to north-east, perhaps forming part of the same structure or the repeated replacement of a demarcation line. Those lying towards the northern end of this alignment were often post-pits with clear post-pipes. To the far south-east was another area of possible structural activity in the form of three post-holes (80581, 80582 and 80746). The nature of the fills of the post- and stake-holes makes it difficult to ascertain if timbers had decayed *in situ* or had been removed prior to backfilling. Some contained wood fragments while others showed

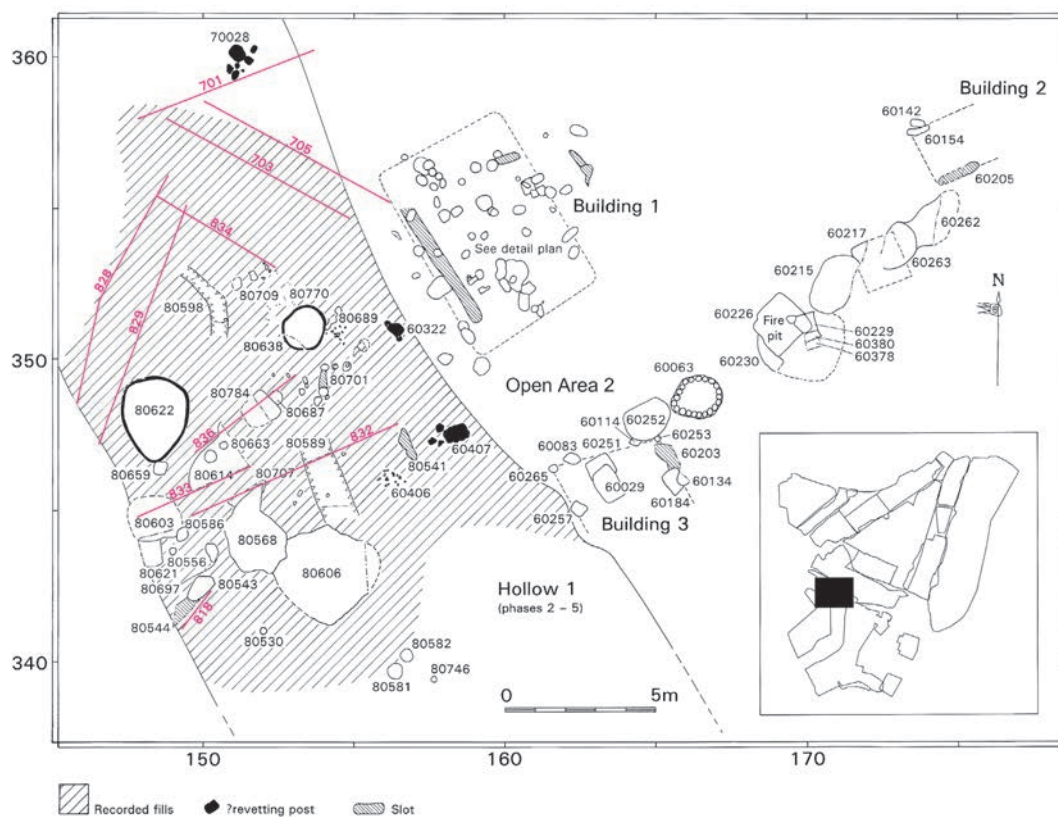


Figure 4.12 Period 1.2: Plan of Buildings 1–3, Open Area 2 and activities within Hollow 1 (Areas 6–8). Scale 1:250

traces of burning around the edges or base. Several fills included flecks of burnt daub, while others contained fragments of daub. Clusters of possible root-holes (e.g. 80745 and 60406) appeared along the length of the northern edge of the hollow, perhaps the result of the presence of bushes/plants or indicating the position of small stake-hole features.

No clear spatial patterns were evident and it seems unlikely, given the surrounding conditions and localised ground slope, that these were the remains of domestic dwellings. It is more likely that these are the remnants of fences/demarcation around pits, drainage gullies, animal tethering and so on. Another possibility is that some of the posts suggest a crossing point over the hollow.

Small Finds

Finds include two casket/book fittings decorated with non-ferrous metal inlay (SF5914 and 5914.01; Fig. 4.99, Plate 4.37; Mould, Chapter 4.III) from post-hole 80663 and a bone implement handle (SF6218 from slot 80581; Fig. 4.97).

Pottery

Nearly 2kg (1.908kg) of pottery was recovered from these features. Most contained small amounts of pottery, predominantly TTW although a few sherds of NEOT and EMW were present. Forms indicate a 10th- to early 11th-century date.

Hollow 1, Phase 5: pits (Fig. 4.12)

Twelve pits lying within the hollow, perhaps dug during the accumulation of surrounding fills, are dated to the 10th to early 11th century on ceramic grounds (G8/6). It is uncertain how many of these features may have been in use at one time. They ranged in size from small to large, although most are of medium size with an average depth of c. 0.80m. They were apparently used for the disposal of domestic refuse, although some waste may have come from craft/industrial processes. Some contained ash and burnt daub, two being clay-/wood-lined. The pits were concentrated in an area immediately to the south-west of Building 1 (see below) with which they were probably contemporary.

To the north was a fairly large pit (80638), about 1.20m deep and perhaps originally clay- or wood-lined, while just to its south-west was a heavily truncated sub-square pit (80784). Running roughly parallel to the western edge of the hollow was a line of large pits aligned north-west/south-east. The northernmost was one of the largest (80622, c. 2.60 x 1.65m) and cut into earlier features. Although not bottomed, it was augered to a depth of 0.90m. It had numerous linings of clay and wood, with a distinctly ashy silt fill and may have been cleaned out for re-use.

Just to the south was a sequence of pits recorded in section and plan either side of a baulk (80614, 80578 and 80623). To the south of the baulk were five intercutting pits (the latest two having been assigned to Period 1.3). The earliest lay to the north (80707, S.832) and was about 1.20m deep. Further to the south was a very large pit (80606, S.831), with a diameter of about 3m and 0.86m deep. Its primary fill indicated weathering of the pit sides, followed by organic deposits which contained charcoal and bands of black, organic material. Pottery recovered from this pit indicates a possible 10th-century infill date. It was cut by another pit to the north-west (80568), 0.80m deep with a primary fill of redeposited natural sand, followed by a sequence of refuse deposits

including black ash. The largest amount of pottery from any of the pits included here came from this pit which may have been infilled in the early 11th century.

Just to the west of the line of large pits, right on the edge of the hollow, were a few small pits which had been heavily truncated, the deepest being 0.45m deep (80621, 80603 and 80543). Fills were often charcoal-rich and organic.

Further details of later pitting are given in Period 1.3, while the effects of the pitting in profile through the hollow are shown in Fig. 4.5.

Small Finds

A bone spindle whorl (SF5926) was recovered from pit 80622. Finds from pit 80614 included an iron nail (SF6166). Finds from pit 80568 included the usual range of domestic refuse comprising a horseshoe of pre-Conquest type (SF1070; Fig. 4.106), lock tumbler (SF6189 from 80545; Fig. 4.100) and worked bone (SF5910).

Pottery

(Fig. 4.70 on CD)

These pits were extensively sampled and produced fragmentary assemblages. Just over 7kg of pottery was recovered (G8/6; 7.058kg; Fig. 4.70 on CD). The common component in all the assemblages is the dominance of TTW, usually supplemented by either NEOT or EMW and occasionally both. A 10th- to early 11th-century date is suggested, although pit 80606 may date to the 10th century. See Appendix 6.

Botanical and Zoological Remains

by Peter Murphy and Alison Locker

Samples taken from pit fills (pit 80568, BS962 963; 80638 BS985, 984; and 80606 BS960) were very similar in composition. In only one (pit 80606, fill 80604) were cereals common (Chapter 4.IV, Table 4.24). *Avena* (oat) predominated with some *Hordeum* (barley), *Secale cereale* (rye) and *Triticum aestivum* (bread wheat) type. A few charred weed seeds (*Vicia* (vetches), *Raphanus raph.* (wild radish)) were noted and charred hazel nut shell occurred sporadically. Uncharred plant macrofossils were limited. The range included *Sambucus nigra* (elder), *Conium maculatum* (Hemlock) and *Chenopodium album* (fat hen). Other macrofossils included mammal and small mammal bones and fish. The samples suggest a range of domestic and other refuse, possibly including sewage. White globules of siliceous fused material came from most samples. Identified fish bone from these pits, amounting to 38 bones, is shown in Part III, Table 91.

Plot(s) to the East of Hollow 1

To the east of the hollow were the largely fragmentary remains of a number of possible early structures and/or buildings which are briefly described below from the north-west to the south-east. Some clearly pre-dated Cemetery 3, while others may have been contemporary with it or retained during its use.

Building 1: post-in-slot and post

(Figs 4.12–4.13, Plate 4.6)

To the north-west of contemporary pitting lay a building (G6/4; Fig. 4.13) aligned north-west/south-east. This angle reflected the line of adjacent Hollow 1, the eastern edge of which lay less than 2m to the west. The building may have been subject to repairs/alterations over time and three main areas of post replacement were evident: roughly at the centre of the northern, eastern and southern sides. Other posts were scattered across the central area, which may have been the remnants of internal fittings or partitions although no clear patterning was apparent.

The building consisted of a beamslot to the west (60338) and two fragments of slot to the east, possibly forming two sides of the same structure. Short remnants of beamslots between the two and a concentration of posts in this area may relate to repairs and alterations of the same single structure. The western slot was recorded

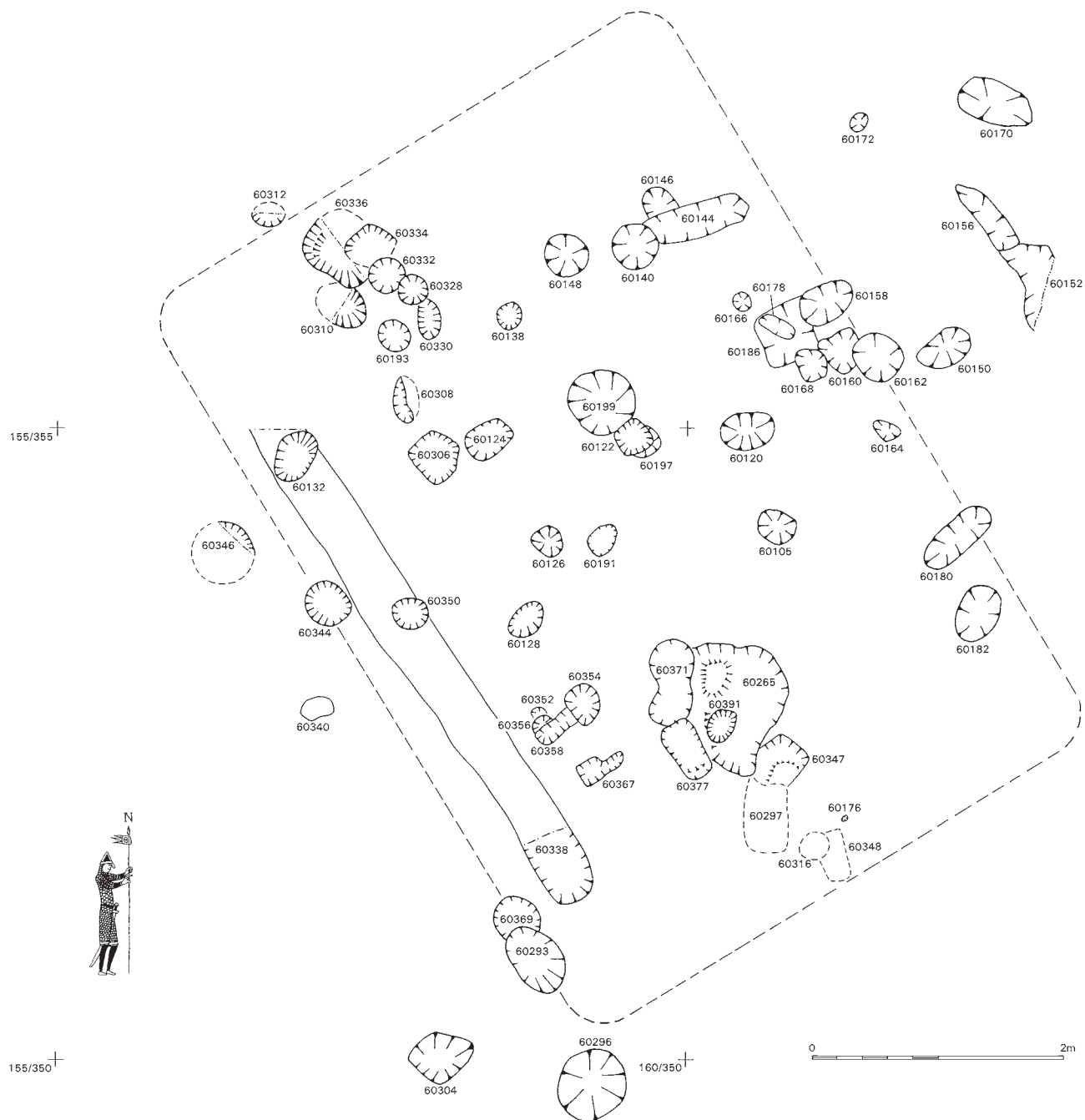


Figure 4.13 Period 1.2: Detailed plan of Building 1 (G6/4, Area 6). Scale 1:50

over a length of nearly 5m and was butt-ended to the south, at a point coinciding with a rough line of posts to the north-east and perhaps indicating the southern extent of the building. Two posts, which cut into charcoal-rich fills of the slot, may have formed parts of an integrated structural element. Just to the south was a large post-pit, perhaps indicating a repair to the southern wall. Seven other post-holes to the south-west may have been associated with the same structure or repairs to it. Alternatively, they could suggest the presence of a fence along the northern edge of the hollow.

To the south-east, in front of the structure, were a few posts, possibly representing the south wall and repairs to it. In the central structural area, clusters of posts may suggest the replacement of timbers, although most lay in

no clear alignment. A line of posts, on a similar alignment to the western slot described above, lay to the north, the northernmost being large (60336) with four intercutting posts above it.

A total of fifty-seven post-holes (some of which were post-pits) relate to the building, with depths varying from very shallow (0.05m) to relatively deep (0.35m). No clear pattern by depth is apparent, which might have indicated the load-bearing capacity of particular elements. The nature of post-hole fills suggests that some of the posts decayed *in situ*, whilst others were removed and the holes backfilled. Nine of the post-holes, together with the western slot, contained burnt material (usually frequent charcoal), possibly introduced during backfilling or perhaps indicating damage or destruction by fire. Two



Plate 4.6 Working shot during excavations in Area 6, showing some of the numerous post-holes relating to Building 1 (Period 1.2)

post-holes contained charred timber *in situ* and others contained burnt clay, fire-reddened sand or burnt organic matter. There was not, however, sufficient evidence to suggest that the building had been burnt down.

The structural elements covered a roughly rectangular area with maximum dimensions of 6m north-west/south-east by *c.*4–6m wide. Although there is no clear constructional parallel on the site, the building bears the strongest resemblance in plan to the Building 12 (see below) which had a slot set with posts just inside the perimeter. There was, however, no indication that the Area 6 example was sunken-floored and the area is unlikely to have suffered truncation due to its subsequent burial beneath the south bailey rampart. No indication of internal flooring survived. Plant macrofossils from the building (see below and Murphy, Chapter 4.IV) may

indicate that it was used for grain storage, although this suggestion remains tentative.

Pottery

Virtually all of the pottery recovered from this structure (G6/4; 0.656kg) comes from samples, resulting in an extremely fragmentary assemblage (an average sherd weight of only 2g). The TTW forms can be allocated to Dallas' early level assemblage from Thetford, while at Fishergate type AB13 jars were recovered from early 11th-century contexts, although new evidence suggests a possible revision of the date to the 10th century (see Goffin, Chapter 4.III). The presence of single small sherds of Stamford ware (Fabric B) and YTW does not necessarily indicate a mid 11th-century or later, post-Conquest date. The building was stratigraphically sealed by deposits ceramically dated to the mid to late 11th century (Period 2.1, Chapter 5) underlying the castle's south bailey rampart (Period 3.1, Chapter 6). See Appendix 6.

Botanical and Zoological Remains

by Peter Murphy and Alison Locker
The environmental remains found within the post-holes and slots include carbonised, well-preserved cereals which could indicate a

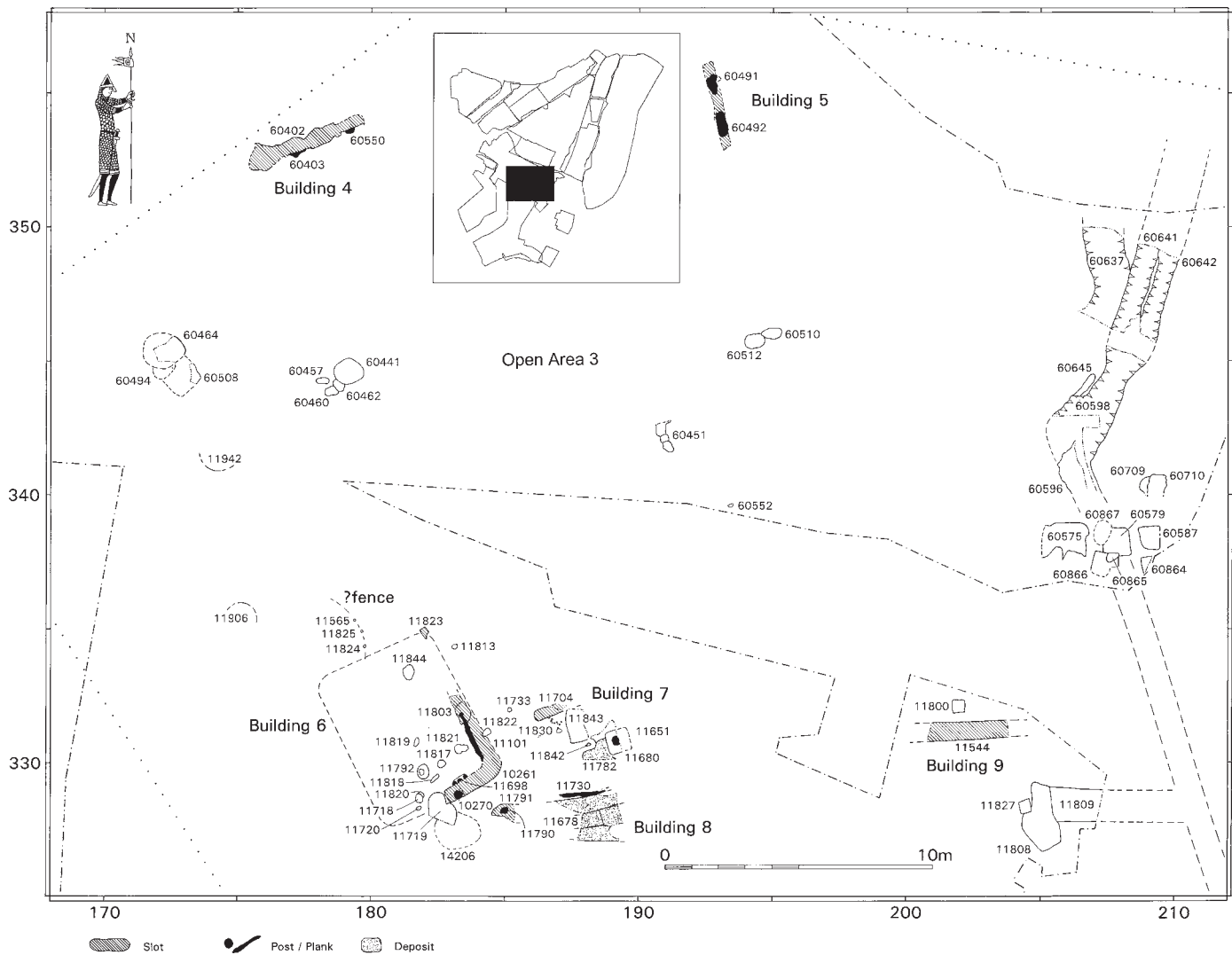


Figure 4.14 Period 1.2: Plan of Buildings 6–9, Open Area 3 and adjacent gullies (Areas 1 & 6). Scale 1:250

granary fire, suggesting a possible interpretation of the building for grain storage although the material clearly came from more than one source. Samples taken from the structural elements of the building (Chapter 4.IV, Table 4.20); BS405, 411, 414, 420, 423, 426 and 528) contained low densities of charcoal, although charred cereal, pulse and weed seeds were consistently present, often in small quantities. Other charred plant material included large Fabaceae, *Corylus avellana* (common) and weed seeds, predominantly large forms (*Agrostemma githago* (corn cockle), *Anthemis cotula* (stinking mayweed), *Brassica* (wild or cultivated cabbage/mustard), *Fallopia convolvulus* (black bindweed), *Plantago lanceolata* (ribwort plantain), *Vicia/Lathyrus* (vetches)). Seven samples were fully analysed and are detailed in Chapter 4.IV. The fish bone assemblage from the post-holes forming this building, amounting to a total of 232 bones, is detailed in Part III, Table 87, of which most was herring.

Building 2: post and slot
(Fig.4.12)

To the east of Building 1 were the fragmentary remains of a possible structure (Building 2, G6/9, Fig. 4.12). Some elements certainly pre-dated gullies in the area, although their relationship to surrounding pits is uncertain. A shallow, flat-based slot (60205) aligned south-west/north-east (*cf.* Building 1 above) contained an ashy fill. Two adjacent, shallow post-holes (60142 and 60154) may be related.

Pottery

TTW, NEOT and EMW were recovered. See Appendix 6.

Building 3: post and slot
(Fig.4.12)

To the south of Building 1 was another ephemeral structure (Building 3, G6/5; Fig.4.12), consisting of seven posts and a short length of slot aligned north-west/south-east (60203). Depths of the post-holes ranged from 0.08–0.31m and some had been backfilled with redeposited natural.

Pottery

Small quantities of TTW and EMSW were recovered. See Appendix 6.

Open Area 2, phase 1
(Fig.4.12)

South-east of the Building 1 (and overlying the structural traces of Building 3) was a line of twelve medium sized pits and incidental posts (G6/8; Fig.4.12). The line ran from south-west to north-east, probably relating to the use of Building 1. Their distinctive line may reflect the

presence of a plot boundary, perhaps demarcated with a fence or other marker, of which no trace survives.

To the south-west were two, intercutting, roughly square pits (60251 and 60029), the latter augered to a depth of c.0.42m. Next in line was a roughly oval pit (60252), unbottomed at a depth of 0.40m, its fills containing large amounts of charcoal. Just to the north was a similar pit (60063), augered to a depth of 1.64m which may have been cobble lined (*cf.* the fire pits on the site). Further north a large pit (60230) was followed by a short length of slot (60380) and a square pit (60226). Some of the fills of the latter appeared to have been burnt *in situ*, perhaps indicating a function as a fire pit. Cutting into this cluster of pits was an elongated oval pit (60215) which cut another earlier ?square pit (60217). Further east was an unexcavated, oval pit (60263) cutting into another example (60262), both with similar charcoal-rich fills.

Pottery

Just over half a kilo (0.507kg) of pottery was recovered from samples taken from these pits, including TTW, NEOT, EMW and YTW. A TTW crucible (type BE1) was found. See Appendix 6.

Plot(s) Beneath Cemetery 3

The ephemeral remains of several structures/buildings – often no more than short lengths of beamslot with associated post-holes and/or traces of upright planking – lay across the area that was later to become a cemetery (Cemetery 3, see Period 1.3). While these remains provide little information about the nature of settlement, they confirm that the area was settled prior to the laying out of the graveyard (Fig. 4.14). The absence of deep early pits in this part of the site is notable. Much of the area would have eventually been sealed by the construction of the south bailey rampart (Period 3.1, Chapter 6).

Building 4: post and slot (Fig. 4.14)

Lying to the south of the pit line in Open Area 2 were the remnants of a structural element aligned south-west/north-east (G6/20, Fig. 4.14). This irregular slot (60402), which had posts arranged on either side of it, was recorded over a length of 4.5m, having been truncated at either end.

Pottery

The small quantity of pottery consisted of TTW, NEOT and EMW.

Building 5: post-in-slot and post (Fig. 4.14)

Lying several metres to the east was another isolated slot, apparently the remnants of another structure (G6/22, Fig. 4.14). Again, this could relate to pre- or post-Conquest activity but has been included here on the basis of its alignment (north-west/south-east, although nearer to north-to-south than those to the east, perhaps suggesting a gradual change in alignment further to the west, such as the north-south/east-west alignment shown in the sunken-floored buildings in Area 22). The shallow slot (60492) contained two post-settings, each being filled with burnt daub and suggesting another possible candidate for eventual destruction or damage by fire. The posts were 0.10–0.20m deep.

Pottery

The post-holes contained small sherds of TTW and EMW.

Buildings 6 to 9: post-in-slot, plank and post (Fig. 4.14)

To the south were further structural remnants (Fig. 4.14). Many were cut by graves relating to Cemetery 3 and most were sealed by deposits beneath the later south bailey rampart. These fragmentary structures may have been the remnants of buildings, from which the refuse dumped into Hollow 1 may have derived. To the west was a possible curving fence line (G1/4) consisting of three stakes, 0.18–0.21m deep (11565, 11825 and 11824). Just to the south-east were the remains of a possible post-in-slot building (Building 6, G1/5) aligned north-west to south-east. To the north of the main slot was a short slot set with three posts (11698), filled with pebbly deposits acting as consolidation or backfill. Cutting into these was a large construction cut (10261), curving round northwards at its eastern end with a flat butt end to the west, 0.35m deep. A narrow length of slot (11695=11101) along its eastern inner side may suggest the position of a decayed upright plank. Cutting it were post-holes (10270 and 11822) and a post-pit (11803, 0.51m deep). To the north-west was the butt end of what may have been a continuation of the same wall (11823). This observation gives and north-west/south-east length to the building of c.6m, with no trace of the northern or western sides surviving. At the butt end of the building's south wall was what may have been another post-setting (11719), 0.27m deep. Nine other post-holes were enclosed within the structure and may have been internal features or earlier/later structures or alterations. Insufficient evidence survived to ascertain the layout/function of Building 6. Its alignment was probably dictated by the line of Hollow 1 to the south-west, which lay about 10m away.

Just to the north-east was an area of localised structural activity (Building 7, G1/6). An isolated post lay to the west (11733), just to the east of which was a pit (11843). To the north, it was cut by a beamslot (11704) with a butt end to the south, 0.19m deep. The slot ran south-west-north-east on a slightly different alignment to a similar slot to the south (Building 8). Between the slot and pit was a double line of small shallow stakes. To the west was a small remnant layer (11782), apparently respecting a post to the west (11842), cut by a large ?square post-pit, 0.36m deep, containing a circular post (11680).

To the south were two slots aligned roughly east-to-west, perhaps parts of or replacement elements of a single structure (Building 8, G1/7). To the west was a 1m length of butt-ended slot (11790), 0.27m deep with a post at its base. To the west was a narrow slot (?upright plank — 11730) c.0.10m wide and 0.13m deep. The timber may have decayed *in situ*. Above it to the south was a spread of charcoal (11678).

Further east lay another fragmentary structure (Building 9, G1/9), again on an east-to-west alignment. A square post-hole to the north (11800) was 0.33m deep. Just to its south was a 3m length of beamslot (11544), 0.06m deep; concave depressions at its base may have been caused by posts. To the south was another square post-hole (11827), cutting into the fills of a pit (described below).

Small Finds

Finds from the lowest fill of pit 11790 included two fragments of lava quern (SF5574) and human bone, presumably intrusive from the overlying cemetery. Slot 11544 (Building 9) contained a dress/head-dress pin of Saxo-Norman type (SF5818; Fig.4.67).

Pottery

Less than 0.5kg of TTW, NEOT and EMW pottery was recovered from Building 6 (G1/5). Fills relating to Building 8 (G1/7) contained mostly TTW (0.162kg) as well as one large sherd of unidentified fabric. Most of the pottery from Building 9 (G1/9) was of TTW. See Appendix 6.

Open Area 3: Pits and Gullies (Fig.4.14)

Although structural remains were evident, there was no intensive pitting in this area prior to the laying out of Cemetery 3 (Fig.4.14). Scattered pits and posts lay across the area and it is possible that some of the latter related to the use of the cemetery. A series of gullies lay to the east, the dating of which remains uncertain. A single small sherd of Stamford (Fabric B) was recovered from one gully and may indicate a mid 11th century date for infilling.

Three possible domestic refuse pits lay intercutting to the west (60494, 60464 and 60508, G6/11). They contained relatively large quantities of charcoal, burnt daub and pottery. Three more examples to the south (G1/11, 11942, 11906 and 14206) were recorded in section only (S.174, 175 and 132) and had clearly been sealed by subsequent deposits beneath the south bailey rampart (see Period 2.1, Chapter 5). Other features to the east of Hollow 1 pre-dated Cemetery 3. Scattered posts and small pits lay to the east (60457, 60462, 60460, 60441, 60451, 60522, 60512 and 60510 — G6/12), although little evidence survived and few finds were recovered from them. Further east (G1/8) were two other features which were slightly larger. One may have been the remnants of an east-to-west gully (11809, augered to 1.5m), which may have connected with others to the east. Pit 11808 was augered to c.0.5m. Both features were sealed by an organic deposit (augered to a depth of 1.03m) and both had been cut by graves.

Running between Open Areas 3 and 5 were a number of intercutting gullies (G6/16) which may have formed boundary markers. Their replacement suggests some longevity of use/function. The earliest example (60637), which cut into a short length of slot (60645), lay just to the west of the later ones and was observed over a length of 3m, being 1.5m wide and not bottomed. It was irregular in plan and appeared to turn westwards at its southern end. Just to the east, cutting into the earlier gully, was a similar feature (60641=?=60642=60598=60596), with a total recorded length of just under 10m and varying width of about 1.5m. North of a modern pipe trench, this occurred as two apparently separate features, perhaps recuts. To the south of the pipe trench, the two features appeared to join together to form one gully, irregular in plan and curving eastwards at its southern end. The position of a kink in its plan suggests that the gully could have swung out of line to avoid a grave (60561, Cemetery 3, Period 1.3) just to the east.

A number of interpretations for the gullies are possible:

1. successive delimitations of one or more pre-Conquest plot boundaries;

2. successive delimitations of the boundary of Cemetery 3 (Period 1.3): the majority of graves lay to the west of these gullies, although five graves (one in Area 6 and 4 in Area 22) lay further east. It is possible that these graves lay outside the cemetery proper, or that the extension of the cemetery eastwards was a later development;
3. drainage: similar gullies were recorded to the west (Period 1.4 and *cf.* those recorded during excavations in the north-east bailey, Ayers 1985). A later, even post-Conquest, date is possible placing the features within the castle's early south bailey.

A group of large undated square post-settings at the southern end of the gullies (G6/24, 60587 *etc.*) may have formed part of a single structure aligned on north-south/east-west lines. Alternatively, they may have related to the suggested boundary or may have been much later features.

Small Finds

Finds from the gullies included an iron wallhook (SF6736; Fig.4.100), iron dome-headed tack (SF6269) and a gilded copper alloy hinged plate (SF1041; Fig.4.68).

Pottery

A total of 1.109kg of pottery was recovered, of which 1.068 came from pits and the remainder from gullies. Fabrics are TTW, NEOT and EMW. The additional presence of fine Stamford ware (Fabric B) appears to date pit 60441 to the mid 11th century, although its stratigraphic position shows that it pre-dated a subsequent cemetery which has been radiocarbon dated to the late 9th to mid 11th century (see Period 1.3). See Appendix 6.

?Yard/Open Area Between Building 1 and Building 11

A number of pits to the north of Open Area 3 may have lain in an external area between plots relating to Building 1 to the west and Building 11 to the east, although perhaps not in a well-defined area (not illustrated separately; see Fig.4.11).

Open Area 4, Phase 1: pits

by Elizabeth Shepherd Popescu and Andy Shelley

A pit lying to the east (40377, G2/5), 0.70m deep, contained refuse including mussel shell above which were charred timbers which may have been nailed together, perhaps the remnants of an original timber cover. Above this were further charcoal-rich refuse fills. The pit was eventually cut into by castle-related ditches. Just to its west was an isolated pit (40300, G2/49), 0.85m deep, infilled with alternating layers suggesting use as a refuse/cess pit. Much further west was another, larger pit containing organic material at its base (20099, G2/19), 0.55m deep. Above it was a pit with a flint and clay circle at its base (20092/20100, G2/14) which had apparently been used for refuse disposal as a secondary function.

Small Finds

Fills of pit 40377 contained a quern (SF5801), horseshoe (SF5849) and nails (SF1050, 1051 and 1052).

Pottery

A total of 1.133kg of pottery was recovered, consisting of TTW and EMW. See Appendix 6.

Pottery Manufacture and Adjacent ?Structure

The features detailed below have been loosely grouped into a single plot, although it is uncertain which may have been in contemporary use (Fig.4.15). This 'plot' lay within the confines of the later cemetery (Cemetery 3, Period 1.3) and the date range of finds suggests that it may have either pre-dated the burial ground or been contemporary with its early stages. No graves were present in this area. A kiln-like structure, with a substantial ceramic assemblage dating to the late 10th to 11th century, lay adjacent to pits used for the disposal of ceramic waste. These features indicate local pottery manufacture and associated activity. Another pit, lying c.40m to the east, contained similar waste although it appeared to be slightly later (11th century) and is therefore detailed in Period 1.3.

Open Area 5 and Building 10: kiln/drying oven and pits
by Elizabeth Shepherd Popescu and Niall Donald
(Figs 4.15–16, Plate 4.7)

Just to the north-east of Building 10 (see below) was a keyhole-shaped oven or kiln (22285, G22/134, Plate 4.7), aligned east-to-west with a stokehole to the east (Figs 4.15 and 4.16). It was 2.12m long with the width across the kiln end being 1.06m. The flue area was 0.44m wide, broadening to 0.48m at the stokehole. Its depth varied; at the stokehole and flue it was 0.10m deep and at the firing chamber 0.30m deep, dipping down into a pocket 0.55m deep to the north. This deeper area, although curious, appears to have formed an original part of the firing chamber. There was no evidence to suggest the presence of pedestals or a raised area upon which the items to have been fired or dried might have been stacked. The flue and firing/drying chamber were faced with successive clay linings, with a total thickness of 0.10–0.14m. Use of the feature had fired these linings so that they were dark grey or very dark grey in colour with the exception of a lining to the south which was red, compact and sticky, as if never subjected to intense heat. The underlying natural sands and clay were also reddened from heat exposure. Visual examination suggested that the clay linings had not to have been heated sufficiently to indicate use for firing pottery. An interpretation as a failed kiln or drying oven is more probable. Ceramic building material included possible mould fragments.

The disuse and/or demolition of the feature had left few archaeological traces. There was no evidence for

the collapse or dismantling of the superstructure and the feature was finally used for the disposal of ceramic waste. Pottery made up 30–40% of a fill consisting of dark grey black sandy clay with reddish mottles, frequent flecks of charcoal and small lumps of burnt clay. Two further deposits of pottery may also have been associated with this backfilling process, although they had been disturbed by later landscaping. Fire debris was also recorded in the stokehole area. Pottery, plant remains and charcoal are described below. Further discussion appears in Chapter 4.III and VI, with wider implications for pottery manufacture considered in Chapter 13.

Just to the south of the kiln/oven were two fairly small, roughly circular pits. The earliest (22359, G22/136) was shallow (at 0.22m) with a flat base. It contained a relatively large amount of pottery, suggesting a function for

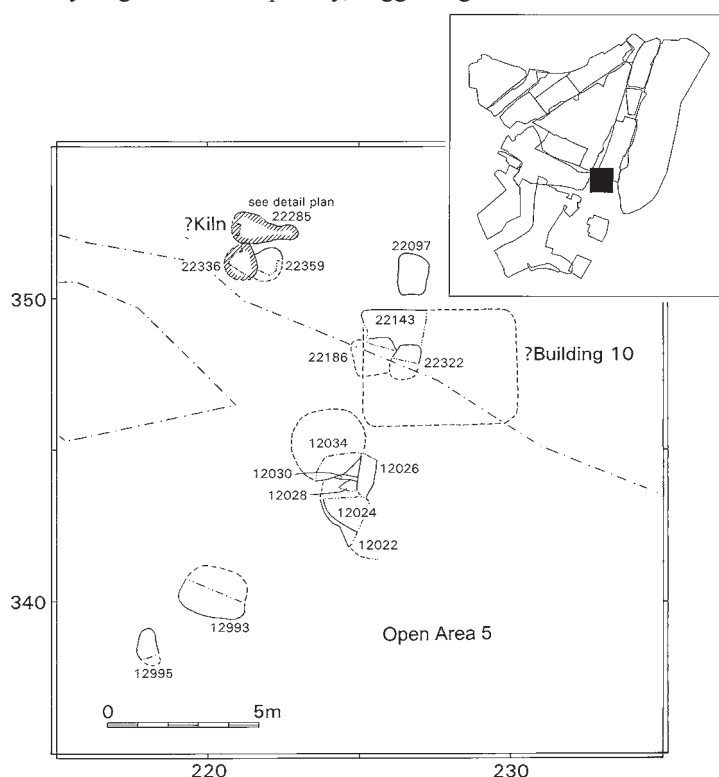


Figure 4.15 Period 1.2: Plan of Building 10 and Open Area 5, showing location of ?kiln 22285 (Area 22 and T8/49). Scale 1:250

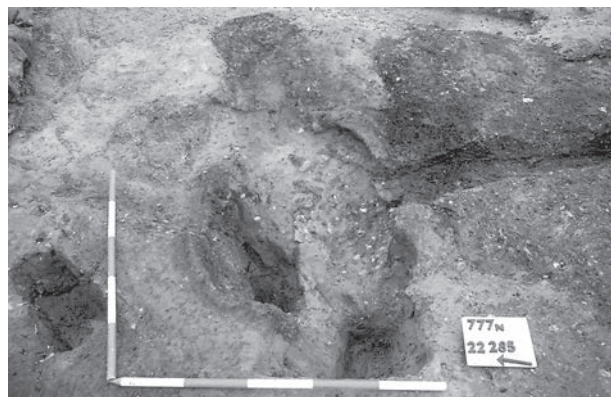


Plate 4.7 Late 10th- to 11th-century failed pottery kiln or drying oven 22285, Open Area 5 (Area 22; Period 1.2)

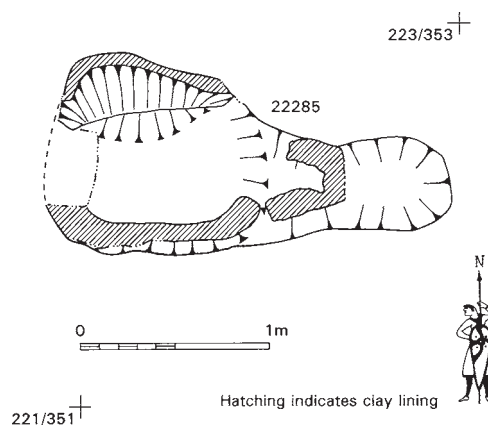


Figure 4.16 Period 1.2: Detail of ?kiln 22285. Scale 1:40

the disposal of ceramic waste. Cutting into this pit and just clipping the southern edge of the kiln was a second pit (22336, G22/135), lined with fire-hardened dark grey clay. Again, it was sub-circular and was excavated to a depth of 0.96m, although the base was not reached. The sides were regular and vertical. Most of the excavated fill was a homogeneous mid grey brown silt with tip lines but with no traces of burning. The top of the pit was filled with dark grey brown/black sandy silt with abundant charcoal and burnt clay. The pebbles within this deposit appeared to have been fire shattered. Their position lies too high to have been contemporary with the fire hardening of the lining and they may have been waste from a heat intensive activity occurring nearby. This fill contained a large ceramic assemblage which might suggest the continuation of firing/drying activities in this area. The environmental sample provided similar evidence to that from the kiln itself and the charcoal assemblage was also very similar in terms of its woody constituents.

Lying slightly further to the east was another small, roughly rectangular pit (22097, G22/137), containing a sequence of refuse fills and much burnt debris. It was flat based with vertical sides and an estimated depth of 1.10m. Its primary fill contained quantities of fired clay, sealed by dark brown grey silty sand containing much burnt material. Other finds from the pit confirm the presence of domestic waste.

To the south were two sub-square/rectangular inter-cutting pits (G22/132, 22322 and 22186). Both were medium-sized and were not bottomed. One contained lenses of ash. Above were the possible remnants of a sunken-featured building (22143, Building 10, G22/133), only the north-western corner of which survived. This interpretation is highly tentative. The feature, which was shallow when compared to surrounding pits and exhibited the same east-to-west alignment to sunken-featured buildings to the north, was 0.30–0.36m deep, with steep sloping sides and a concave base. Its fill contained large amounts of fired clay. It seems likely on the basis of ceramic date and spatial position that this feature predated the cemetery which lay just to the west (Period 1.3).

Furthest to the south were features recorded during a watching brief (T8 and 49/2 and 3; 12028, 12030, 12034, 12026 12024, 12993 and 12995) including an intercutting sequence of pits and slots. Very little of these was excavated although the features were noted to have conspicuously high proportions of burnt and unburnt daub and charcoal in their upper fills which may suggest that they were again the repository for burnt waste.

Small Finds

Pit 12993 contained a prehistoric flint core flake (SF7449) and an iron nail (SF6442). Finds from the possible kiln (22285) included intrusive clay pipe (from 22157) and vessel glass (SF6810 from 22003) and the burnt distal end of a residual Mesolithic/Neolithic blade (SF6611). Finds from pit 22097 include a bone ?point (SF6745), a broken iron blade with a long pointed tip (SF6565) and a fragment of nailed iron sheet (SF6728), possibly from a lock plate.

Pottery

by Irena Lentowicz
(Fig. 4.71)

A large quantity of pottery was recovered from the possible kiln (22285, G22/134; 25.499kg; Fig. 4.71) and a late 10th- to 11th-century date is suggested (overlapping the suggested date of Cemetery 3). Of the total weight, c 84% came from samples; the majority of these were samples taken for identification and dating purposes, while some of the material came from samples taken for environmental flotation. The average sherd

size remains consistent at c. 7–8g regardless of method of retrieval or sample technique used. Although the feature was indeed kiln-shaped, it was small and examination during excavation revealed that the clay lining appeared not to have been fired to a high enough temperature to indicate that the feature had been used for firing pottery, although it had undoubtedly been used. Archaeomagnetic dating (Linford, Chapter 4.III) proved inconclusive. Dallas' criteria for recognition of kiln products (Dallas 1993, 128) were applied to the ceramic assemblage. Although the assemblage was dominated by TTW, other fabrics were present although only EMSW provided a significant quantity. Other fabrics included EMW body sherds and an LMU jug handle.

TTW was represented in the main by jar rims; of 193 rims noted only two came from cooking pots; in addition one bowl rim (type BB2; Fig. 4.71, no. 6) was also present. Three small jars were recorded, but the majority were medium sized vessels (184 rims) with fewer large jars (forty one rims). A wide variety of rim forms were recorded, and types AB/AC11 (forty one/eleven examples; Fig. 4.71, nos 1 and 2), AB/AC13 (forty one/five examples; Fig. 4.71, no. 3) and AB/AC14 (forty eight/seventeen examples; Fig. 4.71, no. 4) were most common. A small number of earlier, 10th-century rim forms were also present (types AB7 — six rims, and AB/AC16 — six/two examples; Fig. 4.71, no. 5) as well as a small number of later, 11th-century types (type AB9 — one rim, and AB10 — three rims). A small number of sherds were noted as wasters (five, including two bases) and two sherds were noted as cracked (a large jar rim (type AC14) and a jar base). Three bases were also noted as clumsily finished, and may have been 'seconds'. A total of eighty-six bases were noted of which many were complete. Only one decorated body sherd was noted — an incised line.

Although the TTW assemblage met some of Dallas' criteria for kiln products (wasters and misfired sherds were present; fabrics and forms were repetitious; the similarity of manual treatment appeared to have been consistent as no divergence from standard, wheel-made products were noted) some of the pottery also displayed signs of domestic use. Some of the TTW sherds were abraded (seventy nine, 0.465kg) and some were sooted (fifty five sherds, 0.570kg). In addition, other fabrics were also present and the EMW and EMSW were also noted as used. EMSW was represented by rims from jars (types AB13 and AB14; Fig. 4.71, nos 7 and 8).

However, this was an extremely large assemblage for a single feature and a proportion of the TTW displayed characteristics of a kiln assemblage. It was possible that the backfilling of the ?kiln/oven was made up of two elements — a domestic assemblage comprising a number of fabrics made up of small sherds some sooted and abraded, and the dumping of possible kiln material made up of large fresh sherds of TTW, some of which is mis-fired and mis-shapen, with a standardisation of vessel form and rim type.

A total of 9.888kg of TTW, NEOT, EMW and EMSW pottery was recovered from the pits adjacent to the possible kiln and is detailed in Appendix 6. Some large individual assemblages were present and some of these features may date to the 10th century, although others are 10th to 11th- or 11th-century groups.

Botanical Remains

by Peter Murphy and Rowena Gale

A flot from pit 12024 is detailed in Chapter 4.IV, Table 4.24. Flots from fills of the possible drying oven/kiln (BS1510, 1588, 1589) were largely composed of charcoal with a few cereal grains (*Avena* (oat), *Secale* (rye), grass/cereal culm, nodes and silica fragments of *Raphanus raphanistrum* (wild radish)). This suggests the use of cereal by-products for kindling or fuel. Charcoal analysis indicates the presence of *Acer* (maple), *Corylus* (hazel), *Fraxinus* (ash), *Pomoid* (e.g. hawthorn/apple), *Quercus* (oak) and *Salicaceae* (e.g. willow/poplar). A high proportion of the oak and ash fragments included heartwood; these are long-lasting fuels with high calorific values and ash burns well when green. Pottery kilns can operate at the temperature produced by wood fuel. A sample from pit 22236 (BS1594, G22/135) was similar in composition to the samples from the 'kiln'. Further details are given by Murphy and Gale in Chapter 4.IV.

Building 11, Phase 1: sunken-featured

by Elizabeth Shepherd Popescu and Niall Donald
(Figs 4.17–4.19, Plate 4.8)

A rectangular sunken-featured building (5.20 x 3.60m; Building 11, G22/154, Plate 4.8) aligned east-to-west lay to the north of centre of an area of surrounding pitting (see Fig. 4.17 and Open Area 6 below). The building may have been constructed towards the end of the 10th

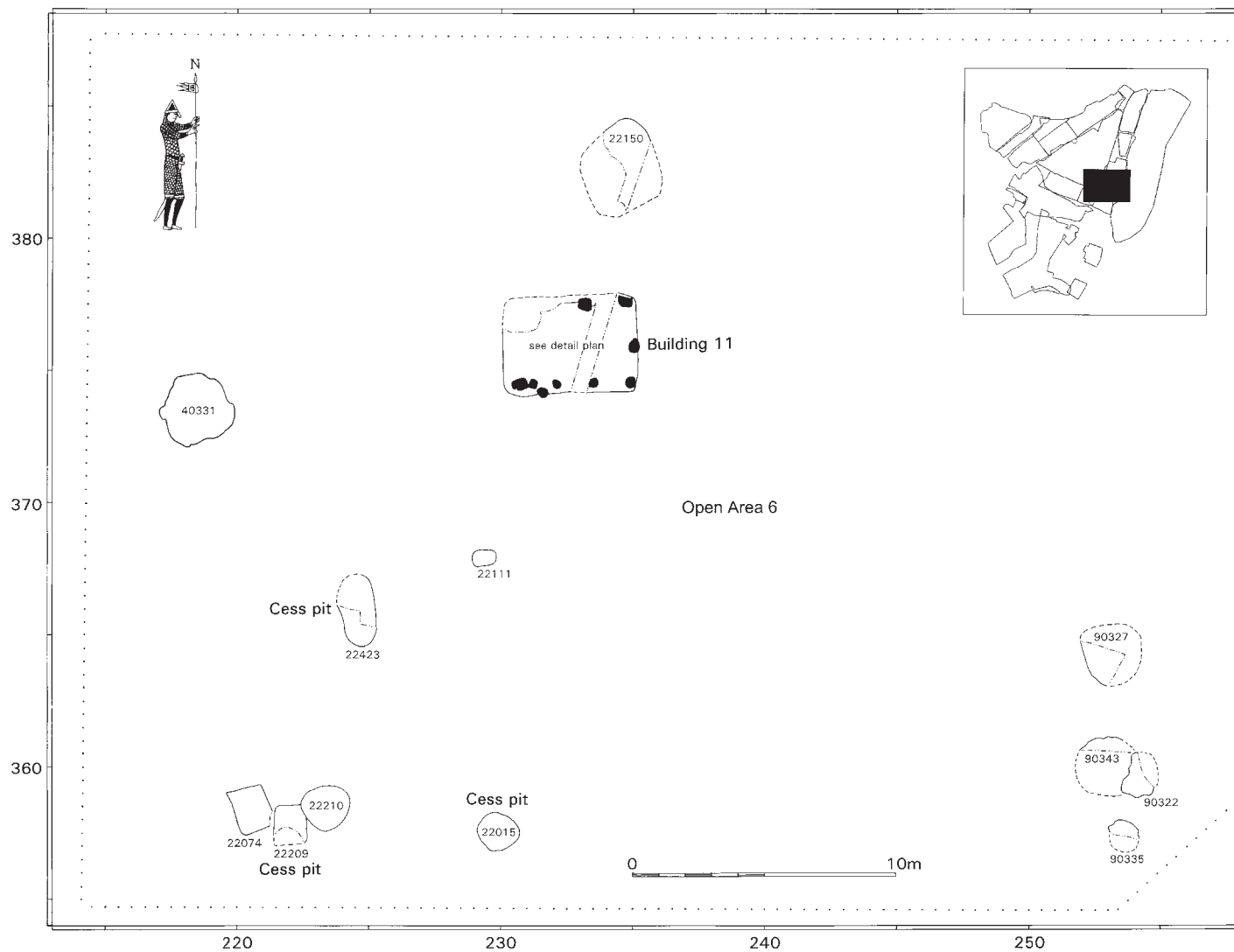


Figure 4.17 Period 1.2: Building 11 and Open Area 6 (Areas 4, 9 & 22). Scale 1:250

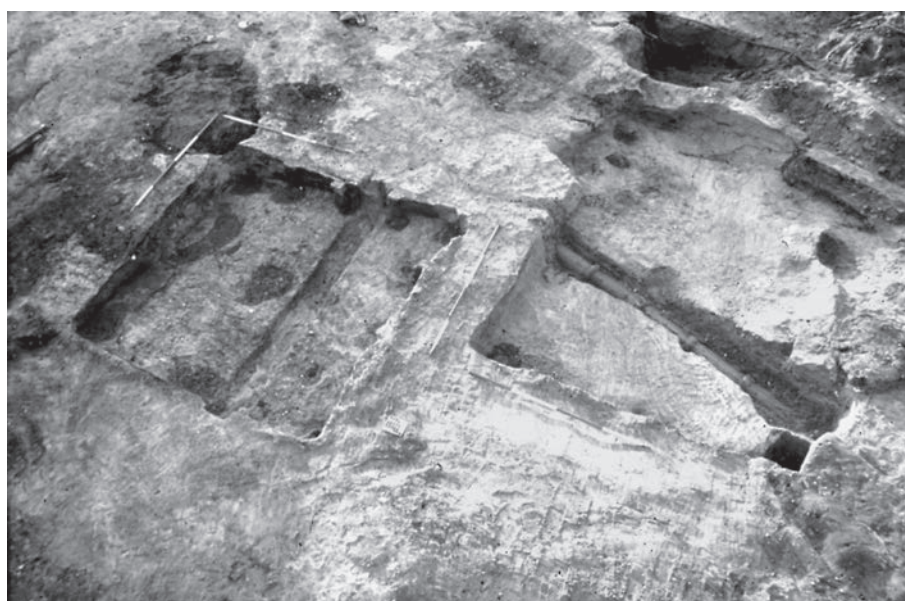


Plate 4.8 Sunken-featured Buildings 11 (right; Period 1.2) and 25 (left; Period 1.4), showing internal post settings. The linear trenches cutting across the features relate to modern services

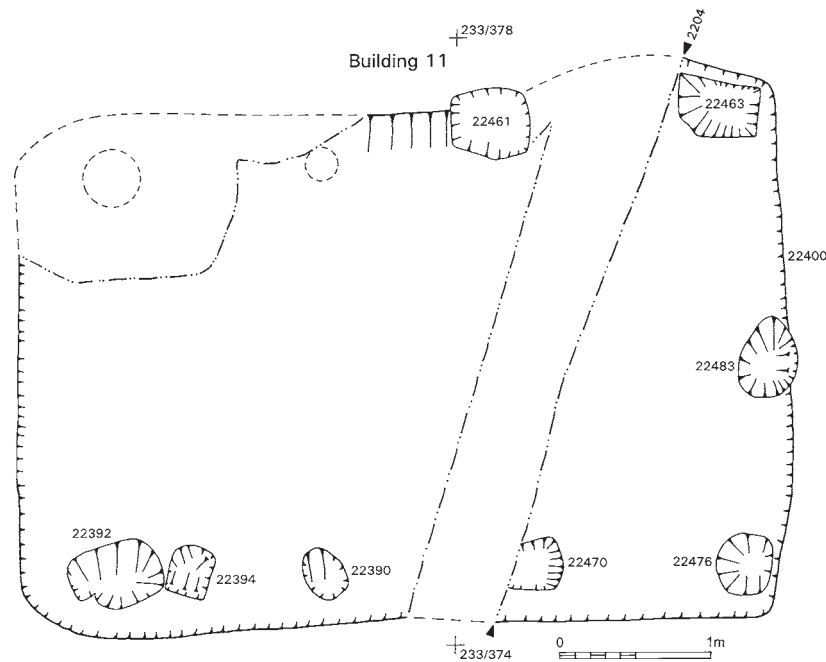


Figure 4.18 Period 1.2: Detailed plan of Building 11 (G22/154, Area 22). Scale 1:50

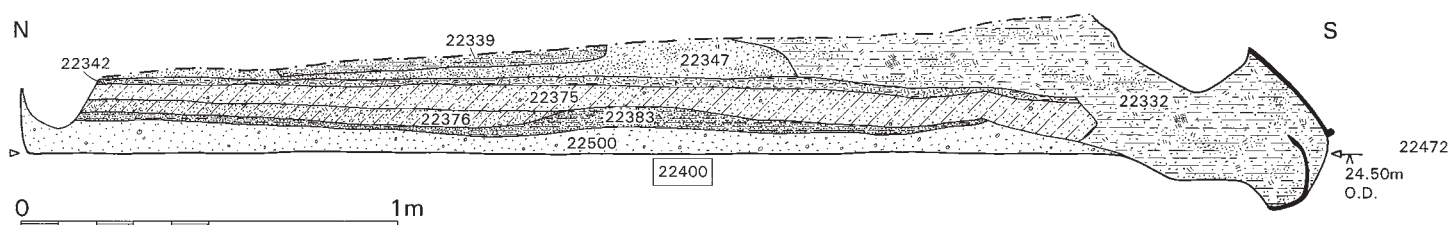


Figure 4.19 Period 1.2: West-facing section across Building 11 (Area 22, S.2204). Scale 1:20

century, with later developments and destruction occurring in the 11th century (Period 1.3).

The surviving depth of the construction cut (22400) was 0.22–0.45m (Fig.4.18). Evidence for walling consisted of five post-holes along the southern edge (22392, 22394, 22390, 22470 and 22476), four of which were spaced at regular intervals, with the fifth placed close to the westernmost post. A single post lay roughly at the centre of the eastern side (22483), with no similarly placed post on the western side. Only two post-holes survived along the northern side (22461 and 22463), roughly opposite those to the south. The post-holes measured between 0.28 and 0.64m in diameter. The two largest posts along the south wall were those in each corner, with those between being smaller. This size difference is not, however, reflected in the depth of the post-holes with posts along the south side ranging from 0.14–0.22m; the post in the south-east corner was the most shallowly set. The post-hole in the north-east corner (22463) was over-excavated due to the presence of an underlying natural solution feature. The absence of a post along the western side of the building could suggest the presence of an entrance on this side.

One possible interpretation of the constructional technique is that a baseplate was supported on earth-fast posts set around the edges of the construction cut to form

a box-frame type structure (see Chapter 4.VI for further discussion). The remains of a revetment around the sides of the construction cut (*i.e.* behind the posts) survived as a very dark grey sandy silt with frequent charcoal flecks which included some undecayed wood fragments (22472; although it is possible that some of the latter may have been the result of recent root disturbance.) This decayed lining may have consisted of upright planks set against the sides of the pit, placed behind the structural uprights. A thin deposit of pale yellow, grey and orange sand (22473) was recorded behind the lining. No ceramic building materials were recovered from early deposits within the building, although evidence from destruction deposits suggests the possible use of daub walling. Similarly, there was no evidence to suggest the nature of roofing materials, which may have been thatch. Although there was no indication of the position of the upcast from the construction cut, elsewhere it has been suggested that such material might have been placed around the external walls of similar buildings.

At the base of the construction cut (Fig.4.19) was a thin band of yellow orange sand containing frequent small and medium pebbles (22500) which might have been the effect of the use of the cut as a floor (or the floor may have been set at a higher level). Very little in terms of use deposits were apparent. The pebble layer at

the base of the construction cut was sealed by burnt silt, presumably the remains of occupation debris lying on the floor (22383; see Period 1.3). Finds from destruction deposits are described in Period 1.3.

Small Finds

Few finds were recovered from the initial constructional phase. A fragment of quern came from the basal fill of post-hole 22483 (SF6607) and may have been deliberately placed to support a post, above which was the rotted base and remnants of the charred wooden post (Lab. Sample 1670).

Pottery

Pottery from the constructional phase of the building consists of four very small sherds of TTW recovered from two samples from post-holes (22461 and 22476). Pottery from later deposits also includes EMW, EMSW and Stamford (B) suggesting an 11th-century date for the disuse/abandonment of the building (described in Period 1.3).

Plant Macrofossils

Plant macrofossils from the constructional phase are detailed in Chapter 4.IV, Table 4.21, with further comments in Chapter 4.IV.

?Yard Relating to Building 11

An area of pitting has been loosely associated with Building 11, although a road may have run to the east of the building, separating the features into two areas (see Chapter 4.VI). The clearest evidence for obviously pre-cemetery activity comes from three pits recorded to the south-west (in Area 22, G22/130), which were overlain by a group of four graves. The pits lay in an intercutting sequence, gradually moving eastwards. Pit fills in the area suggest the disposal of domestic waste (including cess) rather than craft/industrial waste. One pit to the west did contain burnt debris, although it is unclear whether this relates to a firing activity or to the disposal of waste from, for example, domestic hearths. Two pits contained partial animal skeletons.

Open Area 6, Phase 1: pits

by Elizabeth Shepherd Popescu and Niall Donald, with Andy Shelley
(Figs 4.17 and 4.20)

The earliest pit in the pre-cemetery group (22074, Fig.4.20) was sub-rectangular with vertical sides, augering suggesting a depth of 2.00m. Backfilling consisted of many thin lenses of mid to dark brown or grey brown sandy silts. Only one fill contained frequent flecks and lumps of charcoal and lay towards the top of the pit. Pottery indicates that this pit may date to the 10th century. Clipping its south-eastern corner was another (22209), sub-square pit with near vertical sides and a flat base at a depth of 0.86m. It contained a near-complete TTW vessel. The latest pit in the sequence cut the north-eastern corner of the second pit. It was sub-circular (22010) and was flat based with a depth of 1.10m and concave sides. The upper parts of all three pits had been filled by a single deposit of dark grey brown silt containing burnt clay (22075). This may indicate either that the features were not clear at the surviving surface or that they became infilled in a single action, perhaps in association with the overlying cemetery.

Continuing the east-to-west line of pits to the east was an isolated roughly circular cess pit (22015, G22/138), which also contained domestic refuse. It had steeply sloping sides and a flat base and was 1.15m deep. Infilling consisted of a sequence of refuse/organic fills, interspersed with 'clean' sand (the sequence being repeated

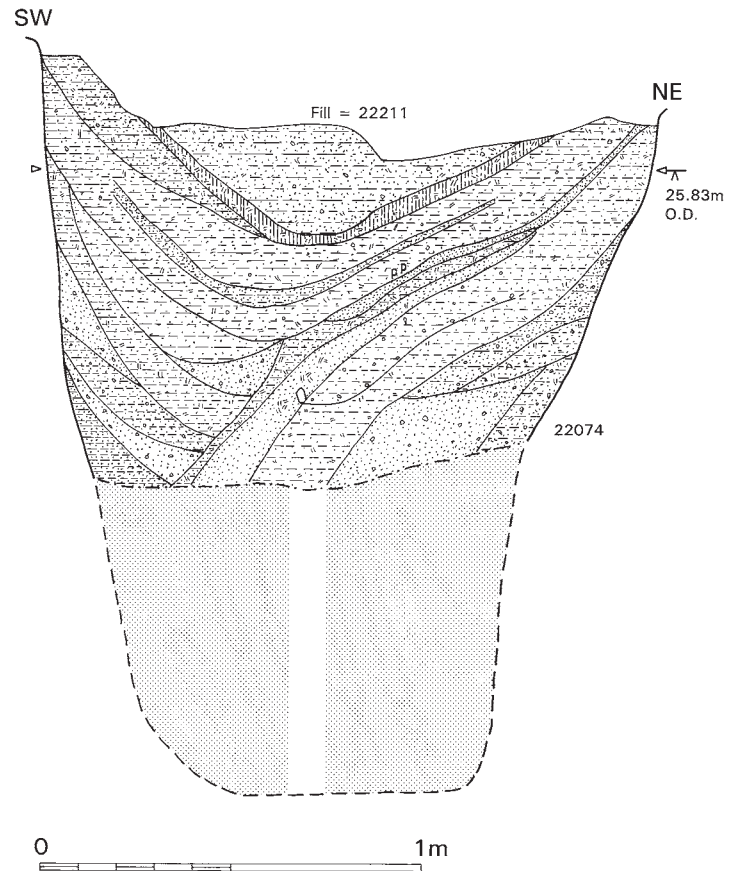


Figure 4.20 Period 1.2: West-facing section across pit 22074, Open Area 6 (Area 22, S.2206). Scale 1:20

nine times before the pit was full). Slumping or shrinkage of fills was evident. The ceramic date for this pit is late 10th- to 11th-century, perhaps making it earlier than those to the west.

An irregular refuse pit (40331, G2/7) lay to the west of Building 11, other pits being dug here later in the 11th century (see Period 1.3). The sides were sloping and it was augered to a depth of 1.82m. A complex infill sequence was apparent. The uppermost 0.80m contained burnt matter, including notable concentrations of burnt clay, ash and charcoal.

Other pits lay to the south of Building 11. Just to the north of the pre-cemetery pits was an elongated oval cess pit (22423, G22/143). Its sides were vertical and the base was not reached at a depth of 1.2m. An organic fill which lay between two fills with a distinctive pink and green mottling. Isolated to the east was another small pit (22111, G22/145) containing part of a cat skeleton.

Just to the north of the building was a large, shallow pit (22150, G22/150) of possible sub-rectangular shape. This had been heavily contaminated by roots from a nearby tree. It was c.0.20m deep.

Four pits of varying size (G9/69) lay several metres to the south-east of Building 11 and may have lain on the other side of a postulated road/lane. They ran in an approximate north-to-south line with three small to medium sized pits to the south and a larger pit to the north. Interpretation is problematic due to truncation, but at least one pit had been used for refuse disposal. Fills

included burnt daub, perhaps from the destruction of an adjacent building/structure.

Furthest to the south was a small, sub-circular pit (90335), truncated to the south by the construction of an air raid shelter. This survived to a depth of 0.37m. Its base was concave with steep north and east sides and a concave west side. To the north was a larger, perhaps sub-circular pit (90343) with a flat, undulating base and near vertical sides and a depth of 0.41m. Only the northern part of this pit was investigated. It appeared to have been left open after excavation, with a deposit of natural sand accumulating to a depth of 0.10m over the base prior to infilling.

Just clipping the south-east side of this pit was an irregularly shaped pit (90322) with a flat/sloping base and gently sloping sides with a near vertical northern edge, surviving to a depth of 0.57m. To the north was a heavily truncated pit (90327) which had been largely removed by modern activities. It may originally have been sub-circular in plan with a surviving depth of 0.66m. It had near vertical sides and a concave base.

Small Finds

Finds from pit 22074 include antler comb-working debris (SF6589; Fig.4.102). Deposit 22075 contained domestic refuse including iron nails (x 2, SF6569) and a child's bone skate of 10th–11th-century date (SF6590; Fig.4.105). Pit 40331 contained intrusive clay pipe, a fragment of lava quern (SF5907) and a fragment of pottery with an iron (possibly iron pan) encrustation (SF6008).

Pottery

(Fig.4.72–4.73 on CD)

The three pits beneath the cemetery provide useful ceramic evidence, consisting of 11.459kg of TTW, NEOT, EMW, EMSW and single sherd of Pingsdorf type ware, as well as residual Roman pottery. Pit 22074 could be 10th-century in origin, while late 10th- and 11th-century forms were present in other features. This layer sealing the pits (22075) appears to date the sealing of the earlier features to the 11th century on the basis of the presence of the type AF9 and AB11 vessels, with of overlying burials being radiocarbon dated to the late 9th to mid 11th century (see Period 1.3 and Chapter 4.V and VI). See Appendix 6.

Botanical and Zoological Remains

by Peter Murphy, Umberto Albarella *et al*

Flots from pits 22074, 22209 and 22010 (BS1573, 1571, 1572) included moderately large quantities of charcoal, including large fragments. Charred cereal grains were extremely rare — just a few *Avena* (oat). Mineral-replaced stems and small concretions were noted, as well as *Sambucus nigra* (elder) seeds. Rare small fish and mammal bones were present. One flot (pit 22209, fill 22212) was largely composed of elder seeds with some charcoal and small fish bones. The seeds may be surviving residues from sewage.

Cess staining was noted in one of the lower fills of pit 22015 and the small flots from cess/refuse fills (BS1504, 1508, 1509) contained charcoal although were largely composed of mineral concretions, occasional scraps of mineral-replaced *Agrostemma githago* (corn-cockle) testa, numerous very small fish bones, abraded mammal bone fragments and some small mammal bones. These components suggest that the feature was used as a cess pit. Animal bone from this pit included the partial skeleton of a goat, while pit 22111 contained a partial cat skeleton (Albarella *et al*, Part III; see Table 4.18, Chapter 4.IV).

?Yard

A large deep pit lay to the east of Open Area 7 and may have been an isolated feature (surrounding pits have 11th- or mid 11th-century ceramic dates, whereas this pit contains 10th- to early 11th-century pottery). The pit was certainly used for refuse disposal as a secondary function, although perhaps not a primary one. This part of the site was notable for a concentration of similar very deep pits (see further discussion in Chapter 4.VI).

Open Area 7, Phase 1: deep pit

by Elizabeth Shepherd Popescu and Niall Donald (Fig.4.21)

This vertical-sided pit was *c.*4.80m deep (91074, G9/51, S.954 and 955 – Fig.4.21) and may originally have been sub-circular in plan, with a surviving east-to-west width of 2.7m. Only the upper 1.20m of its fills was excavated, the rest augered. A possible clay lining (91092) contained small to medium sized lumps of chalk. Where visible, the lining lay directly against the side of the pit. A similar layer was noted again at an auger depth of *c.*3.40m. If the latter was the same deposit, it could suggest a relining (as it lay *c.*1.40m above the base) or that this was simply a fill. The lower part of the pit contained a 0.80m thick deposit of sandy silt, perhaps the result of weathering, overlain by a dark organic refuse layer containing mussel shells. This was sealed by the clay/chalk ?lining. The following *c.*2.2m of pit fill was unrecorded, with the next recorded deposit consisting of pale sands with three very thin lenses of dark organic material, perhaps gradually accumulated (91083). This process apparently continued with a further deposit of mid grey silty sand containing charcoal and burnt clay (91073). A large lens of partially fired grey orange and green clay was present. Above were lenses of burnt red clay and charcoal interleaved with yellow/orange sand, dark brown loam sand and pale grey brown sands (91072 and 91094). These were interpreted on site as burning *in situ*, although an interpretation of the disposal of burnt waste might be more appropriate given its unstructured appearance in section. The uppermost fill (91093) consisted of similar fire debris/burnt clay deposits to those already described.

The original function of this very deep pit is unclear. The nature of its possible secondary lining is unusual for the site. It may have been intended for water storage, a cess pit or simply a massive refuse pit. The presence of textile is notable, due to its rare survival on the site. The burnt clay/daub could indicate the disposal of similar waste to that occurring in pits in Open Area 5 to the west, where the material appears to relate to pottery manufacture.

Small Finds

Finds from pit 91074 were generally of domestic refuse including a lead sheet (SF6428), iron fibre processing spike (SF6318) and very small, charred fragments of textile (SF6443).

Pottery

(Fig.4.74 on CD)

The fills of this pit were dominated by TTW with a total of 1.447kg of pottery being recovered (Fig.4.74 on CD). Small quantities of NEOT and EMW were also present. This pit appears to date to the 10th or early 11th century on the basis of the TTW rims and the small quantity of EMW. See Appendix 6.

Botanical Remains

A composite of upper fills (91094, BS1167) contained a well-preserved assemblage of rye grains and was selected for full analysis (see Chapter 4.IV), while a sample from the 'lining' (91092, BS1168) contained mainly charcoal with no interpretable material. See Chapter 4.IV, Table 4.24.

Building and ?Associated Pits

A sunken-featured building (Building 12, G9/48) may have been constructed in the 10th century with its destruction in the early 11th century. Although the environmental evidence (see below) does not suggest destruction by fire,

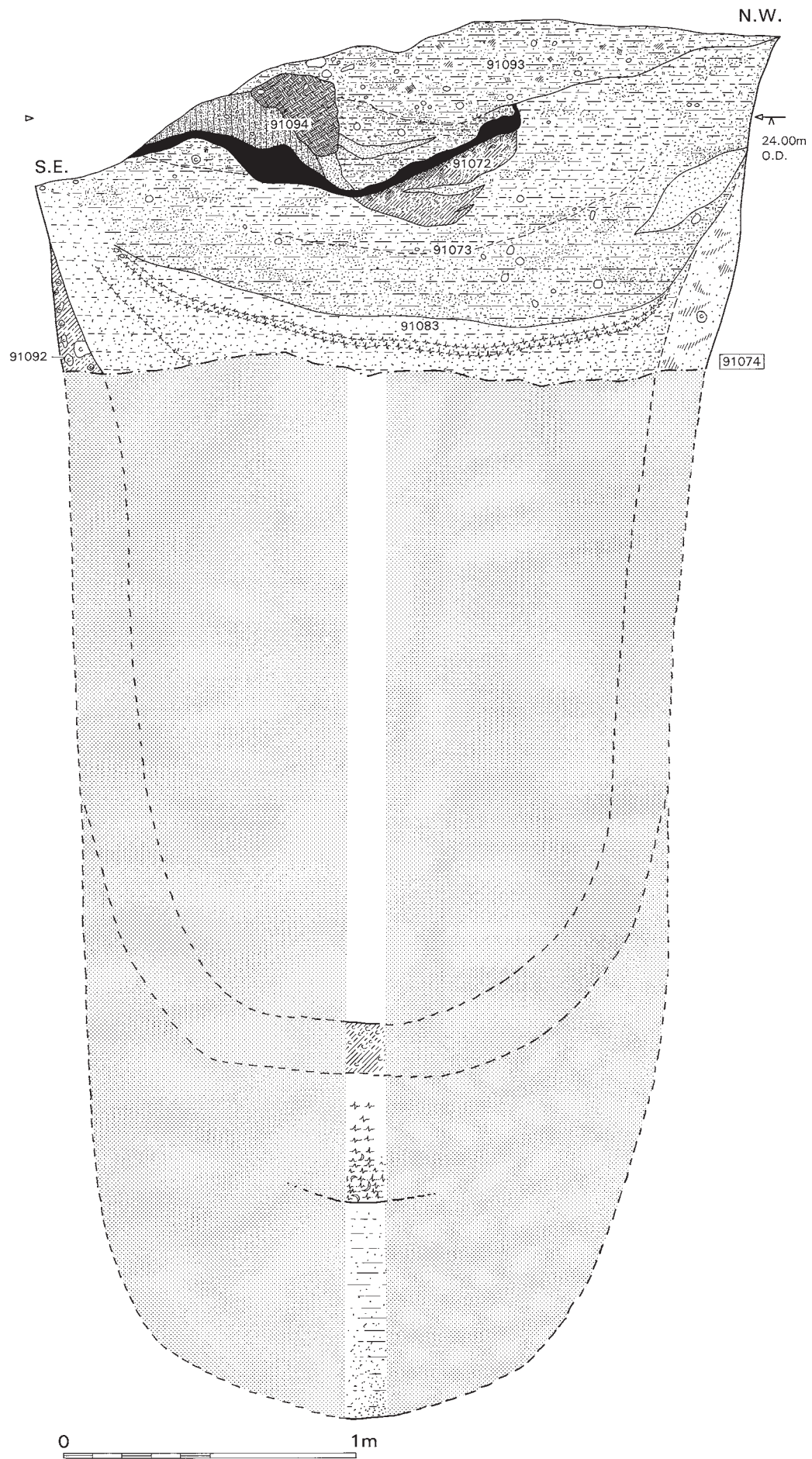


Figure 4.21 Period 1.2: West-facing section across pit 91074, Open Area 7 (Area 9, S.955). Scale 1:20

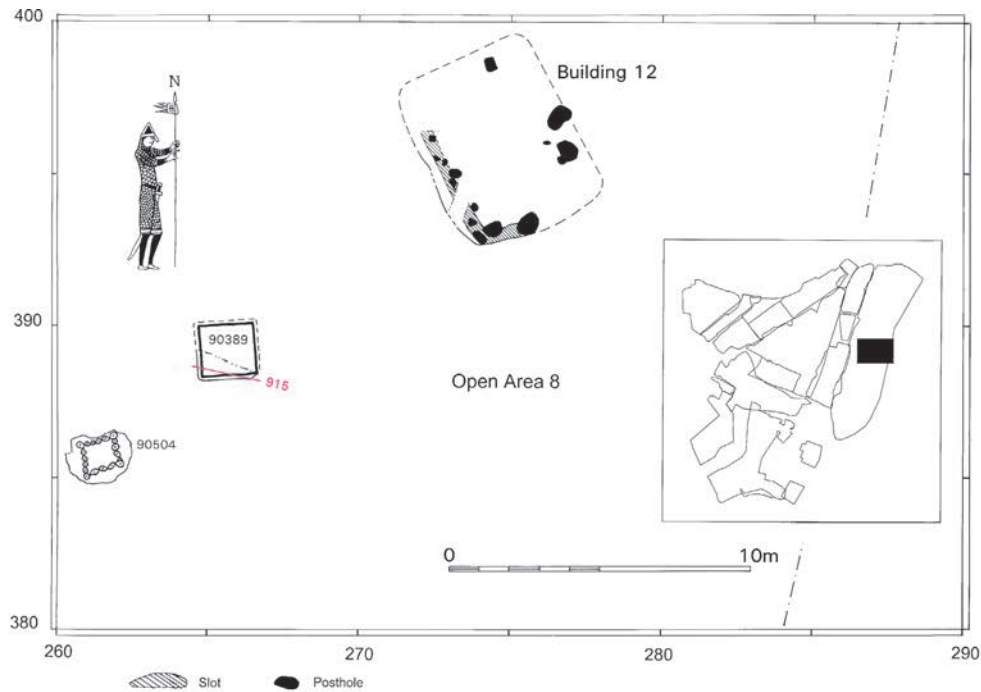


Figure 4.22 Period 1.2: Plan of Building 12 and Open Area 8 (Area 9). Scale 1:250

there was clearly a substantial amount of burnt debris in the environs. The spatial position suggests that the building was probably sealed by the construction of the Norman south bailey rampart.

Building 12, Phases 1–4: sunken-featured
by Elizabeth Shepherd Popescu and Niall Donald
(Figs 4.22, 4.24 and 4.25, Plate 4.9)

Two post-pits and an indeterminate feature lying beneath this building may indicate an earlier form or may have acted as marking out posts, lying about 4m apart. The two post-pits were roughly square (91938 and 92003, not illustrated) measuring between 0.50 and 0.75m. Post-pipes were recorded in both features, one in 92003 and two in 91938. An additional feature (92005) lay next to the northernmost post-pit.

Above these posts was the rectangular sunken-featured building, aligned north-west to south-east and measuring 5.90 x 5.4m (Plate 4.9). The inner sides were lined with a double row of posts set within a construction trench. In summary, the construction and use of the building appears to have spanned three or four phases:

Phase 1: two hearths lay directly on the natural subsoil, separated by a partition dividing the building in two (Fig. 4.24);

Phase 2: the removal of the partition and disuse of the hearths was followed by further deposits including patches of gravel 'surface' (Fig.4.25). Another post may have been inserted at this date, lying just to the north of centre. This was overlain by a deposit with a high sewage content (although whether human or animal was not determined);

Phase 3: the accumulation of an ash deposit, either destruction by fire or indicating the use of the building, with ash being raked out from later hearths (for which no evidence was found);

Phase 4: mixed dumps of fire debris including burnt clay and charcoal.

The description of the construction, use and disuse phases of the building that follows is highly interpretative due to the fact that the nature of the building was not fully recognised on site which necessitated a reinterpretation of the stratigraphic sequence. The building had been heavily truncated horizontally during subsequent landscaping.

Phase 1: Construction, partition and hearths

Only the south-western corner of the building had survived truncation, including stretches of the south-west and south walls (Fig.4.24). The position of posts to the north and north-east gives some indication of the position of the other walls, allowing a reconstruction of the original dimensions of the building. A construction cut (92045 and 92122) measuring an estimated 5.90m long (north-west/south-east) by an estimated 5.40m wide (south-west/north-east) was dug into natural deposits, with a surviving depth of 0.40m to the south and 0.18m to the north. Around the base at the internal side of this cut, a narrow slot was excavated, roughly 0.32m deeper than the internal floor level and with a width varying between 0.50 and 0.75m. This appears to have taken place prior to the setting of posts within the trench to form the walls and support the roof. Two lines of posts were recorded along the south-west and south sides of the building, lying within the slots. The outer line was set at the base of the slot, with post-bases lying up to 0.20m lower than the bottom of the slot. Four such posts were identified along the south-west side (91972, 92001, 92073 and 92069), with a further post on the southern edge (not contexted). The posts to the west were set 0.25–0.50m from the outer edge of the construction cut and were themselves c.0.25–0.33m wide. Two were sub-rectangular and two sub-circular. The largest (92069) probably acted as a corner post. One post-hole (92069) had surviving traces of a post-pipe. The post on the southern edge had a recorded width of 0.70m and a depth of 0.40m, although this appears to represent two posts; a smaller, deeper inner post and a shallower outer one. The inner line of five posts on the western side (91973, 91971, 91970, 91991 and 92071) were sub-circular in plan, with diameters of 0.20–0.35m for wall posts and 0.72m for the corner post. They lay on the inner edge of the slot.

There were no surviving traces of the internal construction slot along the north-eastern side of the building, although three post-holes were excavated. One pair showed the same placement of inner and outer posts to that described above (91984 — inner and 91981 — outer). The

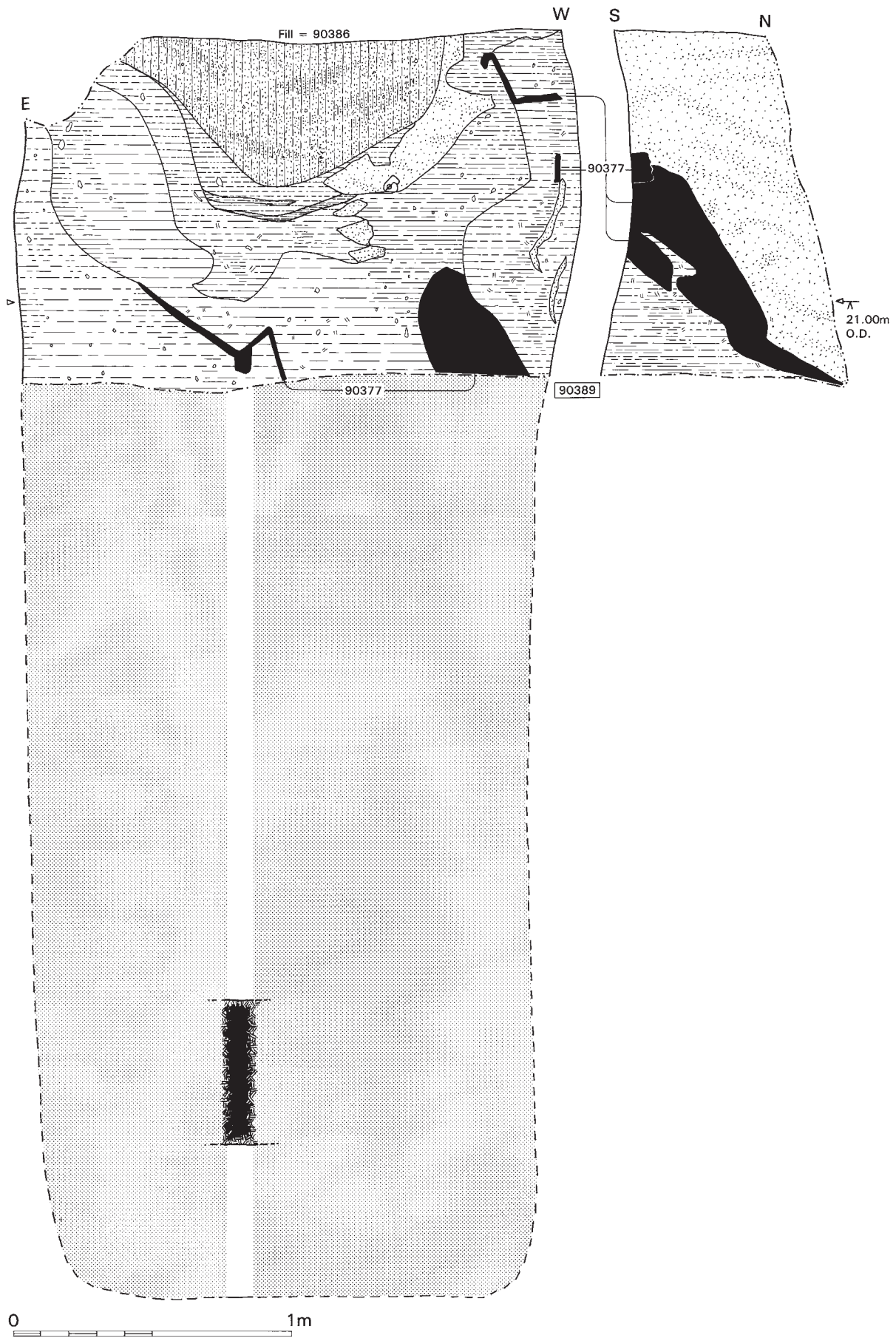


Figure 4.23 Period 1.2: North- and west-facing sections across pit 90389, Open Area 8 (Area 9, S.915). Scale 1:20

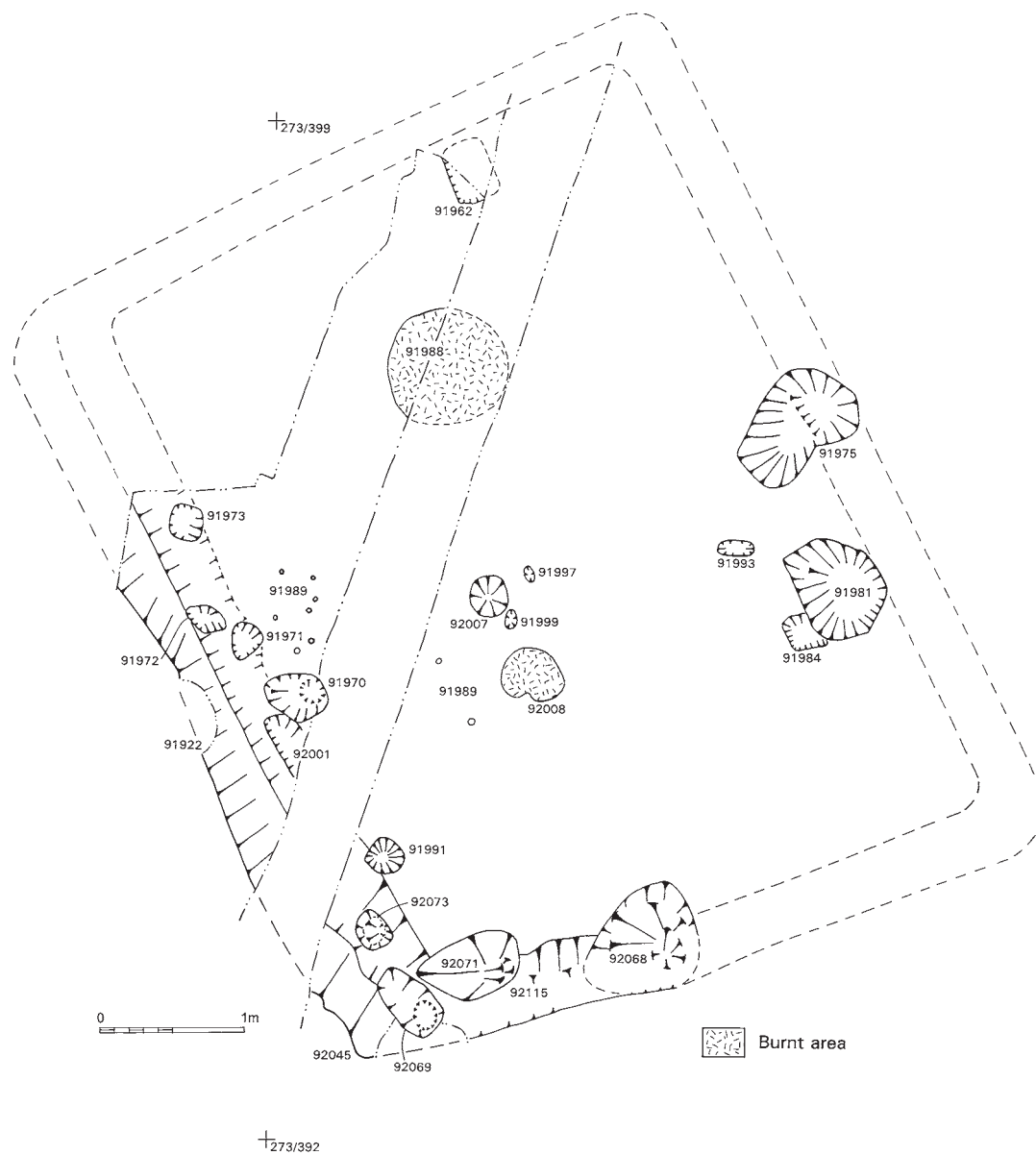


Figure 4.24 Period 1.2: Detailed plan of Building 12, construction (G9/48, Area 9). Scale 1:50

inner post was at least 0.25m across, square or rectangular in plan and with a surviving depth of 0.11m. The outer post was considerably larger at 0.75m across and was sub-circular in plan, being 0.36m deep. The third post may originally have been two and its base lay on two levels (0.27 and 0.52m), the deeper part towards the outside. This feature was 0.92m long by 0.50–0.63m wide.

The northern side of the building had suffered the heaviest truncation and only a single post-hole survived (91962) to suggest the position of the wall. This has may have belonged to an inner or outer line of posts on this side. It was square or rectangular and measured at least 0.35 x 0.20m with a surviving depth of 0.20m.

It is uncertain whether these rows of double posts were in use at one time, or whether one replaced the other. In only one case did an outer post cut the fill of an inner one. Along the southern and eastern edges, the double posts were recorded as a single entity in some cases, either suggesting that both were placed at one time or that one replaced the other in the same approximate position. The position of the two lines does suggest some degree of pairing, suggesting that both lines may indeed have formed parts of a single constructional phase.

The gap between the outer line of posts and the edge of the construction cut was filled by the mixed dumps described in phase 4 suggesting the collapse or removal of constructional fill.

A series of post- (92007) and stake-holes (91993, 91997 and 91999) may have formed an internal partition across the centre of the

building, although this is highly tentative. Patches of burnt soils lay on either side of this possible division (91988 to the north and 92008 to the south). These lay directly above the natural subsoil and could be interpreted as the remains of hearths (with any superstructures removed) or as marking the position of portable heat sources (such as braziers). Clusters of nine small stake-holes (91989), seven to the west and two towards the centre of the building, may indicate the position of an internal fixture.

In summary, the building consisted of a large, sunken floored area with a double line of internal posts set within a construction trench (with a ?beam), with a possible internal partition and/or internal fixtures and two possible hearths. The nature of walling is uncertain, but may have been of half split timbers (one possible example having been recorded in the south-western corner of the building — 91894) or perhaps wattle and daub. The roofing may have been of thatch.

Phase 2: removal of the ?partition and further use of the building

The second phase in the life of the building encompasses the removal of the possible partition and the deposition of layers which sealed earlier activity. A gravel layer (91978=91982) covered the whole of the surviving area of the floor and may have formed a surface (Fig.4.25). To the north, this was overlain by a patch of cassy material containing occasional burnt clay (91977). A single post (91995) lay just to the north of the centre of the building, on its long axis, perhaps forming an

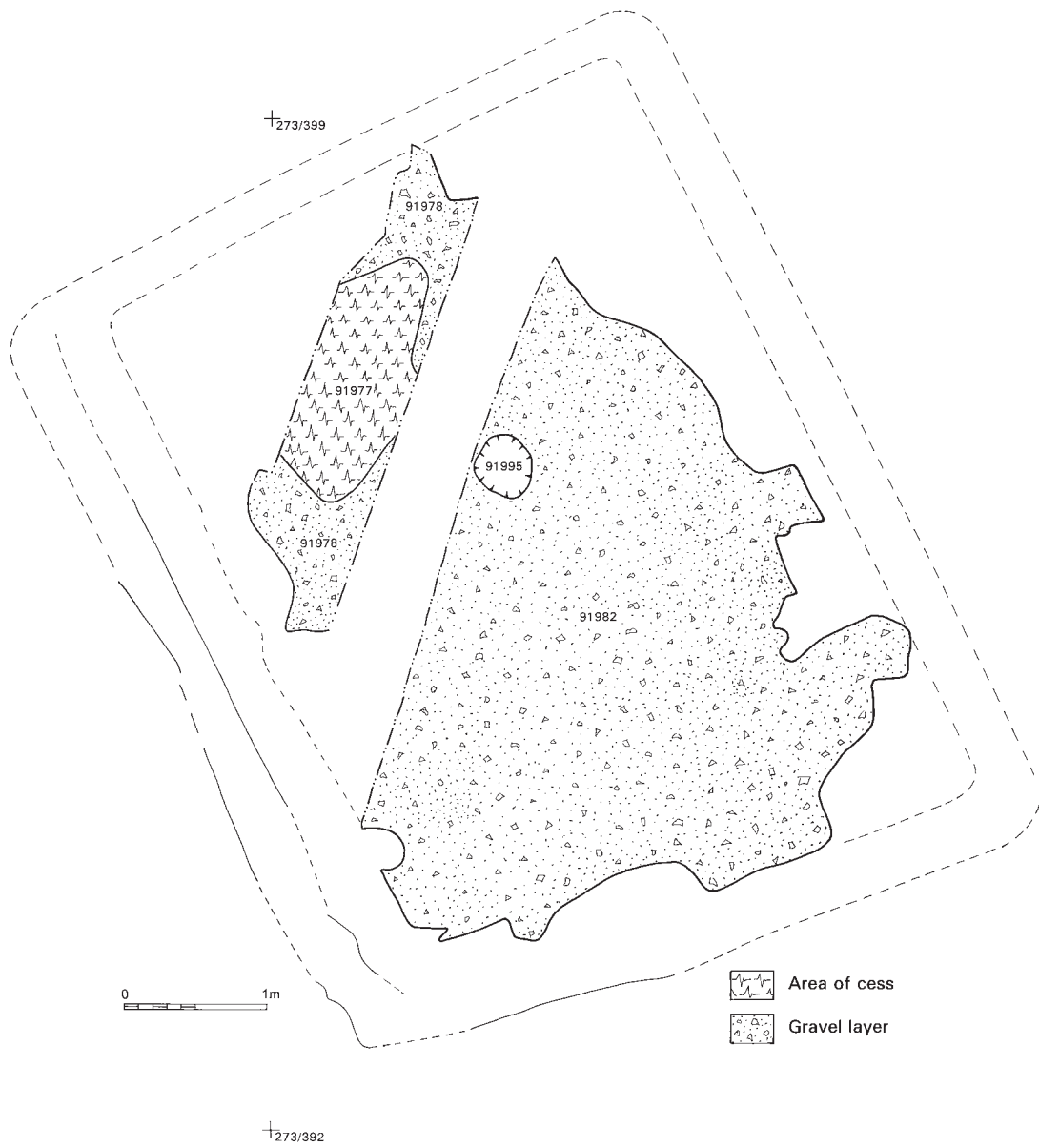


Figure 4.25 Period 1.2: Detailed plan of Building 12, use (G9/48, Area 9). Scale 1:50



Plate 4.9 Ash layer 91955=91960 within sunken-featured Building 12 (Period 1.2)

additional roof support.

Phase 3: ash deposit

An overlying ashy deposit also filled the internal space of the building (91955=91960). It was suggested on site that this was a destruction deposit, resulting perhaps from the combustion of roofing materials, although environmental evidence (see below) suggests that it is more likely to have accumulated more gradually as a result of activities carried out within the building, perhaps from a hearth(s) for which no trace survives. The ash deposit is shown in Plate 4.9.

Phase 4: disuse — mixed dumps including fire debris

The ash layer was sealed by a series of mixed dumps, the earliest of which (91921=91924) consisted of mixed silt containing frequent burnt clay and charcoal. This was overlain by another mixed deposit including lenses of ash and burnt clay (91956). Some post-hole fills (such as the charcoal fill of post-hole 91970) may also relate to the destruction phase.

Small Finds

A Mesolithic/Neolithic blade was recovered from post-hole 91938 (SF7455). Ash deposit 91955=91960 (phase 3) contained a bone spindle whorl (SF6404; Fig.4.101). Deposits assigned to the disuse of the building (phase 4) contained iron nails, a fragment of lava quern (SF6402), sawn antler (SF6395) and leadworking waste (SF6366), suggesting that a range of activities may have been taking place within it.

Pottery

by Irena Lentowicz
(Fig.4.75)

A total of 2.555kg of pottery was recovered from the building (G9/48; Fig.4.75). Nearly half a kilo (0.427kg) came from structural cuts. The majority of this was TTW, represented by a rim from a medium-large jar (type AB17). NEOT and Pingsdorf-type ware, EMW and EMSW were represented by body sherds only. Some of this pottery was noted as fresh, and although much of the material was indeed fragmentary, it was noted as coming from the same vessels. Two fresh TTW body sherds came from floor makeup 91982. Most of the assemblage came from destruction deposits (91921, 91924 and 91960, 2.113kg). A large proportion of the assemblage was made up of two TTW vessels — a large, shattered multi-handled jar (type AG6; Fig.4.75, no. 1) and a cooking pot (type AB14; Fig.4.75, no. 2). Other TTW rims represented included jar and cooking pot rims (types AB5 — two rims, AB6 — two rims, AB14 — two rims, AB17, AC6 and AC7; Fig.4.75, nos 3–11). Other forms recorded included the profile of a NEOT deep bowl (Fig.4.75, no.12), while EMW, EMSW and Pingsdorf-type ware were represented by body sherds. The deposits appear to date to the 10th or early 11th century based on the relatively low proportion of EMW and absence of ginger jar rims.

Botanical and Zoological Remains

by Peter Murphy and Alison Locker

Environmental samples were taken from post-hole fills and deposits within the building (BS1369, 1370, 1411, 1415, 1414, 1412, 1383, 1381, 1413, 1382, 1384) and were fully analysed: study indicates the presence of two main components: charred crop-processing residues and fuel residues (see Murphy Chapter 4.IV and Table 4.22). The function and use of the building is also suggested by the finds recovered from it. These include food waste (fish, mammal bone and mussel shell) in the occupation layers of the first phase, together with the hearths. The second phase included a layer comprised at least in part of sewage (91977) although it is not certain whether this was human or animal in origin. The flot from this cess layer contained relatively abundant bone in comparison with the other samples. Fish bone from fills within the building is listed in Part III, Table 88, which indicates the dominance of herring, including 39 bones from a single fish. A total of 119 bones was identified.

Open Area 8, Phase 1: pits

by Elizabeth Shepherd Popescu and Niall Donald
(Figs 4.22–4.23, Plate 4.10)

Two pits may have been contemporary with the life of Building 12, (G9/109, part), with infills dating to the 10th and early 11th century (another pit with an 11th-century infill date from the same group is described in Period



Plate 4.10 Pit 90504=90302 (10th to early 11th century), showing its wicker lining distorted by pressure from the surrounding deposits (Open Area 8, Period 1.2)

1.3). These pits lay just to the south-west of the building (Fig.4.22).

Furthest to the north-east lay the earlier pit. This was square/rectangular (90389; S.915; Fig.4.23) and had vertical sides with a depth of 4.55m (augered), cut through Norwich crag. It was lined with planks which survived on three sides. These were laid horizontally to the south and west and vertically to the east and had been burnt, either being damaged by fire or a deliberate measure to preserve the timber. There were no obvious uprights to support the lining. The planks were 0.22–0.28m wide and were cut to 0.02–0.04m thick. No uprights to support the lining were apparent, presumably indicating that each was mortised or otherwise fixed to the next. Some of the planking had collapsed into the pit. Augering indicated the presence of burnt timbers about 0.50m thick (lying at between 18.00 and 18.50mOD) which may suggest similar collapse at a lower level, above early fills. The latter would appear to have been about 0.55m thick, suggesting that it had been substantially open at the time of the collapse. Excavated infills of the pit were of refuse-type. The original function of the pit remains unknown, although it may have acted as a deep cess pit or, less likely, a well. The base of the pit lay very close to the level of natural chalk which generally lay at about 17.00–17.50m OD in this part of the site. The possible junction with chalk may have formed the base of the pit, although the possibility of a continuation of the pit (*i.e.* forming a well shaft) into the chalk seems to be discounted on the basis of the auger evidence. The shaft would have needed to continue to a considerable depth before the water table was reached: a well associated with the Late Saxon church beneath the north-east castle bailey extended to a depth of 16m (Site 416N; Ayers 1985, 19, 25–26).

A second pit lay to the south-west and was roughly circular (90504=90346=90407=90300). It was hand-excavated to a depth of 1.20m, augering suggesting a total depth of *c.*3.3m. The sides were sloping/concave. The construction consisted of a fairly large pit with a square wicker lining, subsequently compressed into pointed bow shapes along each side (Plate 4.10). The lining had been packed externally with white sand. The complex sequence of fills had slumped and/or shrunk, presumably the result of lower organic fills. The excavated, upper fills consisted of alternating refuse and clean sand deposits.

One of the refuse fills was of dark brown organic sand. Lying on this fill were two pots, set one inside the other. Above them was a cow skull. These items may have been deliberately placed. Partial animal skeletons were recovered both from this pit (see below) and later examples in the immediate vicinity.

These are the only two surviving pits in the area around Building 12 dating to the 10th to early 11th century. Later pits in the area have mid to late 11th-century infill dates and are described in Periods 1.3, 1.4 and 2.1.

Small Finds

Fills of pit 90389 contained an antler spoon of 10th–11th-century date (SF1081; Fig.4.98; Huddle, Chapter 4.III) and a nail (SF6584). Pit 90504 contained a bone/horn comb in the form of a pair of side plates with three iron rivets (SF1079; Fig.4.69), a bone spindle whorl (SF5937), a nail (SF6111) and an iron knife (SF5996; Fig.4.97). This knife is of some interest. Mould (Chapter 4. III) suggests that with its notched back it is similar to those used to eat fish at table from the 12th century, although similar knives have been found in pre-Conquest deposits elsewhere.

Pottery

by Irena Lentowicz
(Fig.4.76)

A total of 4.940kg of pottery was recovered from these pits. A large ceramic assemblage (4.043kg) came from pit 90504, etc. (Fig.4.76), comprising mainly TTW, but including NEOT, EMW, EMSW as well as the base of a probable continental import (see below). TTW forms recorded included cooking pots (types AB5, AB13, AB14 — four rims, AB15, AB16, AC15; Fig.4.76, nos.3 and 5) and jars (types AB7, AB9, AB11, AB13 — two rims, AB16 and AB17; Fig.4.76, nos 1, 2 and 4), as well as rims from two multi-handled jars (types AG6 and AG9; Fig.4.76, nos 6 and 7), a spouted pitcher (type AD4) and a large non-handled jar (type AF2). A number of bases were also present, and while some of the material was described as fragmentary and abraded, the majority was relatively fresh. Other fabrics were represented by a NEOT base, an EMSW cooking pot rim (type AB13) while body sherds alone represented EMW. The assemblage includes a small intrusive sherd. This pit group in particular appears to represent a Late Saxon tradition verging on the early medieval transition. The handled jars, spouted pitchers and jars/cooking pots with AB7 and AB16 rims would place these fills in the 10th to early 11th century. Fine wares were represented by the base from a jug of buff, micaceous fabric, partially glazed with a copper rich, green-yellow glaze, probably a continental import (Fig.4.76, no.8). See Appendix 6 for pottery from the remaining pits.

Botanical and Zoological Remains

by Peter Murphy, Umberto Albarella *et al* and Alison Locker
(Plates 4.45 and 4.46)

A sample from pit 90389 (BS991) indicates the presence of sewage, with some mineral-replaced *Prunus* fruitstones and fly puparia. The fill in the outer cut of pit 90504 etc. (90469; BS1031, 1032, 1146, 1147) included abundant silica ash with charred grass/cereal culm and partly burnt shells of freshwater molluscs, perhaps burnt thatch or hay. The inner, refuse fills (90349, BS979, 1009 and 90326, BS975) contained frequent charred cereals. Several samples were fully analysed (Murphy Chapter 4.IV, Table 4.24) and germinated grains of both *Hordeum* and *Avena* are illustrated in Plates 4.45 and 4.46.

Pit 90389 contained 3 bones from a single pig, while pit 90504 contained the partially articulated skeletons of a cat and domestic fowl (Albarella *et al*, Chapter 4.IV, Table 4.18 and Part III). Identified fish bone from these pits, amounting to 633 bones, is detailed in Part III, Table 89.

Early Fills of Hollow 2

Hollow 2, Phase 2: primary fills

by Elizabeth Shepherd Popescu and Andy Shelley
(Fig.4.26)

The presence of flint and gravel in some of the early undated fills of this hollow to the north-west of the site (Fig. 4.26) may indicate surfacing within a hollow way. Primary fills of Hollow 2 were recorded in three

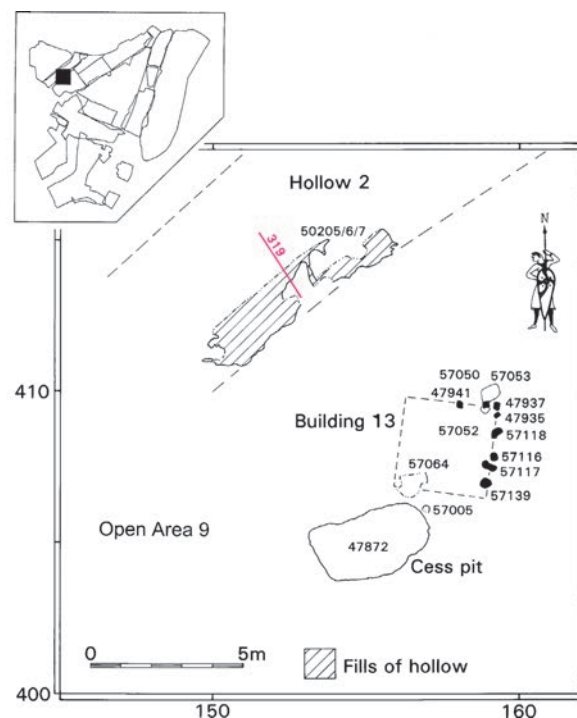


Figure 4.26 Period 1.2: Plan of Building 13, Open Area 9 and infilling of Hollow 2 (Areas 5 & 47). Scale 1:250

places along its length. To the south-west (G5/13) were three possible thin surfaces recorded in plan, noticeably dipping down towards the north-west (*i.e.* into the hollow; S.319). These were recorded over an area of about 7m south-west/north-east by 1.5m north-west/south-east and comprised a black compacted sand and loam deposit (50207), above which were sandy layers (50206 and 50205). Further to the north-east (S.316, G5/59) was mixed loam containing occasional fine and medium pebbles (50368), lying mainly along the southern side of the cut. To the north-east again (S.317) was a deposit displaying dark, horizontal streaks (50337). It contained frequent small flints and was overlain by a thicker deposit of gravel and flint (50336).

Plot to the East of Hollow 1 and South of Hollow 2

Lying about 12m to the west of Hollow 1 and 5m to the south of Hollow 2 was a possible structure and large cess pit (Fig.4.26). It is notable that the alignment of the building takes no account of the presence of the lines of the hollows either to the west or to the north.

Building 13: post

by Elizabeth Shepherd Popescu and Andy Shelley
(Fig.4.26)

Scattered across the area were three post-holes (G47/23), all cut by subsequent features described below. One post (57053) may pre-date the structure described below, or may have been part of it. To the south-west was an isolated pit (57064, G47/15) which had been heavily truncated to a depth of 0.23m with a flat base. It was filled with a mottled and striped mix of ashy loam, silt, clay and sand with frequent charcoal and daub inclusions. This would have lain within or beneath the suggested area of Building 13.

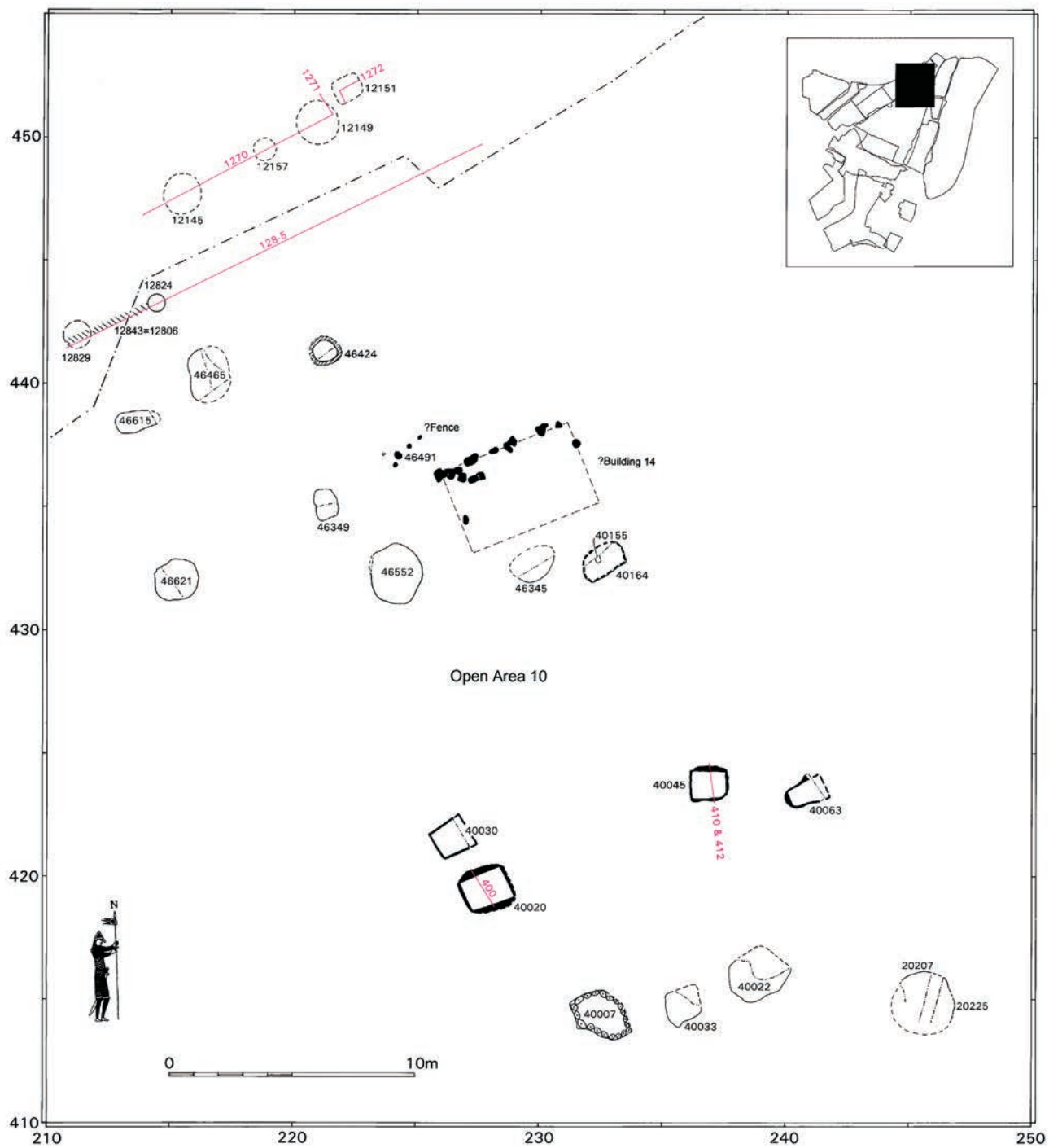


Figure 4.27 Period 1.2: Plan of ?Building 14 and Open Area 10 (Areas 4, 46, 202, T20 & T95). Scale 1:250

Eight post-holes are tentatively suggested as forming part of a structure or building. Although the evidence to link these together is not strong, they do form a fairly convincing eastern 'wall' with a suggested westwards return at its northern end. While the possible groundplan is far from clear, they may suggest a building of about 3m north-to-south with an unknown east-to-west dimension. The eastern 'wall' consisted of six irregularly spaced posts (57139, 57117, 57116, 57118, 47935 and 47957), one of which (57117) may have contained two posts. The post-holes varied in shape and were fairly small (typically

0.20m in diameter), with depths of 0.13m. The northern 'wall' consisted of three surviving posts (47957 again, 57050 and 47941), all roughly square. Posts to the south and west may have been obliterated by a later structure (or repair of the same building — see Period 1.4).

These remnants may represent another sunken-featured building, the below-ground element having been completely truncated leaving only a ghost impression represented by the surviving posts. The square building described in Period 1.4 (Building 25) measured 3.5 x

3.5m. There appears to be little evidence for the nature of the destruction/disuse of the Building 13.

Pottery

Small quantities of TTW and EMW were recovered. See Appendix 6.

Open Area 9, Phase 1: pit

by Elizabeth Shepherd Popescu and Andy Shelley

(Fig.4.26)

Just to the south-west of Building 13 was a very large pit (47872, G47/18). It was an irregular, elongated rectangle in plan, at least 3.30m deep with vertical sides. The excavated fill, from which the finds were three-dimensionally plotted by 10cm spit, was a fairly homogeneous deposit of mid to light brown sand and silt with frequent charcoal flecks and occasional daub and grey green cess staining. The cess deposit became highly compacted towards the centre of the feature. The relationship between the pit and the ?building is uncertain, although they lay very close together to have been contemporary (unless the posts actually formed a screen around the cess pit).

Small Finds

Despite careful excavation, only one piece of sawn antler (SF6753) was found.

Pottery

A total of 0.791kg of ceramics was recovered, dominated by TTW and supplemented by a single large sherd of NEOT. See Appendix 6.

Plots to the North-East

A dense area of post-holes survived within the boundaries of the hollow described in Period 1.1 (Hollow 3) and indicates the presence of a building or number of buildings on this spot (although of course the prevalence of Cattle Market posts across this area makes any interpretations highly tentative). The features assigned to this 'Building' all lay at the base of localised stratigraphic strands. Numerous refuse and cess pits lay in the surrounding area.

?Building 14: post

by Elizabeth Shepherd Popescu and Andy Shelley

(Fig.4.27)

This postulated structure measured *c.*5.50m from east-to-west, with a surviving north-to-south dimension of *c.*3.3m (the southern part having been truncated by air raid shelters; Fig.4.27). Many of the post-holes remained unexcavated and were sampled for artefact retrieval. The western 'wall' of the structure is represented by a small oval post-hole (46835). This was the only element along this side, although other irregular features in the area may have obscured the presence of further posts. The northern 'wall' line was represented by a line of post-holes (46832, 46590, 46833, 46255, 46188, 46553, 46733, 46727, 46743, 46766). A single post-hole may indicate the presence of the eastern 'wall' (46338). Three other post-holes (46257, 46251 and 46249) may relate to the same structure.

Pottery

Several post-holes contained TTW, EMW and EMSW pottery dating to the 10th and 11th centuries. See Appendix 6.

Open Area 10, Phase 1: pits

by Elizabeth Shepherd Popescu and Andy Shelley

(Figs 4.27–4.30)

Four pits to the far south of ?Building 14 ran in a roughly east-to-west line (Fig.4.27). Furthest to the west was a deep pit or perhaps two pits recorded as one (40007), the western part of which was wattle lined. It was at least 3.90m deep. Fills contained burnt wood and organic matter with frequent charcoal, followed by sandy gravel overlain by redeposited natural. Lying adjacent to the east was another sub-square pit (40033), excavated to 1m depth but not bottomed. Further east again was a third, slightly larger sub-rectangular pit (40022) with a depth of 0.65m. Fills included ash and domestic waste including a fairly substantial quantity of pottery. Just to the south-east was the fourth pit (20207=20225, 202/165) which had been heavily truncated and was not excavated.

Four wood-lined pits lay about 10m to the south of the Building 14. Furthest to the south-west was a sub-square example (40020, G2/11), vertical sided and 4.50m deep. This had been truncated on two sides by air raid shelters, with a complex sequence of upper infills (S.400 — Fig.4.28). It had vertical sides and the lowest excavated fills were of refuse interleaved with occasional sand lenses (40012), containing sewage residue with charred cereals (see Murphy below). These had been tipped into the southern side of the pit, forming distinct and sometimes fairly thick bands. The northern side of the pit, in contrast, contained numerous thin fills two of which were fire waste deposits (40104 and 40013) were probably the result of hearth clearance: both contained charred cereals. A third fill (40019) contained sewage residue with charred cereals. The lack of artefacts throughout these fills is notable. Later fills are described in Period 1.3. Immediately to the north was another square but truncated pit (40030) of at least 1.50m depth. Narrow lenses of fire waste were recorded within refuse type fills and traces of a timber lining were noted.

To the north-east was a square pit (40045, G2/50; S.410 and 412, Fig.4.29) 2.75m deep. It had vertical sides and lay on a different alignment (east-west) to surrounding features. A burnt wood lining (40032) survived in its upper part and towards its base, comprising discreet fragments of charcoal up to 0.30m long in a mass of small, spongy fragments. This extended around most of the circumference of the pit and was still vertical. The lowest recorded fills included dark grey silt, sand clay (40169), followed by a peaty deposit (40168). These fills suggest possible natural silting, followed by purer refuse dumps. Later fills are described in Period 1.3.

To the east was another, irregular pit (40063, G2/11) which survived to a depth of 0.50m. Refuse-type fills were interleaved with collapsed wood lining and natural silting. It is possible that the lining of such a shallow pit suggests an industrial or storage function, the pit finally being used for waste disposal.

Closer to Building 14 were two more pits. One (46345, G46/1) lay quite close to the postulated structure and may have been roughly circular in plan, having been heavily truncated to the north. It was at least 2.44m deep. Lower, fills were augered, while hand-excavated fills consisted of refuse-type deposits suggesting domestic waste. Environmental samples were fully analysed (see below).

An adjacent pit was recorded in two parts (40164,

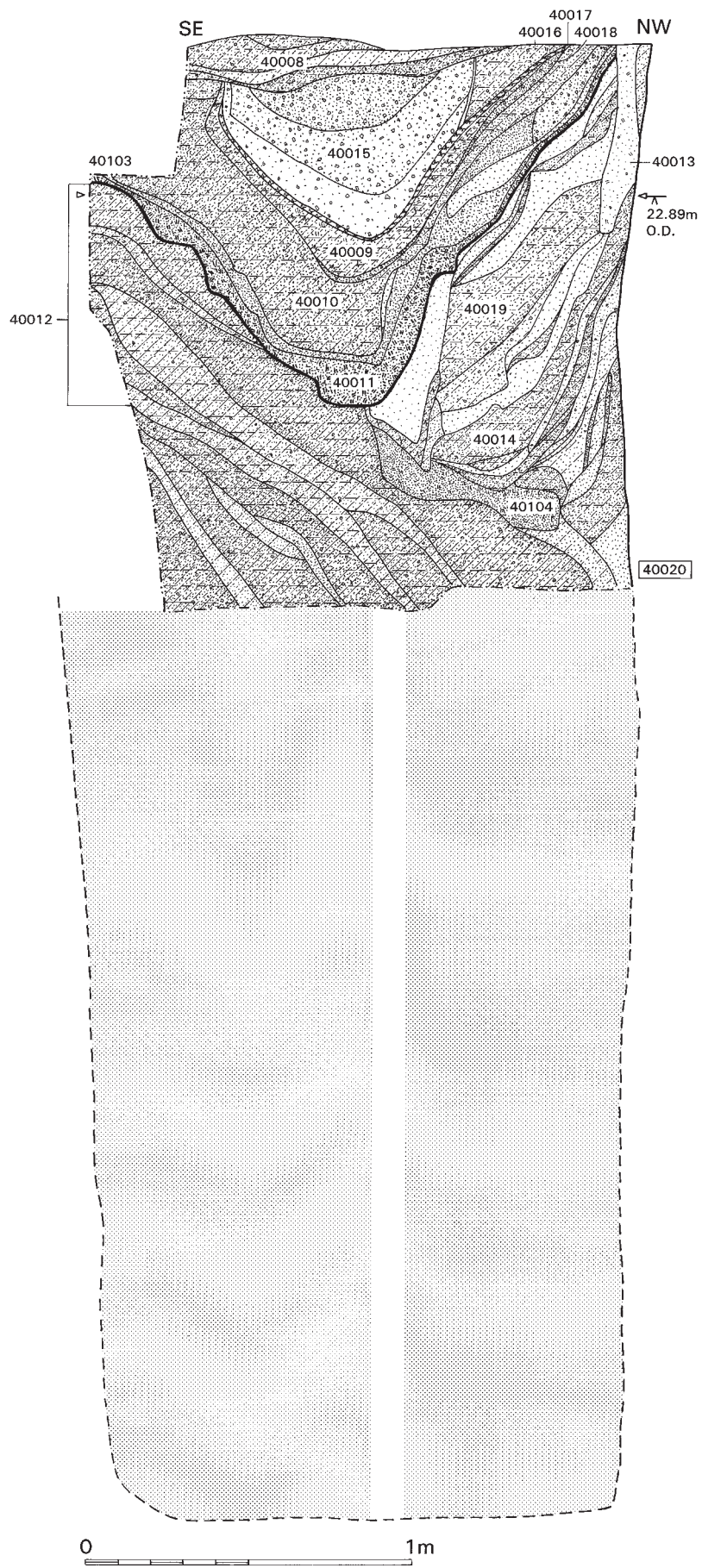


Figure 4.28 Period 1.2: East-facing section across pit 40020, Open Area 10 (Area 4, S.400). Scale 1:20

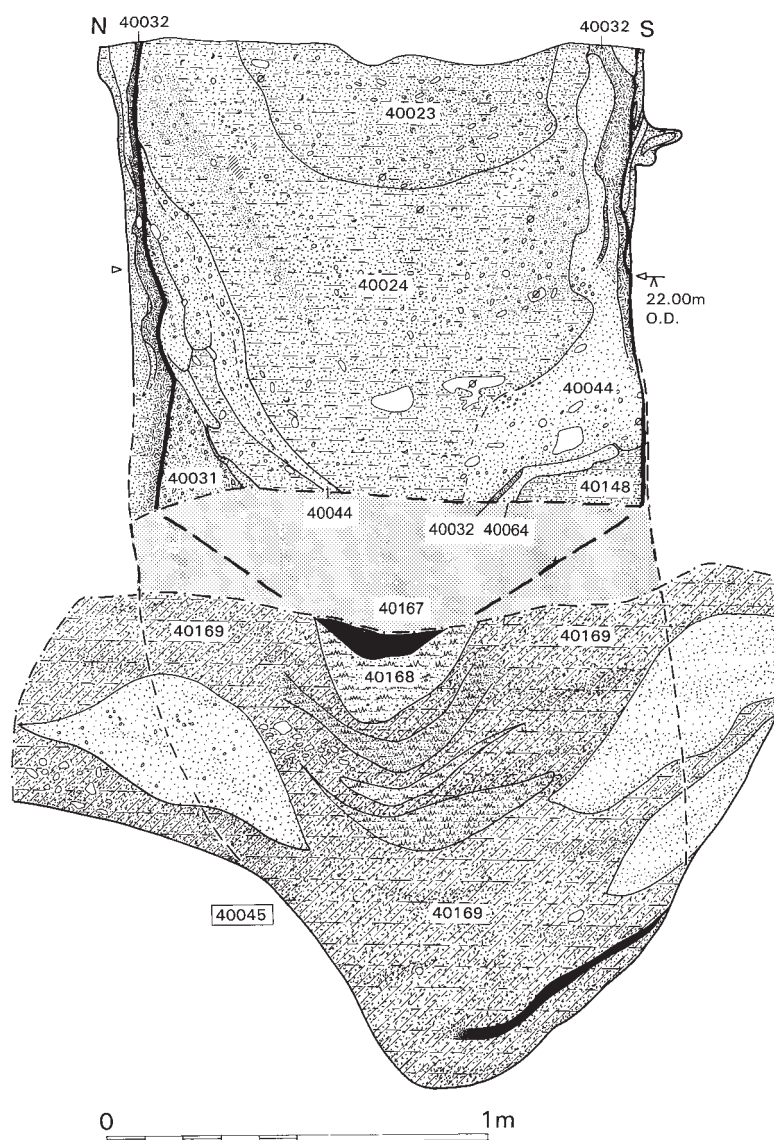


Figure 4.29 Period 1.2: West-facing section across pit 40045, Open Area 10 (Area 4, S.410 & 412). Scale 1:20

G2/19 (part) and 46287 (G46/11). It contained two post-holes and a possible leather lining (fragments of which were kept as SF5564). It was 2.56m deep. Silting fills were followed by the deposition of cess/refuse, subsequently cut by the two post-holes (40155 and 40069). A possible recut of the pit was lined with dark brown peat, perhaps the remains of rotted timber interpreted as a box or basket on site. Further silting was followed by a series of burnt or decayed timbers from which leather was retrieved and burnt flints and soot noted. Finally, a disuse fill was deposited.

A total of six pits and a possible fence line lay to the west and north-west of ?Building 14 (Fig.4.27). Immediately to the west of the building was a heavily truncated pit (46552, G46/12). This large feature was at least 1.94m deep, although it was only partially excavated. A much smaller pit lay just to the north-west (46346, G46/1). This sub-square/rectangular pit survived to a depth of 0.60m, with vertical sides and a flat base. Adjacent to it to the east was a line of small stake- and post-holes (G46/33 and 46/34), which may indicate the presence of a small fence to the north-west of Building 14.

To the west was an oval/square pit (46621, G46/2), just over 1m deep. Its western edge was vertical and its eastern edge slightly battered. A sample from its initial fill indicated cess disposal. The upper fill of this pit may be slightly later in date and is described in Period 1.3.

Three of the pits lay to the north-west of Building 14. Furthest to the west was an elongated oval pit (46615, G46/1) which only survived to a depth of 0.27m. Just to the east was a larger, irregular pit (46465, G46/17) with an untested depth. Its eastern side had been disturbed by a tree. Further east was a heavily truncated, possibly clay-lined refuse pit (46424, G46/1).

Another area of pitting was recorded in watching briefs to the north of Open Area 10 and may have been part of the same area, related to Building 14 or perhaps another building which did not survive. The pits lay to the south of the later motte ditch and had all been horizontally truncated by subsequent landscaping (Fig.4.27).

Although the depth of one large pit (12149, T95/6, S.1270 — Fig.4.30) was not ascertained the vertical nature of tips within the infilling suggests that it was probably deep. This pit may have been cut by another large pit (12151, T95/6) with vertical sides and an observed depth

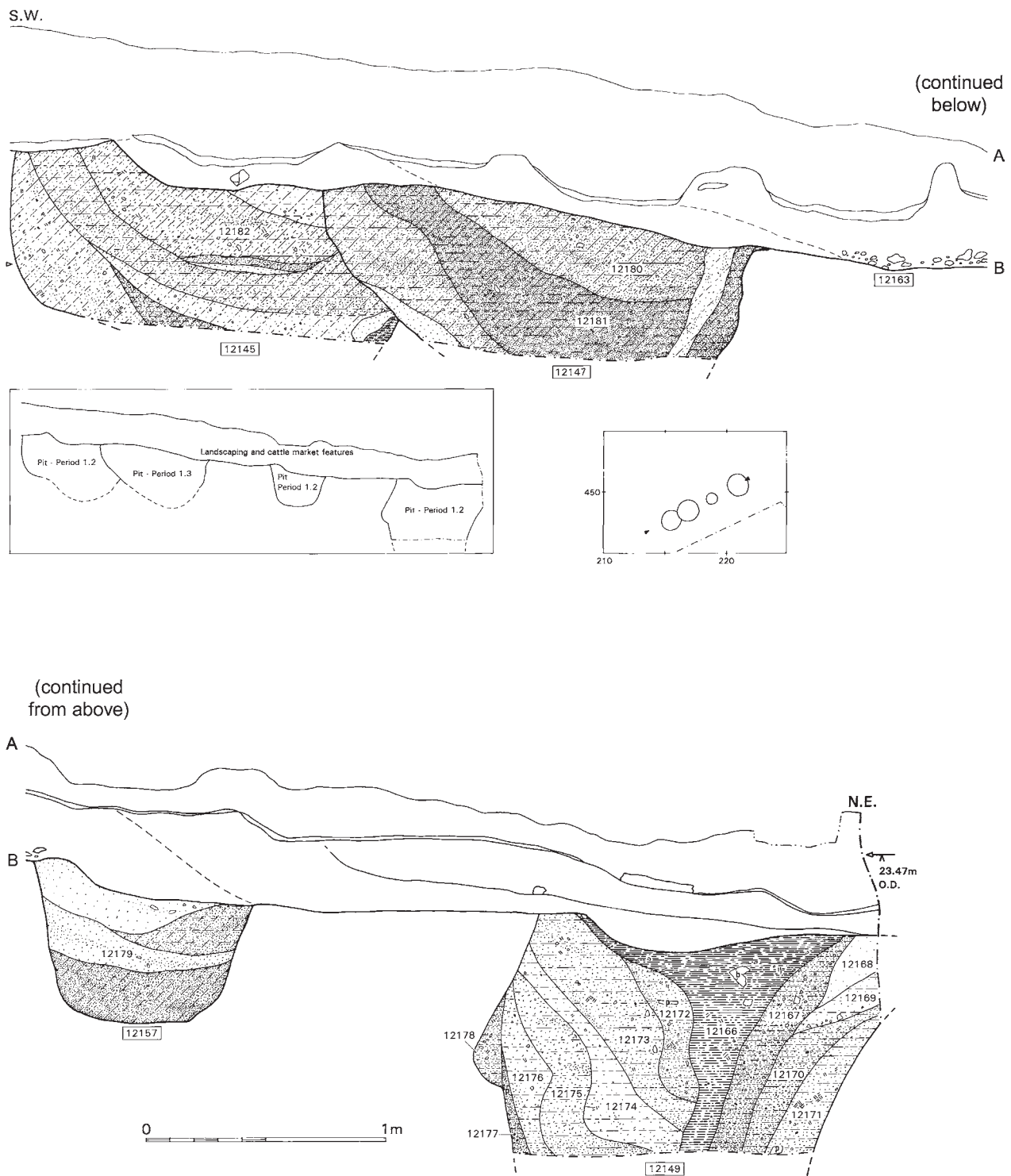


Figure 4.30 Period 1.2: South-east facing section recorded in watching brief, Open Area 10 (T95, S.1270). See Fig. 4.27 for location. Scale 1:25

of 1.20m. Two more pits lay to the west. One (12157, T95/7, S.1270) was fairly small and was 0.65m deep. No diagnostic finds were retrieved from it and the pit is assigned here on the basis of lying within an area of known early pits. Further west was another fairly large pit (12145, T95/6, S.1270) which was not bottomed at a depth of 0.80m.

To the south-west was another small pit (T20/8, 12824), with a surviving depth of 0.95m and a concave

base. This pit was sealed by a layer of dark grey black silty clay (12843=12806, T20/10) with frequent pebbles and lenses of paler sand. This survived to up to 0.18m thick and had been cut into by later features, with an upper level of c.25.14m OD. If this was a pre-Conquest surface, it provides some indication of the level of truncation that must have taken place in the surrounding parts of the site (i.e. up to about 2m). At the western end of the surviving layer was a post-hole (12829).

Small Finds

Finds from pit 40007 included a whetstone (SF5554) and an iron fibre processing spike (SF5606). Another iron fibre processing spike (SF5648) came from pit 40022. Pit 40045 contained a copper alloy hooked tag (SF6268; Fig.4.68). Pit 46436 contained a broken iron strap or knife fragment (SF6675). Finds from pit 46345 include a lavastone flake from reworking (SF7386), a similar flake being recovered from pit 46465 (SF7384). Finds from pit 40164=46287 included iron objects (nail SF6161, industrial debris (formless fragment) SF1033, nail SF1034, horseshoe nail SF1031 and a third fibre processing spike, SF5586). Pit 12824 contained an iron arrowhead of the common type used in hunting and warfare (SF6512; Fig.4.06; Mould, Chapter 4.III).

Human Bone

by Sue Anderson

Part of a human skull was recovered from the upper part of pit 40030. Human bone also came from pit 46552 and may relate to the postulated cemetery to the north-east (Cemetery 2, Period 1.1). These bones consisted of a pair of eroded sub-adult tibiae from an individual aged c.13–14 years.

Pottery

(Fig.4.77 on CD)

A total of 5.304kg of pottery came from these pits, and included TTW, NEOT, EMW, EMSW and Stamford ware (Fabric A), as well as a Pingsdorf type ware base. Infill dates of 10th- and 11th-century are suggested (see Appendix 6).

Botanical and Zoological Remains

by Peter Murphy, with Alison Locker

Some samples from the fire debris fills of pit 40020 (40012, BS331 and 40019, BS321) included mineral-replaced material as well as small amounts of charred cereals, including *Hordeum* (barley) and *Secale* (rye) grains and *Hordeum* rachis nodes. Another sample (40104, BS330) included, unusually for the site, some charred cereal rachis fragments and was extracted for full analysis (detailed in Murphy, Chapter 4.IV, Table 4.24). Samples from later fills (40011, BS320 and 40013, BS329) were composed of large, unabraded charcoal fragments with occasional grass/cereal culm nodes. Charcoal again predominated in an upper fill (40010, BS319), although the fragments were smaller and abraded. The sample included a few small charred cereal grains and uncharred seeds of *Sambucus nigra* (elder).

Samples from the fills of pit 46345 were selected for full analysis and included relatively abundant charred cereal grains, mainly of *Avena* and *Hordeum*. *Avena* floret bases, pulse cotyledons, charred weed seeds and 'silica skeletons'. Also present were burnt fish bones and occasional burnt freshwater molluscs. Contents of the samples (46486, BS1712 and 46515, BS1713) are shown in Part III.IV, Table 4.24.

A sample from pit 46621 (BS1722) contained charred grains of *Hordeum* (barely) and *Secale* (rye) and *Vicia faba* seeds (horse-bean) were present but rare. Mineral replaced macrofossils included insects, monocotyledonous stems, *Malus* seeds and indeterminate seeds. Fish bones and bone fragments and globules of fused off-white material were present. It appears that this represents sewage waste. Fish bone from Period 1.2 pits in Open Area 10 is listed in Part III, Table 90, amounting to 34 identifiable bones.

Period 1.3: Anglo-Saxon Settlement (11th century)

Summary

(Fig.4.31)

Changes to the settlement pattern apparently occurred in the 11th century. In the central part of the site, a cemetery was laid out (Cemetery 3), the graves cutting into earlier buildings and pits. Burial may in fact have begun earlier, with radiocarbon dates indicating a late 9th- to mid 11th-century range. No structure that could be interpreted with certainty as a related church was recorded, although timber buildings lay in the immediate vicinity (Period 1.4). Some of the earlier buildings may have remained in use, with the addition of more pits around them. Others may have fallen out of use and/or been replaced.

Nearly one hundred and forty pits of 11th-century date were recorded. One area of pitting had been used for the disposal of possible pottery kiln waste, suggesting a continuation of earlier activity. Small scale ferrous and non-ferrous metalworking was again evident. More pits were dug into fills of Hollow 1 to the west of the site. To the south, outside the line of Hollow 1, a ditch was inserted which may have served as a boundary marker. To its west lay an isolated pit, while a possible path and associated fence line lay closeby to its east.

Activity to the South

Open Area 11: isolated pit

A single pit of 11th-century date lay on the extreme south-western limit of the site (G1/137, 10153, not illustrated separately). It was sub-circular in plan and 0.51m deep, with a rounded base sloping down from the east. Its primary fill of redeposited natural sand and clay may have been partly the result of weathering or side collapse. A later fill consisted of fire debris (compacted and burnt clay) including large fragments of ?burnt EMW, perhaps burnt *in situ* and suggesting that cooking/processing activities may have been taking place within the pit.

The apparent lack of other pits of Late Saxon date in the southern part of the site is noteworthy. If they existed, some trace should have survived within the excavated area, either to the north or west of or beneath the cemetery of St John at the Castle Gate (Cemetery 4, Period 1.4). The implication is that these areas were not settled at this time, or at least were not used in the same way as the area to the north where extensive and intensive pitting was apparent.

Small Finds

A whetstone (SF5065) of purple phyllite was recovered. Hones of this material are often found in association with Viking activity (Mills and Moore, Chapter 4.III).

Pottery

Pottery included a near-complete TTW vessel, as well as EMW and EMSW. See Appendix 6.

Botanical Remains

A sample from the fire debris deposit consisted predominantly of oat grains with barley, some other cereals and weed seeds but no chaff. Many of the oats had sprouted and were very small (possibly wild). The interpretation of this sample is problematic, although it was selected for full analysis (Chapter 4.IV, Table 4.25).

Ditch 1, Phase 1: cut

(Fig.4.32, Plates 4.11 and 4.12)

A ditch was recorded beneath the cemetery of St John (Cemetery 4, Period 1.4) and survived to c.4m wide by c.1.20–1.40m deep (11109=11313=13241 and 13185, G1/40=G1/73; Fig.4.32; Plate 4.11 and 4.12). It was slightly stepped in profile with a pronounced flat-based slot at its lowest point. The southernmost part was augered, indicating a depth of 1.50–1.70m. The ditch was recorded over a 12m length and ran on a roughly north-west to south-east alignment, although its recorded plan was irregular. A sub-rectangular slot across its base at right angles to the basal slot is of uncertain origin, although may indicate the original position of timberwork within it. The preservation of the stepped profile suggests either that the ditch was infilled soon after excavation, or that it was regularly cleaned out until it fell out of use.



Figure 4.31 Period 1.3: Phase plan – Late Saxon (11th century). Scale 1:1250

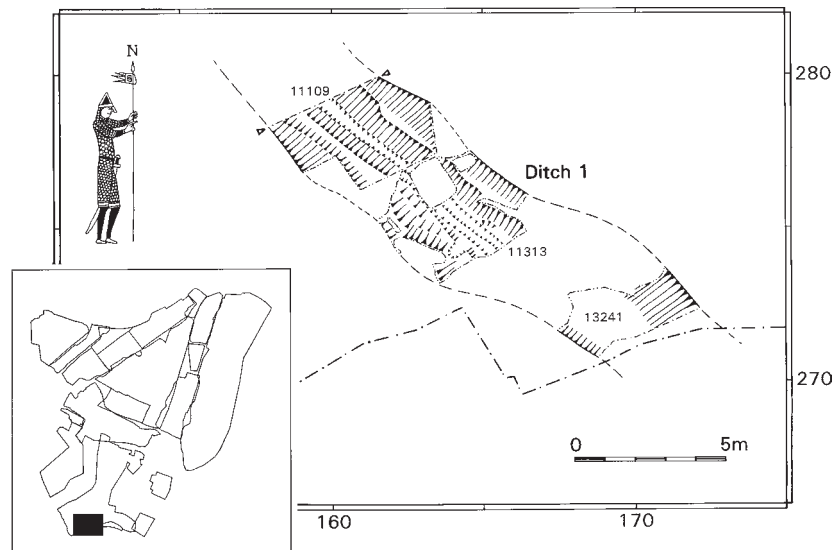


Figure 4.32 Period 1.3: Plan of Ditch 1 (Areas 1 & 13). Scale 1:250

There was a slight indication that the ditch was turning southwards at its southern end.

Infilling of the ditch dates ceramically to the mid/late 11th to early 12th century (Period 1.4), although it appears that the feature originated in the pre-Conquest period. Its infilling was cut into by the cemetery boundary ditch (Ditch 2) and several graves which yielded pre-Conquest/Conquest period radiocarbon dates (Bayliss *et al*, Chapter 4.V). Further discussion of the dating issue and several possible interpretations for its function are discussed in Chapter 4.VI. It appears probable that it either served as a plot boundary (use as a field boundary does not appear likely, given its position in relation to surrounding features) or was perhaps related to the demarcation of this area of Late Saxon settlement. Plant macrofossils from its fills suggest that crop cleaning was taking place in the vicinity (Murphy, Chapter 4.IV).

Open Area 12: surfacing and ?path (Fig.4.33)

A line of eight small circular stakes (G1/62, Fig.4.33) ran from north-west to south-east, spaced *c.*0.30m apart, some 7m from the eastern edge of Ditch 1, with which they were broadly parallel. Their depths ranged from 0.17–0.32m (averaging 0.23m). The undated stakes had probably decayed *in situ*. Above these stakes and perhaps contemporary with them was a cobbled surface (13197), possibly forming a path, laid down prior to the accumulation of graveyard deposits above and to the west, which were eventually to raise the local ground level considerably. Just to the west was a patch of gravel, perhaps forming part of the same surface (at 27.18–27.02m OD), overlain by organic silt. This was cut by a square post (13253), which may have demarcated the western side of the path (which would have been 2–3m wide). Just overlying the cobbles to the east (and probably contemporary) were patchy deposits of chalk and burnt clay. The burning may suggest use as working surfaces.

Although this was an area of the site in which the stratigraphic/depositional sequence was unclear, numerous graves were eventually cut into the path and associated surfacing (Period 1.4), some being radiocarbon

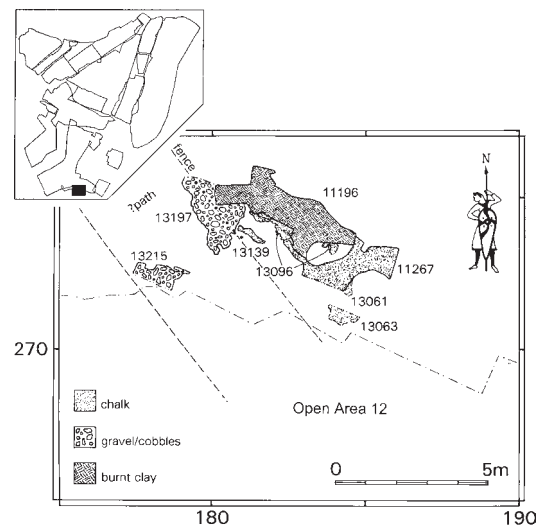


Figure 4.33 Period 1.3: Plan of Open Area 12, showing possible path (Areas 1 & 13). Scale 1:250

dated to the Late Saxon/Conquest period (Bayliss *et al*, Chapter 4.IV). By implication, the graves would have been cut from a much higher level, and were recorded as being directly overlain by late 14th- to 15th-century surfaces and deposits when this part of the site was used for metalworking/founding activities (see Chapter 8.II). The relationship between the two possible Middle Saxon graves (Cemetery 1, Period 1.1) and the possible path is unclear: although no direct relationship was recorded on site, the plan and level evidence indicates that the graves cut through the path (implying either that the radiocarbon dates are incorrect, or that the path dates earlier). This issue remains equivocal and the interpretation presented in this report is based on the radiocarbon dating.

Activity within Hollow 1

Numerous pits were excavated within the confines of the hollow to the west of the site, both to the north and south. The effect of the pitting to the south is shown in Fig.4.5. Some pits cut through early fills of the hollow, although

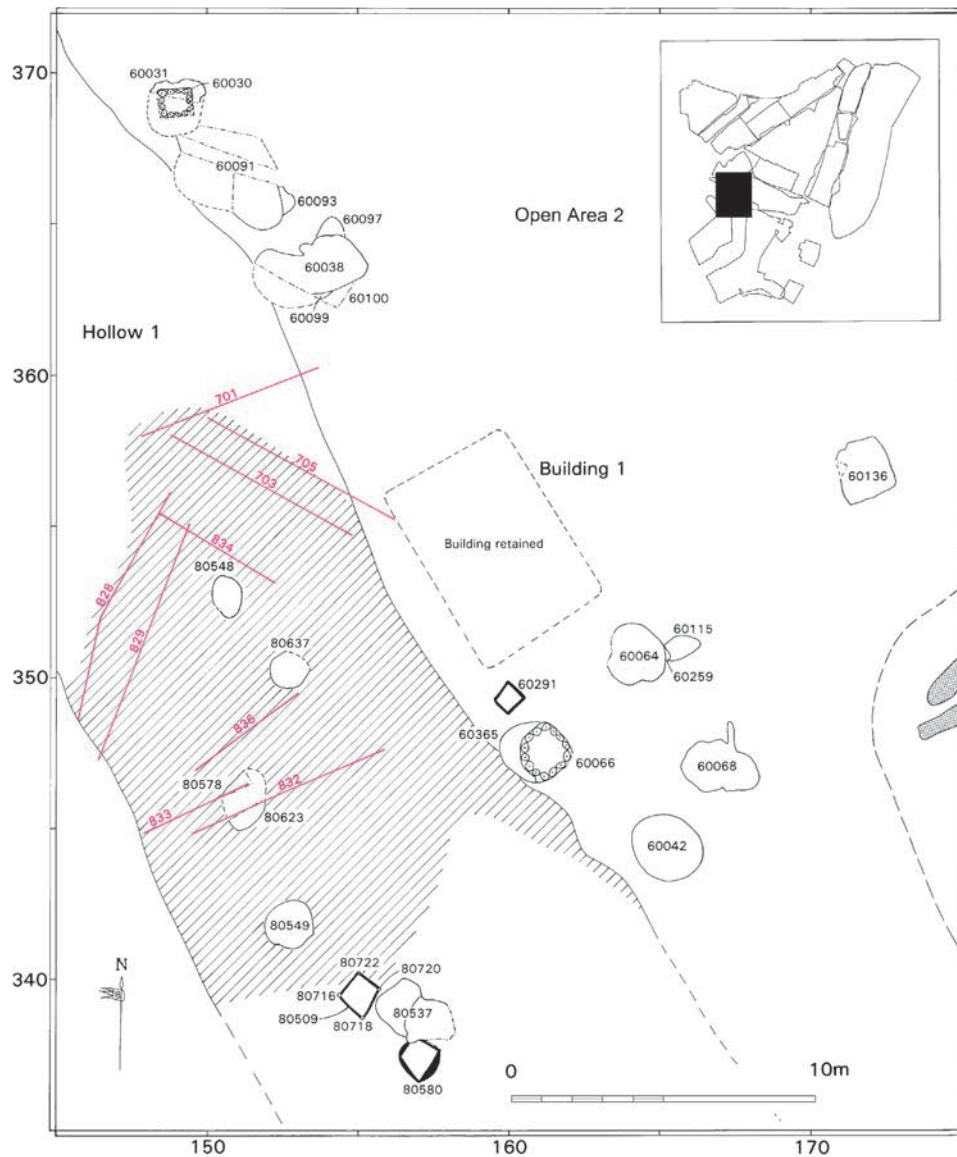


Figure 4.34 Period 1.3: Plan of Building 1 (retained), Open Area 2 and activities within Hollow 1 (Areas 6 & 8). Scale 1:250

the upper relationship with organic fills (described in Period 2.1, Chapter 5.II) is unclear and some pits may have been dug while the surrounding deposits were accumulating. The reason that refuse pits were dug when the hollow was in use as a rubbish dumping area is unclear.

Hollow 1, Phase 6: pits
(Fig.4.34)

Seven pits within the hollow had ceramic dates of 11th-century (G8/6; Fig.4.34). Their average surviving depth was around 0.80m and they do not appear to have suffered truncation as they lay beneath the south bailey rampart. They ranged in size from small to medium, although most were of medium size. Three cut into infilled earlier pits (Period 1.2). Two were wood-lined and had perhaps been used for storage, although their location is unexpected. All the pits except one lay in a line running from north-west to south-east, at right angles to another line of pits to the north-east (Open Area 2). Again, the contents of the pits suggest that they were used for the disposal of

domestic and perhaps some craft/industrial waste. Some contained ash and burnt daub.

Furthest to the north was a small sub-oval pit (80548), cutting into an earlier gully and apparently infilled at the same time. This was not bottomed at a depth of 0.41m. Just to the south was a fairly small circular pit (80637), surviving to 0.50m deep. The northernmost pit in a line of five or six was also small/medium in size (80623=80578) and 0.50m deep being roughly oval in plan. To the south, cutting into the edge of an earlier large pit, was another roughly circular pit (80549), 1.35m deep with irregular sides apparently eroded through weathering. This may suggest that the pit was left open for some time prior to use/backfilling.

Further south-east was a timber-lined, roughly square pit (80509) (c.1m across) with supporting circular posts or stakes at each corner and a wooden base. It was 0.72m deep and was filled with humic loam containing wood, perhaps indicating the disuse of a feature originally intended for storage. The supporting posts continued

below the base of the pit. Further to the south was a sub-circular pit (80580), augered to a depth of 1.74m, which again may also have been wood-lined. Cutting into it was an irregular pit (more probably two excavated as one — 80537) with a rounded to flat base, 0.68m deep (S.838). A post-hole was cut into the north eastern corner (80581).

Small Finds

Pit 80549 contained an iron knife blade (SF6066). Pit 80541 contained an iron fibre processing spike (SF1073).

Pottery

(Fig.4.78 on CD)

Over 4.5kg of pottery was retrieved from these pits (4.672kg). Assemblages are dominated by TTW although EMW becomes an increasingly important component. Jars and cooking pots continue to dominate the range of TTW forms recovered, with bowls and storage jars also represented; however, EMW ginger jars are also present. NEOT, imported Flemish Blue-grey ware and EMSW were also present. Infill dates during the 11th century are suggested (see Appendix 6).

Botanical Remains

by Peter Murphy and Alison Locker

Samples were similar to those described in earlier pits (Period 1.2, G8/6), although one (80688, pit 80537) contained *Ficus carica* (fig). *Sambucus nigra* (elder) seeds were common in this pit and in one other (80540, pit 80540). It is possible that these seeds are the only surviving residues from human faeces. A total of 165 fish bones were identified and are detailed in Part III, Table 91.

Hollow 1, Phase 7: fills and pits

by Elizabeth Shepherd Popescu and Andy Shelley
(Figs 4.7 and 4.35)

The northern part of Hollow 1 (G5/64) became infilled to a depth of c.0.75m. Fills were recorded in plan and section (S.312 and 313, Fig.4.7), both profiles indicating a depth of 0.75m of fill. The earliest deposit (given the same number as the cut; 50097) extended over an area of nearly 6.5 by 3.5m. A concentration of gravel was recorded near the base. Subsequent fills included almost pure sand (50105) and a mixed deposit (50089) of compacted clay silt with frequent flints and pebbles.

Cutting into these fills of the hollow were more pits. Furthest to the south was a large shallow pit, 3.40m across and 0.50m deep (47153, G47/33), which did not have a stratigraphic relationship with the fills of the hollow. One side of the feature was fairly steep sided, while the other was more gradual. This pit contained a relatively large quantity of iron smithing slag, along with a mid 10th-century coin of Eadred (see below). Just to the north were smaller pits. Roughly at the centre of the projected line of the hollow lay a sub-circular pit, probably with vertical sides (50107, G5/8). It was not bottomed or augered but was excavated to a depth of 1m. Late fills appear to date to the late 11th/early 12th century and are described in Period 1.4.

To the north, also within the projected line of the hollow were three more pits (G5/10). One (50094) had been cut by another. The earlier pit may originally have been square in plan, with one right-angled corner surviving to the south-west. It was shallow (0.34m deep), much probably having been truncated. Infilling was in clear bands, which, together with the presence of finds, suggests use as a refuse pit. This pit was cut by a sub-square refuse pit (50037), measuring about 2.5m² and was augered to a depth of 4.20m, only 1.2m of which was excavated. Its uppermost fill was of orange sand, perhaps suggesting deliberate consolidation beneath the

subsequent barbican rampart (Period 4.2, Chapter 7). To the west was the third refuse pit (50069), also sub-square and roughly the same shape, augered to 3.90m with a clay lining. This was filled with sand to a depth of 3m, beneath which the remaining fill was of rich, dark material. Lying towards the projected eastern side of the hollow was another pit (50023, G5/3) which had been heavily truncated.

Four more pits, minimally recorded, lay to the north, also within the projected confines of Hollow 1 (30056, 30057, 30058 and 30059 — G3/2 and 30003 — G3/3).

Small Finds

Finds from fills of the hollow in Area 5 included sawn antler (SF5666). Ironwork includes a broken knife (SF6733) with the tang set on line with the back and a fragmentary knife (SF6735.2). Pit 47153 contained a broken strap hinge (SF6715, Fig.4.100), a broken knife blade (SF6722; Fig.4.97), a simple window catch (SF6720; Fig.4.100), an oval chain link and a rove from a clench-bolt. Other finds include lead spillage (SF6797), a small fragment of lavastone, retaining a small area of the grinding surface (SF6847) and a silver coin of Eadred dating to 946–955 (SF6714). Finds from pit 50037 include an iron padlock key handle (SF5645; Fig.4.100). Finds from pit 30003 included intrusive clay pipe.

Pottery

(Figs 4.79–81 on CD)

A total of 5.468 kg of pottery was recovered from fills of the hollow and associated pits, 1.089kg of 11th-century pottery coming from deposits infilling the hollow. Fabrics consist of TTW, EMW, EMSW and NEOT as well as a sherd of Pingsdorf type ware. See Appendix 6.

Botanical Remains

by Peter Murphy

The flot from pit 47153 (47090, BS1734) consisted mainly of charcoal, with charred cereal grains, a *Vicia faba* horse-bean cotyledon and occasional fish bones. This material gives no indication of the function of the pit, from which a sheep skull was also recovered (Plate 4.43). A sample from pit 50037 (50027, BS339) included charcoal, a large charred *Fabaceae* (bean family) cotyledon, uncharred *Sambucus nigra* (elder) seeds and bone fragments. Again, no interpretation is possible.

Plots to the East of Hollow 1

It is possible that buildings adjacent to Hollow 1 (described in Period 1.2) were retained in use, with new pits dug around them (Fig.4.34). To the north-west of Building 1 was an area of pitting (G6/36 and G6/37), perhaps lying in an associated yard or less well-defined area. A number of pits were subsequently cut by the barbican ditch (Period 4.2, Chapter 7), the fills of some of which appeared to show chemical staining, were originally thought to suggest a post-medieval date. The nature of the finds and size of ceramic fragments, however, suggests that these may in fact have been early pits. All seem to indicate some kind of industrial activity, one pit showing traces of burning *in situ*.

South of Building 1 was a line of pits running south-west/north-east (G6/6; Fig.4.34). A south-westwards projection of this line matches the position of a pit which lay within the hollow (pit 80549 described above). The pit line was reflected in previous or perhaps contemporary lines of pits to the south (see Period 1.2), suggesting that there was a narrow strip of land to the south of the building, probably lying between it and Cemetery 3 (part of the latter perhaps having been in use at this early date; see below), or between this structure and other plots to the south-east. Many of these contained notable quantities of ash, burnt clay and charcoal, perhaps indicate craft and/or domestic waste, or alternatively the destruction of clay-built structures in the vicinity.

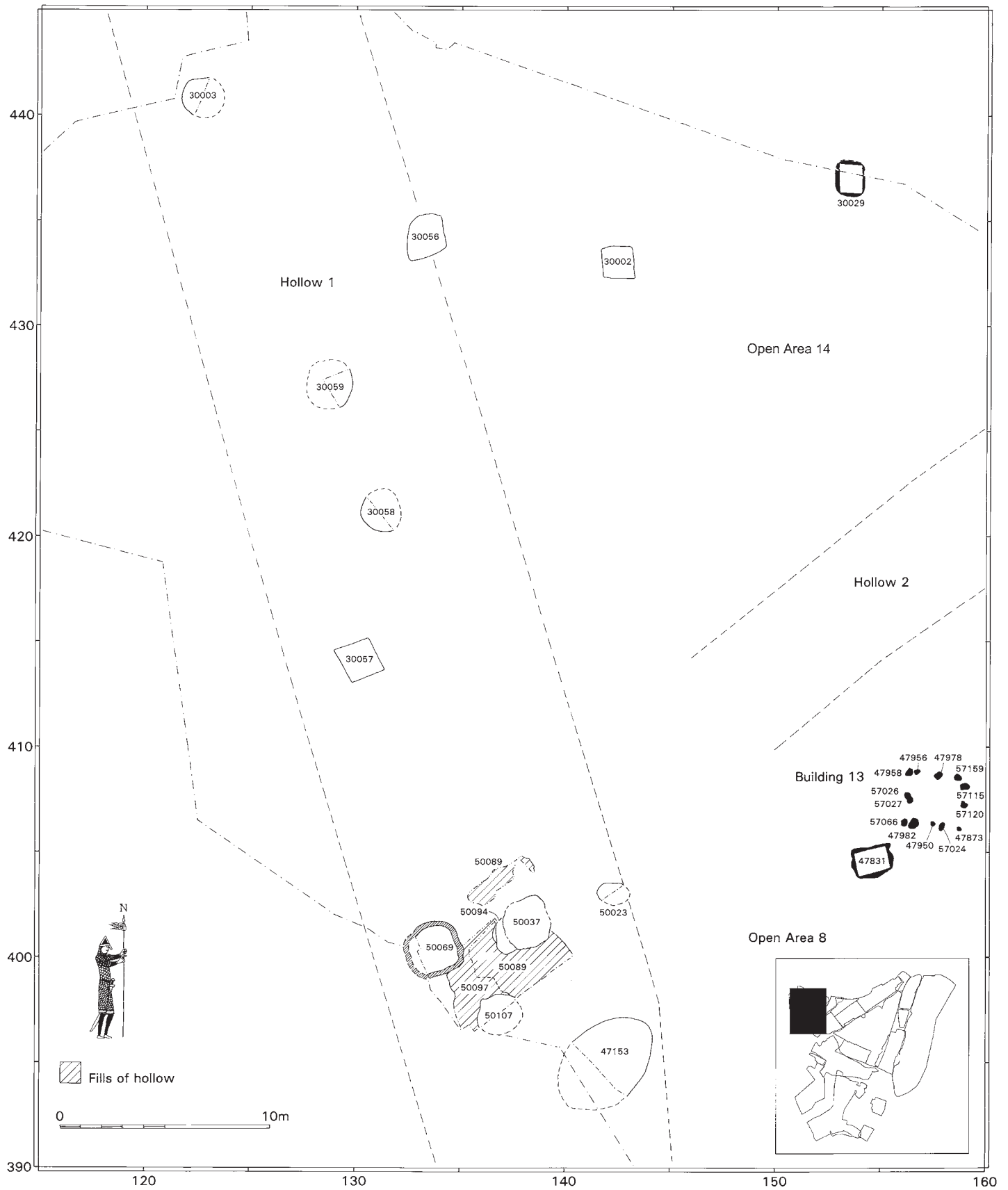


Figure 4.35 Period 1.3: Plan of Building 13, Open Area 14 and activities within Hollow 1 (Areas 3, 5 & 47).
Scale 1:250

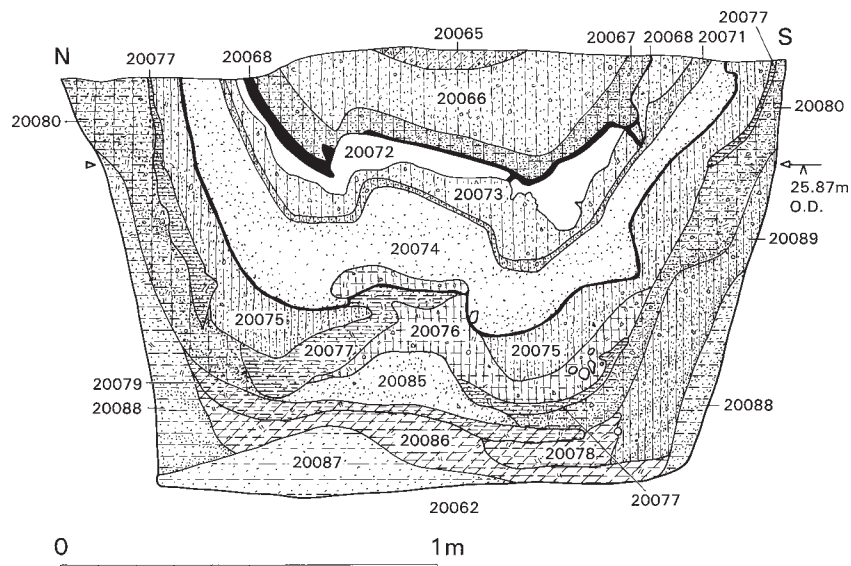


Figure 4.36 Period 1.3: West-facing section across pit 20062, Open Area 4 (S.205, Area 2). Scale 1:20

Open Area 2, Phase 2: pits (Fig.4.34)

The earliest pit (60031) lay close to the eastern edge of Hollow 1. It was sub-square and was lined with wood/wattle, perhaps indicating an initial storage function. It was not bottomed and its lowest recorded fill was apparent collapse behind a lining, with wood staining being evident along the western side. The wood or wicker lining was roughly square. Other fills included domestic refuse.

To the north were two intercutting pits (60093 and 60091), the earliest of which was small and irregular in plan. It was unexcavated but contained an unusual upper fill of light blue/orange/grey silty clay. This was cut by the second, larger pit (60091), probably more than one feature. Again unexcavated, a cross-section indicates that it was funnel-shaped with steep sides. The infill sequence was complex and one fill was stained green. A fill suggestive of side collapse contained half a TTW pot. This may have been disturbed from an earlier feature, or may indicate the true age of the pit. Domestic refuse fills above contained fish bone and charcoal.

To the south was a series of features. Four small pits or post-holes of unknown date (60097, 60095, 60099 and 60100) were cut by a larger pit (60038), probably incorporating more than one feature. It was not bottomed but was augured to a depth of 2.5m. Traces of burning were recorded around its edges and it was filled with greenish, organic, charcoal-rich deposits. One fill had a bluish tinge. Domestic items and refuse were recovered, with the notable absence of later finds.

Other pits were recorded to the south-east of Building 1. To the north-east was a small square pit (60291) which was not bottomed but was augured to a depth of 0.95m. This may have been wood-lined and was filled with domestic refuse. Furthest to the south-west in a line of three pits was a large, sub-square pit (60066), not bottomed at a depth of 0.85m. A sequence of linings and fills were recorded in section. The western side had a stepped profile and the pit may have been wood- or wattle-lined. An upper charcoal fill contained a patch of

copper alloy slag and fired clay recovered from the pit had copper alloy adhesions suggesting the possible lining of a metalworking pit. Cutting this was what may have been a second observation of the same pit (60365), not bottomed at 0.39m but augured to a depth of 1.60m.

About a metre to the north-east was another pit of similar size (60064), the latest in a sequence of three cuts. The earliest of these was sub-oval (60115) and was not bottomed. Its lowest recorded fill contained many fragments of a large EMW cooking pot (fill 60112) (see Lentowicz below).

Cutting into this pit to the west was another pit (60259). Above and to the west was a large, roughly circular pit (60064), augured to a depth of 1.55m (its fills being excavated to a depth of 0.55m). The uppermost part of the pit was redeposited natural sand and gravel. Furthest to the north in the line of pits was a large, square pit (60136), cut by a later gully (Period 1.4). The pit was augured to a depth of 1.19m.

To the south-east were two more pits (G6/14). Furthest to the south was a roughly circular pit (60042) which was augured to a depth of 1.00m. Just to the north was an irregular shaped pit (60068), cutting into an earlier structural slot. This pit was not bottomed and a slot running northwards from the pit's northern edge was recorded as part of the same feature. Up to three features may in fact be represented (two pits and the slot), although all were filled with a single deposit.

Small Finds

Pit 60031 contained 3 nails (SF5756). Finds from pit 60038 included an intrusive medieval copper alloy lozenge-shaped ring brooch (SF6023; Fig.7.24; see Chapter 7. III), as well as an iron clench bolt (SF717).

Pottery

A total of 4.332kg of pottery was recovered from these pits, comprising TTW, NEOT, EMW, EMSSW and YTW. Although a small quantity of YTW was present, a post-Conquest date is not necessarily implied (see Chapter 13) and infill dates during the early to mid 11th or 11th century are suggested (see Appendix 6).

Botanical Remains

by Peter Murphy

One fill of pit 60136 (60135, BS418) produced an assemblage dominated by well-preserved cereal grains, mostly oats. Also present were some *Avena sativa* (cultivated oat) floret bases, a seed of flax, weed seeds, hazel nutshell and a hawthorn fruitstone. This sample appears to contain a batch of semi-cleaned oat grains with some admixture of other material. A sample from pit 60064 (fill 60061, BS379) was mixed and not distinctive in character, with cereal grains, chaff, pea-type seeds, weed seeds, nutshells and fruitstones. Both assemblages are shown in Chapter 4.IV, Table 4.25.

Cemetery 3 (Farmer's Avenue; late 9th to mid 11th century)

(Figs 4.37–4.38, Plates 4.13 and 4.14)

A cemetery was established to the east of Hollow 1 (Fig.4.37), subsuming former external areas and associated structures (Open Areas 3 and 5, Period 1.2). A total of 55 burials was recorded in Area 1 (with 58 grave cuts being recorded), 27 graves were excavated in Area 6 and 4 in Area 22 (G1/10, 6/13 and 22/131). The excavated remains, which included 84 articulated burials, were of 65 adults (23 males, 41 females, 1 unsexed) and 26 children. Additional bone recovered from grave fills and other features brings the total minimum number of individuals to 106. Results of the analysis of the human bone, including radiocarbon dating and DNA analysis, are given in Chapter 4.V.

Cemetery Layout and Grave Alignment

All of the 89 recorded graves were aligned east-west, with a few being slightly nearer south-west/north-east, especially towards the north (e.g. grave 60523). The south-west/north-east alignment of one grave to the south is particularly striking when compared with those surrounding it (11576). The large, rectangular graves were generally widely spaced and arranged in 14–15 rows, with four graves some distance to the east (Area 22). These graves may have been outliers to the main part of the cemetery or the same concentration may have continued across the whole area from west to east. The burials were placed slightly closer together towards the south, where some were intercutting, and the clearest rows of burials lay to the south-east.

Skeletal analysis indicates a higher proportion of female to male burials, although there are no clear spatial clusters relating to sex. A concentration of infants and juvenile burials ran along the eastern side of the cemetery, with another group to the north-east. One burial (grave 60561, sk.60560), a child of 6–8 years lay isolated to the east, in an area of timber structures (Period 1.4).

Two possible family groups have been tentatively identified using the non-metric traits identified during bone analysis as a basis (Anderson, Chapter 4.V). One comprises 10 graves (graves 11102, 11816, 11845, 60436, 60504, 60417, 60455, 60476, 60615 and 60467) the position of which suggests a linear plot running north two south at the eastern end of the cemetery. Three other graves (11785, 60438 and 60547) lay within this area and may therefore be related to the group. The graves may have lain in two or three rows. The first row to the east would include four graves (11785, 60438, 60455 and 60476). The second row just to the west is less regular but may have included two graves (60504 and 60547). The third and most westerly row consisted of seven graves (11102, 11816, 11845, 60436, 60417, 60615 and 60467).

Only three graves lay to the west of this row (60383, 60302 and 60261) and it is possible that they were from the same family group as the others considered here.

The second group lay to the south-west and comprises five burials (graves 11601, 11666, 11702, 11776 and 11771). These lie within three possible rows of graves and, again, the position of surrounding graves may suggest an association (graves 11779, 10548, 11763, 11726 and 11100). Four other graves slightly further to the south lay in the same rows (11798, 11579, 11627 and 11812) and might relate if the linear pattern to the north-west is repeated here. A third group was tentatively identified running in a diagonal strip to the west of Area 1.

The graves were generally rectangular, some having rounded corners, and were of average dimensions of 2m east-west by 0.75m north-south by only 0.30m deep. In several cases (e.g. grave 60643) the grave appeared to be overly large for the burial, which could suggest the presence of coffins/plank burials of which no trace remained (no nails were recovered from these). The maximum depth ranges recorded was 0.67m. Upper levels from which the graves were cut ranged from 26.50 to 27.00m OD. The base of the horizontal deposits to the west lay at around 27.15m OD (sealing graves, e.g. Section 174, Fig.4.38), with grave bases at an average of 26.65m OD, suggesting an original depth of c.0.50m. There is no evidence to suggest that any truncation had taken place to the south and west prior to deposition/accumulation of these layers. Had they had been cut through the top of these deposits, they would have had a maximum depth of c.1m.

Fills of graves were a mixture of topsoil, disturbed deposits from earlier features and redeposited natural. Six graves were sampled (see below). Some contained charcoal and/or carbonised material (wood?) and other burnt matter such as fired clay and ash.

Burial Type and Body Position

The burials were all supine and the majority may have been buried in shrouds (although no textile or shroud pins were found. One late pin was clearly intrusive). Thirteen graves provided evidence for coffins or 'plank burial' (4 infants, 6 females and 3 males). Three examples had a

Burial Type	Area 1	Area 6	Area 22	Total	%
Coffin/plank	8	2	-	10	12
Plank	3	-	-	3	4
?Shroud/unknown	44	25	4	73	84

Table 4.2 Cemetery 3 — burial types

Body position	Area 1	Area 6	Area 22	Total	%
Arms crossed over pelvis	7	9	?2	18	44%
Arms by sides	3	4	-	7	17%
One arm by side, other across pelvis	7	1	-	8	19%
One arm across waist, other across chest	4	-	-	4	10%
Arms across waist	3	1	-	4	10%

Table 4.3 Cemetery 3 — burial position

fold out

fold out

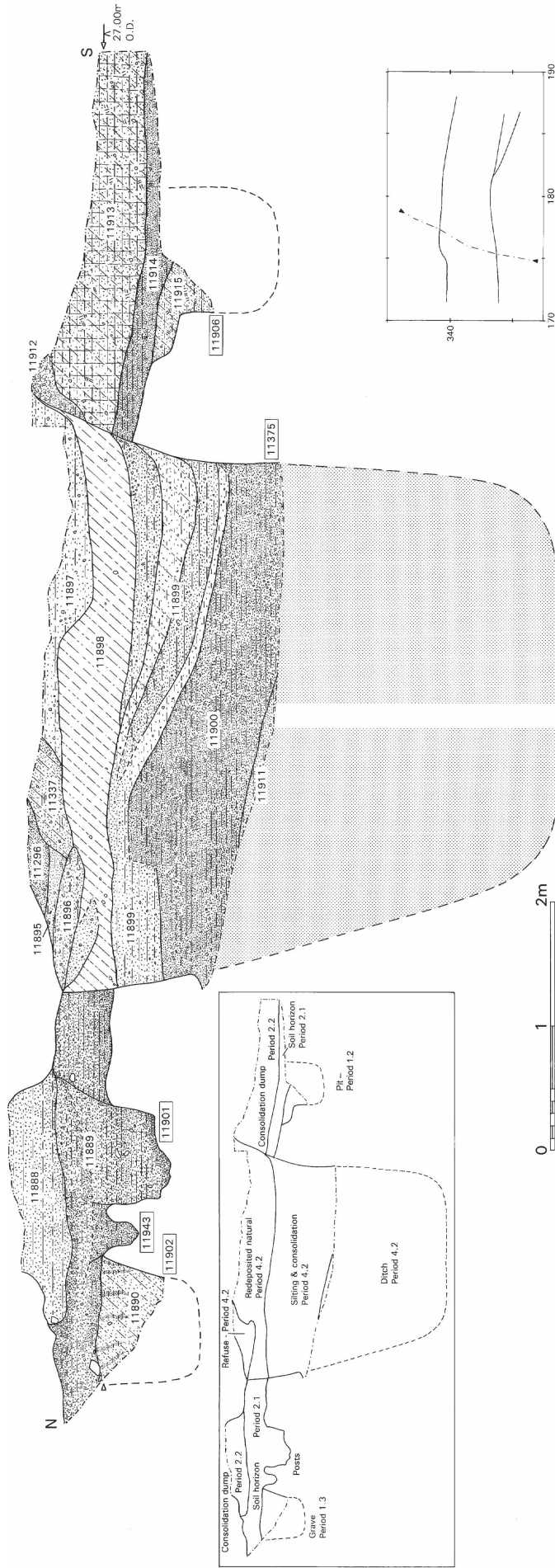


Figure 4.38 Period 1.3: West-facing section across features, including Cemetery 3 graves, beneath south bailey rampart (S.175, Area 1). See Fig. 7.21 for section location. Scale 1:150

slot at the grave base with wood staining suggestive of decayed planks (11614, 11821 and 11683). The coffin/plank burials were concentrated in the southern part of the cemetery, although two lay to the north-west.

The figures for burial type given in Table 4.2 are likely to be misleading as other graves may have had coffins which had subsequently decayed away. These include some of the very large graves as well as those containing possible coffin nails. Planks/coffins may also be indicated by the presence of wood staining or carbonised wood fragments found in other graves.

A stone coffin, recovered in the early 20th century, may come from this cemetery rather than that associated with the Church of St Martin-in-Balliva as was previously suggested (see Ashley, Chapter 4.III and Chapter 4.VI for further discussion).

A total of 41 burials survived well enough for body position to be ascertained (eg sk.60381, Plate 4.13). The main burial positions are indicated in Table 4.3. Some skeletons had, as a result of burial in sand, been reduced to little more than stains. The remaining burials were of indeterminate type as a result of disturbance, truncation or the fact that the grave only contained disarticulated bone.

Other burial positions include examples with hand(s) beneath the pelvis and one child burial with flexed legs (sk.11639). One had the arms crossed above the chest (sk.60541). One burial had the left arm above the waist and the right arm crossed up towards the left shoulder (sk.60458, Plate 4.14). The skull position in three cases was hunched over the shoulders, as if the head had been supported by a pillow, subsequently decayed. This may, however, simply have been an effect of decomposition. In two cases, the skeleton rested on yellow clay 'lining' and another burial within a coffin/planks had the skull hunched forward as if it had originally lain on packing (sk.11810), the skull being stained black. In addition, stones were placed beneath the shoulder blades.

One skeleton was buried with a charcoal deposit (sk.11805). There was one double burial of a female and juvenile, apparently buried at the same time (sk.60629 and 60630). There were no examples of flint/chalk 'pillows' noted in either the cemetery beneath the north-east bailey or the cemetery of St John at the Castle Gate (Cemetery 4). One skeleton may have been removed from its grave in antiquity or perhaps the grave was never used.

Another grave contained a neatly laid collection of bones from two individuals (11218), the majority of the bones being laid between the two skulls. The burials were of an elderly male and a 13–16 year old. Some bones appeared to be coated in clay, presumably a result of re-burial.

'Grave-goods'

A copper alloy brooch dating to the 8th to 9th century was found on the left breast of an elderly male (sk.11667; SF1027; see below). Other finds from graves included a knife tang and fibre processing spike, which may have been incidentally introduced into the graves or may have been deliberately placed.

Distribution of Redeposited Human Bone

The distribution of human bone from the area stretched from as far as Area 8 to the west to Area 9 to the east. Human bone was also recovered from castle ditches to

the north (Areas 2 and 4) and south (Area 1). The main concentration was from features just to the north-east of the cemetery. Additional bone comes from several SMR observations in the area, although some of these may relate to the cemetery of St Martin-in-Balliva.

Dating

Radiocarbon dates were obtained from 15 skeletons (Bayliss *et al.*, Chapter 4.IV), implying a cemetery start date of *cal AD 890–1020 (95% confidence)* and end date of *cal AD 980–1060 (95% confidence)*. A duration of *1–155 years (95% confidence)* is suggested. These results indicate that Cemetery 3 may have been established in the late 9th to 10th century with burial continuing into the early to mid 11th century. Pre-existing features have, however, been attributed a 10th–11th-century ceramic date (Period 1.2). Ceramics from grave fills themselves indicate a date range of late 10th- to mid 11th-century (see Lentowicz below).

The cemetery was laid out over an area which was already in use: several graves cut into earlier structural features and pits (described in Period 1.2). Graves in Areas 1 and 6 were also cut by a few slots and posts (see Period 1.4) prior to the deposition of layers possibly associated with the imposition of the castle (Period 2.1, Chapter 5). The original cemetery area was perhaps small, extending over structures later, although the reasons for such change in land use are unclear as there is little suggestion of pressure for space. The fact that graves were cut by later structures prior to the deposition of deposits possibly associated with the construction of the initial castle indicates that the cemetery may have fallen out of use (at least in part) prior to the Conquest (*i.e.* with its abandonment unrelated to the demarcation of the defences).

An early date in the possible range is also indicated by the presence of the ansate brooch of 8th–9th-century date, worn by one individual within the cemetery (sk.11667; SF1027). Although the bone proved in too poor a condition to be radiocarbon dated, an overlying grave (GU-5734, sk.11636) produced a date of *cal AD 940–1030*. The ceramic dates assigned to each of the Area groups which make up the cemetery vary slightly (Area 1: late 10th–11th, Area 6: mid 11th, Area 22: 11th), although this variation is not reflected in the radiocarbon results. The ceramic dates could be taken to indicate that the southern part of the cemetery (Area 1) which contained the grave with the ansate brooch was the earliest. This area, however, corresponds to the position of the overlying south bailey rampart (Period 3.1) which would effectively have sealed these particular graves from intrusive material entering the upper parts of the graves until the removal of the rampart.

The pottery types present in some grave fills (see Lentowicz below) could suggest that the latest burials were made towards the time of the Conquest, giving a short life-span for the following phase of pre-Conquest buildings (Period 1.4; although see discussion on ceramic chronology in Chapter 4.III). An alternative interpretation is that the features cutting graves and apparently sealed by deposits beneath the south bailey rampart were actually cut through the latter and represent the remnants of structures within the early castle precinct. A ditch described in Period 2.1, Chapter 5 (Ditch 3) is likely to have demarcated the boundary of the Castle

Fee during the timber phase of the castle (c.late 1060s to c.1090s), effectively enclosing Cemetery 3. The bulk of the cemetery was certainly sealed by the south bailey rampart, which is likely to have been constructed in the period c.1094–c.1121.

It is possible that, once this cemetery and its church fell out of use, burial moved south to the graveyard of St John at the Castle Gate (Cemetery 4; see Period 1.4). Further consideration of cemetery dating is given in Chapter 4.VI, 'Date and Duration of Cemeteries' and Chapter 13.

Cemetery Boundaries

The nature of any boundary markers to the cemetery is uncertain. To the west, the limit may have been demarcated by Hollow 1 which ran about 10m to the west of the most westerly grave. To the north-west, no graves were found west of the gullies running along the western edge of Open Area 3 (Period 1.2). The different alignment (north-to-south) of these gullies may suggest that this fact is a coincidence and that any original demarcation of the cemetery was by, for example, a fence no evidence for which survives. Clearly, the graves did not extend as far as the lines of pits and structure(s) to the west which they are likely (at least in part) to have been contemporary. No northern boundary was apparent but again, may have been demarcated by a fence. It may have lain roughly on a line drawn between grave 60281 to the north-west and the graves in Area 22 to the north-east. Many pits in this area (see Open Area 6) suggest that it could not have continued much further north of this line. To the east, where the cemetery extended into Area 22, no graves were found to the far south of the area, although extensive quarrying had later occurred here. The cemetery was presumably bounded here by the road leading northwards from its fork with what was later Berstrete. To the south, it is possible that some graves were removed during the original excavation of the south bailey ditch (Period 3.1, Chapter 6), although the close packing of graves in this area of the cemetery could be taken to suggest that the boundary lay nearby.

Associated Church

The position of the contemporary church — if one existed — is uncertain. The most likely excavated structures are Building 23 or 24 (Period 1.4, Plate 4.15), although the evidence for both is highly fragmentary and each building could equally pre- or post-date the cemetery. Alternatively, the church may have lain to the east or south of the excavated area and may have been of similar construction to that recorded under the north-east bailey (Site 416N; Ayers 1985). Further discussion is given in Chapter 4.VI.

Small Finds

A copper alloy brooch of Ansate type (SF1027; Fig.4.67) was found on the left breast of an elderly male (sk.11667). It dates to the 8th or 9th century and may have been an heirloom (see Goodall and Huddle, Chapter 4.III). Generally, however, the finds are what would be expected from grave infilling with a mixture of redeposited natural and topsoil. Another grave contained a copper alloy pin (SF5555) of Late Medieval/Transitional date and therefore intrusive. A third copper alloy object (SF1020) may be metalworking waste.

Most of the iron objects recovered (SF1022, 1108, 5505, 5740, 6182 and 6145) were nails of which at least some may derive from coffins/plank burials. Also included were a knife tang (SF1021) and formless industrial debris (SF5902), as well as a fibre processing spike (SF1023; Fig.4.101).

Pottery

(Fig.4.83 on CD)

Pottery was recovered from forty-seven graves within Cemetery 3 (totalling 2.927kg; Fig.4.83 on CD) and consisted of the usual range of Late Saxon and early medieval fabrics. The assemblage from Area 6 (0.799kg) comprised TTW, NEOT, EMW and a sherd of YTW. The general character of pottery from these graves suggests a mid 11th-century date, although this does not preclude the possibility that many graves may be earlier. Pottery was recovered from thirty-five graves in Area 1 (1.041kg). The majority was TTW but the group assemblage also included NEOT as well as early medieval wares. A date range of late 10th–11th-century is indicated for these grave fills. Just over a kilo of pottery was recovered from graves in Area 22 (1.087kg). The majority of this came from grave 22128 and included the usual range of Late Saxon and early medieval fabrics, indicating an 11th-century date. See Appendix 6 for further details.

Botanical Remains

by Peter Murphy

Samples were taken from six grave fills, one as a result of the presence of a patch of organic matter around the skull (11811, grave 11812, BS295). Another sample (60446, grave 60445, BS539) contained charred grains of *Avena* (oat; some sprouted), *Triticum* (wheat) and *Secale* (rye) with a charred seed of *Agrostemma githago* (corn-cockle) (Chapter 4.IV, Table 4.25). These may have been incidentally introduced from surrounding activities during grave backfilling, in a similar way to the other macrofossils and fish bone found within the samples. Most graves, however, were cut directly into natural deposits with only a few examples cutting into the fills of earlier features (see further comments in Chapter 4.VI, 'Burial Practices'). Human bone fragments occurred consistently and rare fish bones were also noted in grave 60583 (BS1263).

Plots to the North of Cemetery 3

Open Area 4, Phase 2: pits

by Elizabeth Shepherd Popescu and Andy Shelley

(Fig.4.36)

An area lying between Open Area 2 to the west and Open Area 6 to the east included a line of small to medium sized pits (not illustrated) running from south-west to north-east, perhaps along the northern edge of an external area. They align with other pits in Open Area 2, which could suggest that they were restricted by the same topographical feature or boundary. The two areas of pitting form a line over 50m long. Fills suggest the disposal of domestic waste and cess. There is no evidence to suggest the presence of a building associated with these pits.

The northernmost pit (40290) was subsequently cut by the barbican ditch (Period 4.2, Chapter 7) and survived to 1.10m deep. Just to the south-west was a vertical sided sub-square pit (40183), augered to a depth of 1.92m. This had been heavily truncated by the construction of air raid shelters. Further to the south-west was a rectangular pit (20062, S.205 — Fig.4.36) which survived to 1.20m deep and contained numerous small fills. The lowest of these was inwash and side collapse (20087, 20088), followed by decayed organic material (20086, 20079, 20078, 20089) which had compressed and caused slumping of overlying fills. Subsequent fills of sandy loam, silty loam and inwash may in part have been domestic waste (20076, 20080, 20085, 20077, 20075). Upper fills consisted of redeposited natural sand (20074), followed by sandy loams (20071, 20073) and what was recorded as the remnants of a rammed chalk 'surface' (20072), followed by charcoal (20068) and further sandy loam layers, some containing chalk fragments (20067, 20066, 20065). The presence of chalk 'surface' is notable and may indicate deliberate capping or the remnants of an adjacent floor/surface.

Small Finds

Finds from pit 40290 included a copper alloy needle (SF5877; Fig.4.101).

Pottery

by Irena Lentowicz
(Fig.4.82)

Nearly 3kg of pottery came from these pits, of which the majority was from pit 40290 (2.324kg). This assemblage included a NEOT rim (Fig.4.82, no. 8) and some of the TTW present included some Dallas 'early' level types (AB7 — x 2, AB8 and AC14; Fig.4.82, nos 1–4), and a small storage jar (type AF8; Fig.4.82, no.5) which is also interpreted as an 'early' rim. Other TTW rims included type AB4 (Fig.4.82, no.6). However, EMW was much more common and was represented by a jar rim (type J2b; Fig.4.82, no. 7) and a flat base. The latter is unusual, as EMW bases tend to be sagging. These may indicate that this pit group dates to the early 11th century rather than later. In addition, three fragments of a very large TTW vessel was recorded from context 40337; this was sooted internally and cracked, which may have occurred during use. Pit 20062 also included TTW represented by a type AB1 cooking pot rim and the central section of the base of a pedestal lamp and sooted EMW body sherds. Although exclusively hand-retrieved, much of this pit assemblage consisted of small fragments, reflected in the low average sherd weight (*c.*5g). A further 73g of pottery came from upper fills and included two TTW body sherds and an EMW bowl rim (type 2/10).

The dual survival of Late Saxon and early medieval forms was also reflected in the assemblage from pit 40183 which contained 0.329kg of pottery. Again, both TTW and EMW were present; the former was represented by a single jar rim of a 10th century type (type AB7; Fig.4.82, no. 9), while EMW was represented by three sherds of a ginger jar rim which also appears to have been burnt (Fig.4.82, no. 10).

Botanical Remains

by Peter Murphy

Samples were taken from three fills of pit 20062 (Chapter 4.IV, Table 4.25). Samples from two fills (20078, 263; 20079, 262) contained mainly mineral-replaced material, with 'faecal' concretions, mineralised stems, macrofossils of elder, bramble, strawberry and pea, fly puparia and many small fish bones, suggesting a cess origin. Another fill (20080, BS266) was composed mainly of charred cereal grains, predominantly barley, most of which had sprouted prior to charring. This appears to be a deposit of charred malt. All three samples were extracted for identification and are described further by Murphy in Chapter 4.IV. Pit 40183 (fill 40184, BS671; Chapter 4.IV, Table 4.25) contained charred samples with grains of oat and barley and also a few mineral-replaced seeds.

Building 11, Phase 2: destruction

by Elizabeth Shepherd Popescu and Niall Donald
(Fig.4.19)

Sunken-featured Building 11, which may have been constructed in the late 10th or early 11th century (Period 1.2), was apparently eventually destroyed by fire, although there are two possible interpretations of the destruction process. Firstly, that there was a single fire, represented by a patchy deposit of burnt sand/silt (22383) overlain by burnt clay (22376), the latter perhaps indicating collapsed walling (*i.e.* a thin skim of daub over ?wattles). This may then have been followed by a period of abandonment, with a ?natural accumulation of sand and clay across the hollow, followed by later mixed dumps incorporating fire debris.

An alternative interpretation is that a subsequent compacted clay layer with a very level surface (22375, Fig.4.19) which covered the entire area of the construction cut, overlying the two burnt deposits, was actually a second phase of flooring with associated replacement of structural posts. The possible floor was overlain by more burnt sand/silt (22372=22355 and 22353), perhaps suggesting a second fire horizon. The sunken area was finally infilled with a sequence of mixed dumps, the bulk

being of redeposited natural sand (22347, 22339, 22332 and 22350).

The descriptions of the two fire horizons within the building are similar, consisting of charcoal, silt and ash with frequent burnt daub in later deposits. The second interpretation given above is perhaps the most likely, suggesting that the building had two phases. If this building did indeed survive in use right up to the Conquest, it would have been contemporary with the pits described in Open Area 6, Period 1.4. Alternatively, a replacement building (Building 25) may have been constructed as a replacement just before the Conquest. Building 25 appears not to have gone out of use until the late 11th/12th century and further discussion is made in Period 1.4 and Period 2.1 (Chapter 5).

Small Finds

A pattern-welded knife (SF1111; Fig.4.97; Mould, Chapter 4.III) was recovered from deposit 22375, the knife lying on the interface with the underlying thin burnt layer (22383). All of the finds which may give an indication of the nature of activities taking place within the building came from destruction deposits, either from deposits within the construction pit or from fills of the post-holes. Two fragments of lavastone quern were recovered, both with surviving but pitted grinding surfaces. One may have been used in the construction of the building (SF6607) and is described in Period 1.2. The second fragment came from an upper backfill of the construction cut (22332, SF6598).

Pottery

Pottery recovered from this phase of the building amounted to 1.055kg, most from fills of the main sunken area. Fabrics comprise TTW, EMW, EMSW and Stamford ware (Fabric B). Forms include a TTW lamp. The ceramics indicate an 11th-century date for the destruction or abandonment of the building. See Appendix 6.

Botanical Remains

by Peter Murphy

Only one of the many samples taken was usable, coming from a post-hole (BS1538; 22142, Chapter 4.IV, Table 4.21) the post having been removed or burnt out (*i.e.* this is strictly speaking a destruction deposit). This was composed mainly of rye grains (*Secale cereale*) with small numbers of other cereal grains, virtually no cereal chaff (apart from a scrap of oat awn), a hazel nut shell and some weed seeds (mainly *Agrostemma githago*; corn-cockle) and a single seed of opium poppy (*Papaver somniferum*). This was probably a weed rather than a crop. This sample probably represents a batch of semi-cleaned rye, stored in the building and charred when it was destroyed by fire. See further details in Murphy, Chapter 4.IV and Chapter 13.

Open Area 6, Phase 2: pits

by Elizabeth Shepherd Popescu, Niall Donald and Andy Shelley

(Figs 4.39–4.40, Plates 4.16 and 4.17)

A series of pits with infill dates of 11th- or mid 11th-century may have lain in the same yard/external area associated with the abandonment/rebuild of Building 11 (Fig.4.39). The apparent expansion of Cemetery 3 into the southern part of this area (overlying earlier pits; see G22/130, Period 1.2) may suggest that the southern limit of the 'yard' moved slightly northwards (*i.e.* now being defined by pit 22287). Generally, these pits were similar to those in the earlier phase, pits being more rectangular/square in plan and with an average depth of 2.33m. Of note, although perhaps no more than coincidence, is the fact that three of the pits were wood or wattle lined, the earlier ones apparently being unlined.

Just to the north of the line of pits previously marking the southern limit of the 'yard' was a slightly larger, square pit (22287, G22/140), which was deep with vertical sides but no trace of a lining. It was excavated to a depth of 1.20m, augering suggesting a total

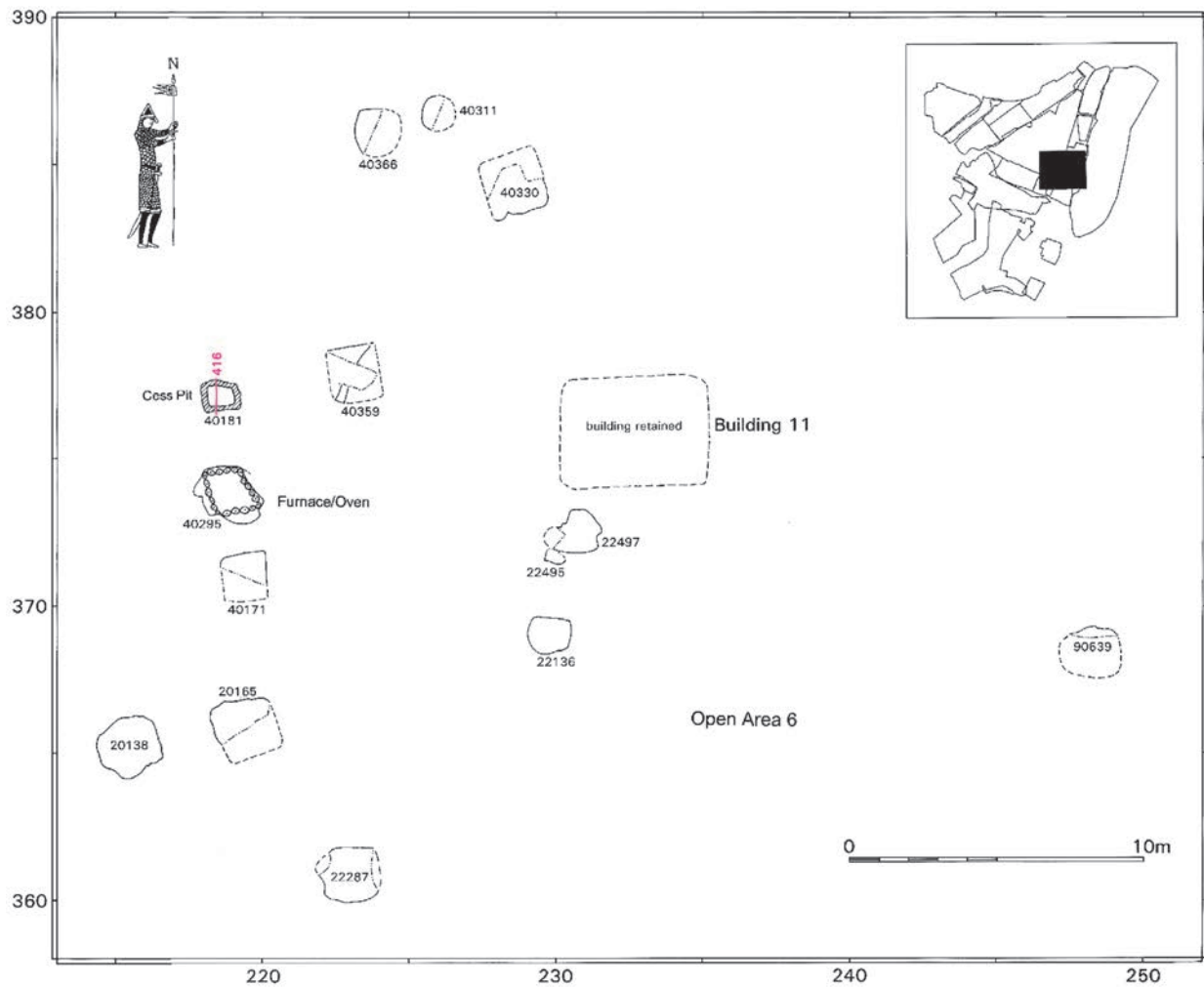


Figure 4.39 Period 1.3: Plan of Building 11 (retained) and Open Area 6 (Areas 2, 4, 9 & 22). Scale 1:250

surviving depth of 3.30m. A lower fill notably contained burnt flint. The uppermost fill suggests that the pit had been deliberately levelled with redeposited natural. Fills produced a good mid 11th-century pottery assemblage (see Lentowicz below).

To the west was an irregularly shaped pit (G2/5, 20138) which lay just to the west of the north-to-south line of earlier pits which continued to be added to at this stage (see below). This could suggest that the external area relating to Building 11 extended slightly further to the west than formerly, or that this pit lay on the eastern edge of another yard area to the west. It survived to a depth of 2.54m. Just to the east was a roughly square pit (20165 G2/5), surviving to 0.95m depth. It had been heavily truncated by the insertion of ditches relating to the early castle (Period 2.2, Chapter 6).

Just to the north was a line of three more small to medium sized pits (G2/10), reflecting the pit line established earlier (see Period 1.2). The northernmost of these (40181) had vertical sides and was clay lined (S.416 — Fig.4.40). This was not bottomed having been excavated to a depth of 1.30m. The lowest recorded deposit (40278) was a silty fill containing 40% mammal bone, above which was evidence that a clay lining may have slumped (40276). Above were a number of thin and one thicker layer of refuse. The thickest layer was of rich brown silty

loam with occasional lumps of charcoal (40229). The recorded fills suggest a secondary use for the disposal of cess (few finds being recovered). Towards the top of the pit was a chalk fill with occasional flints, perhaps capping the pit fills (40186). Above this was a thick dump of dark brown loam infilling the top of the pit (40180).

Lying just to the south was an irregular shaped pit (40295, Plate 4.16) which had been subjected to *in situ* burning, leading to an interpretation as a possible furnace or oven. It contained a large amount of burnt debris and appeared to have had a burnt, roughly rectangular wickerwork and timber lining (Plate 4.17), overlain by clay. The pit was 1.25m deep. At its base was a black deposit of scorched and compacted straw, with later fills containing burnt bone and flint. Little of an adjacent square pit (40171) was investigated.

Just to the east of the northern end of this pit line was another square pit (40359 — G2/5) which had been heavily disturbed by later features. This again was a refuse/cess pit with a mid 11th-century infill date. It had the familiar banded fill with peat/organic matter interleaving with bands of clean sand (either deliberate or the result of weathering).

East of this was another roughly north-to-south line of three small/very small pits (one of which may have been a post-hole — G22/146 and 22/149). The latter lay

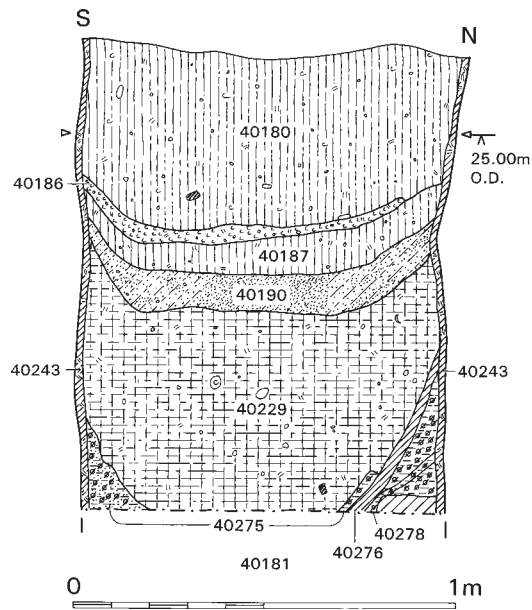


Figure 4.40 Period 1.3: East-facing section across pit 40181, Open Area 6 (S.416, Area 4). Scale 1:20

quite close to the southern wall of Building 11. Two pits had notably organic fills and had apparently been used to dispose of domestic waste. The southernmost (22136, G22/146) was sub-rectangular and was not bottomed at 1.20m. The sides were regular and vertical, but eroded and undercutting in places.

Nearer to the building was an irregular pit or post-hole (22495, G22/149) with a concave base and a depth of 0.47m. Cutting it to the north was an irregular pit (22497), partially excavated to a depth of 0.60m. Its lowest fill may have been decayed wood. All other fills appeared to have been deposited in a single action, deliberately infilling the pit.

To the south-west of the building was another pit (90639, G9/88 — part) which had been heavily truncated and was shallow (0.26m).

More pits lay to the north of the building. These included three small to medium-sized pits (G2/6), again used for refuse/cess disposal, with the notable inclusion of fire debris (ash, charcoal and burnt daub), in some cases perhaps burnt *in situ*. This may have had the familiar sequence of cess/refuse fills sealed by cleaner

sand deposits. The northernmost pit (40311) was small and was 0.64m deep.

Immediately to the west lay a sub-circular or square pit (40366), which survived to a depth of 0.60m. The primary fill of this refuse pit contained 40% ash with loam and charcoal. A burnt sand fill was noted to contain burnt pottery fragments. Further to the south-east was a square pit (40330) excavated to a depth of 1.15m. Tip lines suggest that it was infilled from the west and some fills provided evidence for *in situ* burning.

Small Finds

Pit 22287 contained an iron nail (SF6576), while pit 20138 contained an iron ferrule (SF230; Fig.4.100).

Pottery

by Irena Lentowicz

(Fig.4.84)

A total of 6.329kg of pottery was recovered from these pits, consisting of TTW, NEOT, EMW, EMSW, YTW, as well as Pingsdorf type ware and an unidentified continental import. Infill dates during the 11th century are suggested (see Appendix 6). A good assemblage of pottery was retrieved from pit 22287 (1.653kg); from three fills the pottery was fresh although that from another was burnt and shattered. TTW dominates the assemblage by weight and includes rims from jars (AB14, Fig.4.84, no.1), cooking pots (type AB14, x 4, Fig.4.84, no.2) and a spouted jar with a lid-seated, flattened upright rim (Fig.4.84, no.3) as well as a number of bases and a body sherd from a large storage jar. However, both NEOT and EMW form a larger, interesting proportion of the assemblage. NEOT is represented by a jar with a simple, everted wedge-shape rim, while EMW rims include rims from three ginger jars (types 2 and 3; Fig.4.84, nos.5 and 6) and a cooking pot (type J1b, Fig.4.84, no.4). Many of the EMW body sherds appear to come from this latter vessel and are noted as burnt and shattered. A mid 11th-century date is suggested for this pit on the basis of the combination of ginger jar rims and the TTW fine variant.

Botanical Remains

by Peter Murphy

Samples from the pits were of two main types. Those from pit 40342 (BS654) and 40352 (BS626) included mineral concretions, mineral-replaced plant stems and arthropods and fish bones, besides from charcoal and occasional charred cereal grains. They evidently represent latrine deposits although identifiable mineral-replaced plant macrofossils were not noted during scanning. The remaining samples consist largely of wood charcoal, with few other charred plant remains, apart from a few charred cereal grains. Intrusive modern roots and uncharred seeds of *Sambucus nigra* (elder) were also present.

A sample from pit 40295 (BS697) was composed largely of wood, with off-white fused siliceous material, occasional charred cereal grains, including *Avena*, abundant uncharred *Sambucus* seeds and some fish bones. Four samples from fills of pit 40181 were all similar in composition. Uncharred *Sambucus* seeds were exceedingly abundant, but charred macrofossils were rare: only occasional charred grains of *Avena* (oat), *Secale* (rye) and *Hordeum* (barley) with *Corylus* (hazel) nutshell fragments were noted. One sample (BS679 from fill 40229)

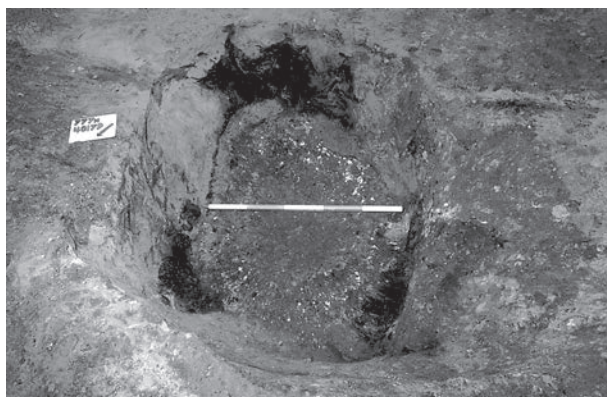


Plate 4.16 Possible 'oven/furnace' base within pit 40295, Open Area 6 (Period 1.3)



Plate 4.17 Detail of wicker lining in pit 40295, Open Area 6 (Period 1.3)

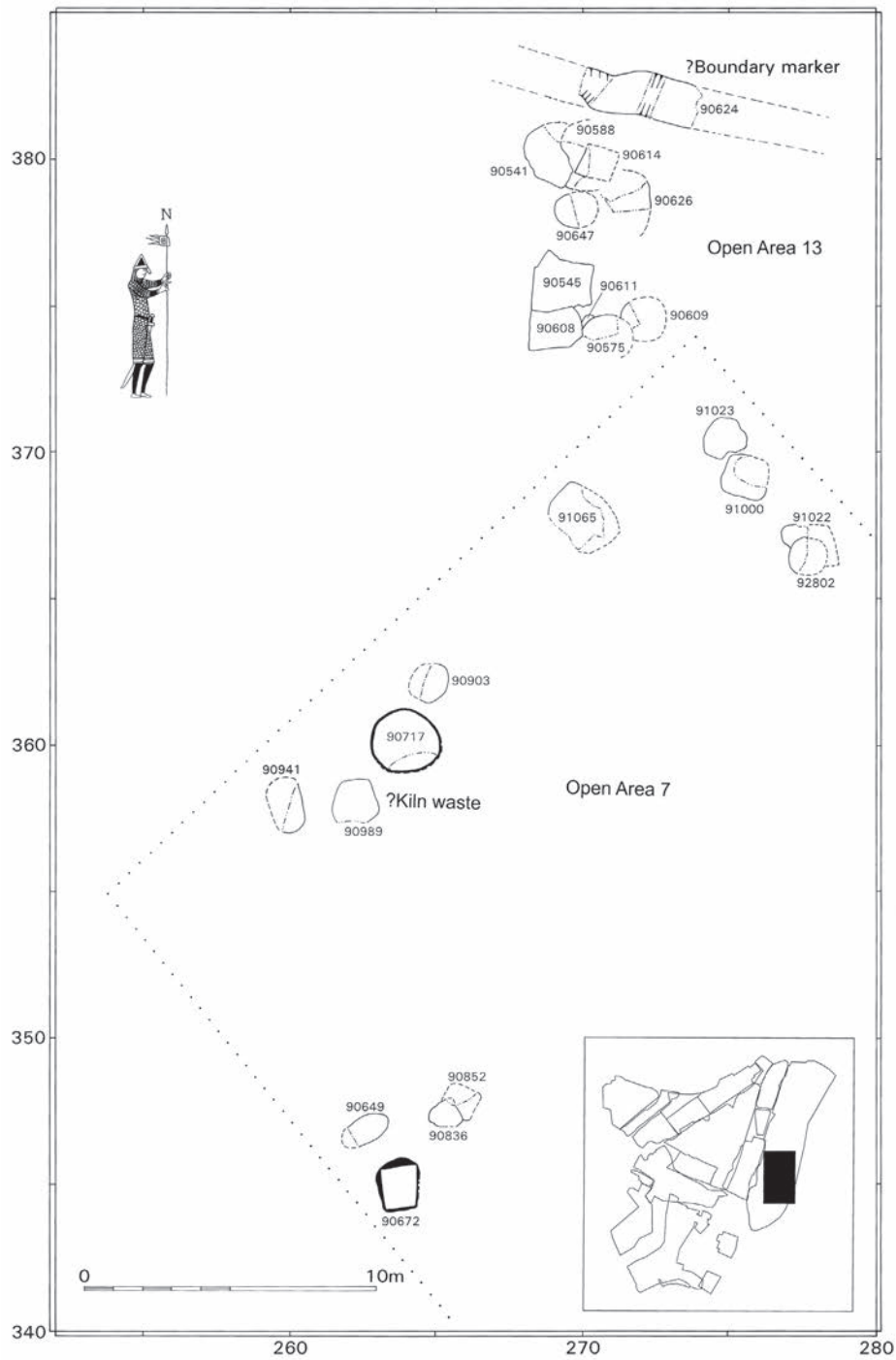


Figure 4.41 Period 1.3: Plan of Open Areas 7 and 13, showing pit 90989 containing pottery ?kiln waste and boundary marker 90264 (Area 9). Scale 1:250

also produced some mineral replaced fly puparia, concretions and fish bones suggesting a component of faecal material.

Plot to the East of Cemetery 3

The northern edge of this possible plot was defined by two areas of pitting (Fig.4.41), one example being nearly 4m deep. Another had apparently been used for the disposal of possible kiln waste. These pits also show a generally low proportion of finds other than ceramic refuse and may suggest localised craft activity. An earlier pottery kiln or drying oven lay about 40m to the west (Period 1.2).

Open Area 7, Phase 2: pits and pottery ?kiln waste by Elizabeth Shepherd Popescu and Niall Donald (Figs 4.41–4.42, Plates 4.18–4.20 and 4.37)

The location of pits in Open Area 7 tentatively suggests three lines sited around the fringes of an external area, with a building perhaps towards the centre (no trace of which was found). They were aligned south-west/north-east (with pit 91074, Period 1.2) forming the south-western corner.

Along the western edge were four small to medium sized pits (G9/52), one of which was possibly in excess

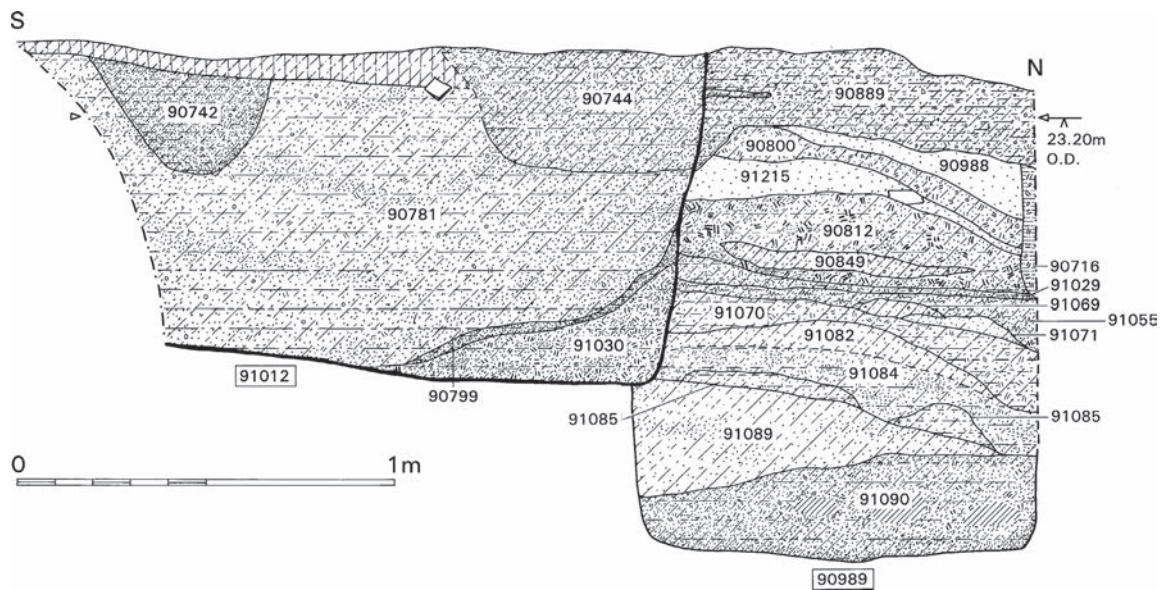


Figure 4.42 Period 1.3: East-facing section across pit 90989, containing pottery kiln waste (S.958, Area 9).
Scale 1:20

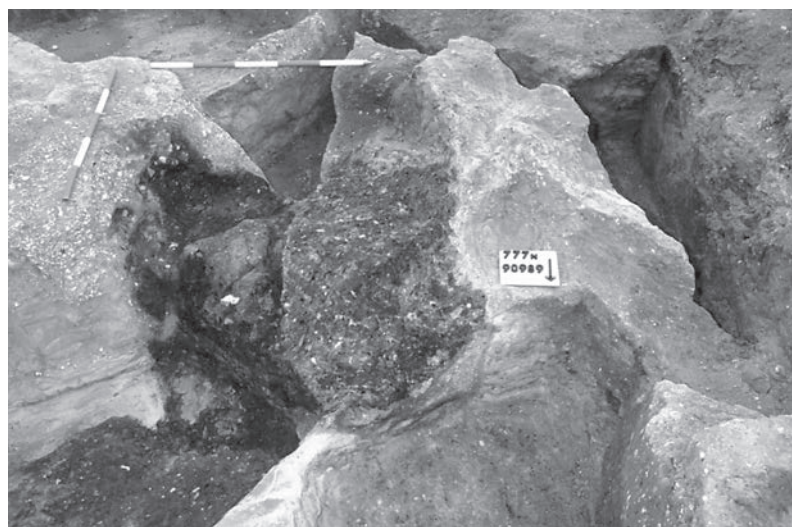


Plate 4.18 Pit 90989 prior to excavation (Period 1.3)

of 3m deep, although only the lower 1.3m was excavated (the upper part having suffered recent ground reduction). It was roughly vertically sided and was wood-lined (90672). It contained no obvious refuse-type deposits and its primary function may have been for storage, *etc.* The lining survived on the pit base and its south-eastern side as a dark reddish brown 'peat' interpreted as decayed wood.

Of the other pits, one was used for the disposal of refuse and the others are of uncertain function. An oval pit west (90649) survived to 0.40m deep. It appears to have stood open for some time before use for refuse disposal. The truncated bases of two other pits lay to the east. One was flat bottomed (90852) and the other was sub-circular (90836) with a concave base and a surviving depth of 0.24m.

Along the north-western side of Open Area 7 was a sub-square pit (90989, G9/79, S.958 — Fig.4.42, Plates 4.18 and 4.19) with a surviving depth of 1.10m (prior to excavation, the 'kiln-like' shape was noted, although on excavation this interpretation was altered). Its base was flat and it had regular vertical sides. The pit had clearly been used for the disposal of ceramic waste (59kg in total; see below). The entire surviving infill consisted of thin alternating level bands of possible kiln rake-out (91090, 91084, 91070, 90812, 90800 and 90889) separated by redeposited natural sands and clays (91089, 91085, 91082, 91071, 91069, 91029, 90716, 90849, 91215 and 90988). Many of the fills were level, although some had been tipped into the pit from the west or south. A single fill (91055) was organic in character. The largest quantities of pottery came from the primary fill (91090, 17.745kg) and a number of later fills, all but one of

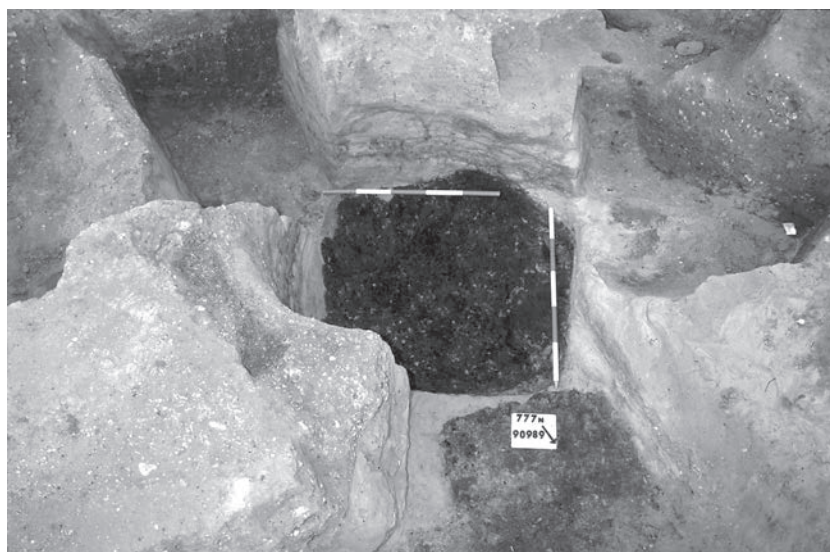


Plate 4.19 Pit 90989 during excavation (Period 1.3)

which had the character of kiln clearance waste (91070, 12.384kg; 91029, 1.046kg; 90812, 25.611kg; 90800, 2.175kg; Plate 4.20). The sand and clay layers may have been thrown in above the hot kiln rakeout in deliberate attempts to cool the underlying material. The presence of other finds and high densities of charred cereals in the primary fill (see Murphy below) indicates that the feature had also been used for the disposal of other categories of waste. A patch of burnt gravel adjacent to the pit was the subject of archaeomagnetic dating, although this proved inconclusive (Noel, AML 88/1990, Plate 4.36).

Adjacent to the pit containing the possible kiln waste was a possible sub-rectangular pit (90941), again heavily truncated being only 0.14m deep. Just to the north-east was a larger sub-circular pit (90717), with vertical sides. This was augered to a depth of 3.88m and the auger suggested the presence of a burnt wood lining at the base. Upper backfills included domestic waste. A smaller sub-circular pit to the north-east (90903) had a concave base at a depth of 0.59m, with regular sloping sides. Another pit (91065 — 9/89) lay on the same south-west/north-east alignment as the pits described above. This had been heavily truncated, was roughly square and c.0.60m deep.

The north-west to south-east leg of the edge of the plot had two pits to the north (G9/90 — pits 91023 and 91000). These may be early features, although this whole area had been badly disturbed by later quarrying and pitting. Just to the south-east were two more pits, perhaps recuts of a single feature (91022 and 92802, G9/89). One contained a virtually complete St Neot's-type ware bowl (see Lentowicz below).

Small Finds

Finds from pit 90989 included an iron strip (SF6226), staple (SF6136; Fig.4.100), an armour-piercing arrowhead which appears to be intrusive (SF6147; Fig.7.35; Mould, Chapter 7.III) and two pieces of sawn antler (SF6206 and 6380). Pit 90717 contained a lava quern (SF6417) and an iron strip (SF6133).

Pottery

by Irena Lentowicz
(Fig.4.85)

Possible kiln waste from pit 90989

An extremely large quantity of pottery (59.668kg, Fig.4.85) was recovered from pit 90989. Dallas' criteria for kiln recognition was applied (1993, 128) and three of the criteria were indeed noted: the presence of waters and/or misfired sherds, the repetition of fabrics and forms, similarity in manual treatment of decoration, manufacture and finishing techniques were all recorded. Wasters and misfired sherds were present; twenty nine sherds were noted as wasters accounting for c.40% of all such sherds from the entire ceramic assemblage (a total of seventy-three wasters were noted during cataloguing). A further twenty sherds were noted as cracked, which may also indicate that these sherds were wasters. Just over a hundred (105) sherds were noted as oxidised, accounting for 12% of all oxidised TTW sherds from the site assemblage (826 in total). Mis-shapen and mis-fired TTW occurs on many Norwich sites, however, and it seems that as long as the vessels were still functional they were used.

While the rims from a bowl (type BB11) and a handled jar (type AE11) were recorded, the other vessel type noted was invariably the jar. A wide range of rim forms were noted: of 632 rims virtually all Dallas' rim types were present; types AB/AC11 (x 185; Fig.4.85, nos 3, 4 and 5), AB/AC13 (x 118; Fig.4.85, no.6), AB/AC14 (x 88; Fig.4.85, no.7) and AB/AC16 (x 71; Fig.4.85, no.8) were the most common rim forms, accounting for over 70% of all rims. Other rims included types AB5, AB10 and AB17 (Fig.4.85, nos 1, 2 and 9). There was also a similarity of manual treatment in decoration, construction and finishing techniques, although this is concluded by the absence of any comments noted to the contrary. The TTW is wheel-made and uniform in colour and size; though not abundant, the most common decorative motif noted in squared-rouletting. Two bases were noted as having not having the characteristic cheese-wire marks on the underside, and a further two bases were classified as sagging rather than flat.

As with the similar assemblage from the kiln or drying oven discussed in Period 1.2, Dallas' final criteria (4) that there is an absence of signs of domestic use could not be demonstrated. Sooting was noted on forty-three sherds and was also noted on the internal surface of some sherds. Much of the pottery was noted as fresh, but some was worn and abraded. Some was undoubtedly used over a fire this is as likely to be the result of an industrial function as a domestic use. Although TTW is by far the most common fabric, small quantities of other fabrics were present and include EMW, EMSW and a few small sherds of LMU.

This is, however, too large an assemblage to be interpreted as purely domestic refuse, especially as few signs of other domestic refuse, such as animal bone, were recovered. This was a large quantity of material to be deposited at one time, and some explanation must centre round either pottery production or distribution/selling during the 11th century. See further discussion in Chapter 4.VI and Chapter 13.

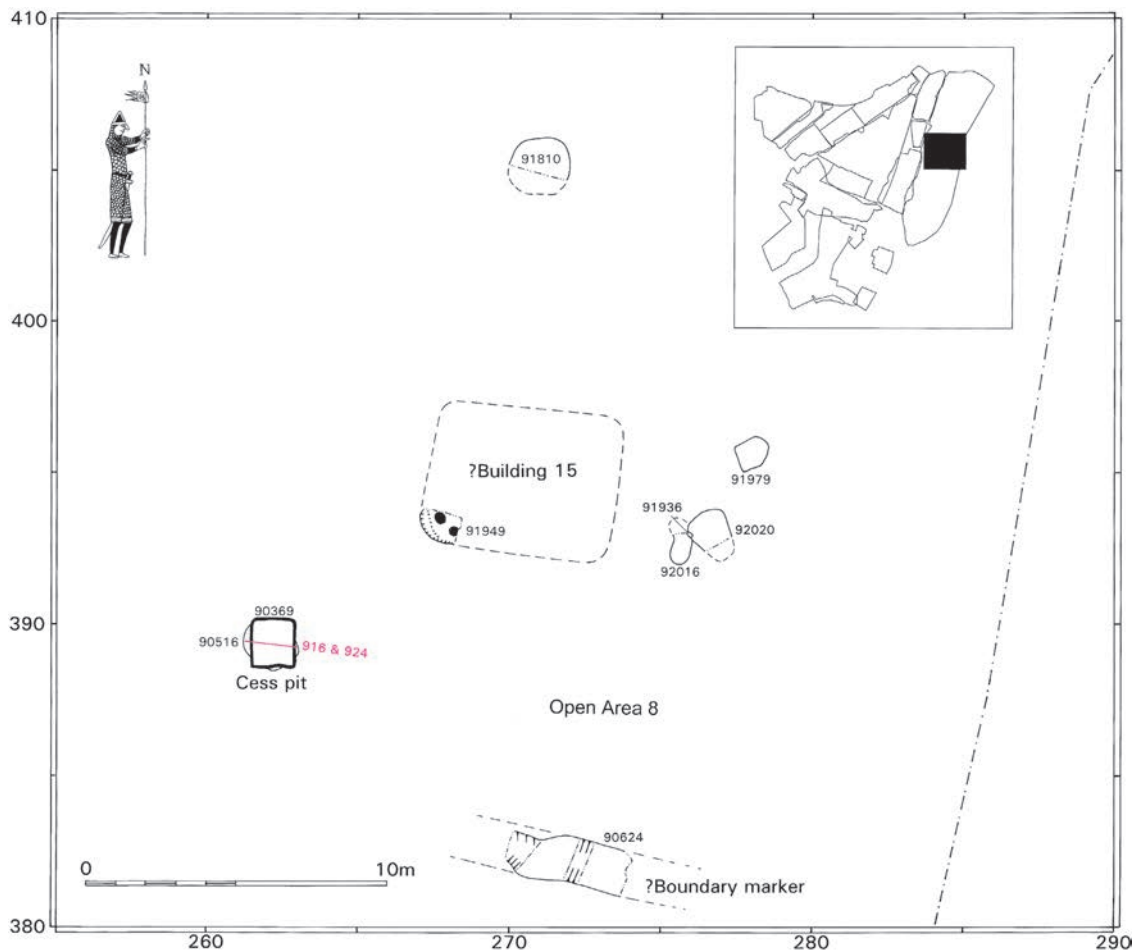


Figure 4.43 Period 1.3: Plan of ?Building 15 and Open Area 8, showing boundary marker 90624 (Area 9). Scale 1:250

Pottery from other pits

A total of 2.681kg of pottery was recovered from the remaining pits, consisting of TTW, EMW, EMSW, YTW and a virtually complete NEOT bowl (from pit 91022). See Appendix 6.

Botanical Remains

by Peter Murphy

A sample from pit 90717 (BS1074) produced a large flot including charcoal up to 70mm, as well as charred cereal grains (oat, rye and barley) and fused globules of off-white ?siliceous material which were unusually common. There was also a minor component of mineral-replaced stem fragments. A sample from pit 90989 (primary fill 91090, BS1176) included high densities of charred cereals and was selected for full analysis (see Chapter 4.IV, Table 4.25 and Murphy, Chapter 4.IV).

Open Area 13: pits

by Elizabeth Shepherd Popescu and Niall Donald (Fig.4.41)

To the south of a possible boundary ditch (90624; see Open Area 8 below) and just cutting into its fill were a series of intercutting pits (G9/100 and 9/101 part). The earliest four pits, all of which were near vertical-sided, were revealed after the removal of an overlying deposit. These were not bottomed but had been infilled with domestic/industrial waste. Furthest to the south was a sub-rectangular pit (90608) that was not bottomed at 1.20m, augering suggesting a depth of 2.80m. Cutting into it to the north was another sub-square or sub-rectangular pit (90545) with a probable depth of 2.46m (excavated to

0.80m). Just to the north was a sub-circular pit (90647) with a minimum depth of 3.00m (excavated to 1.00m). Its fills had apparently slumped, perhaps suggesting the presence of earlier organic fills. Just to the north was the fourth pit (90541), originally sub-square or sub-rectangular, augered to a depth of 1.80m. Overlying these were the fragmentary remains of more pits (90613, 90611, 90609, 90575, 90588, 90599, 90614 and 90626; G9/101, part and 9/100) containing 11th-century pottery.

Small Finds

Pit 90613 contained a fragment of decorative bone strip used on a ?casket (SF1083; Fig.4.99). Finds from pit 90541 included worked bone (SF6201) and a folded lead sheet (SF6183).

Pottery

A total of 1.496kg of pottery was recovered from these pits, consisting of TTW, EMW, EMSW and YTW. See Appendix 6.

Plant macrofossils

A sample from pit 90608 (BS1048) is detailed in Chapter 4.IV, Table 4.25.

Plot to the North of Open Area 13

Building 15: sunken-featured

by Elizabeth Shepherd Popescu and Niall Donald (Fig.4.43)

The possible remnants of a sunken-featured building, perhaps replacing Building 12 (Period 1.2) in the early

11th century was recorded just to the south-west of the other building (Fig.4.43). These consisted of the south-western corner of a large feature (91949, G9/117) with two shallow sub-rectangular post-holes at its base (0.12 and 0.07m deep). The construction cut was about 0.50m deep with vertical sides and a rounded south-western corner. Comparison with other examples suggests that the building would have been c.4m long and was aligned north-west/south-east (*i.e.* quite different from the earlier building). The small posts would not have been capable of supporting much weight. The only other adjacent feature on this alignment was a ditch to the south (90624, see below). The ?building was backfilled with mid brown silty clay sand redeposited natural, the date of the few pottery sherds present suggesting that may have gone into and out of use during the 11th century.

Small Finds

Two iron nails were recovered (SF6451).

Pottery

Nineteen sherds of pottery were recovered from this feature (0.104kg); TTW was represented by a rim from a small jar (type AA2) and two medium jars (types AB6 and AB10) as well as by a base. EMW was retrieved from a sample. An 11th-century date is indicated.

Open Area 8, Phase 2: pits

by Elizabeth Shepherd Popescu and Niall Donald (Figs 4.43–4.44)

To the south of Building 15 was a narrow ditch (90624, G9/102) running north-west/south-east on a similar alignment to the building (Fig.4.41 and 4.43). This may have served as a property boundary marker, separating the building and its ?yard from activities to the south. The ditch was recorded over a 4m length and was 1.30–1.50m wide and c.0.30m deep. It had a flat base and concave sides and was eventually filled with pebbly clay/sand.

To the north-west, in an area of earlier pitting was another in a sequence of deep pits (90516 = 90369, G9/109, part, S.916 and 924, Fig.4.44, Plates 4.21 and 4.22). This was c.5m deep, although its cross-section suggests that if so it would have been very narrow at its base. It was excavated in two stages; first to a depth of 1.20m, then the ground was reduced to allow another observation at a lower level. The original shape of the pit was square, with regular vertical sides. Excavation failed to reach the base of the pit, which was augered. It is evident that considerable erosion had taken place in the lower part of the pit which appeared circular in plan and the sides were no longer vertical. This appeared to have resulted from the failure of the lining. Traces of this lining were only detected near the top of the pit, surviving only on the south side. It consisted of charred horizontal planks near the top and thicker beam(s) lower down. The lowest recorded fill consisted of redeposited natural sands with lenses of mid brown clay loam (90622, 90631 and 90505), above which were two thin layers of mid red brown silty sandy clay and wood mix, perhaps collapsed pit lining (90506 and 90501). All fills had been subject to slumping. These were overlain by a series of charcoal fills interspersed with mid grey brown or mid brown sandy clays or clay loams (90498, 90629, 90492 and 90491). Further slumped fills of burnt clay and charcoal mixed with lenses of grey silty sand were recorded at the base of the upper part of the pit (90354). Final backfilling consisted of pale yellow orange sand (90353

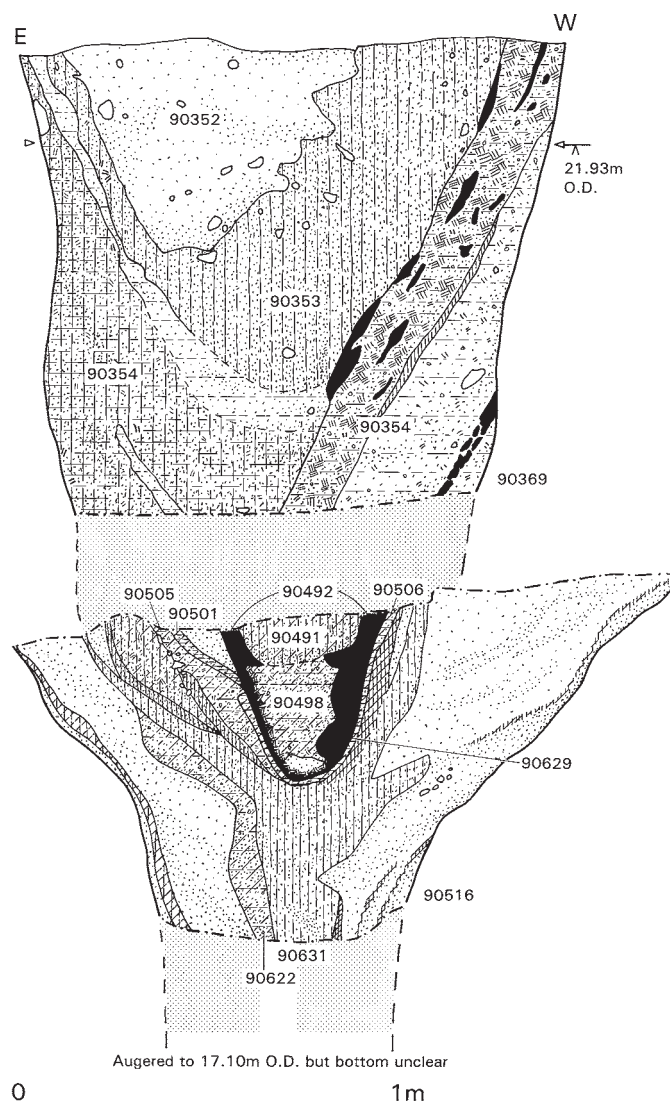


Figure 4.44 Period 1.3: North-facing section across pit 90516/90369, Open Area 8 (S.916 & 924, Area 9). Scale 1:20

and 90352). The upper fills were generally thicker with a higher refuse content. The base of the pit lay close to the anticipated interface between natural chalk and overlying crag. The pit had clearly been used as a cess/refuse pit at least as a secondary function, animal bone containing a number of partial skeletons (see below).

To the east of Building 15 was an area of pitting (91979, 91936, 92016 and 92020; G9/126 part) of probable 11th-century date, cutting into an underlying building (Building 12), possibly resulting in the reworking of deposits.

North of the structure was an isolated circular pit (G9/45, part; 91810), augered to 0.38m. This was recorded as cutting the barbican ditch, but was probably cut by it (with the stratigraphic relationship obscured by slumping).

Small Finds

Finds from pit 90516=90369 included an antler comb fragment (SF1085) wallhook (SF5943; Fig.4.100) and a fragment of wire (SF6104), as well as a whetstone of purple phyllite, pierced for suspension (SF5920; Fig.4.104). Pit 92020 contained a flake from the reworking of a lavastone (SF6530). Finds from pit 91810 include domestic waste including three iron nail shanks (SF6381), sawn red deer antler (SF6302) and a bone spindle whorl (SF6300).



Plate 4.21 Plan view of pit 90369 (Period 1.3)



Plate 4.22 North-facing section across pit 90369 (Period 1.3)

Pottery

(Fig.4.86 on CD)

A total of 2.281kg of pottery was recovered from these pits consisting of TTW, NEOT, EMW, EMSW, EMSSW, YTW and Stamford ware (Fabric B), as well as four sherds of leached out Shelly-type ware of Early Saxon date from pit 90516. Infilling during the 11th century is suggested (see Appendix 6).

Botanical Remains

by Peter Murphy

Samples from pit 90516 (e.g. fill 90361, BS1059) included some mineral replaced *Prunus* fruitstones and fly puparia, also including mineral-replaced scraps of *Agrostemma githago* (corn-cockle) testa. Flots and

residues from a different fill (90491, BS1053) were largely composed of mineral-replaced material — largely monocotyledonous stems, fly puparia, large mineral concretions and occasional *Malva* (mallow) seeds with fish bones and bone fragments. There were too few identifiable plant macrofossils for analysis to be profitable. However, this context was undoubtedly a latrine deposit and the other fill mentioned above probably also included sewage residues.

Animal Bone

Fills of pit 90516=90369 contained partial skeletons of: a horse and cat (both from 90354); a goshawk (90491; Plate 4.41); a dog (90501) and another horse and cat (both from fill 90506). The horse remains appear in Plates 4.39 and 4.40. Four buzzard bones were also present. These remains are discussed further in Chapter 4.IV, 4.VI, Chapter 13 and Part III.

Plots to the Far North

Several 'plots' have been identified across the northern part of the excavated area, although the distinctions between them are tentative and are largely intended as an aid to description. They include areas to the north and south of infilled Hollow 2 (Period 1.1). A possible post-built structure was surrounded by pitting.

Open Area 14: pits

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.35)

Two square pits lay to the east of Hollow 1 and north of Hollow 2 (Fig.4.35, 30002 and 30029, G3/1). Pit 30029 was was .50m deep and had been backfilled with successive refuse and sand deposits, including a mass of charcoal or decayed timber, indicating that it may have been wood-lined. No diagnostic finds were recovered from it and its date remains uncertain.

Pottery

A small quantity of pottery (0.172kg) was recovered from pit 30002, comprising TTW and NEOT. See Appendix 6.

Open Area 9, Phase 2: pit

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.35)

To the south of Hollow 2, a large pit (47831, G47/18; Fig.4.35) was dug in the same area as an earlier pit (see 47872, Period 1.2). The new pit was smaller than the first (being approximately 1.5 x 2m) and was rectangular in plan, having been wood-lined. The lining had survived only as a few carbonised planks and a layer of charcoal. The feature was not excavated to its full depth. Its lowest recorded fill, apart from the wood lining, appeared to be a refuse deposit although this was overlain by a possible clay lining. Some of the latter still adhered to the pit's sides, although most had slumped. Refuse disposal may not have been the primary function of the pit, although one fill (47867) contained a roe deer trophy (see below). Later fills are described in Period 1.4. The location of such a large pit adjacent to a structure (Building 13) is, perhaps, unlikely.

Pottery

A total of 0.320kg of pottery was recovered from early fills of this pit. Coarse TTW was present and appears to be a late 11th century development, although the absence of other fabrics may indicate a pre-Conquest date. See Appendix 6.

Zoological Remains

A roe deer trophy — including antlers and the frontal part of the skull — was found (Plate 4.42); this probably represented a status object, rather than a specimen of any practical use (see Albarella *et al*, Chapter 4.IV and Part III).

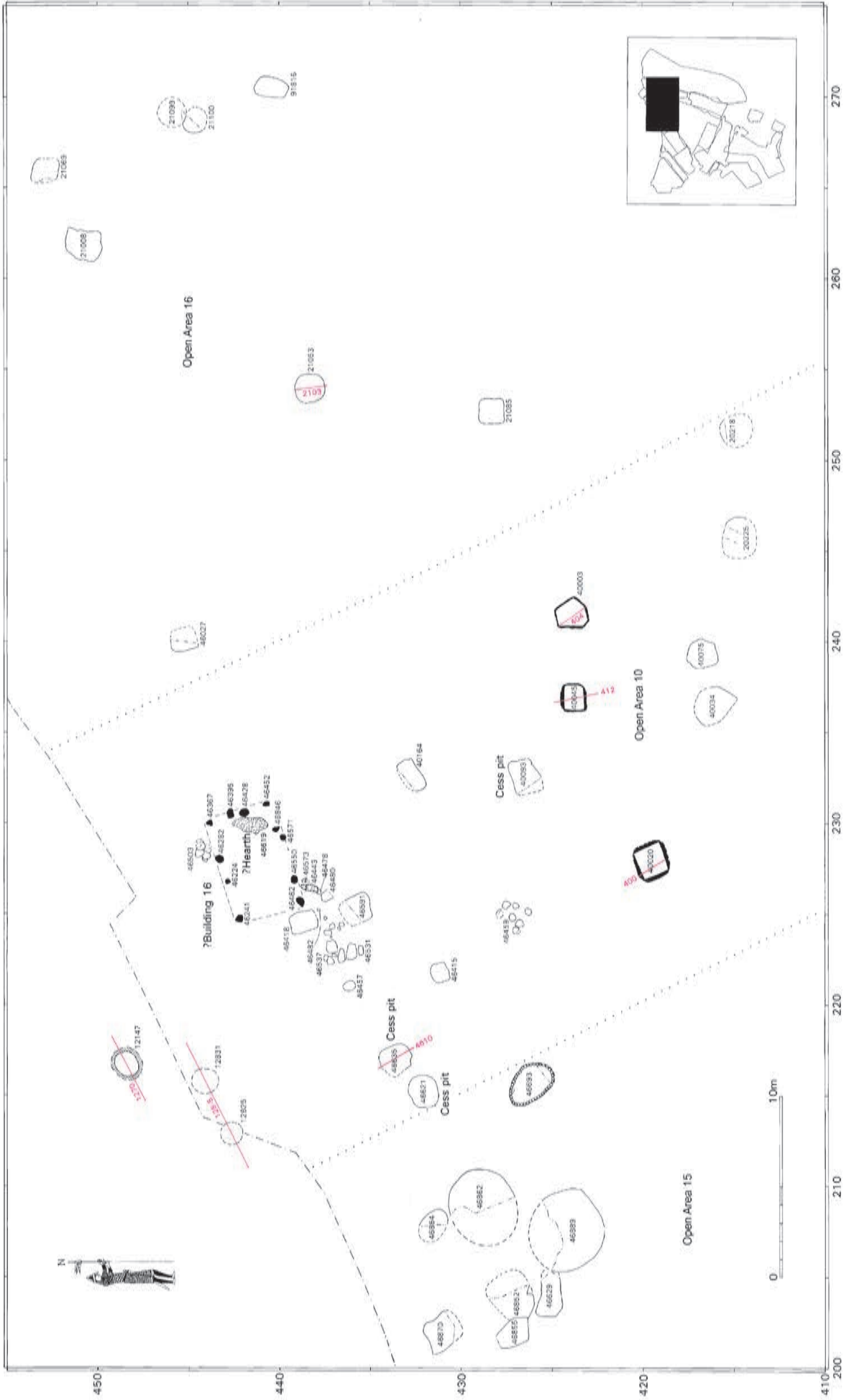


Figure 4.45 Period 1.3: Plan of ?Building 16 and Open Areas 10, 15 and 16 (Areas 4, 21, 46, 202, T20 & T95). Scale 1:300

Building 13, Phase 2: post

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.35)

Structural activity was evident in the area of former Building 13 (Period 1.2), although it is unclear whether this was in fact part of the same structure or alterations to it rather than a completely new event (Fig.4.35). The eastern 'wall' ran along the same line (and could have incorporated some of the same post-holes). This is a highly tentative building, both in terms of constructional elements and possible date.

A total of thirteen post-holes formed a possible small rectangular building, measuring 2m north-to-south by 2.50m east-to-west internally and 2.65 x 2.95m externally. It was aligned just slightly off north-to-south. The posts were an average of 0.20m in diameter, two containing ash in their fills. The levels at the base of the post-holes suggest that the natural ground slope at the time of construction was down to the south-west — a fall of about 0.22m over 3.50m. The features all contained similar fills of sandy silt, with no indications of post-pipes.

The 'building' has been reconstructed from an area containing a mass of post-holes and is open to reinterpretation. The suggested structure was very small (much smaller even than sunken-featured Building 25 (Period 1.4) which measured 3.5 x 3.5m externally). This suggests that it may have been a storeroom. The structure was quite isolated from other buildings (the nearest lying c.50m away to the south — Building 1), this perhaps being the result of truncation.

Pottery

A total of 0.263kg of pottery was recovered consisting of TTW and a small sherd of transitional EMW/LMU. See Appendix 6.

Open Area 15: pits

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.45)

Some distance to the east, an area of pitting lay to the west of Building 16 and associated pits in Open Area 10 (see below), the line drawn between the two open areas being highly tentative (Fig.4.45). Many of the features included here were not investigated. Most, however, were cut by a ditch (see Period 2.2, Chapter 6) associated with the castle and have therefore been interpreted as being of pre-Conquest date. The excavated fills included notable quantities of burnt clay.

Furthest to the north-west was a sub-square pit (46870, G46/12), just to the south of which was another pit (46852, G46/12), heavily truncated by a castle ditch and 1.41m deep. Cutting into the western side of this pit was another pit (46855), while immediately to the south was another, sub-rectangular pit (46629, G46/1). This was flat based and shallow being no more than a metre deep.

A large feature to the south (46889, G46/20) was originally interpreted as an early butt end to a castle-related ditch, although this may actually have been the remnants of a pit. Its fills were cut by a castle ditch and consisted of dark grey loam, clay sand with occasional charcoal and red burnt clay flecks. No finds were recovered from it. At c.3.5 x 4m, it was unusually large for a pit of pre-Conquest date, although there are a few examples of such size of an early date from the site and they may

have served as quarries. Another similarly large, circular pit (46862, G46/12) containing a high gravel content lay to the north-east, again truncated by the castle ditch. Immediately to the north of it was a much smaller pit (46864, G46/12).

The most easterly of the pits (46693, G46/11) was irregular in plan and was shallow with a flat base. A large quantity of flints at its base could have acted as bedding or lining, suggesting an industrial/craft function (a similar pit described in Period 2.2, Chapter 6, is interpreted as a fire pit).

Pottery

A total of 0.301kg of pottery was recovered. Late Saxon and early medieval fabrics were represented by body sherds of TTW, NEOT, EMW and EMSSW. Infilling appears to date to the 11th century. See Appendix 6.

Open Area 10, Phase 2: pits

by Elizabeth Shepherd Popescu and Andy Shelley (Figs 4.9, 4.28, 4.29, 4.45–4.47)

An area of pits to the east of Open Area 15 may have been related to the same activity, or may represent a separate area (Fig.4.45). South of Building 16, two pits may have been replacements for earlier pits in the same area. One irregularly shaped pit (40034, G2/51) was augered to a depth of at least 4m. To the east was square/circular pit of uncertain depth (40075, G2/51). Infilling included burnt refuse and a large quantity of animal bone. Two more deep refuse pits lay to the south-east (20225 and 20218, G202/165).

Overlying earlier fills in deep pit 40020 (G2/11, S.400; Fig.4.28) was a layer of black charcoaled wood and ashy sand (40011) which may have been a collapsed lining settled at the centre of the pit, sealing earlier fills. This was overlain by pink/grey burnt sand and ash with occasional charcoal flecks (40103). Both deposits had apparently been dumped into the pit rather than representing *in situ* burning and contained charred cereals and the other charred cereal rachis fragments. The burnt layers were sealed by a dark grey sand/silt deposit containing many large flints at the base of the deposit (40010). Above were fills perhaps representing natural silting or slumpage into the pit (40018 and 40009), above which was a thin layer of organic matter, perhaps grass (40017). Sealing this were layers of redeposited sand and gravel (40016 and 40015), followed by dark brown/orange sand (40008) which may have been introduced into the pit at a much later date. Samples from this pit included charred bread with textile, perhaps indicating grain stored in a sack (see plant macrofossils below).

To the north-east was a sub-square cess pit (40093, G2/11), at least 1.15m deep with vertical sides. Some fills were organic and one may have represented growth (such as moss) within the pit.

The upper fills of an adjacent pit (40045, G2/50, described in Period 1.2) have been assigned here, indicating that the pit continued in use. Earlier fills were followed by charcoal (40167; S.410/412 — Fig.4.29), followed by a sequence of ash and charcoal deposits and burnt sands. Above was another fill of fire debris (40031), including 30% fine and medium sized pebbles, many of which were in shattered fragments. Later fills included thick refuse dumps containing daub, shell and chalk as well as lenses of ash and frequent flint cobbles (40148, 40064, 40032, 40044, 40024 and 40023). These fills

were 0.80m thick and contained domestic waste. Again, some of the flints showed traces of burning and some had chalk or perhaps lime mortar adhering to them.

To the east was a sub-square pit (40003, G4/11), cutting into an earlier pit. This was at least 3.70m deep (S.404 — Fig.4.46) with almost vertical sides and a collapsed wooden lining. Only the upper fills of this deep pit were recorded and are described in Period 1.4, the pit probably having been in use during the 11th century.

Lying to the north-west of these pits was a cluster of seven post-holes (46459 *etc.*; G46/8 and 46/32), perhaps the remnants of a small structure. Although the phasing of these features is uncertain, they lay beneath the projected area of the later barbican rampart and may therefore have been pre-Conquest in origin. No finds were recovered from them.

Five pits and an area of small pits/post-holes lay to the west of Building 16. Some of the pits may have been retained in use from Period 1.2. The southernmost pit

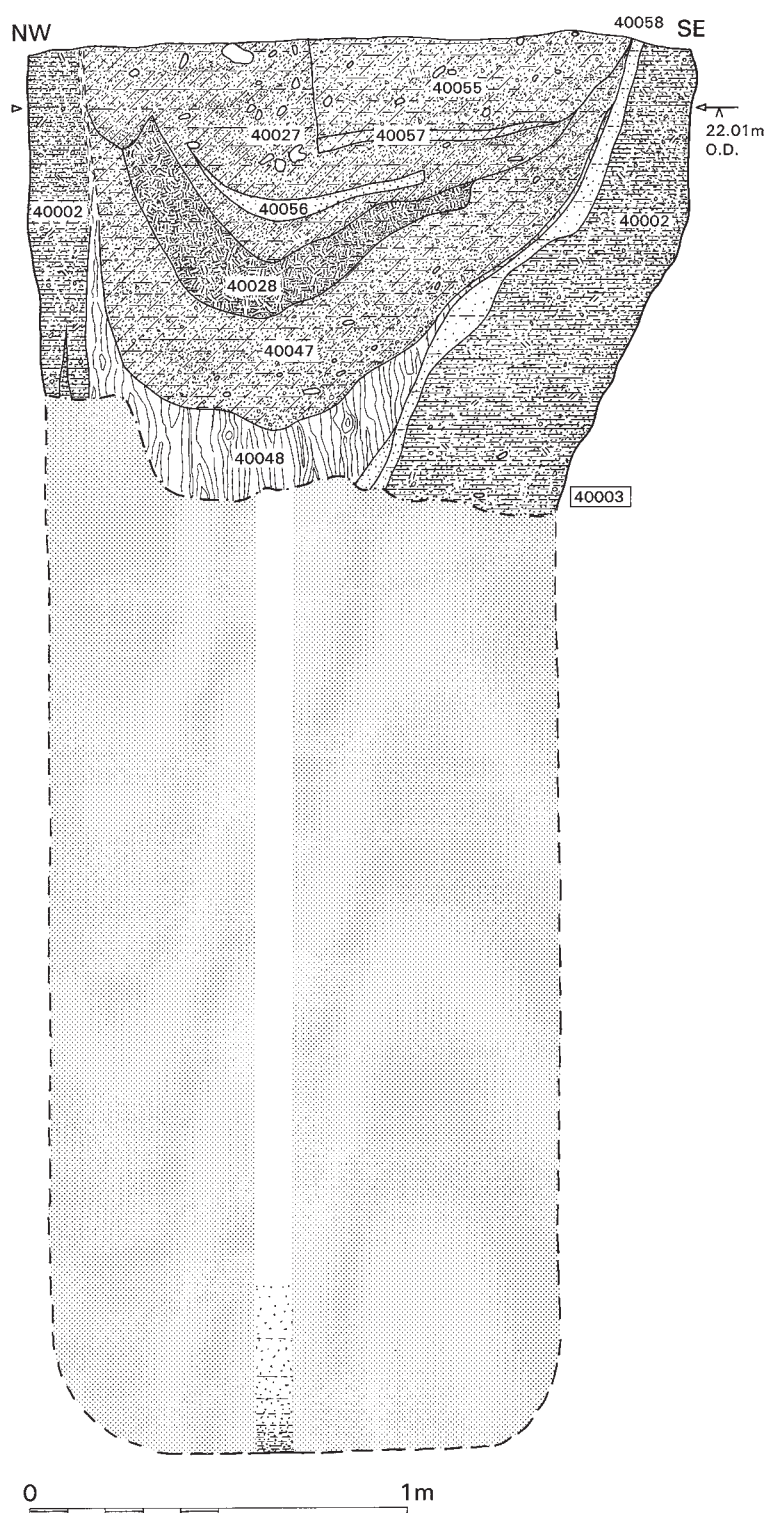


Figure 4.46 Period 1.3: North-east facing section across pit 40003, Open Area 10 (S.404, Area 4). Scale 1:20

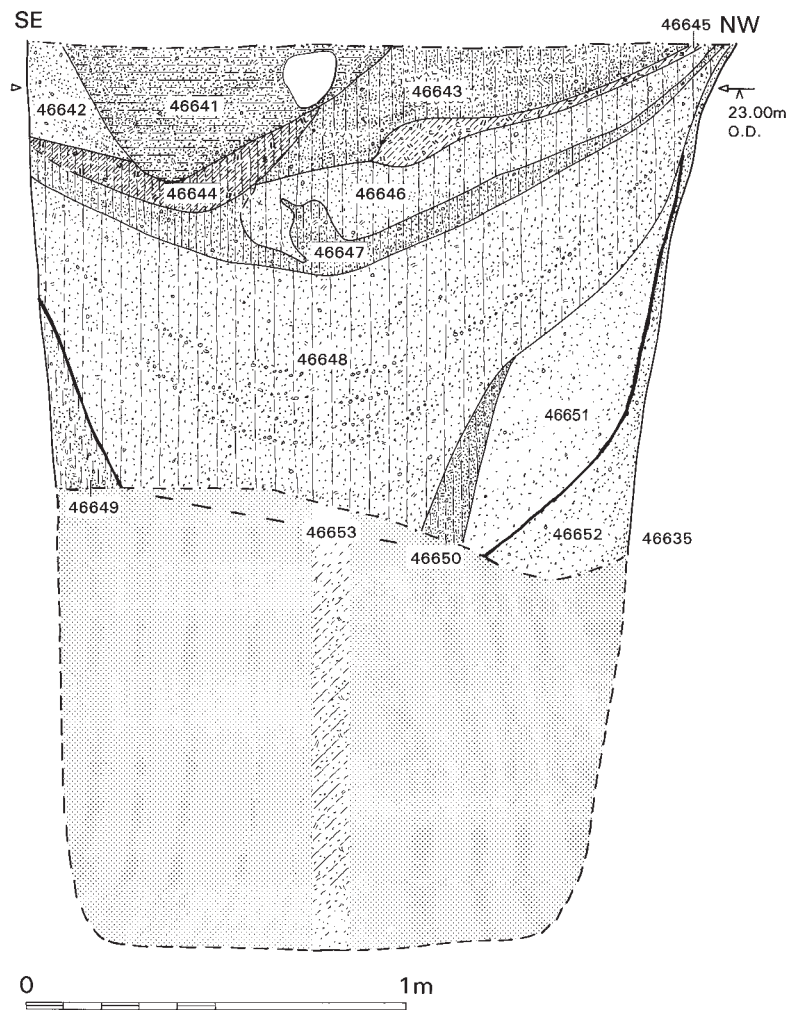


Figure 4.47 Period 1.3: South-west facing section across pit 46635, Open Area 10 (S.4610, Area 46). Scale 1:20

(46415, G46/16) was at least 2m deep. Domestic waste had been deposited into it, including a fragment of burnt hearth or oven lining.

Immediately adjacent to the western end of former ?Building 14 (Period 1.2) was a square/rectangular pit (46591, G46/17) at least 2.35m deep. Its fill included a coprolite.

Further to the west were two more pits. The westernmost (46621, G46/2) may have been retained from earlier use (see Period 1.2), continuing to be backfilled with refuse and sewage. An adjacent sub-square/oval pit just to the north-east (46635, G46/2) had vertical sides and was 2.46m deep (S.4610; Fig.4.47). The lowest excavated fill consisted of a cess deposit in excess of a metre deep (46653). Above this were slumped bands of refuse interspersed with layers of redeposited natural (46649, 46652, 46651 and 46650). Upper, sewage fills are described in Period 1.4.

To the north, immediately adjacent to the western end of ?Building 16 was another rectangular pit (46418, G46/17), augered to a depth of 3.04m. A sequence of fills consisted of dark grey silt and sand with layers of redeposited natural and refuse giving a banded effect. Finds included both domestic and craft waste.

A concentration of very small pits and post-holes (46443 etc.) lay to the south-east of Building 16, perhaps

being contemporary with this phase of activity. Some, at least, of these may have formed part of the structure, possibly related to a doorway (although this suggestion is highly tentative).

Three pits containing 11th-century pottery may have replaced those assigned to Period 1.2 in the same area (Figs 4.9 and 4.30). Furthest to the north, an earlier pit was cut by another (12147, S.1270, T95/8). This was 1.55m wide, with a vertical eastern edge and a western edge at an angle of roughly 45°. The pit may have been clay lined. Just to the south-west lay the two other pits. One (12831, T20/8 — S.128-5, Fig.4.9) had been much truncated by other pits. It had a flat base and irregularly vertical sides. Another earlier pit was cut by the third pit (12825, T20/8) which was 0.90m deep with a concave base.

Small Finds

Finds from pit 40075 included two antler combs (SF5607 and 5701; Fig.4.69) and an iron object (SF5680). Pit 20225 contained a bone ?needlecase (SF6588). Finds from pit 40020 included intrusive clay pipe. Given the detail with which the fills were examined, it is notable that no artefacts were recovered. Pit 40093 contained a lead strip (SF5999). Pit 40045 produced intrusive medieval/post-medieval window glass (SF5575). Pit 46635 contained a fragment of nailed binding (SF6725). Finds from pit 46418 included an iron nail, as well as a copper alloy finial (SF6668), lava quern (SF7385) and lead spillage (SF6798).

The post-holes to the south of Building 16 contained slag, a lavastone quern (SF6809), iron objects (SF6659 industrial debris/bar and SF6662 nail) and a buzz-bone (SF6669).

Pottery

A total of 4.175kg of pottery was recovered from these pits, comprising TTW, NEOT, EMW, EMW/LMU, EMSSW, EMSW, YTW and Pingsdorf type ware, as well as a residual Roman Grey ware bead and flange bowl rim. Infilling during the 11th century is indicated (see Appendix 6).

Botanical and Zoological Remains

by Peter Murphy and Alison Locker

Samples from pit 40020 (40011 — BS320 and 40013 (or 40103) — BS329) were composed of large, unabraded charcoal fragments with occasional grass/culm nodes (Chapter 4.IV, Table 4.25). The burnt layers were sealed by a dark grey sand/silt deposit containing many large flints at the base of the deposit. Charcoal again predominated in this fill (40010 — BS319), although the fragments were smaller and abraded. The sample included a few small charred cereal grains and uncharred seeds of *Sambucus nigra* (elder). One sample from an upper fill of the same pit (40103 — BS329) was composed of charred material. Charcoal, including roundwood stems is common. Small amounts of cereal grains, chaff, culm nodes, weed seeds, hazel nutshell, elder seeds and bramble fruitstones were present. This deposit also included charred textile (as did lower fill 40104 — BS330) and a mass incorporating cereal periderm (bran) and corncockle testa, probably charred bread.

Two fills of pit 40093 (40102 (BS357) and 40105 (BS356)) were sampled and consisted mainly of mineral concretions with variable, but generally low, charcoal content. Charred cereals and weed seeds were uncommon. Mineral-replaced plant material (*Prunus spinosa*-type (sloe), *Rubus fruticosus* (bramble), *Sambucus nigra* (elder), impressions of *Agrostemma githago* (corn-cockle) testa, stem fragments) was common, as were mineral-replaced arthropods, including fly puparia. Small fish bones were exceedingly common and small mammal bone and bone scraps were present. These have been interpreted as sewage residues.

A sample from pit 46621 (46637— BS1724) was similar to that from an earlier fill and contained moderate amounts of charcoal with abundant small mineral concretions. Charred grains of *Hordeum* (barley) and *Secale* (rye) and *Vicia faba* (horse-bean) seeds were present but rare. Mineral replaced macrofossils included insects, monocotyledonous stems, *Malus* seeds and indeterminate seeds. Fish bones, bone fragments and globules of fused off-white material were present. This would appear to include a component of sewage. Samples from fills 46648 (BS1730) and 46650 (BS1729) were quite different. The flots from the latter was largely composed of charcoal, whilst the former included remains of cereals, beans and hazel nutshell.

A small assemblage of 103 identifiable fish bones was recovered from these pits and is detailed further in Chapter 4.IV and Part III, Table 90.

Building 16: post

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.45)

It is tentatively suggested that, during the early to mid 11th century, ?Building 14 (Period 1.2) may have been destroyed or damaged by fire (although the evidence to support this argument is not strong), the area being cleared with burnt debris such as fired clay thrown into surrounding pits, and a replacement building constructed slightly further to the north. This new ?structure appears to have lain on the same alignment as the earlier ?building and measured 3.70 by 5.65m, being constructed of at least eleven upright posts, four along the north wall (46241 (G46/18), 46224 (G46/8), 46282 (G46/28) and 46367 (G46/28)), two (plus the corner posts) along the east wall (46395 and 46428 (both G46/28)) and five along the south wall, one of which may have been a setting for a double post (46462 (G46/18), 46550 (G46/8), 46571 (G46/28), 46846 (G46/18) and 46452 (G46/28)). The dimensions are similar to those of one of the recorded sunken featured buildings (Building 11, G22/154, Period 1.2). The only internal feature recorded consisted of a patch of

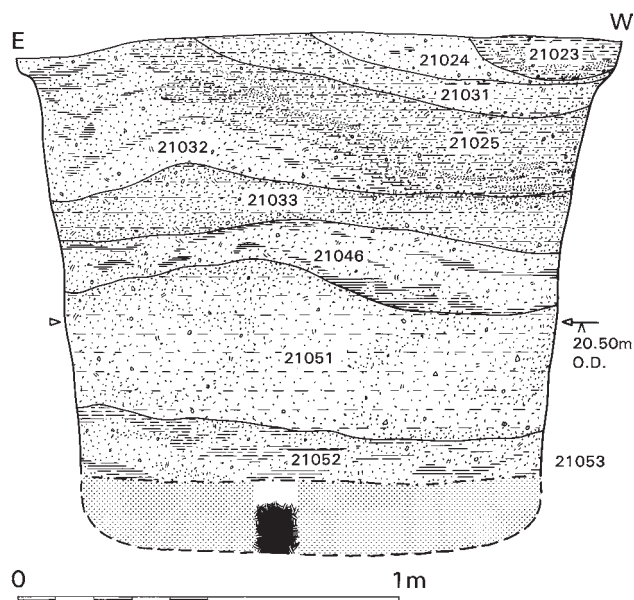


Figure 4.48 Period 1.3: North-facing section across pit 21053, Open Area 16 (S.2103, Area 21). Scale 1:20

burnt natural (46619, G46/28) which might suggest the presence of a hearth (similar to that encountered in other sunken featured buildings).

The post-holes had an average depth of 0.24m and it is possible that the posts represent the remnants of another sunken featured building, the sunken part having been levelled by subsequent truncation. The structure would have lain in one of the postulated hollows (Hollow 3; see Period 1.1), a factor responsible for the survival of the post-holes. The ground to the north-east may have been slightly higher, accounting for the absence of small features here, although not for the absence of any deep pits in this area. To the north of the ?structure was a mass of intercutting post-holes (46503, G46/15, part).

Pottery

Pottery included TTW and EMW. See Appendix 6.

Open Area 16, Phase 1: pits

by Elizabeth Shepherd Popescu and Niall Donald (Fig.4.45 and 4.48)

Another area of pitting lay to the east of Open Area 10, south of the postulated earlier cemetery (Cemetery 1, Period 1.1). The western boundary between this and Open Area 10 is arbitrary and is separated from it merely to suggest the possibility of another 'plot' to the east of the hollow, within which no associated building survived (Fig.4.45 and 4.48).

Only two pits lay along the western 'boundary' and could equally well have been related to Open Area 10. The northernmost (46027, G46/17) had been badly disturbed and survived to a depth of only 0.22m. Further to the north-east was a square pit (21085, G21/169) with vertical sides and a flat base, 0.73m deep. The pit may have stood open prior to infilling.

To the north-east again was a circular pit (21053, G21/168, S.2103 — Fig.4.48), with steep, near vertical sides. It was not bottomed but was excavated to a depth of 1.20m, augered to an additional 0.20m. The basal fill of the pit located by the auger was a narrow band of char-

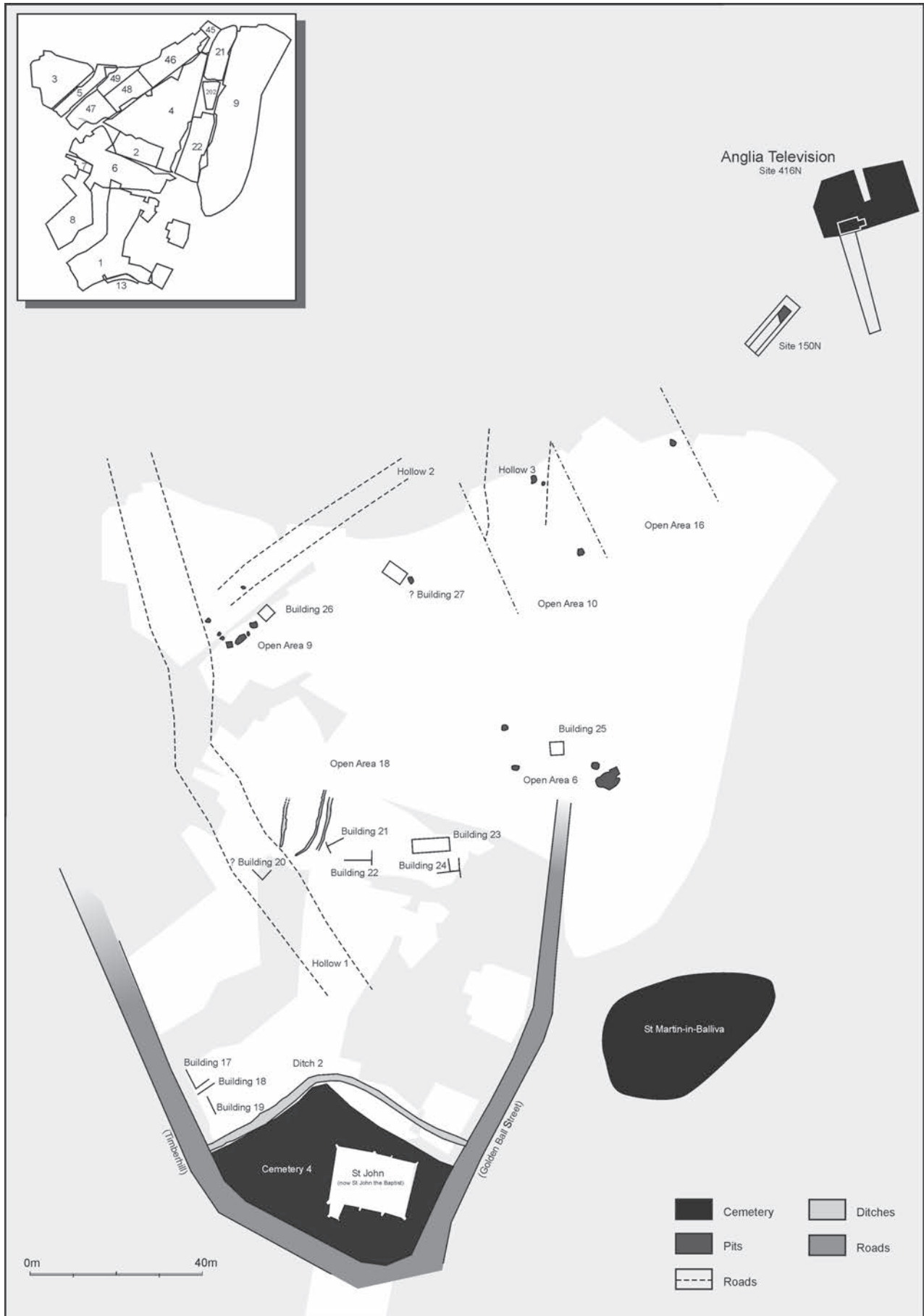


Figure 4.49 Period 1.4: Phase plan — pre-/post-Conquest (mid to late 11th century). Scale 1:1250

coal with some burnt clay. The pit may have remained open allowing the deposition of interleaved yellow grey silty sands with distinct silt lenses, perhaps as a result of erosion (21052). The upper fills may represent the back-filling or use of the pit for refuse disposal with a sequence of grey silty sand/redeposited yellow sand and again dark silty sand — a familiar pattern (21051, 21046, 21033, 21032, 21025, 21031, 21024 and 21023).

Much further to the north-east, approaching the edge of the 'plot' was an irregularly shaped pit (21008, G21/170), roughly sub-rectangular but with undercut sides and a flat base. This was 0.81m deep and one fill contained occasional very large cobbles. The irregularity of the pit edge suggests that it may have been weathered.

The four pits along the eastern 'boundary' of the area were as follows. Furthest to the north was a sub-square pit with vertical sides (21069, G21/168), with an estimated depth of 3.75m. The basal fill (from augering) consisted of an extremely organic black carbonised material.

Just to the south was a heavily truncated pit of indeterminate shape (21099, G21/168) which was not bottomed at a depth of 1.00m. The sides were near vertical and the character of its fills indicated cess disposal. This pit was cut by another (21100, G21/168), sub-circular and with vertical/undercutting sides falling to a flat base at a depth of 0.81m.

The southernmost pit in the line (91816, G9/39, part) was rectangular with vertical sides and a flat base, 1.69m deep. Again, it may have remained open, prior to the deposition of refuse fills.

During the excavation of a slot through the uppermost step into the barbican ditch (Period 4), a deposit of dark grey/brown sandy loam with paler sandy patches (91781=92019=91903, G9/40 and 9/39 (part)) was recorded in section. It was noted during excavation that this may have been partly the fill of a pre-Conquest pit, subsequently truncated horizontally. It was sealed by post-medieval metal surfaces (Period 6.3), one of which contained a Late Saxon ear-ring (SF6326; Goodall, Chapter 4.III).

Small Finds

Pit 91816 contained two articulating iron chain links (SF6375; Fig.4.100), sawn antler (SF6374; Fig.4.100, 6396, 6486, 7494 and 7495), an antler wedge (SF7399; Fig.4.102), a Neolithic ground edge knife (SF6524) and a whetstone (SF6529), the surfaces of which do not appear to have been used for sharpening. Deposit 91871 etc. contained a bone strip (SF6301).

Pottery

by Irena Lentowicz
(Fig.4.87–4.88)

A total of 5.269kg of pottery was recovered from these pits, consisting of the usual range of Late Saxon and early medieval fabrics although including fine TTW variant and sherds of chalk-tempered TTW (from pit 21088). This is not a common find in Norwich, but has also been noted during excavations at Blackborough End, Norfolk. The fine TTW variant is 11th-century.

Pit 91816 (G9/39, part; Fig.4.87) contained 1.602kg of pottery. Some of the material was recorded as fragmented and abraded, and many sherds were noted with scaling on the inner surface indicating use for boiling water. Again, the majority of the pottery was made up of TTW (and included a large sherd of a fine variant), and 11th-century rims were represented by cooking pots (type AB6 and AB12; Fig.4.87, no.4) and jars (types AB8, AB11, AB12 and AB16; Fig.4.87, nos 2, 3, 5, 6 and 7). Rouletted decoration was noted on a small number of sherds, and a more unusual motif, a scored wavy line, on another (Fig.4.87, no.8). More importantly, were the less common vessels recorded: a small cooking pot (type AA2, Fig.4.87, no.1) and a ginger jar. A further ginger jar was recorded in a non-local fabric which was shell and mica tempered. The other fabrics present, EMW and EMW/

LMU, were represented by body sherds only. The suggested date for this assemblage is mid 11th-century due to the presence of EMW/LMU and TTW ginger jar rim.

Over a kilo of pottery was recovered from external deposit 91781 etc. (1.098kg, Fig.4.88). The majority of the assemblage was TTW, represented by a number of rims from cooking pots (types AB11, AB16, Fig.4.88, no.4) and jars (types AA11, AB12, AB14, AB15, AB16; Fig.4.88, nos 1, 2 and 3), as well as rims and decorated body sherds from storage jars (type AF9, Fig.4.88, no. 5), a spout from a spouted pitcher (Fig.4.88, no.6) and a pedestal base from a lamp (Fig.4.88, no.7). Other fabrics represented include EMW body sherds and an EMSW jar rim (type AB8, Fig.4.88, no. 8).

See Appendix 6 for further details of the remaining pit assemblages.

Botanical Remains

by Peter Murphy

Samples from pit 91816 included low to moderate amounts of charcoal, with occasional charred cereal grains (*Hordeum* (barley), *Secale* (rye), *Triticum* (bread wheat), *Avena* (oats)), an *Avena* floret base, *Corylus* (hazel) nut shell fragments and seeds of *Vicia/Lathyrus* (vetches) and *Chenopodiaceae* (fat hen). Occasional mineral-replaced material was noted, including a large *Fabaceae* (bean family) cotyledon and a fly puparium. Shells of *Ceciliodes acicula*, *Helocella itala*, *Pupilla muscorum*, *Trichia hispida* gp and *Vallonia* sp. were fairly common. Bone fragments and fish bones occurred sporadically. Fused globules of off-white material were noted. Interpretation as refuse fills seems reasonable.

Open Area 17: isolated pit

A pit of probable 11th-century date (12603) was identified during a watching brief (T28) along the northernmost part of the site where it had been cut by the barbican ditch (Period 4.2).

Small Finds

Pit 12603 contained fragments of copper alloy sheet (SF6232) which may have been intrusive.

Pottery

A total of 0.353kg of pottery was recovered from this pit, consisting of TTW and EMW dating to the 11th century. See Appendix 6.

Period 1.4: Pre- or Post-Conquest Activity (mid to late 11th century)

Summary (Fig.4.49)

Many of the features and deposits described below may either pre- or immediately post-date the Conquest. Distinct changes in the nature of activity are apparent. To the north and east were more buildings with surrounding pits, a total of forty-one pits and ten buildings being recorded. One well-preserved sunken-featured building may have acted as a storeroom or small workshop. To the centre and west of the site were buildings of different constructional technique, often employing beamslots with one example incorporating upright posts and planks. A series of gullies cut into earlier pit lines, on a completely different alignment to earlier activities in the area.

To the south, the cemetery of St John at the Castle Gate (later de Berstrete, now St John the Baptist, Timberhill; Cemetery 4) was established, its northern boundary demarcated by a ditch. Both the cemetery and its boundary ditch overlay a pre-existing ditch (Ditch 1), which was infilled. The excavated part of the cemetery, lying to the north of the extant church, covered an area of c.40m east-west by 11m north-south, graves becoming sparser towards the west and east. The ceme-

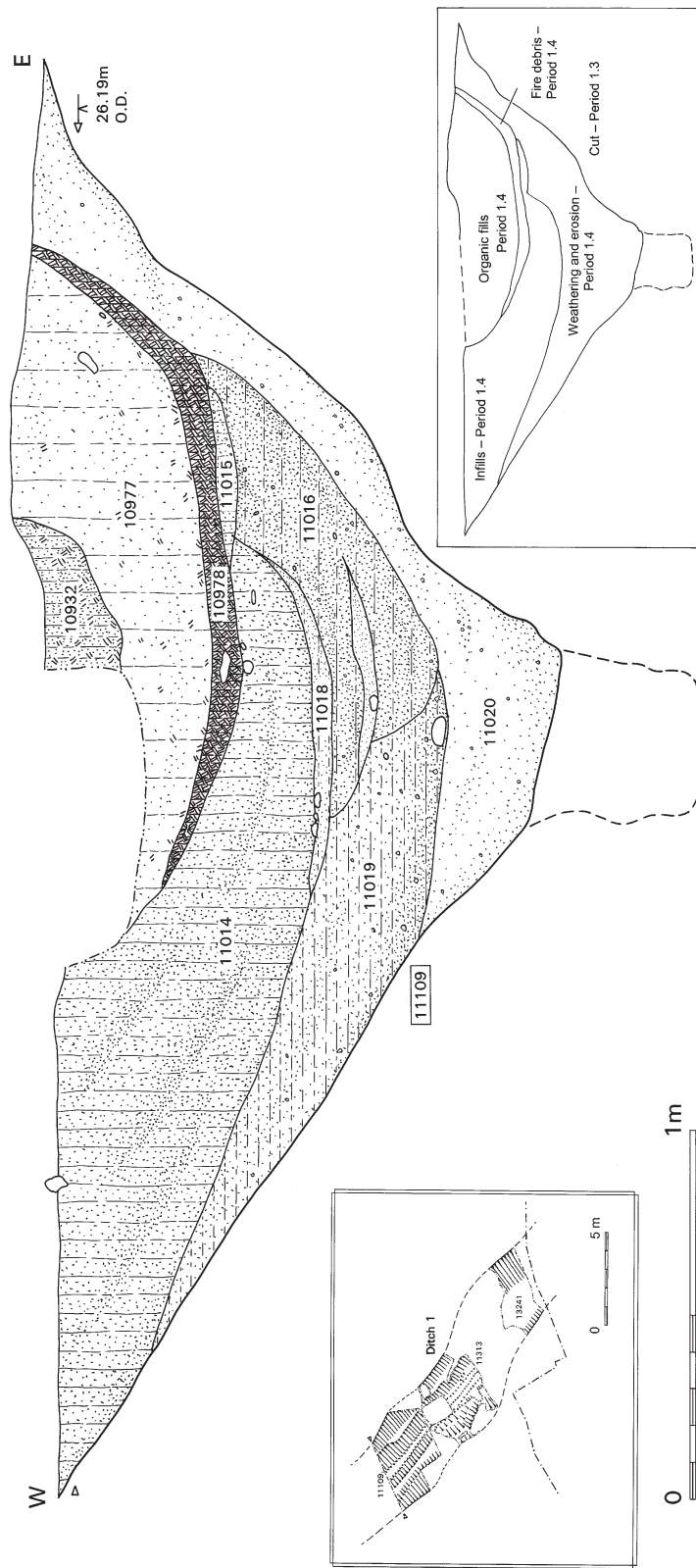


Figure 4.50 Period 1.4: South-facing section across Ditch 1, showing phasing of its fills (S.148, Area 1). See Fig.4.33 for section location. Scale 1:20

fold out

fold out

tery boundary ditch curved round to the east (where it was recorded at Golden Ball Street, Site 26496N). The intercutting nature of graves clearly indicates a pressure for space and is strikingly different to the other Late Saxon cemetery (Cemetery 3, Period 1.3) to the north. Of the total graveyard area, much of which survives to the south and west of the present-day church, about 15% was archaeologically investigated. A total of 265 individuals are indicated (including disarticulated remains), representing 149 adults and 35 children. Up to 35 of the skeletons showed changes indicative of leprosy.

Elements of post-in-trench buildings to the north-west of the cemetery may have been the remnants of structures (perhaps granaries) fronting onto a forerunner of present-day Timberhill.

Activities to the South

(Fig.4.50, Plate 4.12)

Infilling of Ditch 1, beneath the subsequent cemetery (Cemetery 4) appears on the basis of radiocarbon dating of overlying burials to have occurred in the pre-Conquest period, although ceramic dates indicate a late 11th- to early 12th-century date for infilling. The infill process recorded in the northern part of the ditch is illustrated in S.148 (Fig.4.50) and Plate 4.12.

Ditch 1, Phase 2: erosion and refuse dumping

The basal fills of the ditch were of redeposited natural, presumably derived from weathering of the ditch sides (11020, 11019 and 11016, G1/41). The inclusion of a fairly large quantity of finds suggests the deliberate or incidental accumulation of refuse, of domestic and/or craft origin (specifically iron smithing). These deposits filled the ditch to a depth of c.0.70m and indicate gradual infilling, part by natural agency and part deliberate. One fill in the central section of the ditch (11171) had obviously been reworked by grave digging and contained the remains of two children.

Ditch 1, Phase 3: deliberate infilling

Above earlier ditch fills was a thick dump of clean redeposited natural sand, possibly dumped into the ditch from the east (0.60m thick in the northern part of the ditch, 0.10m deep to the south; 11014, 11015 and 11240, G1/42). These fills may have been dumped as a deliberate action to level the ditch, which was now infilled to a depth of c.1.30m.

Ditch 1, Phase 4: fire debris

Overlying the fills described above were deposits of fire debris, tipped into the ditch from the east. To the north (10978, G1/43) was a layer of charcoal containing domestic refuse. A sample was noted on site to contain burnt wattle and ?barley. The central section of the ditch produced a similar deposit (10001) lying at a similar level within the ditch. Again, this consisted of charcoal with flecks of burnt clay and had been tipped into the ditch from the east. It may originally have been more extensive, having been disturbed by later grave-digging.

Ditch 1, Phase 5: organic dumps

The final phase of infilling of this ditch consisted of thick dumps, organic in parts, which served to level the ditch and had been much disturbed by subsequent graves. To the north was redeposited natural, mixed with charcoal

at its base (10977, 10272, 10932 and 11391, G1/44). Above this was a dark brown charcoal-rich loam, more redeposited natural and another charcoal layer containing pottery. In the central section of the ditch were similar thick dumps (11105) of dark grey sand loam containing frequent charcoal and highly organic in character. These had been much disturbed by graves which may have introduced intrusive finds. To the south (13239) was a fill of red brown sandy silt including large flints. The upper, organic fill in the central section (11105) was excavated in spits, with many graves being cut through it (in grid squares 160/270, 160/275, 165/275 and part of 165/270). At least four disarticulated individuals were included. A sample produced similar results to that described in Phase 3. Ceramic dating suggests that this stage of infilling occurred in the late 11th to early 12th century, although the dating implications are considered further below and in Chapter 4.V and VI.

Small Finds

A fragment of lava quern (SF5500) was recovered from Phase 2 ditch fills, as well as mortar, daub and an iron clench bolt (SF5469). Phase 4 fills included an iron belt buckle link (SF5414; Fig.4.68) and nails. Another nail came from Phase 5 fills.

Pottery

by Irena Lentowicz
(Fig.4.89–4.90 on CD)

A total of 3.066kg of pottery was recovered (see Appendix 6). Pottery from the first stage of infilling (Phase 2, G1/41) totalled 1.289kg (Fig.4.89 on CD). Although TTW dominates this group (87%), it is dated ceramically to the mid 11th century because of the presence of ginger jar rim (type 1, with applied thumbled decoration; Fig.4.89 on CD, no.6) and other later rim types. This is not a common TTW rim form, but is found in small numbers on many Norwich sites. Early medieval wares are represented by a number of small body sherds only. EMW accounted for 12% of the assemblage, with the remainder being EMSW.

Above the earlier fills was a dump which produced only one sherd of TTW (Phase 3, G1/42; 0.004kg). A total of 1.138kg of pottery was recovered from Phase 4 fills (G1/43). Both areas of infilling are similar in character in that TTW ceases to be the dominant single component of the assemblage, which also contained YTW, EMW and EMW/LMU. None of the pottery was noted as burnt and the interpretation as a fire debris deposit is not reflected in the ceramic record.

Just over half a kilo (0.585kg) was recovered from the final dumps into the upper part of the ditch (Phase 5, G1/44; Fig.4.90 on CD). Fabrics included TTW, EMW and EMW/LMU.

In general, TTW is still a significant component in some contexts (accounting for 49% of the total group), although other fabrics are beginning to increase (EMW at 19%, EMW/LMU at 16%). This growing proportion of EMW, along with the presence of EMW/LMU transitional sherds (x 5) would seem to imply a late 11th/early 12th-century date. Further discussion on the dating issue, specifically in relation to radiocarbon dates from overlying burials, is given in Chapter 4.V and VI.

Botanical and Zoological Remains

by Peter Murphy and Alison Locker

A sample from fills assigned to initial infilling (Phase 2) has been fully analysed (fill 11017; BS116). It contained frequent charred chaff and grains, weed seeds, seeds of grassland plants and the remains of bracken, gorse and broom. This has been interpreted as the residue from crop-cleaning waste, mixed with other material: a relatively rare type of deposit from the site. This sample is described further by Murphy in Chapter 4.IV and detailed in Table 4.26. Samples from Phase 3 fills (10978; BS110 and 164) were charcoal-rich with some charred cereal grains and culm nodes. Uncharred elder (*Sambucus nigra*) was common and some bone fragments were present. Samples from fills assigned to phase 4 (11105; BS148) was similar in its constituents. Animal and fish bones were recovered from many fills. Fish bone from Phase 4 and 5 fills is detailed by Locker in Chapter 4.IV and Part III, Table 92.

Cemetery 4: St John at the Castle Gate (later de Berstrete, now St John the Baptist, Timberhill: late 10th to mid 11th century)

Introduction

(Figs 4.51–4.56, Plates 4.23–4.29)

The earliest documentary reference to this church (*Sancti Johannis ante portam Castellii*; St John at the Castle Gate) was made in the mid 12th century, although the extant



Plate 4.23 The Church of St John the Baptist, Timberhill (formerly St John at the Castle Gate/de Berstrete), viewed from the east

building may have replaced an earlier church. It later became known as St John de Berstrete and, finally, St John the Baptist, Timberhill (as it remains today; Plates 4.23 and 4.24). The excavated part of the associated cemetery, which lay to the north of the church, covered an area of about 40m east-west by 11m north-south, graves being concentrated in the centre of this area and becoming sparser towards the west and east (Fig.4.51). No burials were recorded at the Golden Ball Street site. As noted above, of the total graveyard area, much of which survives to the south and west of the extant church, about 15% was archaeologically investigated during the Castle Mall Project (Plate 4.23).

A fenced boundary ditch curved around the cemetery to the north (see below and Fig.4.57) between two roads and was recorded at both the Castle Mall (G1/46) and Golden Ball Street sites (GBS Group 25). The eastern section of this boundary, and by implication the cemetery itself, was cut off by the earliest castle ditch, probably in the late 11th century. It appears that the postulated Late Saxon church to the north (associated with Cemetery 3) was engulfed within the castle defences and displaced either at the time of the Conquest or just before it. It may have subsequently been combined with that of St John. Although support for this theory might appear to be provided by skeletal analysis (Anderson, Chapter 4.V), which indicates possible genetic links between the two



Plate 4.24 Long-and-short work in the east wall of the Church of St John the Baptist, Timberhill (formerly St John at the Castle Gate/de Berstrete)



Plate 4.25 Excavation of Cemetery 4 (St John de Berstrete/Timberhill) in progress



Plate 4.26 Possible leper skeleton 11261 (old female) showing stones placed around skull and underlying 'surfaces' into which the grave was cut



Plate 4.27 Probable leper burial sk.13055 (unsexed, c.16–19 years) in stone and mortar lined grave 13090 (Cemetery 4, St John de Berstrete/Timberhill). This burial was radiocarbon dated to cal AD 990–1040 (OxA-6377)

skeletal groups, such linkage in a small geographical area would be anticipated and cannot be taken as proof (Sue Anderson, pers. comm.). In the case of the Timberhill cemetery, most of which survived outside the castle precinct, burial continued after the Conquest, with a number of late graves cutting into the cemetery boundary ditch. Analysis of the bone indicated genetic relationships suggesting nine tentative 'family' groupings. A significant proportion of the burials showed traces indicative of leprosy.

The intercutting nature of graves here clearly indicates a pressure for space and is strikingly different to the Late Saxon cemetery to the north. Most of the skeletons in Cemetery 4 were closely fitted into graves, which were often elongated ovals in plan. The apparent gap in the centre of the excavated area was largely the result of disturbance by later features and modern intrusions.

Graves and Graveyard Deposits

The graves in this cemetery were noticeably more closely packed and smaller than those in the broadly contemporary cemetery to the north (Cemetery 3, Period 1.3). They were generally 'body-shaped' with average dimensions of 1.5m x 0.50m and rounded corners, often widening to take the shape of the shoulders and tapering towards the feet. Two graves had niches for skulls (see 'Burial Type' below). The surviving depth of 134 graves is known, giving an average depth of 0.20m with an additional c.0.30m having been machined off. The deepest surviving grave was 0.83m (grave 10201). The method

of excavation (in spits) and the later effects of truncation mean that the original depth was probably far greater. Grave bases to the west were generally lower than those to the east (with some under 26.00m OD). Those lying above surfaces to the east must have been cut from a considerably higher level (see below), although there was no evidence for the importation of material to raise the surface level of the graveyard.

Grave fills were generally of redeposited natural or reworked from earlier features/deposits. Some contained frequent pebbles, charcoal or chalk, apparently disturbed from underlying deposits. Local soil conditions had

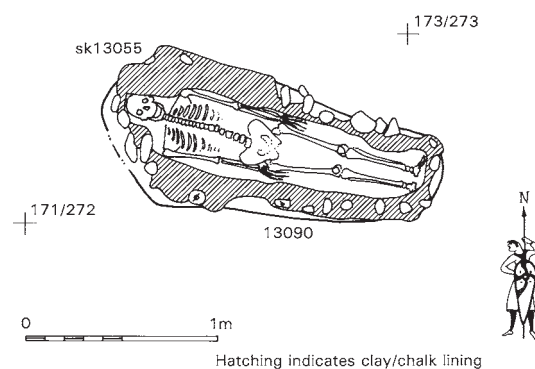


Figure 4.55 Period 1.4: Cemetery 4, detailed plan of lined grave 13090, showing leper burial sk.13055 (Area 13). Scale 1:40

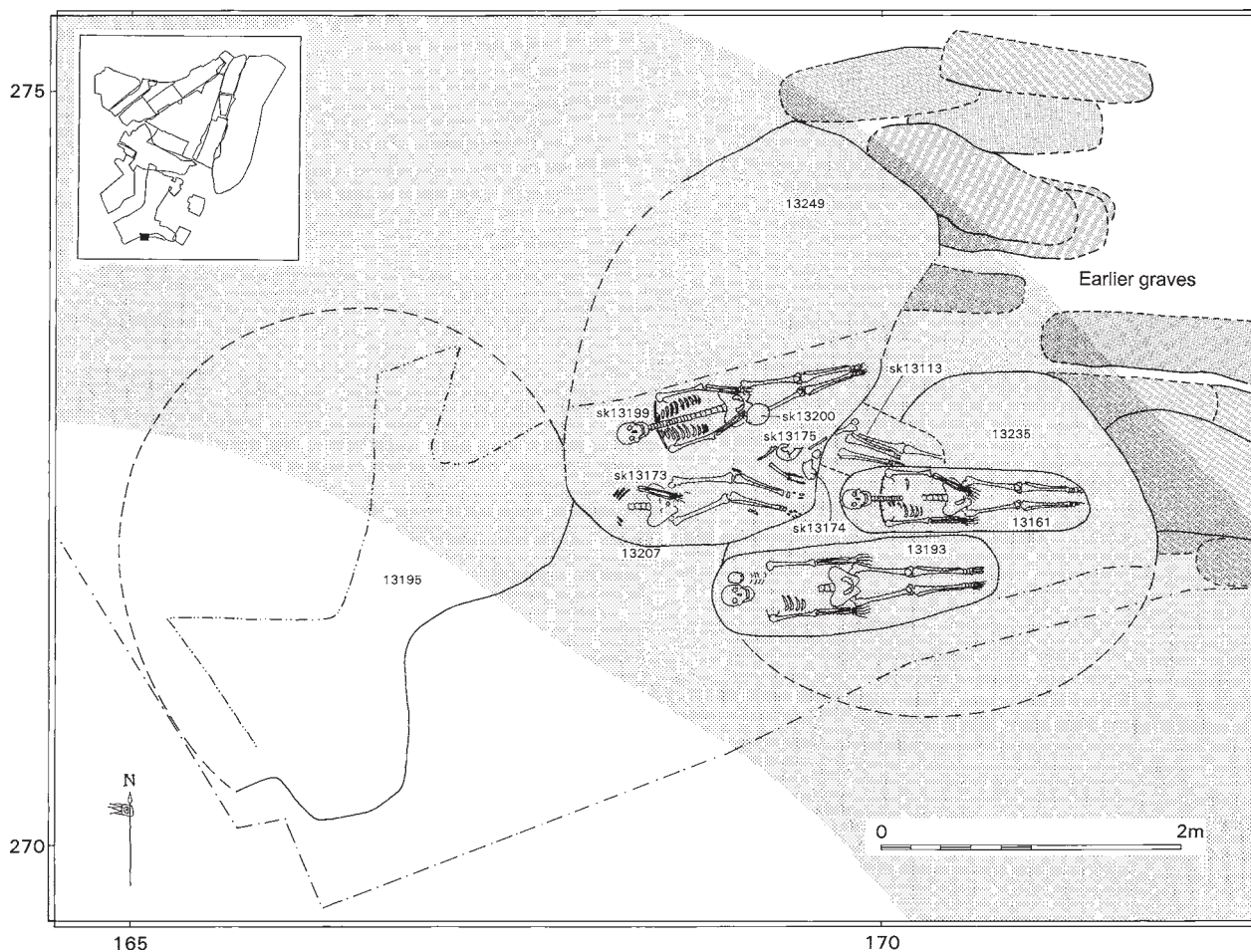


Figure 4.56 Period 1.4: Cemetery 4 (St John, Timberhill/Berstrete) showing pitting to south (Area 13). Scale 1:50



Plate 4.28 Young to middle aged female sk.13028, grave 13031, (Cemetery 4; St John de Berstrete/Timberhill)



Plate 4.29 Young female sk.13262, grave 13265 (Cemetery 4, St John de Berstrete/Timberhill), showing flint 'ear-muffs'

clearly affected many skeletons, some of which had largely decayed and survived as little more than stains. There was often differential preservation within a single skeleton, for instance one (sk.11402) had a marked decay variation coinciding with a change in character of the surrounding natural sand.

In the north-eastern part of Area 1 a composite layer of graveyard deposit and grave fills (11532) was machined

off to a depth of *c.*0.30m prior to the excavation of burials. Finds recovered from it included the bones from at least four disarticulated individuals. This deposit was recorded in four grid squares (170/275, 170/280, 175/275 and 175/270) and burials here were excavated extremely rapidly. To the south, graves came down onto natural sand, while to the north, they were cut into siltier material and grave fills were therefore of silty loam rather than redeposited natural sand. This made ground was interpreted on site as fills of a castle-related ditch (the ?Fee boundary, Ditch 3), although this does not appear to have been the case (see 'Dating' below). Burials to the south-west had been severely truncated by later structures and skeletons in this area were poorly preserved (in particular sk.11501, 11506 and 11511) with surviving bones stained black. The recorded relationships between burials in this area are highly tentative.

A similar graveyard layer to the west (11400, grid squares 165/270, 165/275, 170/270 and 170/275) included grave fills and later deposits. It contained the disarticulated remains of six individuals (parts of which were recorded elsewhere).

The upper, organic fill of an earlier ditch (fill 11105, Ditch 1, G1/44, Period 1.4) was taken off in spits, with many graves being cut through it (in grid squares 160/270, 160/275, 165/275 and part of 165/270). At least four disarticulated individuals were included. Beneath this, another ditch fill (11171, G1/41) had also been reworked by grave digging and contained two extra children aged *c.*2 and 4 years. Further cemetery deposits containing 14th-century pottery are described in Chapter 8, Period 5.1 (G1/70).

Graves lying to the west were generally cut from a lower level than those to the centre and east. The level of the present day cemetery surface is *c.*28.5m OD, sloping upwards to the north and downwards to the south. The graveyard may originally have sloped downwards to the north of the brow of the hill. The current Timberhill road surface at the top of the hill is *c.*27.10m OD, sloping down westwards to 26.80m OD just to the west of the excavated area. The surviving southern part of the cemetery lies at about 0.70m above the level of the road. Late medieval/transitional features and deposits survived in the eastern part of Area 1 to a level of between 27.60 and 27.90m OD. Underlying surfacing and a possible path (see Period 1.3) lay at *c.*27.00m OD.

Cemetery Layout, Grave Alignment and 'Family Plots'

The burials lay within twenty-five broadly defined rows, some having been assigned loosely to 'family' groupings on the basis of non-metrical traits and congenital anomalies (Anderson, Chapter 4.V and Fig.4.53). The overall layout of burial within the northern part of the cemetery was fan-shaped, with graves generally aligned south-west to north-east to the west, east-to-west at the centre and north-east to south-west to the east, all reflecting the shape of the block of land available for burial formed by the position of the cemetery boundary ditch to the north and east.

Analysis of spatial distributions relating to age and sex (child, male and female burials) provided little information. The only striking feature about the distribution of children/adolescents is a roughly east-to-west line in the southern part of the cemetery of those in the 14–18 year old range, spanning many rows of burials. No

Angle	No. graves	% total
Graves aligned directly west-to-east (0°)		
0°	33	19%
Total	33	19%
Graves aligned north-west to south-east (upwards from 0°)		
1–5°	3	2%
6–10°	9	5%
11–15°	13	8%
16–20°	14	8%
21–25°	26	15%
26–30°	14	8%
31–35°	8	4.5%
36–40°	8	4.5%
41–45°	2	1%
46–50°	4	2%
51–55°	3	2%
56–60°	3	2%
61–65°	0	0%
66–70°	1	0.5%
Total	108	63%
Graves aligned south-west to north-east (downwards from 0°)		
1–5°	4	2%
6–10°	5	3%
11–15°	1	0.5%
16–20°	5	3%
21–25°	7	4%
26–30°	1	0.5%
31–35°	0	0%
36–40°	2	1%
41–45°	1	0.5%
46–50°	1	0.5%
51–55°	1	0.5%
56–60°	2	1%
61–65°	1	0.5%
66–70°	0	0%
Total	31	18%

from a total of 172 measurable graves

Table 4.4 Cemetery 4 — angle of burial alignment

areas specifically dedicated to child burial are apparent. Distributions of males and females show no concentrations either of age or sex, although there is an obvious predominance of females. The lack of any evident patterning may indicate that burial took place in family groups. Leper burials appear across the whole cemetery, not restricted to particular rows or family groups. The distribution of possible, probable and definite leper burials is shown in Fig. 4.54.

The longest strand of inter-cutting graves was nine, although burial appears to have been rapid. Many of the graves towards the centre of the excavated area cut into the upper fills of an earlier ditch (Ditch 1), which had presumably been completely infilled prior to the establishment of this part of the cemetery. There is no indication that any graves respected the line of this early ditch,

suggesting that it was a pre-cemetery feature. Graves here were dug down to the level of a ditch fill of redeposited natural which may have been thought to be natural by the medieval grave diggers. Many finds from the graves here can therefore be expected to be redeposited. Interment may have continued sporadically in the northern part of the cemetery throughout the medieval period, although pitting began in the western part of the burial ground in the late 13th century (where a block of land was sold off in 1294; see Chapter 7.II, Period 4.2). During the late 14th to 15th centuries pitting spread to the centre and east of the graveyard (Chapter 8.II), suggesting that this area was no longer used for burial by this period.

A prevalence of alignment to 11–30° above 0° is clearly apparent (Table 4.4; 67 graves in all, 39% of those measurable), as is the fact that most graves are on a north-west to south-east alignment. The high proportion of graves aligned at 21–25° above 0° is derived largely from the significant number of graves on this alignment in the western part of the cemetery, apparently reflecting the line of the boundary ditch (although later encroaching into it). Graves at the centre of the excavated area were generally aligned east-to-west, lying furthest away from the boundary marker. Graves to the east were commonly aligned south-west to north-east, again mirroring the line of the cemetery boundary ditch. There were, however, a few graves on peculiar alignments (such as graves 13176, 11067, 10038 and 11260, alignments between 45° and 65° south of 0°). These lay to the east of the excavated area and were at a strongly exaggerated south-west to north-east angle.

The western part of the cemetery comprised twelve approximate rows running along the south-eastern edge of and eventually encroaching above the cemetery boundary ditch (Ditch 2, see below). The rows encompass seventeen graves, some of which overlap a second block of graves (see below). These seventeen graves were generally aligned in the range 20–40° south-westwards (the average angle being -16°), with three examples lying east-to-west (at 0°). In other words, graves here were usually aligned south-west to north-east, although to the north the alignment changes to east-to-west or north-west to south-east. Two ‘rows’ did not contain any graves within the area excavated. A possible family link between burials in two rows here (both skeletons showing signs of *spina bifida occulta*; ‘Family 1’: sk.10492=11441, grave 10516 and sk.10229, grave 10240) lay within this part of the cemetery (grave 10516 cut into the boundary ditch and was demonstrably late and has been assigned to Period 4.2; it is possible that the other grave may also have been a late). Another skeleton (sk.10189=11440) showed a possible genetic relationship with those described in the adjacent row (see below).

Another row of thirty-three graves ran from south-west to north-east just to the south of those described above. Most of these were aligned north-west to south-east (an average of +22°), with three aligned directly east-to-west. As many as three family groups have been tentatively identified in this part of the cemetery (Anderson, Chapter 4.V). Twelve skeletons have a range of traits suggestive of a genetic relationship (‘Family 2’: sk.10189=11440, 11050, 11115, 11114, 11116, 11165, 11117, 11163=11165, 11187, 11203, 11245 and 11245). These individuals were buried immediately adjacent to or on top of each other. Rather than resulting from a lack of space, Anderson

suggests that this may relate to burial within family plots, indicating a rapid burial rate, within a few generations. Radiocarbon dating of these burials supports this hypothesis (Bayliss *et al.*, Chapter 4.V). At the northern end of the row were two further possible family groups, each of two graves (the one furthest to the east lying in another row described below). Other groupings of non-metric traits include two skeletons with detached neural arches ('Family 3': sk.11092 and sk.11459) and two others with a range of traits including sagittal wormian bones ('Family 4': sk.11438 and sk.11504).

Five loosely defined rows in the central part of the cemetery overlapped with other rows at their northern ends. A total of fifty-seven graves are included, of which a considerable number (twenty-three) were aligned east-to-west. Generally, graves here were aligned in the range 0–30° upwards from 0 (an average of +4°). Large pits to the south contained burials, sandwiched between earlier and later graves (see below). The alignment of graves in this part of the cemetery was presumably the least affected by the line of cemetery boundaries, hence the more usual alignment. Two possible family groups have been identified in this area. In the central part of one row were two burials with sagittal wormian bones and other common traits ('Family 5': sk.11402 and sk.11488). Other graves with similar traits lay at the northern end of adjacent rows). One burial (sk.13072) suffered from *spondylolysis*, possibly suggesting a link with graves in a row further to the east. To the far south were seven other burials with several non-metric traits in common ('Family 6': sk.13257, 13261, 13256, 13259, 13263, 13265 and 13266).

The eastern part of the cemetery was made up of seven rows encompassing sixty-nine graves. Initial analysis suggested that these may have been a later development (at least partially) as some were recorded as overlying fills of the Fee ditch (Ditch 3, Period 2.1) or earlier surfaces (G1/60 Period 1.1 and G1/62, Period 1.3). Revision of this interpretation (and the line of the Fee ditch) has resulted from radiocarbon dating and additional evidence from the Golden Ball Street excavations.

Five graves here were aligned east-to-west, with most graves aligned in the range 20–60° upwards from 0 (an average of +21°). To the north the grave alignment changed to north-west to south-east, suggesting a reflection of the presence of the cemetery boundary. Although the majority of graves here were aligned north-west to south-east, some ran south-west to north-east. Two possible family groups and part of a third are suggested. Two skeletons exhibited *spondylolysis*, similar to a third burial just to the west (row 18 – 'Family 7': sk.13072, 13065, 13177). Five burials forming a north-west to south-east line had parietal notch bones ('Family 8': sk.11328, 13169, 13035, 13156 and 13017) (see further comments by Bayliss *et al.*, Chapter 4.V). These were overlain by three further graves, also in a line, with *spondylolysis* ('Family 9': sk.10026, 11290=13008 and 13130). There was space for another row of graves in the blank area between graves 13036 and 13018.

A single stake-hole (13166) and a length of ditch (13033) were recorded within the burial sequence. The ditch survived over a 4m length and had been truncated at either end and to the south. Its function is uncertain and its fill contained redeposited human bone. It seems unlikely that the ditch would have served as a boundary

as it lay at the centre of the northern part of the cemetery. It cut through one grave and was cut by several others.

Burial Type

The distribution of the various types of burials excavated is indicated in Fig.4.52. The majority of burials were of indeterminate type, although the shape of graves and compact position of skeletons suggests that they were probably wrapped in shrouds. Few pins were found within graves, two being LMT dress-making pins (both from grave 10516: this grave cut through fills of the cemetery boundary ditch and was therefore late, see Period 4.2). The other was a Saxo-Norman head dress pin (SF1043, from grave 13058) which appears to have served as a shroud pin, having been found on the left humerus of the burial. That no textile survived within graves was a result of local soil conditions.

Eleven burials were provided with flints to support the skull, usually placed either side of it (graves 11128, 11251, 11262, 13072, 13203, 13116, 13176, sk.13163 and 13265). Nine examples lay towards the south of the excavated area, with the two others further to the north. One burial to the east (grave 11262) lay within a coffin with flints placed either side and at the top (west) of the skull, with a patch of organic/burnt matter by the feet. Four skeletons lay above either beds of pebbles or large, isolated flints (10069 (sk), 10031 (sk), 13126 and 11141).

Four graves contained organic/burnt matter or dark staining. One contained burnt wood lying beneath the pelvis (11067), possibly the remnants of a coffin carbonised for preservation. Another contained a possible carbonised post lying at one side of the grave (13135). The origin of the other organic material is uncertain, the patches in both cases lying by the legs and feet (11261 (Plate 4.26) and 13163 (sk)). Two other grave fills were sampled (graves 10865 and 10890).

Three graves produced evidence for coffins in the form of soil stains (five graves contained nails, some possibly from coffins). The tightly fitting shape of most graves, however, suggests that there was no room for a coffin. All three coffins lay towards the east, one (11858) cut into made ground and the two others (11195 and 11262) both cut into earlier surfaces (G1/62, Period 1.3). The survival of wood here may have been due to different soil conditions, given that these graves were not cut into natural sand.

One grave towards the south (13090, sk.13055, Fig.4.55 and Plate 4.27) was provided with a flint and chalk lining, perhaps in imitation of a stone coffin. This was the latest in a sequence of nine graves. The grave cut was an irregular oval, the base of which was uneven with a ridge along the centre, perhaps the result of subsidence into earlier graves. The lining contained a high proportion (60%) of flint cobbles up to 200mm in size, some of which appeared to have been roughly faced/hewn. The flints were random, uncoursed and were bonded with a silty loam, subsequently rendered with a chalk/sand mix. The lining included two pieces of brick, one of which was identified as an anomalous FT21, dating to the late 13th to 14th century (see below). Iron coffin nails were found *in situ* around the body, although the tight fitting shape of the lining seems to preclude such a possibility. The lining provided a niche for the skull and widened to

accommodate the shoulders. The skeleton, which proved to be a leper, lay with its arms by its sides.

One other grave (13135) was cut to provide a niche for the skull and fitted closely to the shoulders of the skeleton it contained. This grave also had a possible post setting in its southern edge (see above) and the grave was of a similar shape to the lined grave described above.

Five graves were provided with 'shelves', four at the western end to support the skull and the fifth to the east supporting the feet. In the most obvious example (13031, sk.13028, Plate 4.28), the shelf curved round within the base of the grave with the skull resting on it; here the step was about 0.25m wide east-to-west. The steps in other graves ranged from 0.10–0.50m wide.

In two cases, double burials were made in a single grave (both lying towards the south of the excavated area). In one (13193) a baby of 6–9 months had been placed by the left shoulder of a 14–15 year old individual (unsexed but perhaps the mother). The other burial was of two females (13265), the first being a 25–30 year old with possible flint ear muffs, overlain by a young individual with two large flints placed either side of the skull (Plate 4.29). The right arm of the lower skeleton appeared to have been flexed above the chest in order to avoid the other body.

One part of the cemetery (towards the south/centre of the excavated area) was the location for several large intercutting pits, some of which contained one or more articulated or partially articulated skeletons (Fig.4.56). The fact that most lay above the fills of an earlier ditch (Ditch 1, G1/40, Period 1.3) may be coincidental or may indicate that ditch fills were mistakenly excavated. It is possible that these features acted as charnel pits or for the disposal of those affected by outbreaks of disease. The earliest pit (13235) was a large pit of irregular plan (c.3m east-to-west x 2m north-to-south) which ran into the southern limit of excavation. It is possible that the cutting of this feature pre-dated the cemetery, as it was partially infilled with redeposited ditch fill containing residual 11th-century pottery and metalworking waste, disturbed from the earlier ditch. Burials were subsequently placed within it (graves 13193, 13161 and sk.13113, etc), all sealed by a later fill of the pit containing LMU body sherds and more metalworking waste (including tuyere). It is possible that the graves were independent of the pit, although they included three fragmentary skeletons with no visible grave cuts, the earlier pit fill perhaps having shrunk to form a hollow. The burials could then have been placed and the ground subsequently levelled up. This pit was cut by a sequence of later graves.

Above the upper pit fill was another grave (13213), followed by a sequence of three further pits. The lowest of these (13252) had been heavily truncated and very little survived. No finds were recovered from it. Above was a large pit (13195) with an irregular plan, much truncated to the west and surviving with a north-south width of 3m and an east-west width of 2.5m. Its lower fill contained the remains of at least three sub-adults and a juvenile.³ A third pit (13207=13249) contained several skeletons. This feature was c.2m east-west by 1.5m north-to-south and of irregular shape. It contained reinterred bone and two articulated skeletons (sk.13173 and 13199, one of which was a leper) at its base.

Body Position

Seven different burial positions were recorded (Table 4.5).

Of those where the body position is known (88 in total), by far the majority (over 60%) were buried with the arms placed by the sides (Plate 4.28). This is in contrast to Cemetery 3 (Period 1.) where the most common burial position was with the arms/hands crossed above the pelvis (42%). Further comparisons between local burial groups are given in Chapter 4.VI.

'Grave-goods'

Some of the objects found within graves and detailed below were perhaps incidentally introduced into the graves during backfilling, although others had been deliberately placed. Three knives were recovered. One example was recorded being hand-held (right hand), although this may be the result of post-depositional movement, the knife originally being worn suspended from the belt. This knife has a centrally-placed tang and sloping shoulder and is complete — it is of undiagnostic type and could date from the Late Saxon to medieval periods (see below and Mould, Chapter 4.III). As noted above, a head dress pin of Saxo-Norman date may have acted as a shroud pin. Other objects (which include a needle, a Norman-type horseshoe, blade or strap, two strips, a possible handle, a clench bolt, a lead disc and glass bead) may have been introduced incidentally or deliberately placed. The glass bead came from a child's grave. Further discussion is given in Chapter 4.VI.

Reinterred and Disarticulated Human Bone

Many graves (19 examples) contained bone disturbed from earlier burials which had often deliberately and carefully reinterred. The majority (15 examples) contained reinterred skulls. These were usually placed by the lower legs and/or feet with the base of the skull downwards. In one case (10202) skulls were placed either side of the pelvis with a third skull by the lower left leg. In another (13120) two skulls were placed above the right arm and in another (13146) two skulls lay beneath the legs. Other examples include disarticulated bone placed by the lower legs and feet and in one case (13238) a grave had apparently been widened to take long bones.

Disarticulated and partially articulated remains were recovered from later ditch and pit fills. Displaced human bone was recovered from a wide area surrounding the

Position	% total (Cemetery 4)	% total (Cemetery 3)
1) Arms by sides (hands occasionally above or beneath pelvis)	61.5%	17%
2) One arm by side, other above pelvis	15%	19%
3) Flexed legs	3.5%	None
4) Arms/hands above pelvis (crossed or uncrossed)	16%	44%
5) Arms across waist	1%	10%
6) One arm across waist, other above pelvis	2%	None
7) L. arm by side, R. arm raised above chest	1%	None

Table 4.5 Cemetery 4 — body position

cemetery, most of it deriving from later pits and wall foundations that were cut through it. Four fills of the ?Fee ditch (Ditch 3) also contained redeposited human remains, the earliest from fills of redeposited natural (G1/56), then from overlying mixed silting and refuse fills (G1/57) and finally from mixed backfills (G1/58). The latter contained parts of a skeleton which may equate with that found in a lower fill (G1/56). Three fills of the cemetery boundary ditch (Ditch 2) contained redeposited bone, all from late refuse/backfill deposits (G1/48, Period 4.2). In addition, an upper fill of the ditch (G1/163, Period 4.2) contained part of the redeposited skeleton of a young ?male (sk.10230). One late 13th-century pit dug into the western part of the cemetery contained a partial skeleton (sk.10451) and disarticulated bone from the same body (a middle aged female) in an upper fill (Period 4.2).

Dating

Radiocarbon dates indicate that the cemetery (represented by the 18 skeletons sampled) came into use in *cal AD 980–1030 (95% probability)* and went out of use in *cal AD 990–1050 (95% probability)* (Bayliss *et al.*, Chapter 4, V). The dated burials indicate the presence of only one or two generations, the duration of the cemetery represented by the measured examples being *between 1 and 65 years (95% probability)*. These dates suggest an overall start date later than that of the Farmer's Avenue cemetery (Cemetery 3), the presence of a Middle Saxon burial (OxA-6382, sk.13156, Cemetery 1, Period 1.1) perhaps being coincidental or indicating the early establishment of the cemetery. Diagnostic artefacts from graves are generally of Late Saxon/Norman type, although a few later objects were present, some of which were undoubtedly intrusive (see below).

The lined grave (13090) contained a large fragment of English/Flemish unglazed floor tile (Drury's type FT21; NAU Fabric 140) which was retrieved from the grave lining (13085). Floor tiles first appear in the archaeological record in the late 13th to 14th century (Lentowicz, Chapter 4.III) and this tile therefore presents an anomaly both with the implied dating of the stratigraphic sequence and the radiocarbon date of this burial (13055, OxA-6377, *cal AD 990–1040 posterior density estimate (95% probability)*). This may indicate mis-identification of the tile (possibly Roman in origin) or if the identification is correct, mislabelling.

A total of 30 graves contained ceramics ranging from the Middle Saxon period to the 15th century (with two containing 16–17th-century material). The Middle Saxon pottery came from a grave in the eastern part of the cemetery. It is notable that most of the graves containing 10–11th-century pottery lay above or adjacent to an earlier ditch (Ditch 1, Period 1.3) from which pottery and other finds may have been disturbed. Graves containing 11th-century pottery were fairly widely spread. This pottery often came from graves the middle or at the top of the sequence. Two graves contained 11–12th- or 12th-century pottery and one, which cut through fills of the cemetery boundary ditch, contained 12–13th-pottery probably redeposited from ditch fills as the grave also contained an LMT pin. Eight graves were assigned date ranges of 12–14th-century and were scattered across the whole of the excavated cemetery area. Two 15th-century dates indicate the presence of intrusive pottery as

it appears that the northern part of the cemetery was no longer used for burial at this time.

It was originally believed that the eastern expansion of the cemetery may have been a slightly later development. Several graves cut into earlier working surfaces and a possible path (Period 1.3) and others were recorded as overlying fills of the ?Fee ditch. The exact ditch fill(s) was unclear, although it was suggested that they were probably fills dating to the late 12th–13th century (Period 4.1, G1/58). Earlier fills of the ditch contained redeposited human bone, presumably washed into the ditch from adjacent burials. Grave 13036 was cut by late 14–15th-century pits (Chapter 8.II, G1/63), giving it a *terminus ante quem*. Subsequent work at the Golden Ball Street site has led to a revision of the line of the ditch, such that no graves would now cut into fills of the ?Fee ditch. Some graves do appear, however, to have been cut into made ground. This may indicate the presence of a pre-existing feature (*e.g.* burh boundary), or may indicate a southwards continuation of Hollow 1 (Period 1.1). No trace of any such early feature was found at Golden Ball Street, although the projected line suggests either that it ran further west or that it had been completely removed in this area by the ?Fee ditch. Further discussion on this issue is given in Chapter 4.VI.

Five graves (10038, 10069, 10031, 10026 and 10027) were recorded as cutting into a cemetery deposit dating to the 15th century (G1/70). There is much uncertainty, however, about levels from which graves were cut following machining and their relationships to surrounding late 14–15th-century deposits and features (G1/63–1/72, Chapter 8.II). Pitting into the western part of the cemetery began in the late 13th century, perhaps immediately after the last burials were made in the area (Period 4.2). Such encroachment was widespread across the northern part of the cemetery by the late medieval/transitional period (Period 5.1, Chapter 8.II).

Small Finds

Copper alloy objects

A copper alloy needle (SF1026; Fig.4.101) came from grave 11454. A possible headdress pin was found by the left humerus of the relevant skeleton (sk.13038), having possibly been used as a shroud pin (SF1043; Fig.4.67). It dates to the 11th to early 12th century (Goodall, Chapter 4.III).

Iron objects

One skeleton was found with a knife apparently held in its right hand, the bone still adhering to it during analysis (13041, SF5678; Fig.4.97). The knife may, however, have originally been worn at the belt and have adhered to the hand as a result of post-depositional processes (see Mould, Chapter 4.III). The knife has a centrally-placed tang and sloping shoulder and is complete. Grave 13059 contained small rectangular staples with clenched arms (SF1046 Fig.4.107 and SF1045), probably from the coffin construction, indicating a coffin board thickness of *c.* 1 inch (25mm). Six further iron objects are Late Saxon/Norman in date; a 'Norman' type 2A horseshoe branch of mid to late 11th- to 12th-century date SF5730 (grave 13207); a possible fragment of a knife blade with an angled back (SF1047; Fig.4.97 (13098, 13065); a strip coated in non-ferrous metal with specks of metalworking waste in the encrustation (SF5423, grave 10852) and a stem, possibly from a broken handle (SF1049, grave 13098), which also contained a knife blade of pre-Conquest type (SF1047). A knife tang (SF1021) was also found within grave 11238. The rove from a clench bolt (SF1054) came from grave fill 13118.

Other objects

Other objects found in graves include a sub-circular lead disc (SF5439, grave 11088) and a crimson glass bead (SF1055; Fig.4.67), the latter found in a child's grave (13180).

Pottery

(Fig.4.94)

Just over a kilogram (1.001kg) of pottery was recovered from deposits associated with the cemetery. Over half of this is Late Saxon and early medieval material, although medieval and later pottery was also recovered. Fabrics include TTW, NEOT, EMW, LMU and GTGW (see Appendix 6 and Fig.4.94 for the full fabric range). The general date range of the pottery recovered from graves is late 12th- to 13th-century, although obviously the date of individual contexts varies and, as discussed elsewhere in this chapter, the origin of the cemetery appears to lie in the Late Saxon or early Norman period.

Ceramic Building Material

by Irena Lentowicz

A total of 2.208kg (62 fragments) of building material was recovered from graves and although some assemblages were fragmentary, much of the material was made up of individual fragments and some was clearly intrusive. As is discussed in Chapter 13, medieval bricks, roof tiles and floor tiles were introduced to Norwich during the 13th century and their presence in grave fills may indicate contamination from ground disturbance including later pit digging and other features associated with tenements overlying the cemetery. Only Roman material was recovered from grave 11093 (0.015kg; this was noted as *opus signinum*) and a fragment of imbrex associated with skeleton 11859 (0.080kg). Fired clay and plaster were recovered from grave 10865 (0.02kg), while daub Fabric 129 was recovered from grave 13075 (0.003kg). Fabric 129 and RT200 fragments were associated with skeleton 11160 (0.025kg), and RT200 was also recovered from grave 13195 (0.005kg). Roof tile types RT100 came from grave 11128 (0.080kg) and RT103 from grave 13180 (0.022kg) which also contained mortar fragments. Mortar fragments were also recovered from grave 13090 (0.240kg) but this grave also included a large floor tile fragment type FT21 (see comments on identification and dating above). Floor tile fragments were also recovered from grave 13011 (0.380kg, type FT26), grave 11221 (0.070kg, type FT21) and grave 13036 (0.425kg, type FT140). Roof tile type RT103 also came from layer 10742 (0.605kg) but this layer was dominated by brick fragments EB107 and EB7. Intrusive brick fragments were identified from grave 13070 (0.140kg, type LB3) and grave 13187 (0.015kg, type LB4). Brick fragments type EB8 were recovered from grave 11085 (0.020kg) and from grave 10890 (0.028kg) which also contained roof tile type RT200 and mortar fragments.

Cemetery Boundary Marker

The excavation revealed two ditches which, in combination, served to delimit the northern boundary of the cemetery at different dates. The earliest of these ran along the north-western edge of the cemetery, curving slightly eastwards at its eastern end (Ditch 2) and may have had a smaller pre-cursor. A further stretch of this ditch was recorded to the east at the Golden Ball Street site. In both observations, the base of the earthwork provided evidence for the positioning of timber uprights and trenches which may suggest timber baseplates. These indicate that the boundary was fenced, although their position at the base of the ditch is peculiar (see further discussion in Chapter 4.VI). The boundary ditch was subsequently cut off at its eastern end by a ditch which may have demarcated the Castle Fee boundary, possibly from as early as c.1067–70 to c.1094 (Ditch 3, Period 2.1). Although the eastern stretch of the cemetery boundary ditch fell into disuse at or around the time of the Conquest, the western section continued to function into the early 14th century, when a few graves extended out above the fills of the ditch (Chapter 7). The castle ditch apparently also served as the eastern boundary of the cemetery, in conjunction with the surviving stretch of the earlier marker.

To the west, the cemetery was probably delimited by a road (perhaps of Roman origin and later known

as Berstrete), which the excavated boundary ditch ran to join. Another road, which was later to lead into the castle enclosure, may have forked off Berstrete to run along the eastern side of the cemetery, the burial ground being set within the triangle formed by the junction of the two roads. The total cemetery area, as defined by the ditch to the north and the roads to the west and east, amounted to c.1,954m². In terms of excavated cemetery area, the boundary ditch demarcated a triangle of land c.65m east-to-west by c.12m north-to-south. The presence of the ditch dictated the shape of urban topography in the area and continues to do so today (in the line of a modern alleyway). Further discussion of the implications for local urban topography are given in Chapter 4.VI and in more general terms in Chapters 12 and 14.

Ditch 2, Phase 1: cut

(Fig.4.57–4.58, Plates 4.11 and 4.30)

The boundary ditch was observed over a total length of c.33m at the Castle Mall Site (Fig.4.57), running south-west to north-east across the southern part of Area 1 and curving eastwards at its north-western end to run to the south-east where it was recorded at the Golden Ball Street site. Here, an additional observation of 12m of

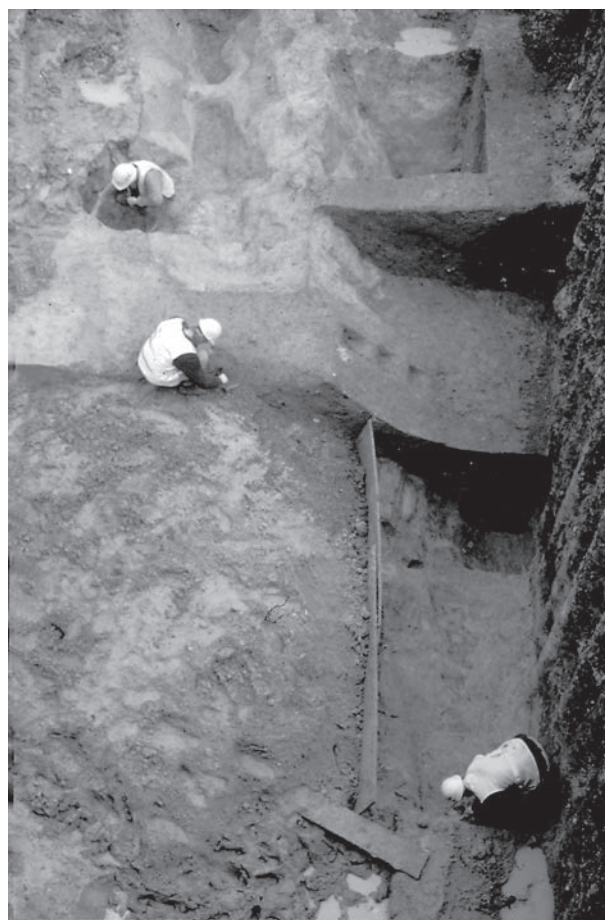


Plate 4.30 Excavation of boundary ditch to St John's cemetery (Ditch 2, Period 1.3–1.4) at the Golden Ball Street Site (top left), showing the slots and posts set within its base. The larger ?Castle Fee ditch (Ditch 3, Period 2.1) cuts across it to the right of the photograph, its square-ended eastern terminal being visible at the top right of the image.

the ditch extends the total recorded length to just over 70m. The ditch survived to roughly 1.50–2.00m wide by 0.90m deep (Fig.4.58) and was V-shaped in profile with pronounced slots and posts at the base. Infilling at Castle Mall took place from the 12th to the early 14th century and is described in Periods 2.1 (Chapter 5.II) and 4.2 (Chapter 7.II). Infilling at Golden Ball Street dated from the late 11th to early 12th century and is described in Period 2.1 (Chapter 5.II). There is slight evidence to suggest the presence of a precursor to this ditch or the presence of an earlier gully. Another gully ran just to the north, parallel to a third gully running into the boundary ditch.

The boundary marker cut across an infilled earlier ditch (Ditch 1, Period 1.4). Late fills (*i.e.* early 14th century) within the eastern part of the ditch recorded at the Castle Mall site were cut away by the possible recutting of the ?Fee ditch (Ditch 3, Chapter 5.II), although both ditches had probably been cleaned out and effectively recut on many occasions, leading to a masking of the true temporal relationship. As well as cleaning episodes, shrinkage/slumping of ditch fills may have had their effect. Fills of the ?Fee ditch recorded at Castle Mall span the medieval period, suggesting that it and the western stretch of the boundary ditch must have been open at the same time. At the Golden Ball Street site, the boundary ditch was again cut into by the ?Fee marker. This stretch would appear to have fallen out of use at the time of or soon after the Conquest.

Castle Mall Site

The remnants of the possible precursor to the main boundary ditch were recorded in plan and section along a short stretch of the northern edge of the main ditch (Fig.4.57, G1/45). The early cut (10672) was linear although its profile is unknown, having been largely removed by the later ditch. The surviving northern edge aligned with other, adjacent observations of the later ditch to the east (10158) and west (10641). The presence of this earlier phase of the ditch elsewhere may not have been recorded due to the close proximity of the later ditch. Its fill contained a fairly high proportion of silt, which could indicate weathering and/or disuse.

Several slots were excavated along the length of the subsequent ditch at Castle Mall (Ditch 2, G1/46, Plate 4.11). In the far south-western corner of Area 1 the plan of the ditch (10299=10295=10339=10641) was irregular due to the effects of slumping and later intrusions. The next slot through the ditch (10536) indicated a steep-sided profile and pronounced slot at the ditch base (Fig.4.58, S.112). This basal slot was c.0.20m wide, perhaps representing a shovel/spade width (although see below). The ditch here was 1.80m wide and 0.90m deep. Three large posts (10676, 10679 and 10683) lay at its base: one was circular (0.16m deep) and the others were square/circular (0.15 and 0.22m deep), all having concave bases. These may have been inserted as part of the original construction and had decayed or been robbed before silting of the ditch occurred. The posts coincided with the butt end of a 12th-century ditch to the north (Ditch 12, Period 3.2) and could imply a crossing point. Alternatively, the posts could have formed part of a fence or screen set within the ditch. Two depressions at the base of the ditch just to the east may indicate the position of further posts, again set within a slot.

An observation just to the east (10158) also demonstrates a narrow slot along the ditch base. The ditch here appeared to cut into an earlier deposit/fill to the north, which may have been a continuation of the ditch pre-cursor described above (G1/45). The main ditch was 0.85m deep at this point.

The surviving ditch was narrower in the next observation (10108, S.102) at 1.20m wide and 0.75m deep, the profile showing a less pronounced slot at the base. To the east (10127) the lack of a slot at the base of the ditch was also evident, although the base itself was a similar width to other observations (at 0.20m). The base of this part of the ditch was much lower than elsewhere, with a depth of 0.90m. A gully (10374) ran along its northern edge, c.0.20m wide. This may have drained into the ditch although it had a fairly sharp, square-based profile, not apparently eroded by water action. Its fills were the same

as those of the ditch. This gully was probably the same feature as that recorded just to the west, suggesting that it sloped downwards to drain eastwards into the boundary ditch. The relationship with another ditch to the north (Ditch 12, Period 3.2) is uncertain. Another small gully (10730, G1/49), recorded over a length of 1.5m, ran roughly south-west to north-east, its fills indicating natural weathering. The two gullies ran roughly parallel, perhaps serving a similar function. To the west, the gully was cut by another ditch (Ditch 12).

Another observation of the boundary ditch to the east (10769) cut through the fills of an earlier ditch (Ditch 1, Period 1.4). The ditch at this point was described as 'stepped' and was 0.50m deep at this point, again with a possible basal slot.

About 8m to the east was the next observation of the ditch (also 10769), which had been cut into by the recut ? Fee boundary ditch (Ditch 3). The ditch was not bottomed at this point, although its alignment curved round slightly to the east.

Golden Ball Street Site (GBS Group 25 part)

by Elizabeth Shepherd Popescu and David Whitmore

The only pre-Conquest feature encountered during the Golden Ball Street excavations was a north-east to south-west orientated, apparently basally fenced, ditch (448=532, GBS Group 25; Fig.4.58) located towards the southern limit of Area 2. This feature clearly represented a continuation of the cemetery boundary observed during the Castle Mall excavation. The southern edge of the ditch recorded at Golden Ball Street had been cut away by the ?Castle Fee ditch (Ditch 3) at or soon after the Conquest. Towards the centre of the excavation, it had also been truncated by a large 16th-century pit. Approximately 5m of its length survived, however, to the east with an additional 1.20m to the west, where it had been truncated by the construction of the Castle Mall shopping centre. The base of the ditch undulated, with at least three deeper slots placed at intervals along its length (Plate 4.30). At its eastern end, these slots were almost vertical sided, with square or rectangular post-holes set into each end. The presence of these features led to variations in ditch depth (ranging from 0.35m to 0.85m) although its width was an almost uniform 1.60m.

Pottery

Finds from the early ?gully/ditch at Castle Mall (G1/45) included two TTW body sherds (8g); these are thin-walled and resemble EMW, perhaps indicating transitional products.

Plots Fronting onto a Road to the West (later Berstrete)

To the north-west of Cemetery 4 was an area of structural activity, with buildings probably facing onto a road to the west (later Berstrete, the earliest documentary reference to which was made in the mid 12th century). The excavated evidence indicates the presence of two substantial buildings, plant remains from which suggest that they may have served as granaries (Fig.4.59 and Plate 4.31). These buildings may have originated in the pre- or post-Conquest periods or could date to later in the medieval period. They have been placed here, however, due to the fact that they were cut by pits of 12–13th- (14th) century date. If the buildings existed earlier (*i.e.* contemporary with Period 1.3), their location would suggest that pre-Conquest settlement extended to the west of the line of Hollow 1. An immediately pre-Conquest to 12th-century date appears likely. If pre-Conquest in origin, the buildings may have been removed at the time that the castle was established: they would have lain outside the Fee boundary, although it is probable that a substantial area around the new castle would have been cleared of buildings (see further discussion in Chapter 5.V). Had the buildings been constructed or retained into the post-Conquest landscape they would have lain in a triangular block of land delimited by the Castle ?Fee ditch to the north-east, the road to the west and the boundary ditch of St John's cemetery (Cemetery 4) to the south.

fold out

fold out

Building 17: post-in-trench
(Fig.4.59, Plate 4.31)

A beamslot ran on a north-east/south-west alignment (10842, G1/138, Fig.4.59) just to the south of an earlier pit (Period 1.3). It survived to 4m in length and was c.0.70m wide, with a possible return northwards at its western end (Plate 4.31). It was 0.20m deep with a concave base into which two circular posts (10885 and 10886) had been set, one 0.35m deep and the other 0.12m deep. These posts were placed centrally in the slot and lay about a metre apart. The post-holes were filled with redeposited natural and frequent charcoal. The slot itself had been back-filled with redeposited natural, indicating perhaps that a structural timber had been removed or perhaps acting as packing around the posts. Two additional posts (G1/139, 10604 and 10621, not illustrated) lay at the western end of the slot, on the inner side of the return and may suggest strengthening or post replacement. One was rectangular and the other circular, both being filled with redeposited natural suggesting that the posts had been removed. The original extent of the building to the north and east is unknown. Its alignment was presumably dictated by the presence of the road just to the west.

The remnants of a further timber structure, perhaps associated with Building 17 (G1/141) lay just to the north, on a similar alignment, although it did not coincide with the suggested northwards return of Building 17. This structure was cut through the fills of an underlying 11th-century pit (G1/137, Period 1.3). In the far north-western corner of the Timberhill frontage was a deposit of reddish brown clay sand, grading into natural at its base (at 26.01–25.75m OD; 10203). This may have been the result of weathering and erosion of the natural ground surface. It was cut into by two posts, the largest of which (10241) was roughly circular although its irregularity could suggest that it was actually the result of animal activity. It was flat based and 0.16m deep. To the north-east was another possible post-hole (10281), irregular in plan with a flattish base (0.08m deep). Above the posts was a short length of slot (10194), 0.13m deep and flat based. To the south-east lay another slot of similar dimensions (10147). This was rectangular, 1m long and was aligned north-west-south-east at approximate right angles to the slot described above. Again it was flat based and 0.17m deep.

Pottery

Only 0.53kg of TTW, EMW, EMSW and EMW/LMU was recovered. See Appendix 6.

Botanical Remains

by Peter Murphy

A sample from the fill of slot 10842 (10826, BS79; Chapter 4.IV, Table 4.23) consisted predominantly of barley grains (none sprouted, mainly of wholly six-row hulled barley *Hordeum vulgare*), with some oats, rye, bread-type wheat and pea. Chaff fragments were rare and weed seeds uncommon. Preservation was good and the deposit suggests that these were cleaned batches of stored cereals. The weed flora includes some taxa characteristic of light, sandy soils (*Raphanus* (wild radish), *Spergula* (corn spurrey), *Brassica* (wild or cultivated cabbage/mustard), but also some *Anthemis cotula* (stinking mayweed), characteristic of clay soils. This may imply the mixing of batches of cereals from more than one source. Their similarity implies that they were charred during the same process or event: a possible interpretation is that they represent charred debris from a granary fire (see Murphy, Chapter 4.IV).

Building 18: post-in-trench
(Fig.4.59, Plate 4.31)

Lying parallel to and about a metre to the south of the building described above was another beamslot with internal posts (10967, G1/140, Fig.4.59). This was recorded over a 5m length and was 0.70m wide and 0.69m deep. The three posts set into its base (10973, 10960 and 10981) lay towards the southern side and were smaller than those in the other building (c.0.20m in diameter, Plate 4.31), the posts apparently having decayed *in situ*. They were sub-square/circular and the deepest was 0.28m (the shallowest being a mere 0.02m). They were spaced 0.60m apart. To the north, cut by the slot, was a small square post-hole (10946), half of which had been removed by the trench. Its fill of redeposited natural contained frequent charcoal. The slot must have originally continued westwards (where it ran into the limit of excavation) and eastwards (where it had been truncated by cellars). It was filled with compacted clay which may have served as a packing around the posts. Again, the alignment was probably dictated by the presence of a road just to the west.

Small Finds

Finds from the possible building included iron formless industrial debris (SF5445), an iron object (SF5477) and non-ferrous metalworking debris (SF5350).

Pottery

A small amount of pottery was recovered mainly from samples (0.050kg). TTW and early medieval fabrics dominate (EMW, EMSW and EMW/LMU).

Botanical Remains

by Peter Murphy

Samples taken from fills of construction trench 10967 (BS103 and BS106–8) were virtually identical to those from Building 17, again suggesting a possible granary fire (Chapter 4.IV, Table 4.23). Plant macrofossils were fully analysed and are discussed further by Murphy in Chapter 4.IV.

Building 19: post-in-slot and post
(Fig.4.59)

To the south of Building 18 were two roughly parallel lines of posts, some in post pits (G1/142, Fig.4.59). These lay at approximate right angles to the buildings to the north and to the postulated road to the west. They may have related directly to Building 18 forming an internal subdivision(s). Furthest to the west were four posts of similar size and shape (10598, 10584, 10570 and 10460), with depths ranging from 0.05–0.10m suggesting that their upper parts had been truncated. Two of the fills were organic, one with ashy mottles. Cutting into the southernmost pit was a larger, square post (10446), 0.19m deep.

The second line of posts to the north-east consisted of a fairly small post (10302) which was cut by a larger one in a post pit (10310/10292). Both the post-pit (0.43m deep) and post were flat-based, the latter having been inserted centrally, prior to packing. A metre to the south was a similar post-pit (10330/10328). Again, this was flat based, 0.22m deep with the post placed to the eastern side of the cut, then packed with a pebbly deposit containing a few large flints. To the south was another small post-hole (10610), then three intercutting posts (10772, 10757 and 10748), one of which was slot-like. The largest was 0.34m deep.

Pottery

Most of the small ceramic assemblage was undiagnostic body sherds (TTW, EMW, EMSW and EMW/LMU). See Appendix 6.

Central Area (features pre-dating the south bailey defences)

Activities across the central part of the site were characterised by gullies and buildings of beamslot construction (Fig.4.60). These (at least in part) were subsequently sealed by deposits relating to the castle and, in particular, the construction of the south bailey rampart (Periods 2 and 3, Chapters 6 and 7). The fragmentary remains of four 'buildings' lay to the east, with a fifth lying within the confines of Hollow 1 to the west. One may have served as a church relating to Cemetery 3 (Period 1.3), although the limited evidence precludes a definitive interpretation as such. All of the buildings lay within the cemetery area, either cutting into or without a stratigraphic relationship to graves. One building (Building 23) had been repaired or altered. It is possible that some of the buildings were post-Conquest in origin, lying within the south bailey. The buildings vary in shape and size from earlier examples; at least two of those included here may have been longer and more rectangular in plan.

To the west lay three parallel gullies aligned roughly north-to-south, cutting across earlier pit lines (Open Area 3, Period 1.2 and 1.3), suggesting a change in both land use and local alignment. They may have formed boundary markers or drainage features, perhaps feeding into Hollow 1 just to the south (although there may have been a structure within the hollow at this date). Two parallel examples lay about 2m apart, rather with the appearance of a narrow trackway, although this interpretation does not appear likely. They may have been immediately pre-Conquest features (having been 'sealed' by deposits underlying the south bailey rampart) or the apparent function/alignment change may indicate a post-Conquest date. They could indicate successive replacement of a single boundary.

Building 20: post-in-slot (Fig.4.60)

At the southern end of Hollow 1, above earlier pits, were two possible structural elements (G8/7, Fig.4.60) including a beamslot (80680) with a post set in its butt end (80657), the base of the slot being uneven. Infilling indicates a mixture of destruction debris and refuse. The fill of the post-hole was 'peaty' and the timber may have decayed *in situ*. Lying in a line projected north-westwards from the southern end of the slot were two intercutting posts (80640 and 80586).

Pottery

A total of 0.298kg of TTW and EMW was recovered. See Appendix 6.

Open Area 18: gullies (Fig.4.60, Plate 4.32)

Further to the north was a length of gully or slot (60027, Fig.4.60) running north-to-south over a recorded length of 11m. It was just under 1m wide and 0.30m deep, cutting through earlier structures and pit lines (Period 1.2 and 3). It was apparently butt-ended to the south and ended just before a projected junction with Hollow 1, into which it may have run. The northern end had been truncated. A series of profiles along the length of the

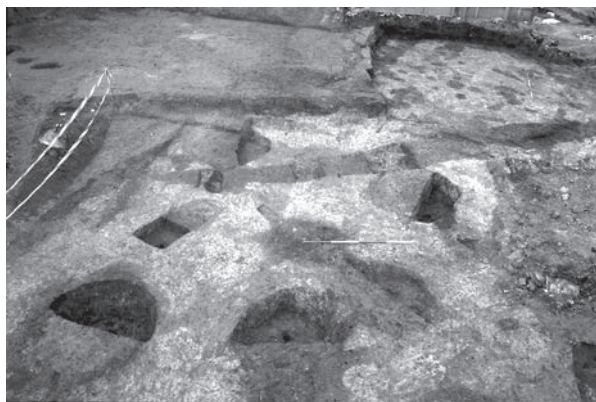


Plate 4.32 Features sealed beneath the later castle's south bailey rampart (Area 6), showing gullies (Period 1.4) leading towards Hollow 1, which cut across earlier lines of pits. Viewed from the east.

gully indicate that it had a rounded base. The feature may have silted up naturally while left open to the elements, although it did contain some finds. Similar gullies lay to the east (see below and G6/16 in Period 1.2), although this was the only gully recorded as sealed by subsequent deposits (Period 2.1, Chapter 5), which may indicate an immediately pre-Conquest date for infilling.

To the east was another length of gully (60174=60213=60050), 0.50m wide and 0.15–0.25m deep with a rounded base, recorded over a total length of 18m. It was truncated or possibly butt-ended to the north and was irregular in plan. A continuation of this feature (60050) was recorded to the south of a later pit. Its fill had been disturbed by the insertion of a cellar and the feature was very shallow (0.02m) at this point. This additional section of slot gives the gully a distinct curve westwards at its southern end.

About 2m to the east, running parallel to the gully described above and with the same westwards curve at its southern end, was the third gully (60201=60247), observed over a 12m length. This was 0.30m deep in parts, shallower in others (0.08m) and was again recorded in two parts. Its base was slightly concave and it had been truncated by later pits at either end.

Small Finds

Gully 60027 contained a narrow iron knife blade (SF5662; Fig.4.97).

Pottery

Over half a kilo of pottery (0.562kg) was recovered from the gullies and included TTW, NEOT, EMW, EMSW and YTW. A mid 11th-century date is suggested by the dominance of EMW. See Appendix 6.

Building 21: beamslot and post (Fig.4.60)

Just to the east of the easternmost gully described above was a length of narrow ?beamslot (G6/21, Fig.4.60), aligned south-west/north-east with a possible cross-wall of slot/post construction continuing southwards from it. The fill of the slot contained burnt daub, although the feature was otherwise quite similar in character and dimensions to the adjacent gullies. The feature is on an odd alignment to surrounding features, being more similar to the alignment displayed by earlier activity. It did, however,

post-date graves of Cemetery 3 (Period 1.3). The slot (60386) ran north-east-south-west over a recorded length of 6m. It was 0.18m deep was cut by a small pit at its northern end (60409, which in turn cut an earlier grave). This sub-rectangular pit may have been the setting for a large post, perhaps contemporary with the slot although on a slightly different alignment (north-to-south). On the southern edge of the slot and perhaps contemporary with it was a circular post pit (60428), 0.10m deep. The fill of the slot had a high daub content, especially towards the south. Towards the south was a line of small slots/posts, perhaps forming part of the same structure running across the line of the main slot. Just to the south of the northernmost post-hole (60288) was a short length of slot (60425) which bottomed out at the same depth as the main slot. Two other posts (60249 and 60405) lay to the south. The northernmost was 0.20m deep and there were indications that it had been rocked from side to side in order to remove it. The southernmost post-hole was very shallow (0.05m). Cutting into the slot was a small oval pit (60272, G6/46), 0.25m deep. This was filled with frequent daub and charcoal, some of the daub being faced. Two post-holes recorded in Area 1 (G1/3) may relate to the same structure (11527 and 11528). Again they contained frequent charcoal and burnt clay.

Pottery

A total of 0.359kg of pottery was recovered, including TTW, NEOT and EMW, along with a small Ipswich Pimply ware body sherd. The latter was obviously residual but is indicative of Middle Saxon activity in the vicinity. See Appendix 6.

Building 22: beamslot

(Fig.4.60)

Just to the south-east was another structure (G1/12=G6/17, Fig.4.60), aligned east-west/north-south and sealed by horizontal deposits. This cut through graves and had two main elements; an east-to-west beamslot (11901=60472) and a north-to-south beamslot 60538) crossing it at its eastern end. Butt ends to both east and west suggest a building length of about 11m. If pre-Conquest, this structure would again indicate that this part of Cemetery 3 was out of use before the laying out of the castle bailey. The earliest slot was the one aligned north-to-south which had deep slots running across its base. It was butt-ended to the north, while to the south, it ran into the limit of excavation. Its sides were stepped and it was 0.59m deep. Its lower fill suggested that the feature may have been left open before use. It was subsequently deliberately back-filled at the same time as the east-to-west slot running above it, presumably once the structural timber had been removed. The east-to-west slot ran over a length of 9m, probably extending westwards for another 2m (recorded in Area 1). It was butt-ended to the east and was recorded in section in Area 1 (11901) on the eastern side of a machine trench, although it did not appear in the western section suggesting that it ended or turned southwards before it reached this point. The slot was 0.50m wide and 0.30m deep, flat based with a square profile suggesting that it held a large structural timber (i.e. a baseplate). Again, silting was apparent at the base of the cut which contained human bone disturbed from the earlier cemetery (Cemetery 3). It was backfilled with mixed redeposited natural. The slot cut through two post-holes along the southern edge (60474 and 60450).

Pottery

Just under half a kilo of TTW, NEOT and EMW was recovered (0.483kg). See Appendix 6.

Botanical Remains

by Peter Murphy

A sample (BS618, 60537) contained very poorly preserved charred cereals with a few weed seeds, hazel nutshell and bracken pinnules (Chapter 4.IV, Table 4.26). It is likely that there was differential preservation during charring and the assemblage is therefore uninterpretable.

Building 23: beamslot

(Fig.4.60, Plate 4.15)

Further to the east was a building consisting of a series of slots (G6/23, Fig. 4.60). This structure is the primary candidate for a timber church associated with Cemetery 3, although the recorded evidence was limited (see Chapter 4.VI). It would have been about 10m long, again aligned east-west/north-south. The first phase consisted of an 8m length of beamslot, aligned east-to-west (60533) was butt-ended at each end (0.50m wide and 0.22m deep). Running southwards from it towards its eastern end was a similar slot (60618), 4m long, truncated by a modern pipe trench at its northern end with its southern end obscured by flooding. This cut an earlier slot (60549). It ran east-to-west for c.2m, truncated to the west.

The northern slot described above may have been retained into a second 'phase' of the building. Another, narrower slot (60620) was inserted running north-to-south from the eastern end of the earlier slot. Again, this appears to have been a beamslot and may have held upright planking. It was 0.10m deep. Cutting this to the south was a longer slot of similar dimensions, running east-to-west for 7m (60616). It was butt-ended to the east and was 0.07m deep, again it may have held an upright plank. To the east, cut by the slot just described, was another short length of very shallow beamslot (60599), 0.20m wide and truncated to the north by a modern pipe trench. To the south, this may have linked to a slot relating to a different structure (Building 24 below).

Pottery

Five very small body sherds (8g) of TTW were recovered from a sample taken from beamslots 60533 and 60599.

Building 24: post and plank

(Fig.4.60)

To the south was a building of an unusual constructional technique for the site (G6/25, Fig.4.60). It was of post and upright plank construction, the posts lying to the north of the planking. There was some indication that the building may have extended to the north and perhaps to the south, although the original groundplan remains uncertain. Again, this building had no stratigraphic links to Cemetery 3, although a grave (60561) lay within the area of the proposed building. This could either suggest that this was a church or that the building pre- or post-dated the burials.

A narrow slot (60835), perhaps resulting from the insertion of a upright plank into the ground (with no trace of a larger construction cut) was aligned east-to-west and was recorded over a length of c.4.5m. There was some suggestion of a northwards return at its eastern end. The eastern 'wall' continued southwards in the form of a line of square posts (60863, 60861 and 60860). The western end of the slot had been truncated. Along the

length of the western plank slot were eight posts spaced at varying intervals and of varying shape (from west to east: 60602, 60830, 60829, 60828, 60832, 60833 and 60834). The undisturbed nature of the structure suggests that it had decayed *in situ*. Running northwards from one of the posts was another slot (60588), irregular in plan and cutting through fills of an earlier gully (G6/16, Period 1.2). Just to the east was a line of six small stakes (60712 *etc.*) which ran north-to-south and may have been internal features within the building. To the east of these was a north-to-south line of three posts (60707, 60708 and 60711).

Pottery

An extremely small quantity of TTW and EMW was retrieved from samples taken from post-hole 60830 and cut 60595.

Building 25, Phase 1: sunken-featured

by Elizabeth Shepherd Popescu and Niall Donald
(Figs 4.61–4.64, Plates 4.33–4.35)

A roughly square sunken-featured building measuring 3.50m x 3.50m (G22/155, Figs 4.61–64) was constructed just to the south-east of an earlier building (Building 11, Period 1.2). The square construction cut (22271) survived to a depth of 0.16–1.34m and was aligned east-to-west/north-to-south. The superstructure was supported on twelve earth-fast posts placed around the edges of the construction cut and one central post (outer post-holes: 22402, 22403, 22404, 22405, 22406, 22407, 22408, 22454, 22434, 22411, 22412 and 22487; central post 22414; Plates 4.33–4.34). The posts had been set into large, deep post pits with depths varying from 0.35–0.62m and dimensions in plan of 0.24–0.64m. Post-pipes survived in eight of the post-holes suggesting that the dimensions of the actual posts were roughly either 0.20 x 0.20m or within the range 0.10–0.15 by 0.10–0.15m. The posts were sub-circular, sub-square or sub-rectangular,

although it is possible that the posts were originally the same shape with the differences occurring as a result of post-depositional processes.

The position of the posts closely matches the surviving remains of a plank-built retaining wall within the construction cut (22395=22396). This survived as three planks set on edge, placed one above the other and supported against the sides of the main cut by the posts (Plate 4.35). Packing was placed behind the timbers (22397). It is possible that, along the western side of the building, there was an alternating pattern of posts set in front of and behind the revetment (five posts lay along this wall, with four on each of the others, counting the corner posts in each case), although on the other two recorded walls the posts were placed on the inner side of the timber walling. Only the corner posts may actually have supported the weight of the roof, the others both supporting the walls and, perhaps, a tie beam for the roof. The internal dimensions (*i.e.* floor space) would have been only about 2.5m squared and the position of the central post, if this served to support the centre of the roof, would have restricted this space even further. The central post was one of the most deeply set (at 0.58m).

The base of the construction cut appears to have acted as the floor. The sides of the base of the cut lay between 0.04 and 0.20m higher than the central area, perhaps suggesting wear. Towards the south-western corner of the building was a semi-circular cut (22489), adjacent to a post-hole (22491), although there is insufficient evidence to suggest an interpretation as a step (or steps) into the building at this point. Alternatively, the entrance may have lain at the southern end of the eastern wall, accounting for the absence of a post(s) in this area and the gentler slope of the construction cut side at this point. Burnt daub, suggesting the nature of wall facing, was recovered from destruction deposits.

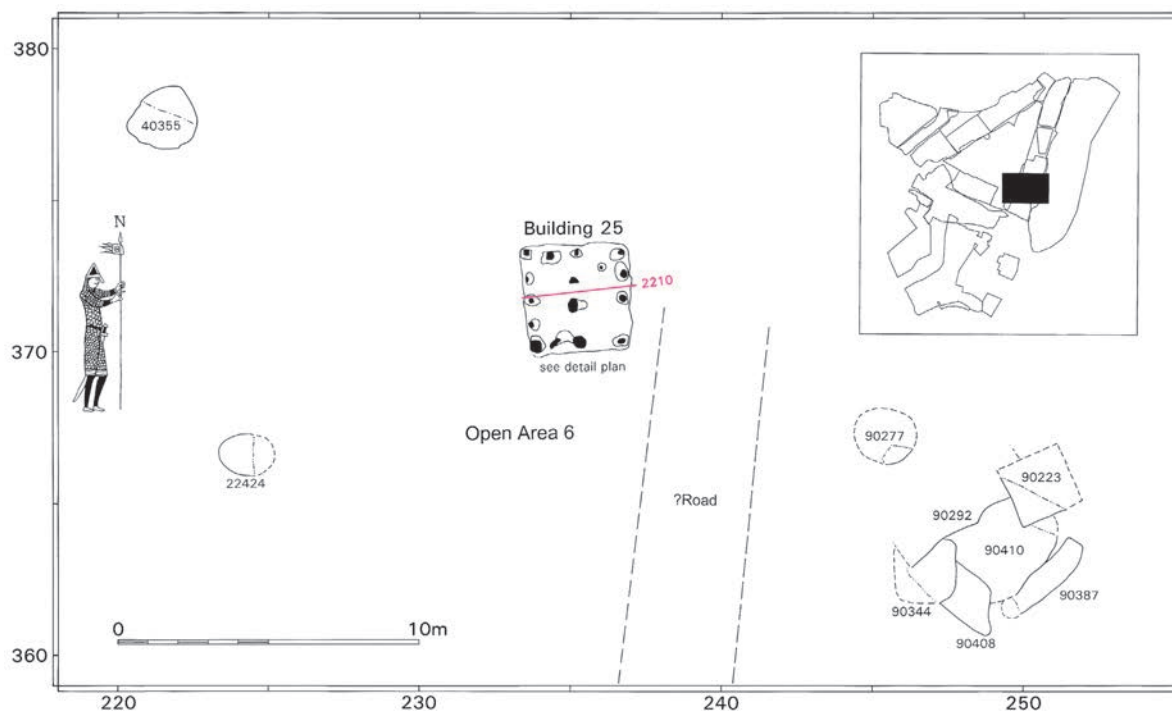


Figure 4.61 Period 1.4: Plan of Building 25 and Open Area 6 (Areas 4, 9 & 22). Scale 1:250

The building has been placed in this section to allow an interpretation of either pre- or post-Conquest constructional date. Pitting surrounding the building in Open Area 6 took place in the mid to late 11th century (see below). There are two possible interpretations for date of this building in relation to adjacent Building 11:

1. that Building 11 only went out of use at the time of the Conquest. The position of Building 25 next to it in the post-Conquest period would then be coincidental;
2. that Building 25 was constructed during the 11th century to replace Building 11. Building 25 may then have been enclosed by the defences and been used or fallen into decay until it went out of use in the very late 11th or early 12th century.

There is very little evidence to indicate the use of the building. Two free-standing posts (22413 and 22415) within it may have served a structural function (e.g. a bench). The lowest layer within the building of charcoal, ash and burnt sand, presumably a combination of a dirty floor and fire debris (22342, Period 2.1, Chapter 5).

Small Finds

Artefacts recovered from post-hole fills, which may have been introduced during the use or disuse of the building, include an antler strip/comb fragment (SF6657), bone comb (SF6630), buzz-bone (SF6586) and nails (SF6647 and 6673). Finds from the burnt ?floor (detailed in Period 2.1, Chapter 5) include a fragmented glass bead (SF6616), while further nails and lead spillage came from post-Conquest destruction levels (Period 2.2). See Chapter 5.II for further comments.

Pottery

by Irena Lentowicz

Only a small quantity of pottery was retrieved (0.234kg) from the constructional phase, which appears to date to the 11th century. TTW was represented by two rims — one from a jar (type AC16) and one from a bowl (type BB7). The other fabrics present (EMW, NEOT and YTW) were represented by body sherds only. YTW came from three post-hole fills (22436 = 1 sherd, 22429 = 5 sherds, 22427 = 1 sherd). Fabrics from deposits associated with the destruction of the building include EMW/LMU sherds indicative of a late 11th- early 12th-century date (see Chapter 5.II, Period 2.2).

Plant Macrofossils

The sample from 22429 (BS1663), containing a slightly higher density of charred cereals than others was selected for analysis as an example of material from the feature (Chapter 4.IV, Table 4.21). Fish bones and bone fragments occurred in small numbers. Other deposits sampled were generally of slightly later date (see Period 2.2). See further discussion in Chapter 4.IV and Chapter 13.

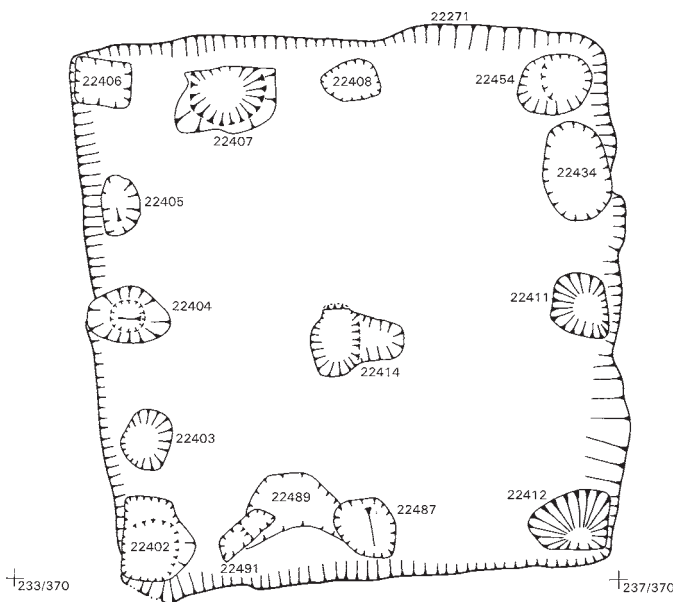


Figure 4.62 Period 1.4: Detailed plan of Building 25 showing construction cut and post-holes (Area 22). Scale 1:50

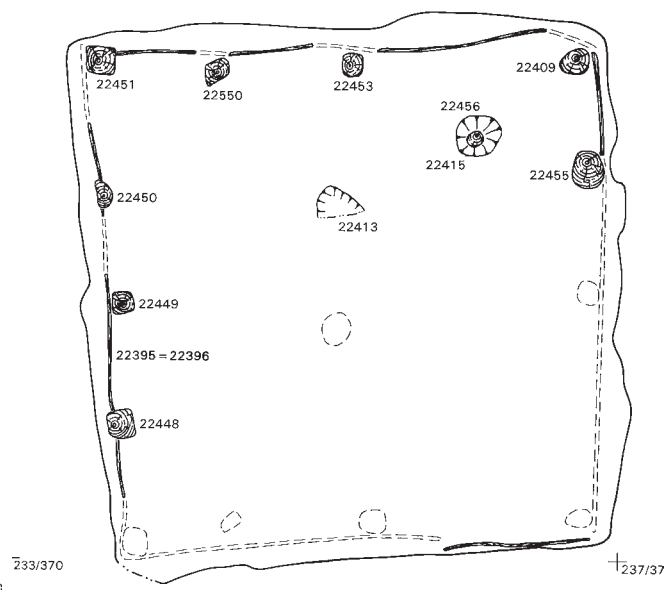


Figure 4.63 Period 1.4: Detailed plan of Building 25, showing wooden constructional elements (Area 22). Scale 1:50

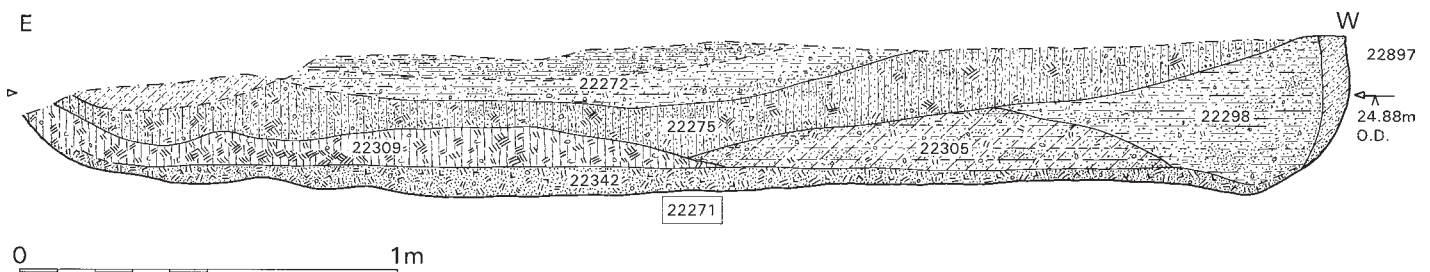


Figure 4.64 Period 1.4: North-facing section across Building 25 (S.2210, Area 22). Scale 1:20

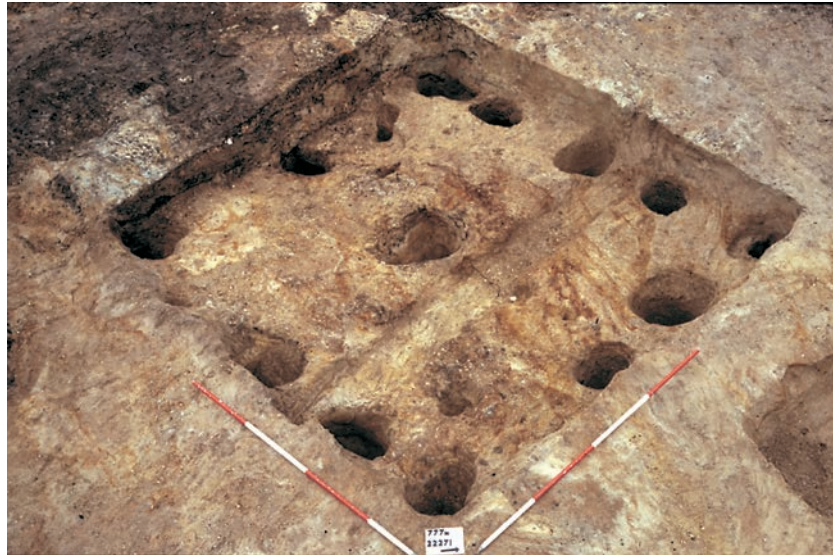


Plate 4.33 Building 25 (Period 1.4)



Plate 4.34 Constructional detail of Building 25 (Period 1.4)



Plate 4.35 Planking within Building 25 (Period 1.4)

Pits Associated with Building 25

A number of pits overlay earlier ones in the vicinity of Building 25 with which they may have been contemporary. Alternatively, these may have lain within the early castle defences.

Open Area 6, Phase 3: pits

by Elizabeth Shepherd Popescu, Niall Donald and Andy Shelley (Fig.4.61)

To the north-west of Building 25 lay a sub-circular pit (40355, G2/9, Fig.4.61), cutting into an earlier pit. It was roughly circular but of unknown depth, with near vertical sides. Several fills were present were humic and included a layer of mussel shell. Further to the south was a sub-circular pit (22424, G22/144), 1.25m deep with a concave base. The upper part of the sides were sloping, becoming vertical lower down. The fills of both pits suggest a combination of cess and refuse disposal.

Above earlier pits to the south-east was a series of eight intercutting pits. The earliest (G9/63) consisted of five features through which a series of sections were cut (90410, 90387, 90408, 90344 and 90292). They are

ill-defined and it is uncertain exactly how many pits are represented. One large pit (90292) is, however, of interest. This had surviving dimensions of 3.8 x 3.72m and must originally have been considerably larger. Its sides appear to have sloped gradually and irregularly towards the base, which may have been reached at a depth of 1.26m. One fill contained fallow deer bone which may indicate post-Conquest deposition (see below), although the ceramics give a general 11th-century date. The ceramic assemblage is large and reflects the continued disposal of ceramic waste in this part of the site (see Chapter 4.VI for further discussion).

Above these pits were two more (G9/64), again heavily truncated. One was sub-circular and the other square/rectangular. The latter (90223) had been diagonally truncated by the construction of an air raid shelter. It was augered to a depth of c.2.20m and had vertical sides, in places undercut presumably a result of the collapse of the sides which were cut into soft sand. The excavated, upper fills consisted of burnt deposits. The second pit was sub-circular (90277) and had again been heavily truncated. It was excavated to a depth of 0.66m, although not bottomed.

Small Finds

Pit 90292 contained an iron arrowhead of (11th- to 14th-century type (SF6292; Fig.4.106), iron nail (SF6205) and lead strip (SF6604). Finds from pit 90223 include a copper alloy needle (SF5880) and hooked tag (SF6142; Fig.4.68), as well as iron nails (SF5908, 6235 and 6064). Finds from pit 90408 included a lead strip (SF6604), a lead sheet (SF6599) and an iron knife (SF6107).

Pottery

(Fig.4.91 on CD)

A total of 28.867kg of pottery was recovered, including TTW, NEOT, EMW, EMSW, EMW/LMU and YTW (see Appendix 6), the majority of which came from two pits.

Pit 90292 contained 9.264kg of pottery (Fig. 4.91 on CD). TTW was the most common fabric recovered and a wide range of rim forms was noted, most being from jars with a few cooking pots represented. Over two hundred rims were present, only five of which were noted as sooted and attributed to cooking pots. Of the remaining rims, 166 came from medium sized jars, 43 from large jars and 6 from small jars. The most common rim types were AB11, AB13 and AB14, all of which have a long existence (Fig.4.91, nos 2, 3, 5, 6 and 7).

A total of 16.844kg of pottery was recovered from pit 90223. The ceramics present (see Appendix 6) indicate a pre-Conquest date; this pit however, overlay an earlier one (G9/63) which contained fallow deer bone perhaps indicative of a post-Conquest date (see Albarella *et al*, Chapter 4.IV, Chapter 13 and Part III).

Botanical and Zoological Remains

by Peter Murphy and Umberto Albarella *et al*

A sample from pit 90223 (90041, BS561) included charcoal, cinder, occasional charred cereal grains and *Chenopodiaceae* seeds (fat hen), uncharred *Sambucus nigra* and occasional fish and other bones. Another fill (90040, BS713) also contained *Hordeum* grains (barley), possibly a residue from malt-drying and was extracted for full analysis. It is described further by Murphy in Chapter 4.IV. Pit 90292 contained fallow deer bones as well as the partial skeleton of a dog (Albarella *et al*, Chapter 4.IV and Part III).

Plots to the North

Three areas of activity were recorded across the northern part of the site and are loosely grouped together as 'Open Areas' with associated structures.

Hollow 1, Phase 8: pits and surfaces

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.65)

A pit (50107, G5/8, Fig.4.65) lying in Hollow 1 to the west of the site may have been infilled in the late 11th to early 12th century. Its lowest recorded fill contained occasional large flints and the character of its upper fill could suggest deliberate consolidation. Two undated surfaces (G5/9) overlay earlier fills of Hollow 1 running along the western edge of the site. These may have slumped into the earlier pit and again contained a few large flints. These fills probably acted to consolidate earlier fills. The lower surface (50061) consisted principally of loam with frequent flecks of charcoal, frequent white clay and gravel with lenses of sand. This was overlain by a pebble surface (50048) consisting of 40% pebbles in a matrix of loamy sand with occasional flecks of charcoal. Both surfaces had survived truncation by virtue of having slumped into the hollow and covered an area of about 2.00 by 1.50m. The surfaces may have been the remnants of deliberate surfacing, perhaps related to a routeway or associated with a building. If they formed a route across the hollow, they may have formed a similar feature to the later 'road' indicated further to the south (see Chapter 6).

Pottery

The sherd of pottery from pit 50107 is of interest in that it appears to be transitional EMW/LMU, dating the fills to the late 11th-early 12th century.

Open Area 9, Phase 3: pits

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.65)

Two pits lay along the southern edge of Hollow 2 (Fig.4.65). To the west, immediately adjacent to the postulated junction of Hollows 1 and 2, was a circular pit (50144, G5/1) with steep sides, but of unknown depth. The second pit (50173, G5/14) cut into fills of Hollow 2 (described in Period 1.2). The pit was small and rectangular and was relatively shallow with a surviving depth of 0.54m. It fills contained 40% ash and were apparently burnt in places.

A series of pits was recorded to the south of Hollow 2, adjacent to a possible building (Building 26, described below). Two small examples, both with organic fills, lay to the south-east of pit 50144, possibly in line with it (a fourth pit in the line is 57187, see below). The two pits lay 0.45m apart and each was roughly circular. The southernmost (47025, G47/24) was 0.80m deep with near vertical sides and a gently concave base. The second small pit (47026, G47/24) was shallower, at 0.40m deep. It also had a gently concave base, although its sides were less steep. An upper fill contained very frequent charcoal fragments, perhaps the remnants of a timber or fire waste deposit. It is possible that both these features were actually large post-pits, although neither contained post-pipes.

Further south, a square pit (57187, G47/21) was 1.5m deep and was filled with clay, silt, sand interspersed with dense layers of decayed vegetable matter, perhaps the accumulation of windblown leaves and twigs. Moderate chalk fragments and ash lenses were also noted. This pit contained a pair of large goat horns (Plate 4.44).

Lying just to the east was a large feature of uncertain function (47662, G47/21). This, for its large size, was not particularly deep at 1.15m and was sub-rectangular in plan, with vertical sides and a flat base. Cut into its base were three post-holes, two of which were then sealed by material either slumped or thrown into the pit. This was in turn cut by two more post-holes and two stake-holes. It is perhaps more likely that all of the posts/stakes were contemporary. Five were of similar size and formed a nearly square shape with dimensions of 1.27 by 1.00m, apparently the remnants of a small structure. The structure may have continued to the south, where the pit had been truncated by later features, and may have been designed to lie within the pit, flush with its top, or may have risen above the surrounding ground surface. The interpretation of the feature is problematic. It lay within the postulated area of the rampart associated with the possible forerunner of the barbican ditch and it is possible it was actually related to the construction of the rampart (see Chapter 6). Immediately to the east lay the surviving base of a small oval pit (47807, G47/7), 0.51m deep. This had vertical sides and a flat base.

Infilling of an earlier pit just to the north-east (47831, Period 1.3) may have continued. Subsequent fills apparently resulted from refuse disposal, one made up of 50% ash and containing copper alloy fragments. Large amounts of animal bone were recovered. Later fills included more ash deposits, sealed by a layer of chalk which perhaps served to cap the pit. Five more fills followed, including cess and a thin layer of charcoal. The uppermost of these fills may have been the result of landscaping activities at the time of the Conquest.

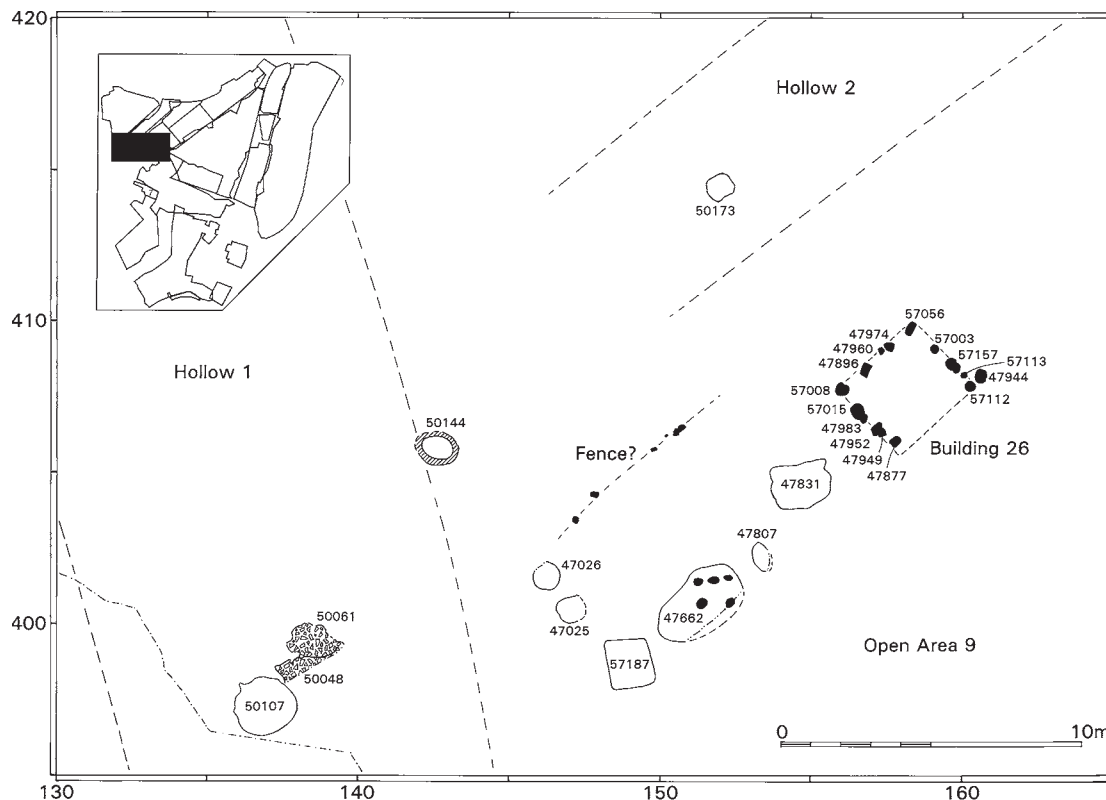


Figure 4.65 Period 1.4: Plan of Building 26, Open Area 9 and activities within Hollows 1 and 2 (Areas 5 & 47). Scale 1:250

To the north of the pits, a series of six small post- or stake-holes were recorded (G47/46), perhaps forming a fence line following the same alignment as surrounding pits and ?structures. Their average depth was 0.08m and their profiles suggest that they may have been stakes rather than posts.

Small Finds

Finds from pit 50173 included a fragment of ?uncut tooth plate made of antler (SF5650; Fig.4.102). Pit 47025 contained iron slag (SF6718) and an iron stud with a globular head and copper alloy coating (SF6742). Pit 47026 contained an iron fibre processing spike (SF1115). The refuse-type fills of pit 57187 contained an iron strap (SF6711) and an iron fibre processing spike (SF6719; Fig.4.101). Finds from pit 47831 included a fragmentary pair of iron shears (SF6793) and a fragment of riveted sheet or nailed binding (SF6755).

Pottery

A total of more than 1.646kg of pottery was recovered, consisting of TTW, EMW and EMSW. See Appendix 6.

Plant Macrofossils

by Peter Murphy

A sample from pit 47831 (BS1786) produced predominantly charred plant material (Chapter 4.IV, Table 4.26). Charred cereal grains (mainly oats, barley and rye) were common. A few had germinated before charring, but insufficient to suggest that malt was represented. Cereal chaff was rare. Seeds of cultivated vetch (*Vicia sativa*) were noted, with fragments of large Fabaceae cotyledons, and hazel nutshell fragments. There was a wide range of terrestrial herbs — segetals and grassland plants. Wetland taxa were common. In view of the rarity of chaff, this samples appears to have included a component of prime grain. The seeds/fruits of segetals could represent either original crop contaminants or a later admixture of processing waste used as fuel for crop drying. The seeds/fruits of wetland taxa *might* represent residues from peat fuel, though *Phragmites* remains were rare and *Cladium* absent. It is more probable that charred residues from hay are represented. (See further comments on fuels in Chapter 13.)

?Building 26: post

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.4.65)

A third possible structure is postulated as replacing an earlier one (Building 13, Periods 1.2 and 1.3), although on a different alignment (Fig.4.65). The earlier ?structure(s) had been aligned north-to-south, while the new one was aligned south-west to north-east. Again, the interpretation of these post-holes as a single building directly overlying an earlier structure is highly tentative.

The ?structure consisted of fifteen post-holes, ten of which may have formed the original structure with the others added later. The southern line of posts had apparently been lost to truncation. Of the ten main posts, each was separated by a distance of about a metre, creating a groundplan with dimensions of 3.15 by at least 3.00m. The natural ground level appears to have sloped down to the south-west. Along the western wall, the bases of the post-holes were recorded at 24.74m OD, falling to 24.54m OD along the northern wall. The eastern wall bases lay at 24.54m OD. The post-holes differed in shape (circular, rectangular, oval, irregular), but were of roughly similar size. Two rectangular posts lay along the northern wall. Four posts formed the western wall (47877, 47952, 57015, 57008), four along the northern wall (57008, 47896, 47974 and 57056) and four along the eastern wall (57056, 57003, 57157 (double ?) and 57112). Two smaller posts (57113 and 47690) may have been infill posts between the main structural uprights. Another two small posts (47983 and 47949) cut into earlier posts along the western wall. No floor levels were recorded and it is possible that the structure was originally sunken floored, the cellared part having been truncated leaving only the

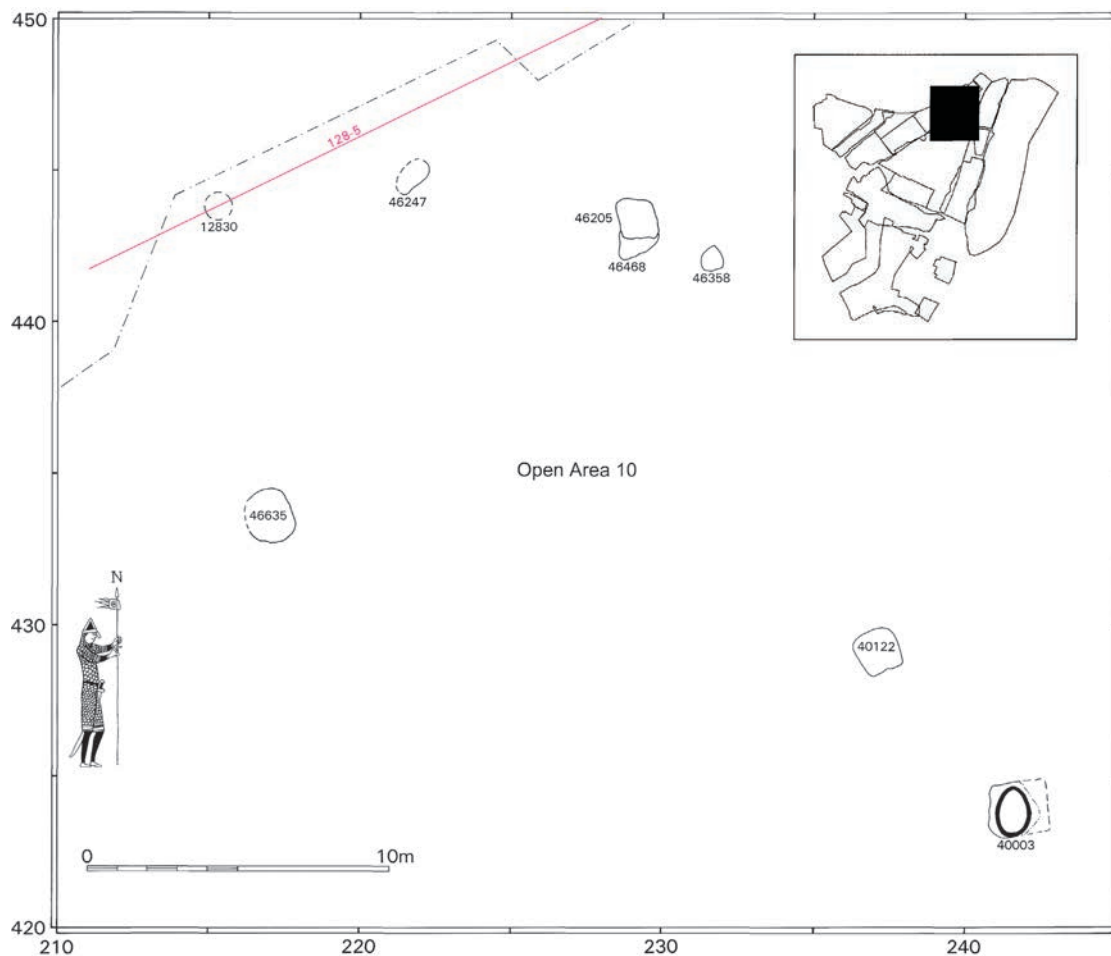


Figure 4.66 Period 1.4: Plan of Open Area 10 (Areas 4, 46 & T20). Scale 1:250

post-holes to suggest its presence (*cf.* plan with Building 25). One other, larger post-hole just to the east (47944, G47/52) may have been related.

Pottery

Only 9g of TTW and EMW pottery was recovered from three post-holes (47974, 47960 and 47896), indicating a general 11th-century date.

Botanical Remains

by Peter Murphy

A sample (47894) included only small amounts of charcoal, a few charred cereal grains, uncharred *Sambucus* (elder) seeds and a shell of *Trichia hispida* sp. There was too little material for an interpretation to be possible.

?Building 27: post and slot

Another possible structure was recorded to the east of Building 26, again to the south of the projected line of Hollow 2 (not illustrated separately). The remnants of this tentatively identified building consisted of posts and a short length of slot, only the possible south-east corner of the structure surviving. It may have been sealed by the construction of a castle rampart (Period 2.2), although it dated to between the 11th and early 12th century. It consisted of eight post-holes, forming an approximate right-angle, some of which may have been replacements for others. A short length of beamslot (48221, G48/18) ran parallel to the suggested south-east wall of the structure at a distance of about 1.08m from it, perhaps forming

an internal partition (although rather too close to the wall). Other features to the south (G46/18 and 46/20) may also have been related to the structure.

Pottery

Only 24g of TTW and EMW was recovered from these post-holes, including a TTW lamp rim.

Open Area 10, Phase 3: pits

by Elizabeth Shepherd Popescu and Andy Shelley (Figs 4.9 and 4.66)

Pitting continued in this area of the site (Fig.4.66). To the north-west was a pit recorded during a watching brief (T20/8, part; Fig.4.9). This pit (12830) cut into an earlier pit (Period 1.3) and was 0.70m deep with a near vertical western side, but a more gradual slope to its eastern side. Further to the east was another, heavily truncated pit (46247, G46/16, part), augered to a depth of 2.20m. To the west was another pit (46635, G46/2) which apparently continued to be used for refuse disposal into the late 11th century for refuse disposal. Some of its fills contained lenses of ash and charcoal indicative of fire waste. Intrusive finds were present in its fills.

Three pits lay to the east. One of these was flat based (46468, G46/12) and was 0.44m deep. The overlying pit (46205, G46/16) was square with a depth of 1.35m. Adjacent to these pits as a small pit of irregular shape

(46358, G46/28) which contained burnt sand/rammed chalk fragments with pebble and burnt clay inclusions, the chalk was tentatively suggested as a surface dumped into the pit.

To the south lay a square pit (40122, G2/11), only 0.50m deep, with vertical sides and a flat base. Further south, another pit (40003, G2/11, part) had probably been in use earlier in the 11th century (see Period 1.3). Its fills contained decayed wood, including wooden posts and a collapsed timber lining. Above were fills containing the usual range of domestic waste. Above were compacted and mixed deposits, probably much later than the earlier refuse fills, overlain in turn by a layer of clean sand. These late fills may relate to deliberate consolidation of the top of the pit, perhaps at the time of the Conquest. Animal bone included partial skeletons (see below).

Small Finds

Finds from pit 46635 included a length of nailed binding (SF6725), two sheet fragments (SF6631), three intrusive lace tag fragments (SF6633) and two iron nails. Pit 46648 contained a sawn antler tine and skull fragment (SF6635; Fig.4.102). Finds from pit 40122 include intrusive clay pipe (from an adjacent Cattle Market feature) and a quernstone (SF5936). Pit 40003 contained an iron fibre processing spike (SF5719), nailed binding (SF6334), a nail and iron needle (SF6035, Fig.4.101). Pit 12830 contained an iron clenched bolt (SF6507).

Pottery

(Fig.4.92–93 on CD)

A total of 1.341kg of pottery was recovered from these pits, the material from pit 46635 being illustrated in Fig. 4.92 on CD and that from pit 40122 in Fig.4.93 on CD. Infilling of many of these features may date to the mid to late 11th century. Fabrics consist of TTW, NEOT, EMW, EMSSW, YTW, EMW/LMU and LMU. See Appendix 6.

Botanical and Zoological Remains

by Peter Murphy, Umberto Albarella *et al* and Alison Locker

A sample from pit 40003 (40002, BS302) was selected for full analysis and proved to be a sewage residue (see Table 4.26 and Murphy, Chapter 4.IV). Animal bone from the same pit included a partially articulated domestic fowl, as well as thirteen bones from a single pig (Albarella *et al*, Chapter 4.IV and Part III). A total of 274 fish bones was identified and is detailed in Part III, Table 90.

Open Area 16, Phase 2: ?oven

by Elizabeth Shepherd Popescu and Niall Donald

Cutting into an earlier pit (21069, Period 1.3) was a feature which may represent the base of an oven (21070, G21/168). It consisted of a patch of bowl-like lining of red brown clay measuring c.0.40 x 0.40m. Above this was a deposit of large, discrete fragments of compacted clay with abundant chalk flecks, some of which were burnt, although the whole was perhaps insufficiently fired to suggest an oven lining and may indicate the collapse of an associated superstructure. Overlying the clay was a charcoal layer: this may have been a dump of burnt matter or may indicate *in situ* burning within a surviving oven bowl. Burnt clay is notable in subsequent deposits in this area, suggesting either a continuation of activities in the vicinity (*i.e.* relining of an oven) or perhaps redeposition from elsewhere. Overlying the possible oven was a possible post-pit with double posts (21059, G21/168), sealed by dumps of burnt clay and cobbles (21018 and 21020).

Pottery

The ceramics from pits and features within Open Area 16 were not noted particularly because of their contemporary assemblage (which was dominated by TTW and supplemented by EMW), but because of the presence of residual Middle Saxon pottery, which may indicate that Middle Saxon settlement was located near to this particular part

of the site. A fairly substantial amount of pottery was recovered from the possible oven (21070, 0.670kg), providing a fairly wide range. This included residual sherds of Ipswich ware as well as sherds of as yet unidentified fabrics (which may be French imports). Small quantities of TTW, EMW, EMSW and EMSSW came from the layers overlying the oven. See Appendix 6.

Crustaceans

Pit 21070 notably contained the remains of crab shell (Plate 13.1). See Chapter 13 for comments.

III. FINDS

Introduction

A total of 347 artefacts (3.3% of the site assemblage, Table 4.6) came from Late Saxon deposits at Castle Mall, of which a small proportion were intrusive. Additional objects of Late Saxon date recovered residually in later features or unstratified are described below, with the exception of the finds from the barbican well shaft which are detailed in Chapter 9.III. The five objects from Period 1.1 were all probably intrusive as a result of later disturbance, while the remaining items deriving from Late Saxon deposits were relatively equally distributed between Periods 1.2–1.4. No finds of this period (other than residual pottery) were recovered from the Golden Ball Street site.

Period	Small Finds (no. objects)	Pottery (Qty)	CBM (Qty)
Period 1.1	5	1	0
Period 1.2	110	9,069	1,157
Period 1.3	129	21,880	797
Period 1.4	103	1,564	584
Total	347	32,514	2,538

Table 4.6 Selected Period 1 finds by sub-period

Dress Accessories and Personal Possessions

Dress Fittings

Rings

Bone ring

by Julia Huddle

(Fig.4.67)

Bone rings made from cattle metapodials are known from Late Saxon deposits in London, where they are described as finger-rings (Pritchard 1991, fig.3.56; alongside evidence for their various stages of manufacture). At Winchester, the majority of similar examples are from late 9th- or early 10th-century deposits (Biddle 1990, 1131). Elsewhere complete rings have been found at Canterbury (Elder and Riddler 1988, fig.31.107), Hereford (Shoemith 1985, fig.24.11) and Bradwell Bury (Riddler 1994). The Castle Mall example (SF5729) is unstratified. Some of the offcuts of sawn-off articular ends of cattle longbones

recovered from the site (see boneworking below) may have been associated with bone ring manufacture. The Castle Mall example is perhaps rather large for a finger ring and it may have served another purpose.

SF5729 Bone **ring**, probably made from cattle metapodial. Diameter of hole: 22mm. Overall diameter: 28mm. 40000, unstratified

Copper alloy finger or ear-rings

by Alison Goodall

(Fig.4.67)

Four copper alloy finger or ear-rings of Late Saxon date were recovered residually in later contexts; two from post-medieval deposits (SF5053 and 6326), the third from pre-/post-Conquest refuse layers beneath the south bailey rampart (SF5616) and the fourth unstratified (SF5779).

Penannular rings with overlapping ends constitute the most common type of ear-ring found in the Roman period (Allason Jones 1989, 2) as well as in the early medieval period; two plain round-sectioned ear-rings were also found in 10th- to 12th-century contexts at Fishergate, York (Rogers 1993, 1370–71, fig.668.5413–14). Several examples, some with stamped decoration and one made in gold, were found in the excavations at Thetford (Rogerson and Dallas 1984, 68–9, fig.110.12–13, 17–18, 20–21) although none of these was from a dated context.

SF5053 **Penannular finger or ear-ring**, with tapering ends and unusual lozenge-shaped section, decorated with fine zigzag borders on the outer three angles.

10058, external dump, Period 6.3, G1/91

SF5616 **Penannular finger or ear-ring** with sub-rectangular section, tapering to circular section pointed ends, which touch but do not overlap. Undecorated.

60071, soil horizon, Period 2.1, G6/18

SF5779 **Penannular finger-ring** of D-shaped section; both ends have flattened sections and rounded tips.

70000, unstratified

SF6326 **Penannular ?ear-ring** of circular section, tapering from one end to the other, the thicker end pointed. Possibly an ear-ring.

91787, external surface, Period 6.3, G9/40

Glass beads

by Julia Huddle

(Fig.4.67)

A tiny polychrome glass bead (SF1055) was recovered from the fill of a child's grave (13180) in St John's cemetery (Cemetery 4, Period 1.4). A plain glass bead (SF6616; not illustrated) was found, probably residually, in late 11th/early 12th-century destruction debris within a sunken-featured building (Building 25, Period 2.2; see Chapter 5.III).

Late Saxon beads are often made of glass: thirty-one examples, for instance, came from late 10th- to 12th-century contexts at Fishergate, York (Rogers 1993, 1379); occasionally they are polychrome, similar to SF1055, although the Castle Mall bead is certainly not as impressive as the York examples (Rogers 1993, fig.676 and 677). A few glass beads are also known from Late Saxon contexts in Norwich, including one from Greyfriars from the use fill of an 11th-century sunken-featured building (Emery 2007) and another from a 10th-century context at Fishergate (Williams 1994a, 19, fig.13 no. 2).

SF1055 Globular **bead**; opaque red glass, with off-white glass around central perforation (see illustration) which appears to run through entire length of bead. D: 3.2mm, H: 2.3mm 13179, fill of grave 13180, Period 1.4, G1/61

Copper alloy dress/head-dress pins

by Alison Goodall

(Fig.4.67)

A number of pins were found in the Late Saxon levels at Castle Mall, most being of later medieval type with coiled wire heads which must therefore be intrusive. An incomplete pin (SF1043) from grave 13058 (St John's, Cemetery 4) is reminiscent of a group of pins from 11th- and early 12th-century levels at Castle Acre Castle; all but one of the Castle Acre pins were of bone, the other being of copper alloy (Margeson 1982, fig.47, nos 23–46; Goodall 1982a, fig.44, no.48). The pins have a variety of head forms, most with a loop at the top and almost all with hipped shafts. Most are between 30 and 40mm long. It was suggested that the Castle Acre examples were used ornamentally, either to secure a veil or to decorate the hair, possibly with a cord threaded through the loops.

SF5818 from Castle Mall has a solid bun-shaped head. A similar pin was found in an 11th- to ?mid 12th-century context at Winchester (Biddle 1990, 557, fig.151.1447), while pins with bun-shaped heads were among the types of dress pin current in London in the 14th century (Egan and Pritchard 1991, 302). The Castle Mall example may have been used in the hair or a head-dress in a similar way to the smaller pin described above.

SF1043 **Pin**. Incomplete dress pin. Slim, slightly swelling shaft, which runs through ovoid head with double square collar below, and terminates above in a small loop.

13037, fill of grave 13058, Period 1.4, G1/61

SF5818 **Pin** with solid flattened globular head.

11536, fill of slot 11544, Period 1.2, G1/9

Copper alloy brooches

Cruciform brooch

by Kenneth Penn

(Fig.4.67)

A copper alloy brooch was found unstratified in Area 49 (SF6768). Like many others it cannot be easily placed into any of the schemes developed by Aberg (1926), Reichstein (1975) or more recently by Mortimer (1990). The lack of the foot terminal and worn condition hampers identification to type, but other features, especially its simplicity, point to a relatively early date in the English cruciform series.

The brooch, with its narrow outline and half-round knobs, fits between Aberg's Group 1 and 2 brooches, with a mid 5th- to mid 6th-century date range, but no close parallel can be advanced and the brooch lacks a terminal to compare with the characteristic horsehead terminals of the Group 2 brooches. A fragment of a brooch (bow and headplate) from Wenhaston, Suffolk, has a similarly simple headplate with small integral knobs and is assigned to Aberg Group 2 by West (West 1998, 103, fig.133).

Reichstein's typology is of limited application to the English material, although the Norwich brooch (if it had an animal head terminal) could be compared with a brooch from Borgstedt, Germany (taf. 115, no. 7) and especially two brooches from Little Wilbraham, Cambridgeshire (taf. 115, nos 9, 13), the last with narrow headplate and small integral knobs (Reichstein 1975). The simplicity and narrowness of the brooch is echoed in many of the Norwegian brooches figured by Reichstein.

In Mortimer's recent classification (Mortimer 1990), the brooch fits best into her two early groups A and B

and is likely to be late 5th/early 6th-century. A similar date, 500–525, is proposed by Hattatt for a very similar Aberg Group 2 brooch from East Anglia, also with a narrow outline, slightly expanded headplate and integral half-round knobs, and horsehead terminal (Hattatt 1985, fig.231, no. 663).

SF6768 Cruciform brooch; Early Saxon. The brooch has a narrow headplate, slightly expanded, with integral side and head knobs, all half-round. The bow is low and faceted along its length, with top and bottom panels. The lower part appears to have had a faceted panel and possibly some linear decoration. Both head and foot are slightly upturned. The foot terminal is missing, and whether it was a simple splay or of horsehead form is not known. On the reverse are the remains of a pin bar lug and catchplate. Incomplete length: 61mm
49000, unstratified

Ansate and disc brooches
by Alison Goodall and Julia Huddle
(Fig.4.67)

Few finds were associated with the Late Saxon cemetery beneath the later south bailey rampart (Farmer's Avenue, Cemetery 3) but among them was an ansate or 'equal-armed' brooch (SF1027) with elongated trefoil-like terminals to the arms. This probably dates to the 8th or 9th century. Three other ansate brooches are known from Norwich. One is from Fishergate (Williams 1994b, 14, fig.9 no. 2), while the second example is an unfinished brooch of similar form to SF1027 from St Martin-at-Palace Plain; it has an animal head at the end of one arm and has been dated to the 8th century (Williams 1987a, 63, fig.55 no. 3). The third and most recent example was recovered from excavations on the Castle Mound and derived from post-medieval make-up, to the west of the castle bridge (Wallis in prep.). Further afield in East

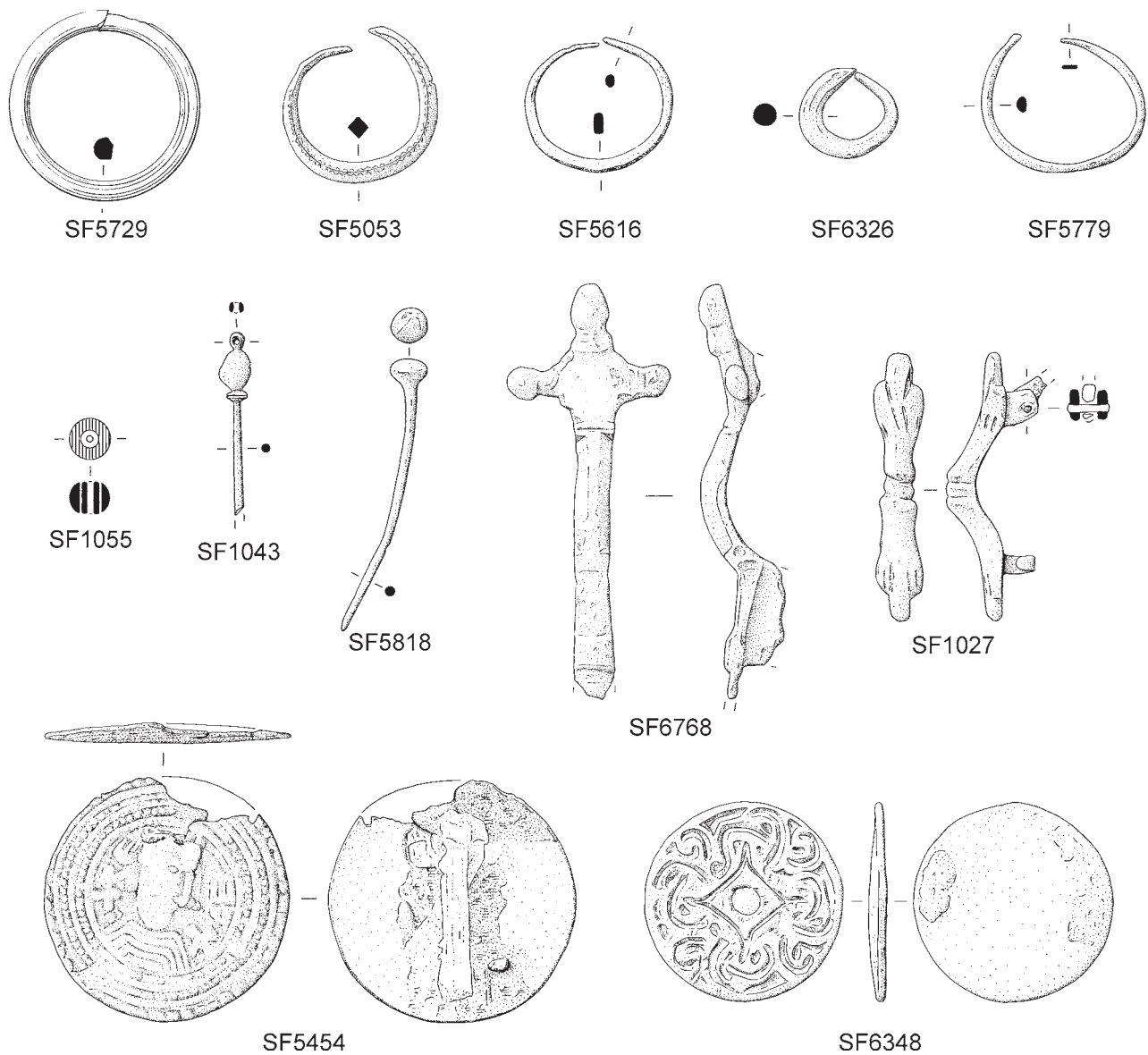


Figure 4.67 Finger & ear-rings of bone (SF5729) and copper alloy (SF5053, 5616, 6326, 5779); glass bead (SF1055); copper alloy dress/head-dress pins (SF1043 & 5818); copper alloy brooches — cruciform brooch (SF6768); ansate brooch (SF1027); disc brooch with pseudo-coin motif (SF5454); Borre-style disc brooch (SF6348). Scale 1:1

Anglia, another (incomplete) example has recently been excavated at Stamford, Lincolnshire, although at present there is no further information regarding its context or dating (Helen Geake, pers. comm.). Two ansate brooches are known from London, one from an 11th-century context and the other from an early 13th-century context (Pritchard 1991, 143, fig.3.23, nos 94 and 95). Pritchard cites others recovered in Germany and France and discusses the increasing numbers known in Britain, where they are concentrated in settlements facing across the Channel and North Sea.

A Borre-style disc brooch (SF6348) was found unstratified in Area 9. It is comparable to an example from Coppergate, York made of lead alloy (illustrated in Hall 1984, 59, fig.60, top centre) and probably dates from the 10th century. Local parallels include two from Norwich Castle's north-east bailey (Margeson and Williams 1985, 29, fig.24 nos 1 and 2) and another from Magdalen Street, Norwich (Penn 2000b, 8). Margeson discusses these flat disc brooches decorated with a knotted interlace pattern, and their prevalence especially in East Anglia. The large number found in Norfolk, she suggests, may indicate production in the county, perhaps even in or around Norwich (Margeson 1997, 23).

SF1027 Ansate brooch with triple moulding in the centre of the bow and elongated trefoil-shaped terminals. Incised lines accentuate the form of the trefoils: one arm has an additional row of irregular short incisions. On the reverse, the pin bar lug and catchplate survive, along with the iron pin bar and part of the iron pin still *in situ*.

11667, found on left breast of male skeleton 11686, Period 1.3, G1/10

SF6348 Borre-style disc brooch, relatively crisp and unworn but missing pin bar lug and catchplate; scars from these can be seen on reverse. Sunken central roundel within engraved lozenge and surrounded by crude but symmetrical stylised interlace-style ornament. D: 29mm. 90000, unstratified

Disc brooch with pseudo-coin motif

by Mark Blackburn

(Fig.4.67, Plate 4.36)

This brooch (SF5454) simulates a class of high-status precious-metal brooches that became popular in the 9th century, especially in the Carolingian world. They consisted of struck gold coins or pseudo-coins framed in a filigree border of beaded wire with an attachment either for suspension on a necklace or for pinning as a brooch. Where genuine coins were mounted these were Carolingian — portrait *solidi* of Louis the Pious (814–40) or the more plentiful Frisian/English imitations of these (9th century) — while the pseudo-coins had a wider repertoire of prototypes based on Carolingian portrait types or a variety of Roman or Merovingian issues. Examples in gold are recorded from the Hoen hoard, Norway (dep. later 9th century) or single finds from the Netherlands (several illustrated in Berghaus 1965). In Germany this form of coin brooch continued until at least the late 10th century, as shown by the Klein-Roscharden II hoard (Gandert 1951). These Carolingian brooches with beaded borders are distinguished from coin brooches of the 6th/7th century, such as those in the Wieuwerd hoard (dep. c.620; Lafaurie *et al* 1961), on which the filigree border generally consists of rows of wire finely platted in herringbone and other patterns.



Plate 4.36 Copper alloy disc brooch from Thompson, Norfolk, probably East Anglian, 9th/10th-century, dia. 24mm. *cf.* Castle Mall SF5454 (Fig.4.70)

Simpler cast copies of such brooches, generally in copper alloy or lead, are quite often found in the Netherlands and Germany. A pseudo-coin brooch cast in silver emulating a Louis the Pious imitative *solidus* was present in the Westerkliif II hoard, Netherlands (dep. c.885; Coupland forthcoming). Several in base metals found on the Löhrrstrasse, Mainz site have been discussed by Berghaus (1994, illustrating parallels) and dated to the 9th/10th centuries.

Anglo-Saxon examples in precious metal of coins framed in filigree borders are rare, but there are two in silver dating from the 10th century. One of these found in Rome contains an East Anglian coin of Edward the Elder (899–924) in a four-ring border (Wilson 1964, no. 64; Okasha 1971, 'Rome II'; Blunt 1986, 165–6), while the other, from Canterbury with a pseudo-coin of mid 10th-century character, is set in a massive twelve-ring border (Hinton 1974, no. 6; Okasha 1971, 'Canterbury I'). A cast brooch in silver in the Yorkshire Museum, possibly a local find, emulates a late Roman coin and has a false-filigree border of four rows of finer and one of broader beads (Tweddle *et al* 1999, 268, no. 103). It has been dated to the 9th century based on Continental parallels. Several examples in base metals have been found in England mostly copying 10th-century coin types (Wilson 1964, 35–6; Dolley 1971, 146; Campbell 1982, 142), while some ornamental disc brooches in lead with false-filigree beaded frames have come from 10th-century contexts in York (Mainman and Rogers 2000, 2571–4).

Two brooches that are very closely related to the Norwich piece are both finds from East Anglia (Gannon 2003, 57 n.229). One from Icklingham, Suffolk, 15 kilometres south west of Thetford, is in the Ashmolean Museum (Hinton 1974, no. 15) and the other from Thompson,⁴ Norfolk, 15 kilometres north of Thetford, in the possession of Anna Gannon is illustrated here (Plate 4.38). Gannon notes (pers. comm.) that they appear to be mould duplicates of each other. Although both are in simpler frames of one beaded row, the central 'coin' motif has very close parallels to the Norwich find and they are all clearly from the same 'school' if not the same workshop. Hinton dated the Icklingham brooch to the mid to late 8th century, seeing the very stylised drapery on the bust as inspired by a rare group of 'sceattas' of series L (c.720–40), but this is likely to be a coincidence, as the form of the portrait fits into the tradition of Carolingian coin portraits derived from the *solidi* of Louis the Pious. The brooches are quite far removed from their prototype, demonstrated particularly by their decorative inscriptions (+ΔE) which bear no resemblance to the originals. The

portraits on the Icklingham and Thompson finds have become laterally reversed, presumably through copying the design on to a mould. They have plain flat backs, like the Norwich brooch, but the catch-plates were moulded in copper-alloy as part of the brooch, and the pins were mounted horizontally. The differences in size of border and technique suggest that they may well be from a different workshop from the Norwich find, yet they form a distinctive group and the three recorded findspots suggest they are local East Anglian productions. As to their date, while they could belong to the later 9th century although the 10th century is more likely, and a continuation into the 11th century particularly for the smaller module cannot be ruled out.

SF5454 Late Anglo-Saxon copper-alloy **disc brooch**, with pseudo-coin motif in the centre, cast in one piece, probably East Anglian, later 9th or 10th century.

Central 'Coin': right-facing diademed bust with stylised drapery composed of four symmetrical bands; pseudo-inscription +[Δ?]E to the left and +ΔE[S?] on side] (reversed) to the right of the bust.

Frame: simulating five concentric circles of finely beaded filigree and a sixth outer circle of larger beads which has been trimmed back after casting.

Back: plain flat surface, with stains indicating the position of a vertical back plate, probably of copper-alloy, which had protected the area from corrosion, outlined and surrounded by staining from iron corrosion. This would appear to come from the degradation of an iron pin and catch plate mounted on the lost back plate, although a small piece of iron still adheres to the brooch in the stained area suggesting that the attachment of the pin may have extended beyond the narrow back plate. The pin was aligned vertically in relation to the brooch design.

Diam.: 37mm; diam. of 'coin': 20mm. Weight: 5.17g (damaged).
11162, fill of ?Castle Fee ditch, Period 3.2, G1/57

Copper alloy hooked tags

by Alison Goodall
(Fig.4.68)

Hooked fasteners (such as SF6142 and SF6268) are typical finds from the Middle and Late Saxon periods and a total of eight such items were recovered from the Castle Mall excavations. Two came from Late Saxon contexts. Of the others, one was from a medieval ditch fill (SF5052), a fastener similar to SF6142 (SF5164) was found in a late medieval context and another four (SF1100, 6055, 6750 and 7605) were found unstratified. Several similar tags were found in excavations at Thetford in various stages of manufacture (Goodall 1984, 69, fig.111.32-40), but these had a more rounded shape to the heads than the Castle Mall examples. Others were found in cemeteries at Meon Hill and Stockbridge Down, supposedly in positions near to the wrists of skeletons, suggesting that they may have been used as sleeve fastenings (Kendrick 1934, 154, fig. XV.M5; Hill 1937, 25, pl 1c).

SF1100 Hooked tag with triangular plate. The apex of the triangle is extended to form a hook, the tip of which is missing. The wider end is incomplete and has one complete and one broken perforation. A row of three complete and one broken stamped annulets runs longitudinally between them.
91201, unstratified

SF5052 Hooked tag with circular plate decorated with engraved ornament of curved lines within single line border. Two attachment holes in plate; hook beneath has missing tip.

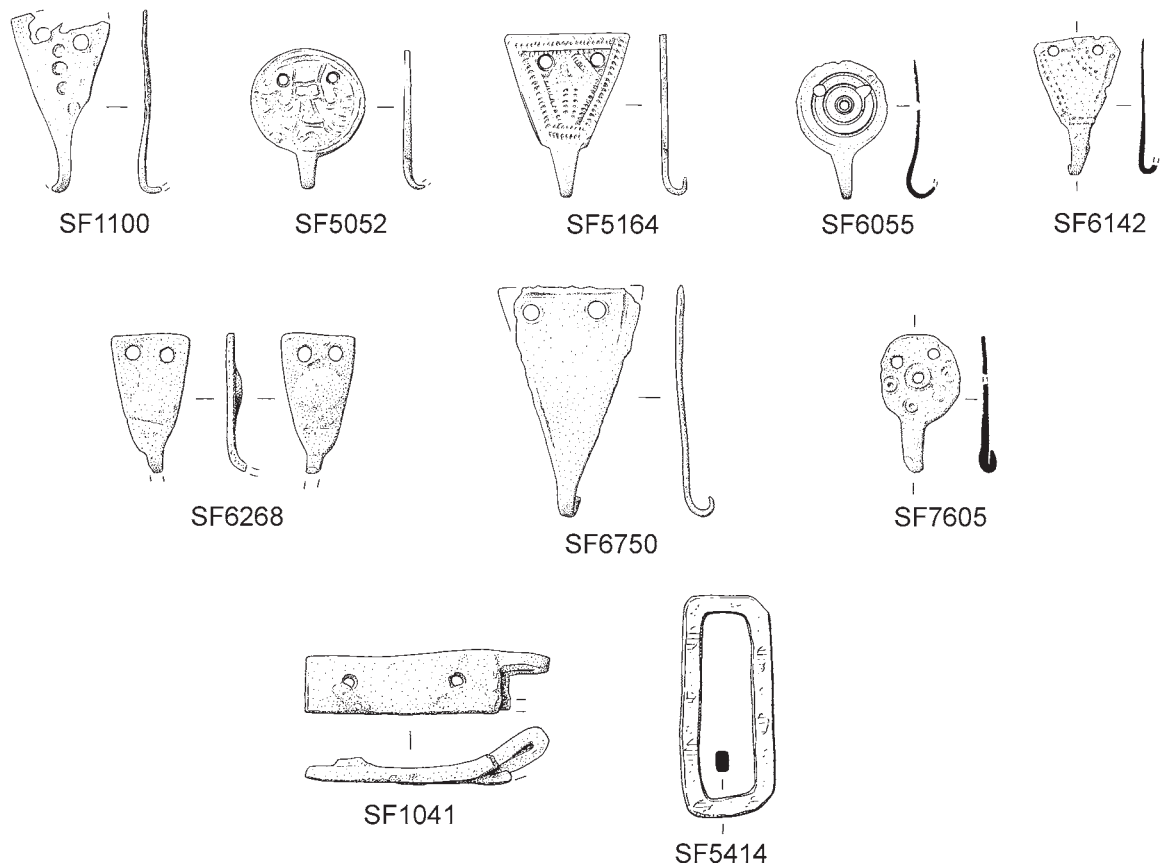


Plate 4.68 Copper alloy hooked tags (SF1100, 5052, 5164, 6055, 6142, 6268, 6750 & 7605); copper alloy hinged plate/?belt fitting (SF1041); iron buckle frame (SF5414). Scale 1:1 ironwork 1:2

- 10126, fill of cemetery boundary ditch, Period 4.2, G1/48
- SF5164 Hooked tag** with triangular plate. Two attachment holes in wider end, narrower end trimmed at sides and bent to form hook. Front is decorated with traced or stamped lines forming a double-line border around edge of plate and around holes and a double line down centre.
10507, fill of pit 10529, Period 5.1, G1/146
- SF6055 Hooked tag** with circular plate and delicate hook with tip missing. The plate has two attachment holes and is decorated with a central hole surrounded by three engraved concentric circles.
80000, unstratified
- SF6142 Hooked tag** cut out of sheet copper alloy, with triangular plate and delicate hook, tip missing. Plate has attachment holes in top corners, and decoration of short punched lines forming a double-line border and double lines around the attachment holes.
90250, ?animal disturbance, Period 1.4, G9/64
- SF6268 Hooked tag** with triangular plate and broken off hook. Plate has two attachment holes, one now blocked by corrosion and possibly a slight circular boss in the centre.
40168, fill of pit 40045, Period 1.2, G2/50
- SF6750 Large hooked tag** with triangular plate and small complete hook. The plate has two asymmetrically placed attachment holes in the top corners; there are faint engraved lines around the edges, which may be cutting-out lines and if these had been followed, the holes would have been more symmetrical.
48000, unstratified
- SF7605 Hooked tag** cut out of a sheet of copper alloy, with sub-circular plate and small turned-over hook. Plate has two attachment holes in the top edge and a hole surrounded by a ring in the centre. There are four rings-and-dots around the lower edge.
48000, unstratified

Copper alloy and iron belt fittings
by Alison Goodall and Quita Mould
(Fig.4.68)

A hinged plate with traces of gilding, possibly from a hinge or a buckle plate (SF1041) was found in the fill of a Late Saxon gully (Period 1.2), although the object itself is not intrinsically datable. A narrow rectangular frame or link (SF5414) came from fills of the ditch beneath the cemetery of St John (Cemetery 4).

- SF1041 Rectangular hinged plate** (copper alloy), perhaps from a buckle, with two circular attachment perforations. From one corner, a single folded hinge bar lug projects; the opposite lug is now missing. Traces of gilding on the projection.
60570, fill of gully 60642, Period 1.2, G1/16
- SF5414 Buckle frame**, iron.
10978, fill of ditch 11109, Period 1.4, G1/43

Textiles

by Elizabeth Crowfoot, with Penelope Walton Rogers
Tiny fragments of mineralised and charred textile (SF6443, not illustrated) were recovered from a large 10th- to early 11th-century pit (91074, G9/51, Period 1.2). No dye was detected. The presence of textile in such an early deposit is notable, due to its rare survival on the site. A clothworking tool (fibre processing spike) was found in the same pit (see discussion on textile manufacture below).

Personal Possessions

Antler combs⁵
by Julia Huddle
(Fig.4.69)

Eight (possibly ten) pieces of antler single-sided composite combs were found, four of which came from Late Saxon deposits (SF5701, 5607, not illustrated, 6657,

not illustrated and 1085, not illustrated). Additionally, a bone strip (SF5467, G1/48, Period 4.2, not illustrated) found residually in fills of the boundary ditch of St John's cemetery may be a fragment of a comb connecting plate, although it lacks tooth cutting marks. The other fragments came from deposits dating to immediately after the Conquest and are described further in Chapter 5.III.

Late Saxon single-sided composite combs consist of separate tooth plates held together between two riveted connecting plates. The rivet holes often occur at the ends of two plates, resulting in semi-circular holes here (as on SF5607). The connecting plates are plano-convex in section, with slightly curved backs and are generally decorated, either with incised linear or occasionally ring-and-dot ornament (for example SF6657 and 5701). This type of comb is well known from 10th–12th-century deposits in Norwich and elsewhere. Examples are known in Late Saxon levels at Thetford (Rogerson and Dallas 1984, 167, fig.186–7) and London (Pritchard 1991, 194–8, fig.3.76–3.77) and from Anglo-Scandinavian deposits at York (Waterman 1959, fig.16; MacGregor 1978, fig.29; Rogers 1993, fig.681). The decoration seen on SF5701 is identical to a comb from a 10th-century pit in London (Pritchard 1991, fig.3.76). Evidence for the manufacture of these combs was recovered from 11th–12th-century deposits at Greyfriars, Norwich just to the north-east of the castle (Huddle in Emery 2007). Further evidence for antler and horn working is discussed below.

- SF1085 Comb.** Antler tooth plate fragment from single-sided composite comb, six teeth remaining (4 per 10mm). Ends of teeth are broken off and surfaces of teeth are highly polished. Not illustrated.
90516, assigned to pit 90516, Period 1.3, G9/109
- SF5467 Strip.** Bone strip fragment, of slightly plano-convex section with incised dot-in-circle decoration, tapering at one end, with iron rivet towards thin end.
11268, fill of cemetery boundary ditch 10769, Period 4.2, G1/48
- SF5607 Comb.** Antler tooth plate from single-sided composite comb, with seven teeth (5 per 10mm), three of which have broken off. 'Beading' visible on remaining teeth. Iron stained rivet holes at both ends. Not illustrated.
40074, fill of pit 40075, Period 1.3, G2/51
- SF5701 Comb.** Antler connecting plate fragment from single-sided composite comb, of plano-convex section, tapering towards end; back slightly curved. tooth cutting marks on base and two closely set iron rivets towards end. decorated at the end with incised parallel lines.
40074, fill of pit 40075, Period 1.3, G2/51
- SF6657 Strip.** Antler strip fragment, of slightly plano-convex section, with incised dot-in-ring decoration. Distorted by fire. Not illustrated.
22435, fill of post-hole 22411, sunken-featured Building 25, Period 1.4, G22/155

Bone side-plates for horn combs

by Julia Huddle
(Fig.4.69)

A pair of horn comb side-plates made from bone were recovered from fills of a sunken featured building in Area 22 (SF6630, not illustrated) and another from a 10th–11th-century deep refuse pit in Area 9 (SF1079). One other possible side-plate fragment was recovered from a mid 14th–15th-century quarry (SF6151, G9/81, Period 5.1, not illustrated) and if correctly identified is residual.

Horn rarely survives the archaeological conditions and therefore generally all that remains of these combs

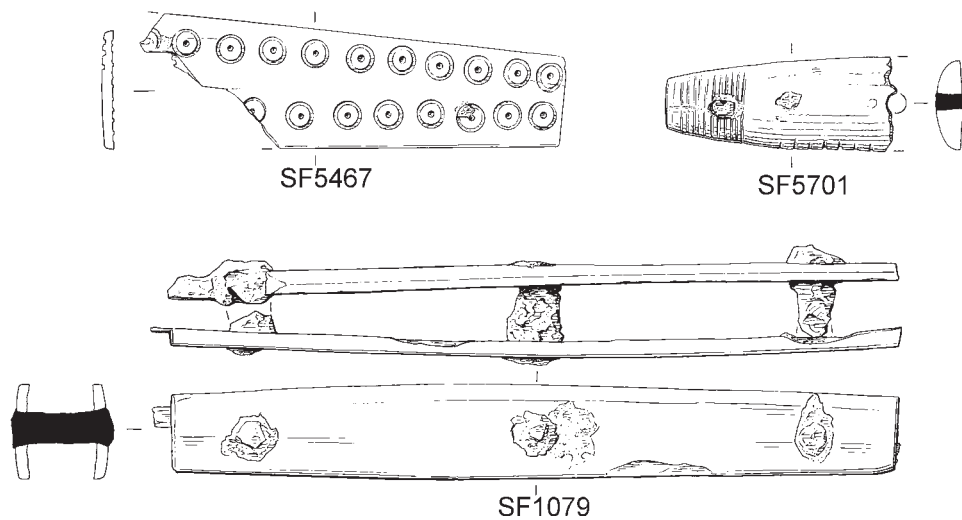


Figure 4.69 Antler combs (SF5467 & 5701); bone side plates for horn comb (SF1079). Scale 1:1

are the bone side plates and iron rivets. Occasionally these side plates are found with saw marks along their edges, left from cutting the teeth, as with a pair from Bishopgate, Norwich (Margeson 1993, 66, fig.33 no. 412). However, like those from Castle Mall, many of the excavated examples lack the tooth cutting marks and as a result have in the past been unidentified (Pritchard 1991, 199). See for example those recovered from Late Saxon contexts at Thetford (Rogerson and Dallas 1984, 167, fig.188), where they were unidentified.

Most illustrated examples of these side-plates, together with those from Castle Mall, have been partially cut each end with a saw (or knife) using a straight edge and finally snapped off, leaving a small burr along the lower edge. No attempt has been made to round off the edges and this would suggest these are rather low quality combs.

Six bone strip fragments three of which are perforated (SF6301, not illustrated), suggesting the manufacture of combs, were found in pre-Conquest deposits (with considerably more from the immediately post-Conquest period; see Chapter 5 for illustrated examples). Double-sided combs, made of horn with bone side-plates cut from split animal rib and attached by two or three iron rivets, are known in London from 10th–12th-century deposits. Two well preserved combs of this type, with much of the horn surviving, were recovered there, one from a 10th-century pit at Milk Street (Pritchard 1991, 199) the other from Queen Victoria Street (MacGregor 1985, 95). Further discussion of comb manufacture is given in Chapter 13.

SF1079 Comb fragment. Pair of bone side-plates with three iron rivets. Domestic animal rib. 90469, fill of pit 90504, Period 1.2, G9/109

SF6630 Comb fragment. Pair of bone side-plates with three iron rivets, one side-plate is broken. Domestic animal rib. Not illustrated. 22427, post-hole 22403 within sunken-featured Building 25, Period 1.4, G22/155

SF6151 Bone strip fragment, with iron rivet at one end. Domestic animal rib. L: 38mm, W: 14mm. Not illustrated 91066, fill of quarry pit 91045, Period 5.1, G9/81

SF6301 Bone strips. Incomplete bone strips x 6; three are perforated and broken on or near the holes. Mid-sized mammal ribs. Not illustrated. 91781, external dump, Period 1.3, G9/40

Furnishings and Household Equipment

Pottery

by Irena Lentowicz
(Figs 4.70–4.93)

Introduction and quantification

A total of 32,517 sherds of pottery weighing 237.330kg was recovered from contexts assigned to Period 1, which constitutes almost 25.0% of the site assemblage (see note relating to dating the assemblage and specifically ceramics from cemeteries below). No features of Late Saxon date were recorded at Golden Ball Street. Most of the Anglo-Saxon assemblage dates to the 10th and 11th centuries, although a small quantity of earlier material was present. The period assemblage is dominated by Late Saxon rather than early medieval ceramics (see Table 4.7 below), but the latter does contribute a persistent, if small, presence in many group assemblages. There is a small residual element, and a larger quantity of intrusive pottery; the presence of later intrusive ceramics can be explained by later activity overlying these contexts.

Fabrics and forms

Early and Middle Saxon

The earliest post-Roman pottery recovered comprised five sherds of possible Early Saxon ware, four of which occurred residually in the same early to mid 11th-century pit fill in Area 9 (pit 90516, Open Area 8). Middle Saxon Ipswich-type ware was slightly more numerous (17 sherds; 0.175kg). Most came from Late Saxon deposits (9 sherds), while the remainder was redeposited in lesser amounts in each of the other periods from features across the site. All but two of the sherds from Period 1 were found in features in Area 21, relatively close to the displaced Middle Saxon cemetery (Cemetery 2; see Fig.4.10). The others came from Area 1 and included one fragment from a grave in St John's Cemetery (Cemetery 4). Fragments of two jars were the only forms identifiable and the group included two fragments of Ipswich pimply ware. Prior to 1987 only fifteen sherds of Ipswich-type

<i>Fabric</i>	<i>Qty</i>	<i>Wt</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	23	0.181	<0.1	<0.1
TTW	29,571	219.773	90.9	92.6
NEOT	256	2.973	0.8	1.2
TTW/EMW Transitional ware	18	0.328	<0.1	0.1
Stamford ware (Fabric A)	7	0.064	<0.1	<0.1
Pingsdorf-type ware	6	0.040	<0.1	<0.1
EMW	1,499	6.679	4.6	2.8
EMW/LMU	24	0.089	0.1	<0.1
EMSW	886	4.721	2.7	2.0
EMSSW	15	0.076	<0.1	<0.1
YTW	54	0.357	0.2	0.1
Stamford ware (Fabric B)	4	0.026	<0.1	<0.1
Misc. import	4	0.278	<0.1	0.1
Intrusive	141	1.666	0.4	0.7
Unidentified	7	0.071	<0.1	<0.1
Total	32,517	237.330		

Table 4.7 Quantity and weight of Period 1 pottery by fabric

ware had been recovered from the 'Needham' area (Atkin 1993, 11), while excavations at Greyfriars to the north-east added thirty-six sherds (Lentowicz in Emery 2007) to the corpus. See Chapter 4.VI for wider discussion, as well as comments on the transition between Ipswich-type and TTW in Chapter 14.

Thetford-type ware

Late Saxon and early medieval fabrics accounted for *c.*93% and *c.*5% of the period assemblage respectively. The principal fabric present was Thetford-type ware (TTW), which accounted for 92.6% of the period assemblage. Indeed 61.1% of the TTW recovered from the excavation came from contexts assigned to this phase, while a further 17.5% came from contexts assigned to Period 2. Although TTW forms a large proportion of many Norwich assemblages, it is rare that almost three-quarters of the excavated assemblage come from contemporary non-residual contexts. For example, from Greyfriars only 40% of the excavated TTW came from contemporary contexts (Lentowicz in Emery 2007).

A large number of rims were recorded from Period 1 at Castle Mall (2237 examples; 62.1% of the total 3604 TTW rims recovered); Dallas' vessel form and rim typology was used to classify the material (Dallas 1984). Not surprisingly cooking pots and jars made up the vast proportion of these with 1,899 rims attributed to jars and 269 to cooking pots, accounting for 96.9% of Period 1 rims. Medium-sized jars/cooking pots (type AB) were most common with 1,725 examples recorded (77.1% of the total Period 1 rims), with 351 large-sized vessels (15.7%; type AC) and only forty-five small-sized rims (2.0%; type AA). There were no appreciable differences among the ratio of small:medium:large vessels between the sub-periods; indeed the proportion was remarkably similar. The exception was that smaller vessels made up a larger proportion of the assemblage in Period 1.4 (10% of Period 1.4 rims, while previously 1.9% and 1.8% of Periods 1.2 and 1.3 rims respectively) to the detriment of medium-sized rims.

Differences and developments in rim typology over Periods 1.2–1.4 were also studied (see also Goffin's comments on jar types below). Again there did not appear to be any significant difference between the assemblages. Just over half the rims could be assigned to more closely datable rim types (1,749 rims, 78.2% of Period 1 jar and cooking pot rims). Dallas's early putative 10th-century rim forms (types AA7, AA11, AB7, AB8 and AB1) (Dallas 1984, 125–6) along with earlier rims established at Fishergate (types AB15 and AB17) (Dallas 1994) accounted for 281 rims (16.0%). Eleventh-century rim forms (types AA1, AB1, AA2, AB2, AB4, AB9, AB10, AB11 and AB12) total 599 rims (34.2%) were present. The remaining 869 rims (49.6%) came from long-lived forms (types AA11, AB13, AB14, AC13 and AC14), although see comments on new evidence for the possible earlier (*i.e.* 10th-century) dating of type AB13 and AB14 discussed by Goffin below. There is little variation in proportions of these rim types between the sub-periods and, although some groups contain only earlier types, many were recovered alongside 11th-century fabrics such as EMW.

<i>Vessel type</i>	<i>Period 1.2</i>	<i>Period 1.3</i>	<i>Period 1.4</i>	<i>Total</i>
Jar/cooking pot	519	1,589	60	2,168
Storage jar	3	2	1	6
Handled jar	4	4	-	8
Multi-handled jar	3	7	-	10
Large jar	-	1	-	1
Ginger jar	-	4	6	10
Spouted pitcher	1	3	-	4
Bowl	11	8	3	22
Lamp	4	1	3	8
Crucible	1	-	-	1

Table 4.8 Number of TTW rims in Period 1

In contrast, the total number of other vessel forms represented by rims appeared small (see Table 4.8). The most common of these were bowls (twenty two rims) and a range of types was recorded. The most frequent single type were large, curve-sided bowls with expanded rims (type BB7 — eight examples), while fewer examples were recorded of bowls with flaring form, straight sides and plain rims (type BB2 — four examples), bowls with flaring form, straight sides and inturned rim (type BB3 — three examples) and angled bowls with a slight carination (type BB11 — two examples). Bowls with flaring forms, straight sides and expanded rims and small curve-sided bowls were less common (types BB4 and BB6 — one examples respectively).

Other utilitarian kitchen wares included storage jars (six rims recorded), handled jars (eight rims), multi-handled jars (ten rims) and a large jar (one rim). However,

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	1	0.002	<0.1	<0.1
TTW	7,885	74.488	86.9	92.2
NEOT	87	1.206	0.9	1.5
TTW/EMW Transitional ware	1	0.034	<0.1	<0.1
Stamford ware (Fabric A)	3	0.024	<0.1	<0.1
Pingsdorf-type ware	3	0.010	<0.1	<0.1
EMW	376	0.869	4.2	1.1
EMW/LMU	6	0.052	0.1	0.1
EMSW	673	3.151	7.4	3.9
YTW	3	0.015	<0.1	<0.1
Stamford ware (Fabric B)	3	0.004	<0.1	<0.1
Misc, import	2	0.228	<0.1	0.3
Intrusive	26	0.690	0.3	0.8
Total	9,069	80.773		

Table 4.9 Quantity and weight of pottery by fabric in Period 1.2

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	13	0.130	<0.1	0.1
TTW	20,664	137.850	94.4	94.1
NEOT	153	1.664	0.7	1.1
Stamford ware (Fabric A)	1	0.002	<0.1	<0.1
Pingsdorf-type ware	3	0.030	<0.1	<0.1
Flemish Blue-grey ware	2	0.050	<0.1	<0.1
EMW	756	4.305	3.5	2.9
EMW/LMU	2	0.008	<0.1	<0.1
EMSW	183	1.398	0.9	0.9
EMSSW	9	0.061	<0.1	<0.1
YTW	20	0.134	0.1	0.1
Stamford ware (Fabric B)	4	0.060	<0.1	<0.1
Andenne-type ware	2	0.008	<0.1	<0.1
Intrusive	61	0.689	0.3	0.5
Unidentified	7	0.075	<0.1	<0.1
Total	20,880	146.194		

Table 4.10 Quantity and weight of pottery by fabric in Period 1.3

this does not represent the total number of such vessels recovered on the site, as body sherds, handles and bases represented many more vessels. The thumbled strips applied to the body of the vessel, not only for decorative purposes but also to add strength, identified sherds from storage jars. Fragments of handles could have come from single- or multi-handled jars. Large bases, with diameters in excess of 20cm would probably also have come from these larger vessels.

More specialised vessels such as spouted pitchers and ‘ginger jars’ were also represented by rims. Three spouted pitcher rims were recovered from Periods 1 and 2, although again a number of handles may be from these. Rims from ‘ginger jars’ were also noted; though these are not a very common TTW form, they do occur in small numbers on many Norwich sites. Ten rims were recovered and came from Periods 1.3 and 1.4.

Other forms were found in much smaller quantity with eight lamp rims recorded and a single possible crucible rim. However, as with storage jars, both lamps and crucibles were better represented by other diagnostic sherds. In the case of pedestal lamps this was the central pedestal section, while four additional crucibles were identified by the presence of residues on the surface of sherds (see Chapter 13, Table 13.21).

St Neots-type ware

While TTW dominated the period assemblage, other Late Saxon pottery recovered was represented by two regional imports of coarse kitchenwares. The most common of these was St Neots-type ware (NEOT), and made up 1.2% of the period assemblage. A high proportion of the NEOT came from contemporary contexts (51.9% of all NEOT came from Period 1, and 18.6% from Period 2). Forms recovered from Period 1 included jars with everted rims (two rims), everted rims expanded to a wedge (five rims), everted rims tapering to a point (one rim) and upright, lid-seated rim (two rims). A number of bowls were also represented by rims from eight vessels; the majority of these were from deep bowls with inturned rims, while one rim came from a smaller straight-sided vessel with

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	7	0.041	0.6	0.5
TTW	1,022	7.750	65.3	74.9
NEOT	16	0.103	1.0	1.0
TTW/EMW Transitional ware	16	0.237	1.0	2.3
EMW	367	1.505	23.6	14.6
EMW/LMU	16	0.029	1.1	0.3
EMSW	30	0.172	1.9	1.7
EMSSW	6	0.015	0.4	0.1
YTW	31	0.208	2.0	2.0
Intrusive	52	0.283	1.1	0.8
Unidentified	1	0.002	0.1	<0.1
Total	1,564	10.345		

Table 4.11 Quantity and weight of pottery by fabric in Period 1.4

an upright rim. There do not appear to be any significant differences between the rims recovered from individual sub-periods. Bowls were recovered from Period 1.2 and 1.3 contexts; and although only everted rims and everted rims expanded to a wedge-shape came from Period 1.2 with the more varied rim profiles from Period 1.3, the total number of rims recovered is too small to sustain statistical validity.

Stamford ware (Fabrics A and B)

Stamford ware (Fabric A) was represented in this period only by body sherds and by a single base sherd; many of the sherds were small in size. The base came from a small sagging based vessel, possibly a crucible (Kilmurray form 16). A small number of sherds of the later, early medieval Stamford ware fabric (Fabric B), was also recovered in this period. Again no rims were recorded and the fabric is represented by body sherds only.

Early medieval wares

Early medieval wares accounted for only c.5% of the period assemblage. Of these fabrics, Early Medieval ware (EMW) was the most common and almost a quarter (14.4%) of the total EMW assemblage was recovered from Period 1. In Period 1.2 the fabric made up 1.1% of the assemblage, while in Period 1.3 this increased to 2.9%; then in Period 1.4 the proportion jumped to 14.5%.

Of the 64 EMW rims recorded those from cooking pots and jar rims were more common, with small type J1 vessels (twenty two examples) more numerous than medium type J2 ones (eight examples). Rims were subdivided according to profile; simple everted rims (types J1b and J2b) were most frequent (seven and fifteen rims respectively). While simple upright rims were equally common, smaller jars were more numerous than medium-sized rims (types J1a — twelve rims, and J2a — two rims). Three jars with everted rims coming to a point (type J2c) were recorded from Period 1.4. This was the only significant clustering identified during the analysis of and comparison between the rim types across the three sub-periods; it would appear that these latter rims were a mid to late 11th-century development.

Significantly a large number of 'ginger jars' were also recorded, coming from Periods 1.3 and 1.4 (twenty-three rims) rather than from Period 1.2 (although any circularity of argument should be avoided here). The majority came from 'ginger jars' with upright or slightly everted rims (type G2 — ten examples), though plain 'ginger jar' rims were also common (type G1 — seven rims) and five 'ginger jars' had an internal bead (type G3); the remaining rim could not be allocated to a type. Though 'ginger jars' are an established EMW form, it is unusual to find them dominating the repertoire; for example, at Greyfriars (Lentowicz in Emery 2007) these vessels made up 15% of recorded rims compared to 34.3% of Castle Mall EMW rims.

Other EMW rims included a single bowl rim, from a large vessel with a hammer-head rim (type B2j).

Early Medieval Sandwich ware

Of other early medieval fabrics only Early Medieval Sandwich ware (EMSW) was recovered in any quantity, 4.721kg, 2.0% of the period assemblage. As with other Late Saxon/early medieval fabrics, much of the EMSW

assemblage was recovered from Periods 1 and 2 (41.7% and 19.0% respectively). EMSW is more common than EMW in Period 1.2, but not in Periods 1.3 and 1.4. EMSW is thought to be the early medieval version of TTW; it was not as well fired and is consequently often noted as abraded. This theory is reflected in the range of forms and rim types recorded; they tend to parallel TTW forms.

Just over half of the 120 EMSW rims recovered came from this period (fifty-three rims). Along with a single lamp rim fragment, the only other forms represented by rims were jars and cooking pots. Medium size rims were much more common (type AB, forty rims), with only twelve larger vessels (type AC) recorded. Though a range of rim types was recorded, long-lived types AB/AC13 and AB/AC14 were most common (twelve/five and twelve/four examples respectively); of other rims these were predominantly later 11th-century (types AB2, AB9, AB10, AB11 and AB12) though single examples of earlier, 10th-century types AB7 and AB8 were also present.

Yarmouth-type ware

Less than half a kilogram (0.342kg) of Yarmouth-type ware (YTW) was recovered from Period 1, just over 10% of the ware. The fabric was present in small quantity in Period 1.2, and increased in Periods 1.3 and 1.4. The majority of the material was body sherds, but three rims all from jars were recorded, one with a distinct neck-body join and rim everted to a point (type Ya) and two jars with everted rims expanded to a wedge shape (type Yc). The quantity of YTW did increase in Period 2 and falls only slightly in Period 3, before decreasing dramatically in subsequent periods, and it is probable that though it occurs in small amounts in the 11th century the main *floruit* of the ware is the late 11th to 12th century (see further comments in Chapter 13).

Imports

The only fine wares recovered from this period were continental imports, made up mostly of Pingsdorf-type ware recovered from Periods 1.2 and 1.3. Again, these were mainly body sherds but a frilled base from a jar was also recorded. Four sherds from an as yet unidentified continental import were also recovered, again represented by non-diagnostic body sherds. Other Continental imports attributable to the Late Saxon period were found residually in later periods, including small quantities of Bardorf ware and Blue-grey ware (Paffrath).

Stratigraphic distribution

Assemblages are detailed by group in Chapter 4.II and Appendix 6, where details of illustrated items can also be found.

Period 1.2

(Figs 4.71, 4.75–4.76; Figs 4.70, 4.72–4.74 and 4.77 on CD)

Thirty four percent of the pottery allocated to Period 1 came from this sub-period, 9,069 sherds weighing 80.773kg (Table 4.9). The assemblage was made up mostly of TTW with small quantities of other Late Saxon wares NEOT and Stamford ware (Fabric A). Early medieval wares are dominated by EMSW, while EMW accounted for only a small proportion of the material.

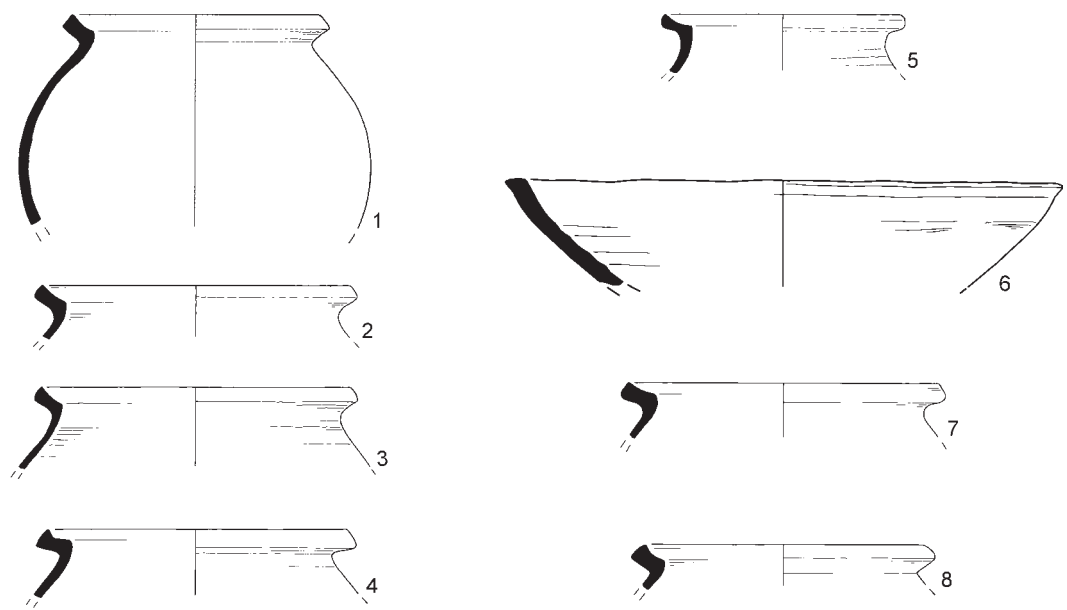


Figure 4.71 Pottery from oven/kiln? 22285 in Open Area 5 (G22/134). Scale 1:4

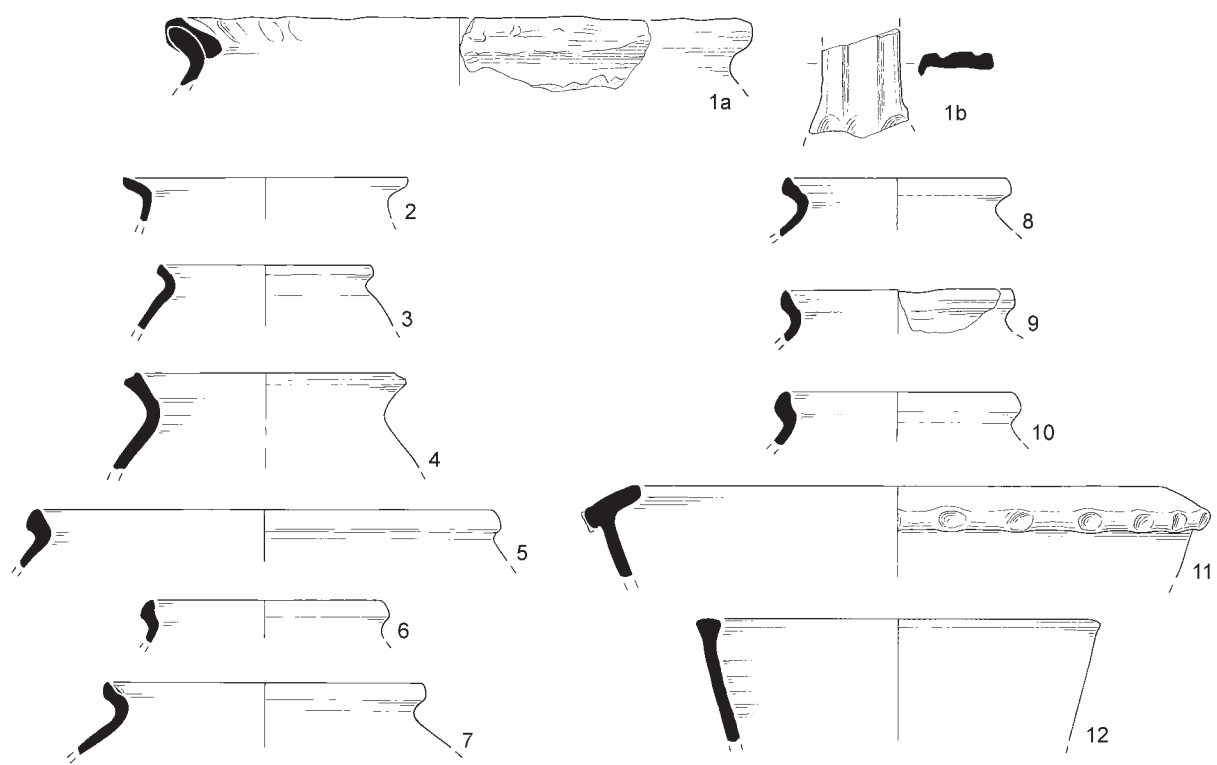


Figure 4.75 Pottery from Building 12 (G9/48). Scale 1:4

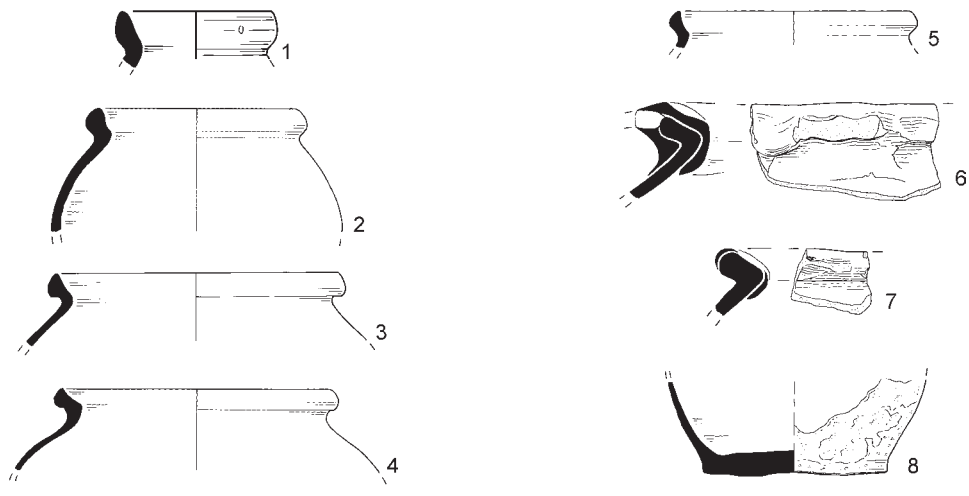


Figure 4.76 Pottery from pit 90504/90407, Open Area 8 (G9/109). Scale 1:4

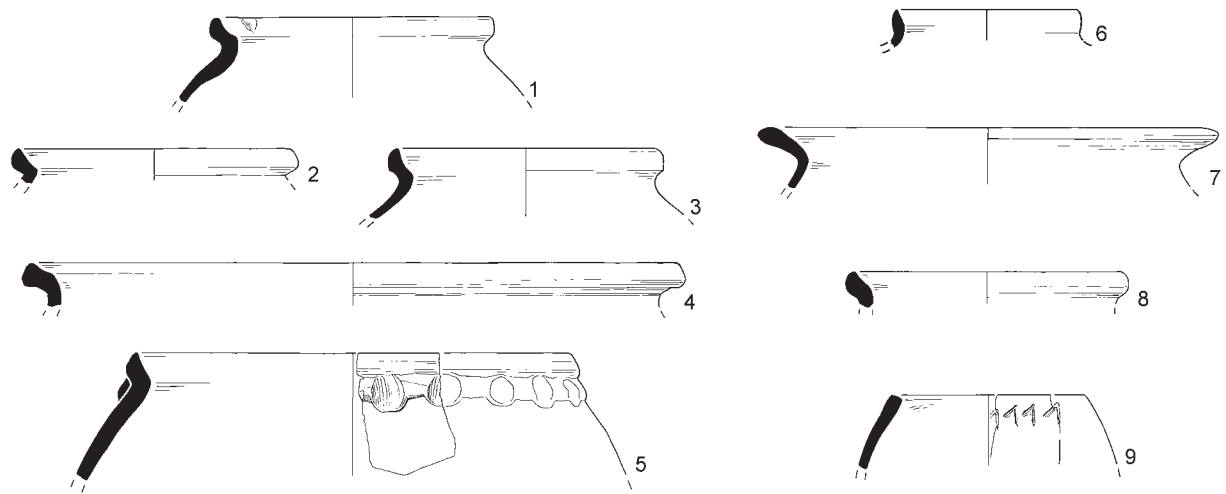


Figure 4.82 Pottery from pits 40290 and 40183, Open Area 4 (G2/8). Scale 1:4

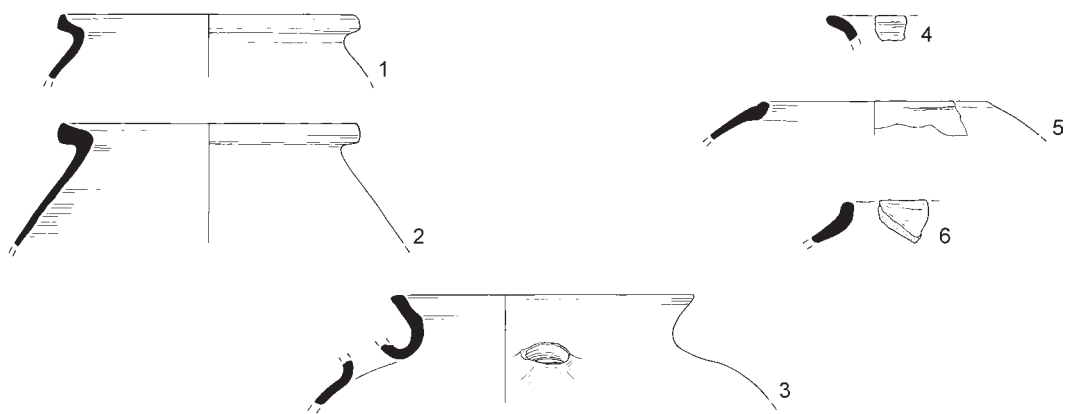


Figure 4.84 Pottery from pit 22287, Open Area 6 (G22/140). Scale 1:4

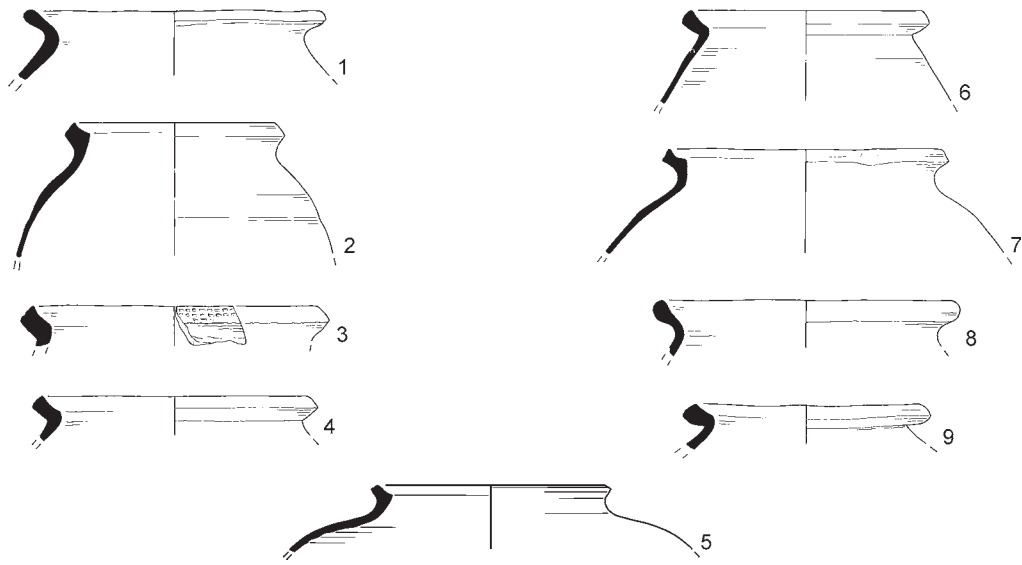


Figure 4.85 Pottery waste assemblage from pit 90989, Open Area 7 (G9/79). Scale 1:4

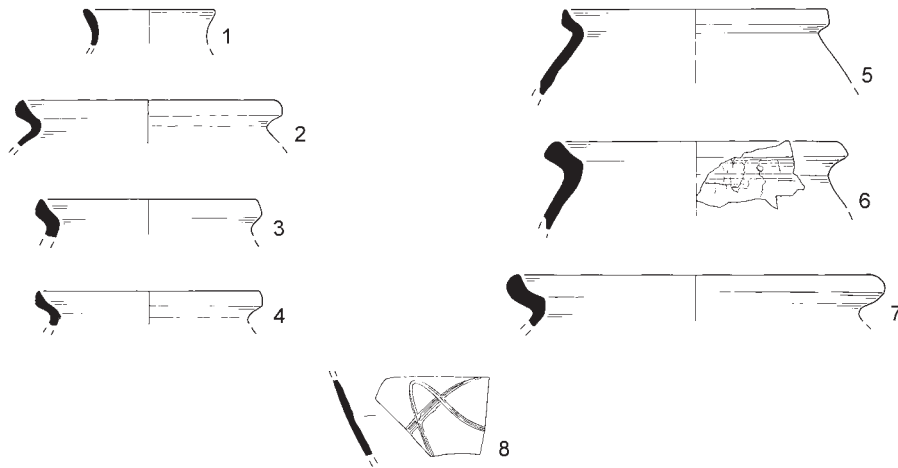


Figure 4.87 Pottery from pit 91816, Open Area 16 (G9/39). Scale 1:4

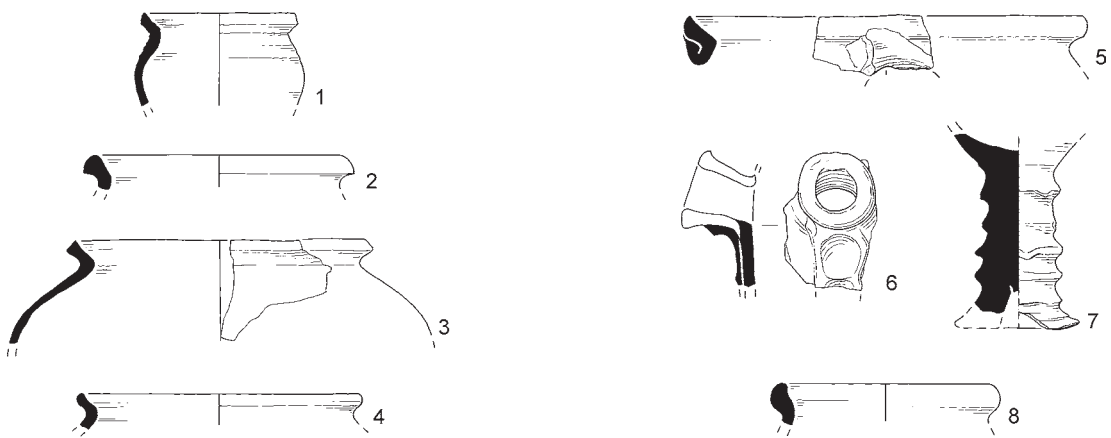


Figure 4.88 Pottery from pit fills 91781 & 91779, Open Area 16 (G9/40). Scale 1:4

Other utilitarian fabrics present include a very few sherds of YTW, while fine wares were represented by sherds of Stamford ware (Fabric B) and Pingsdorf-type ware. Of particular note was the assemblage from a possible kiln or drying oven (22285; Fig.4.71; Plate 4.7; see Goffin below).

Period 1.3

(Figs 4.82–4.85 and 4.87–4.88; Figs 4.78–4.81 and 4.86 on CD)

Over 61% of the pottery from Period 1 came from contexts allocated to Period 1.3, over 21,000 sherds weighing c 146kg (Table 4.10). Of particular significance from this sub-period was a pit filled with wasters and related ceramic material (pit 90989; Fig.4.85; Plates 4.18–4.20; see Goffin below). During this phase TTW again dominated the assemblage slightly increasing its share of the total assemblage, while the proportion of NEOT dropped slightly. Early medieval wares continued to make up c 5% of the pottery but EMW became more common than EMSW. Other coarse wares are limited to a small presence of Stamford ware (Fabric A) although the quantity of YTW has increased. Fine wares were again represented by Stamford ware (Fabric B) and imported Pingsdorf-type ware, and a Flemish Blue Grey ware was introduced. While there was little change in the composition of the fabrics during this period, it was the introduction of a wider range of forms and rim types to the repertoire of TTW that characterised this period. This is especially true of the introduction of ‘ginger jar’ rims in both TTW and EMW.

Period 1.4

(Figs 4.89–4.93 on CD)

Only 4.3% of the Period 1 assemblage was allocated to this phase of pre- or post-Conquest activity, 1564 sherds of pottery weighing 10.345kg (Table 4.11). However, there was a marked change in the character of the assemblage. In the preceding sub-periods TTW made up over 90% of the assemblage, and early medieval wares were present but did not make up a significant proportion. In Period 1.4 the quantity of TTW fell significantly to account for only c.75% of the assemblage, with transitional and early medieval wares accounting for c.21% and YTW making its first impact.

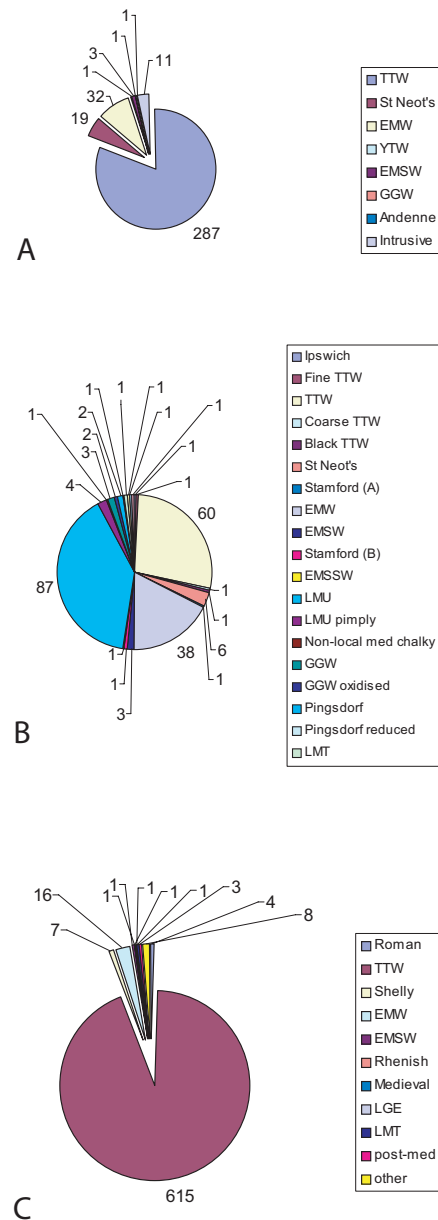
Note on ceramics from cemeteries by Elizabeth Shepherd Popescu (Fig.4.94)

The ceramic assemblages from each of the cemeteries excavated at the Castle Mall site have been detailed where appropriate in Chapter 4.II or Appendix 6, with the caveat that attempting to date a cemetery on the ceramics recovered from it is notoriously unreliable. Further comments on dating issues appear in Chapters 4.VI.

A broad comparison between the ceramics from the two Late Saxon (or in the case of St John’s, Saxo-Norman and later) groups and that excavated in the north-east bailey (Site 416N, Ayers 1985) is given in Fig.4.94. This immediately indicates the differences between the groups and, in particular, the very mixed character of the assemblage from St John’s (Cemetery 4). This latter cemetery had remained open for an extended period and had suffered both encroachment by urban development and disturbance from later burials. The other two ceme-

teries were both ‘sealed’ by the construction of the castle, accounting for the relatively low levels of intrusive material at both of them.

In summary, the cemetery beneath the north-east bailey was dated to the (late 10th) to 11th century on the basis of the pottery (see further comments in Chapter 4.VI). At Castle Mall, Cemetery 3 (Farmer’s Avenue; Fig.4.94) was assigned a broad ceramic date of late 10th- to mid 11th-century, although radiocarbon dates indicate a late 9th- to early 11th-century range (Bayliss, Chapter 4.IV). At Cemetery 4 (St John’s), the situation was less certain given the mixed character of the assemblage, but the general date range of the pottery recovered from graves is late 12th- to 13th-century, although obviously the date



A – Castle Mall, Cemetery 3 (Farmer’s Ave, Period 1.3)
 B – Castle Mall, Cemetery 4 (St John at the Castle Gate, de Berstrete/Timberhill)
 C – Cemetery at North-East Bailey/Site 416N

Figure 4.94 Pottery assemblages from Late Saxon cemeteries, by number of sherds

of individual contexts varies. Of note here was the range of TTW fabrics present, including small amounts of fine, coarse and black TTW as well as the common fabric. Initially, the cemetery was assigned to Period 4.1. In the light of the radiocarbon dating, however, which indicated a late 10th- to 11th-century date for the numerous skeletons measured, the phasing was revised to Period 1.4.⁶ As detailed by Bayliss in Chapter 4.IV, the foundation of the cemetery may either pre- or post-date the Conquest.

Discussion and conclusions

by Richenda Goffin, with Elizabeth Shepherd Popescu (Figs.4.95 and 4.96)

Over a quarter of all the pottery from the entire Castle Mall excavation was recovered from Period 1 (32,517 fragments weighing 237.330 kg). A large proportion (92.7%) of the period assemblage comprised TTW (29,589 sherds; 220.107kg). This collective term is used to describe the Late Saxon/Early Norman coarsewares which were produced at a number of urban centres including Norwich and Thetford, and in addition rural production sites such as Langhale, Grimston and Bircham. The date of the introduction of this major group of Late Saxon fabrics and the chronologies of individual production centres still remains a matter of debate. While it has been suggested that TTW was an innovation of potters from the Rhineland in the wake of the Danish Conquest of c.870 (summarised by Campbell 1975, 5), Hurst argued that the fabric pre-dated the Scandinavian invasions, suggesting instead that the growth of the industry in the late 9th and early 10th centuries was promoted by the new settlers (Hurst 1976, 314–8). At Thetford, for example, it has been postulated that the burgeoning pottery industry of the 10th century could have been a direct result of the economic advantage given to the town by the Danish settlement (Margeson 1996, 56).

In spite of the limitations provided by a lack of external dating for the introduction of this fabric, the Castle Mall site has provided a valuable opportunity to examine the forms present with a view to investigating any relative typological development, using the chronology of Thetford ware forms initially established from the excavations at Thetford and subsequent work on other assemblages (Dallas 1984; Anderson 2004). Where possible, closely dated objects were considered alongside the ceramic sequence.

At Castle Mall, the presence of features which were demonstrably of pre-Conquest date and those which were clearly later offered further scope for examining the development of TTW, a fabric which is not only widely distributed within East Anglia, but which also reached other areas of the country. As a cautionary note, however, it should be emphasised that many of the pits and other features allocated to Period 1 and the sub-periods within it were attributed on the basis of the information provided by the ceramic specialist, often in the absence of stratigraphic relationships supplemented by absolute dating. The danger of perpetuating dating hypotheses based on subjective ceramic chronologies is well-known. A further factor which may contribute to erroneous statistics is the subjectivity inherent in the categorisation of rim shapes, particularly if the type series is comparatively elaborate. Finally, it should be stated that many of the Thetford-type wares in Norwich are likely to have been made locally rather than in Thetford and it should not be assumed that

the development in forms which are detectable in the groups studied in Thetford will necessarily apply to their Norwich counterparts.

Following the major work by Dallas in establishing a type series and initial chronology for Thetford wares from excavations within the town, further studies in this area have been undertaken subsequently. In particular, the excavation at Mill Lane provided an opportunity, although limited, to re-evaluate the initial typology (Anderson 2004). In addition, the study of the TTW from the kiln sites in Norwich (Jennings 1983, 74–92) provided significant additional information which is also directly relevant to the pottery from the Castle Mall excavations.

The assemblage from Mill Lane, Thetford included over 4,500 fragments of Thetford ware, accounting for c.80% of the pottery (Anderson 2004). This compares with 7,885 fragments of TTW recovered from Period 1.2 alone at the Castle Mall. In spite of the relatively large quantity of suitable pottery at Mill Lane, closer investigation of the stratigraphy and the pottery itself indicated that the amount of well-stratified diagnostic material was limited to sixteen groups of associated features. Given these circumstances therefore, the findings are provisional in their nature. With the Mill Lane assemblage, Anderson has re-examined the initial typology established by Dallas and suggested some modifications and refinements. Her analysis also included a consideration of other fabric types such as Stamford, St Neots-type and Early medieval ware. Her investigations are limited to the jar type series, since there were insufficient numbers of other forms to provide meaningful observations. Broadly speaking, the modified rim sequence created by Anderson for the Mill Lane material in Thetford does confirm the main typological pattern suggested by Dallas for Thetford ware jars, and also that of the Norwich TTW kilns (Jennings 1983, 74–87). However, Anderson suggests that certain rim types, previously considered as being long-lived may perhaps be restricted to a narrower timescale, although it is likely that different rim types co-existed for some time in what was an essentially conservative industry.

At Castle Mall, a total of 8 small jar rims (diameters c.8–11cm), 231 medium jar rims (diameters 12–15cm) and 34 large jar rims (diameter c.16cm+) were recovered from Period 1.2 features (Figs.4.95 and 4.96). The large assemblage of pottery from the kiln/drying oven and associated pits (see below) were not included in this examination. Since the jars are sometimes associated with later (*i.e.* 11th-century) fabrics such as EMW and EMSW, a proportion of them are likely to be residual even within Period 1.2. The value of the rim analysis in these circumstances is therefore limited. The jars were catalogued by rim type following the typology of Dallas, and are summarised in two figures (Fig.4.95 and 4.96). The most frequent rim types for medium-sized TTW jars were identified as type AB14 (55 rims) and type AB13 (46 rims), followed by AB6 (26 rims), AB11 (21 rims) and AB7 (20 rims). For the large jars type AC14 was the most frequent form, with twelve examples.

The Period 1.2 TTW rim types from Castle Mall were compared with the provisional modifications to the typology suggested by Anderson on the material from Mill Lane, with encouraging results. The AB13 and 14 types which are 'everted, with sides expanded to wedge' shapes, both with internal hollow, have both been placed

in a new simplified category of 'square wedge', with a suggested 10th-century date. Type AB6 'everted, sides expanded to wedge' with no internal hollow is also described as a square wedge type of 10th-century date. Type AB11 'everted, sides parallel or slightly divergent' with internal hollow has been described as 'parallel sided' with a suggested date range of the mid 10th to early 11th century. Type AB7 'everted, triangular section' with hollow, has been described by Anderson as 'triangular, short wedge' with a suggested date of 10th century. By far the most frequent large jar rim type found was AC14, which, Anderson proposes, is also of the square wedge type, also attributable to the 10th century. Although some of the jars are residual and have been redeposited into later features, it should also be noted that there is little indication of the presence of plain flared rims (Type AA-AC1) which Dallas and other authors have identified as representing the later, 11th-century rim type, and which are also produced in Early Medieval ware.

Although other TTW form types were identified in the Period 1.2 assemblage, they are present only in small quantities and are not suitable for comparative analysis. There are 9 bowl rims, five of which were identified as type B7 'large curve-sided, with expanded rim'. The others comprise BB2 (2 examples), and BB3 and BB4 (1 each).

A noteworthy ceramic assemblage was recovered from a group of features which included a possible kiln structure 22285 (G22/134) and associated pits in Period 1.2 (see Linford, 'Archaeomagnetic Dating' below). The ceramics present appear to be mixed in character (see discussion by Lentowicz in Chapter 4.II). Although a large quantity of TTW was associated with the kiln-like feature, only a small proportion of this pottery is clearly wasters or seconds. However the number of medium sized jars is high, and the frequency of this form may be indicative of mass production. Some of the pottery however had clearly been used, since it was sooted, and some sherds showed abrasion, indicative of redeposition. The presence of other fabrics in small quantities does support the theory that the material was mixed in its makeup, and that it was dumped. The TTW may represent material discarded from a production site, which may have been in the vicinity. Additional evidence for the disposal of waste products was identified in Period 1.3 (pit 90989). Many examples of wasters and misfired TTW sherds were recovered from this pit and the group was similar in nature to that present in the putative kiln, including sherds which were sooted or abraded and also small quantities of other early medieval fabrics. A Late Saxon pit excavated within the north-east bailey of the castle in 1979 may also have contained demolition material from a kiln, or even have been the remains of the structure itself (Ayers 1985, 7). The primary fills of the straight-sided pit contained dense ash and burnt wattle and daub, although waster sherds were not present.

Most of the archaeological and historical evidence for TTW production in Norwich has so far indicated that the industry was concentrated on the Pottergate/Bedford Street area, beyond the boundary of the Late Saxon burh, a pattern which may have shifted westwards after the Norman Conquest (Atkin *et al* 1985, 65). No other kiln sites have yet been identified to suggest that production was taking place in other areas of the city, although a number of intriguing findspots of waster mate-

rial recorded from the early 20th century to the present day suggest that the industry may have been more widely spread. These include observations made in 1905 when the Shirehall was extended (Tench 1910, 42-45). Several deposits of possible kiln debris were noted, consisting of heated stones and clay, with burnt wood and a quantity of broken pottery which was initially considered to be Roman, but from the description is likely to be TTW (see Chapter 4.I). The forms described may be lamp or small bowl fragments, together with jars and handles. These deposits were apparently sealed by the Norman motte itself, which is now known to have been constructed in two main phases (see Chapters 5, 6 and 12): it is probably to the second phase of mound construction (c.1094 to the 1120s) that this particular part of the motte dates. Recent archaeological work at the Shirehall has revealed further ceramic evidence of a similar nature (Goffin in prep.c). Here, pottery recovered from redeposited material forming the second phase of the mound included a number of TTW waster jars. In addition, a considerable quantity of apparently unused and sometimes overfired specialised vessels which are either lamps or small bowls/cups, and a quantity of 'ginger' jars were present. The pottery appears to represent the discarded remnants of products of the later TTW industry, with many vessels being transitional in appearance and closely related to early medieval wares.

In addition to the above, miscellaneous waster fragments of TTW are routinely recovered from watching briefs and excavations in Norwich. Among this material are two complete jars from the Market Place in Norwich (Jope 1952, 307-8), as well as a jar from the excavations at Greyfriars to the east of the known kiln sites (Site 845N; Lentowicz in Emery 2007). As noted in Chapter 13, waster sherds have been recorded both scattered across the Castle Mall excavation and at other sites in the immediate vicinity (see Chapter 13 and Figs 13.2 and 13.10). It may be that further kiln sites were located in the area on which the Castle Mound was built which were in operation not long before the construction of the castle itself. Alternatively it may be that this waste material was removed from the Pottergate/Bedford Street area and dumped here. It is hoped that further analysis of the pottery recovered from the recent excavations and comparison with the pottery from the original Edwardian excavation will prove to be profitable.

In addition to TTW, small quantities of other fabrics are present in Period 1 (see Table 4.7). Two hundred and fifty-six fragments of NEOT were identified, with a small quantity of Stamford Fabric type A (7 fragments). The remainder of the pottery consists of early medieval fabrics comprising EMW and EMSW, with a small quantity of YTW and Stamford ware (Fabric B). The imports are represented by Pingsdorf and Andenne-type wares, which together with four unidentified imports comprise 0.1% by weight of the total Period 1 assemblage.

Broadly speaking, the types of pottery present and their proportions are not dissimilar to those recovered from the early phases of other excavations in Norwich. Direct comparison between excavations is usually problematic, and often the site phasing does not cover the same period of time for both sites. Perhaps one of the noticeable features of the Castle Mall assemblage for Period 1 is the lack of TTW variants, such as Grimston Thetford-type ware (THETG), which is often present in

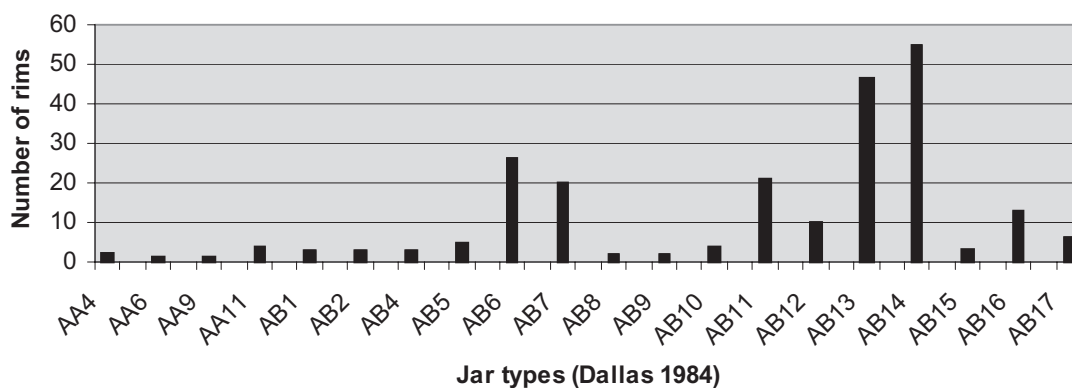


Figure 4.95 Small to medium jar Thetford-type ware jar forms in Period 1.2

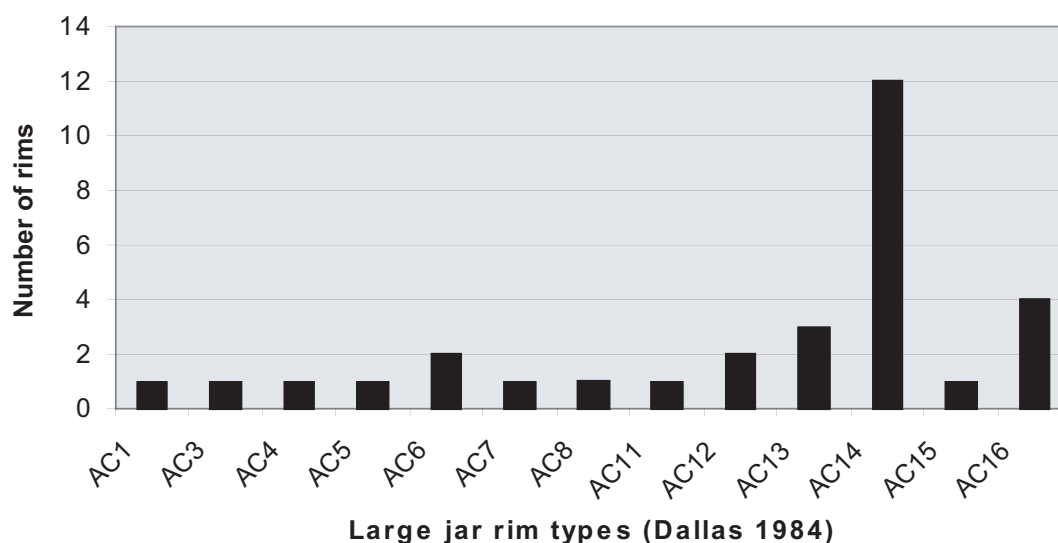


Figure 4.96 Large Thetford-type jar forms in Period 1.2

small quantities from other excavations in Norwich, for example at Dragon Hall (Anderson 2005). There is also a comparatively high proportion of EMSW, which made up 2.0% by weight of the Period 1 assemblage. St Neots-type ware is often found in some quantity in the early levels of Norwich sites, associated with TTW. At Greyfriars for example, NEOT formed 0.9% of the Period 1 assemblage (10th to 11th century), compared to 1.3% at Castle Mall (Lentowicz in Emery 2007). At a nearby small site in King Street, the Period 1 pottery (10th to 11th century) contained several substantial fragments of St Neots-type ware which comprised 7.8% of the Period 1 assemblage by weight, although only 2.04% by sherd count (Site 26460N; Goffin, in Shelley and Brennan forthcoming). At Dragon Hall, also on King Street, only a single fragment of St Neots-type ware was found in Period 1 levels (late 10th to late 11th century) (Site 449N; Anderson 2005). At St Faith's Lane, St Neots-type ware made up 0.9% by weight of the Period 1 assemblage (10th to 11th century) (Blinkhorn, forthcoming a).

The small quantities of Andenne-type wares, Paffrath and Pingsdorf ware present in the Period 1 groups at Castle Mall are entirely consistent with the general pattern of imported wares for Late Saxon and early medi-

eval deposits in Norwich. At Dragon Hall, Pingsdorf ware made up 0.68% by weight of the Period 1 assemblage (late 10th to late 11th century), and Huy-type ware 0.39% by weight (49g and 28g respectively (Anderson 2005). At Greyfriars 2 fragments of Pingsdorf ware and 11 fragments of Andenne type ware made up 0.1% and 0.4% by weight of the Period 1 (10th to 11th century) pottery respectively (Lentowicz in Emery 2007). Sites in Norwich which are located nearer the river often have a higher quantity of early imports. An example of this is the waterfront site of Fishergate, where 10.6% by sherd count of the pottery from the whole site was imported and was almost exclusively of 8th- to 12th-century date (Dallas 1994, 22).

In conclusion, the Late Saxon ceramic assemblage from Castle Mall has assisted the ongoing refinement of regional ceramic sequences and has raised issues in relation to local pottery manufacture and ceramic chronologies, the latter particularly in relation to scientific dates. These are discussed further in Chapters 4.VI, 13 and 14.

Illustration Catalogue

Illustrated material is described by assemblage in the relevant period text (Chapter 4.II) or, for those illustrated on CD, in Appendix 6.

Period 1.2

Fig.4.70 on CD: Pitting in Hollow 1; pits 80568 and 80614 (G8/6, part)

- no.1 TTW, jar with everted rim with sides tapering (type AB4), Pit 80568, fill 80545
- no.2 TTW, cooking pot with everted rim with internal hollow, expanded to wedge shape (type AB13), Pit 80568, fill 80545
- no.3 TTW, jar with internal hollow and parallel sides (type AB11), Pit 80568, fill 80545
- no.4 NEOT cooking pot, with simple everted rim, Pit 80568, fill 80545
- no.5 NEOT, jar with simple everted wedge-shaped rim, Pit 80568, fill 80545
- no.6 TTW, cooking pot with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), Pit 80614, fill 80613
- no.7 TTW, cooking pot with everted rim, internal hollow and rounded edges (type AB16), Pit 80614, fill 80613

Fig.4.71: Oven/kiln? 22285, Open Area 5 (G22/134)

- no.1 TTW, jar with internal hollow, everted rim with parallel sides (type AB11), fill 22157
- no.2 TTW, jar with internal hollow, everted rim with parallel sides (type AB11), fill 22157
- no.3 TTW, jar with internal hollow and everted rim expanded to a wedge shape (type AB13), fill 22157
- no.4 TTW, jar with internal hollow and everted rim expanded to a degenerate wedge shape (type AB14), fill 22157
- no.5 TTW, jar with internal hollow, everted rim and rounded edges (type AB16), fill 22157
- no.6 TTW, bowl with flaring form, straight sides and plain rim (type BB2), 22157
- no.7 EMSW, jar with internal hollow and everted rim expanded to a wedge shape (type AB13), fill 22157
- no.8 EMSW, jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), fill 22157

Fig.4.72 on CD: Pits pre-dating Cemetery 3, Open Area 6 (G22/130)

- no.1 TTW, jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), Pit 22210, fill 22211
- no.2 TTW, jar with internal hollow, everted rim and parallel sides (type AB11), Sealing layer 22075
- no.3 TTW, jar with exaggerated hollow (type AB12), Sealing layer 22075
- no.4 TTW, large jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AC14), Sealing layer 22075
- no.5 TTW, jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), Sealing layer 22075
- no.6 TTW, jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), Sealing layer 22075

Fig.4.73 on CD: Pottery from pit 22015, Open Area 6 (G22/138)

- no.1 TTW cooking pot (type AB6), pit 22015
- no.2 TTW jar (type AB13), pit 22015

Fig.4.74 on CD: Pit 91074, Open Area 7 (G9/51)

- no.1 TTW, jar with everted rim, sides expanded to wedge shape (type AB6), fill 91703
- no.2 TTW, jar with internal hollow and triangular-section rim with developed exterior pendant (type AB8), fill 91703
- no.3 TTW, jar with internal hollow, everted rim with parallel sides (type AB11), fill 91083
- no.4 TTW, jar with internal hollow, everted rim with parallel sides (type AB11), fill 91073
- no.5 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 91073
- no.6 TTW, jar with internal hollow, everted rim expanded to degenerate wedge shape (type AB14), fill 91073

Fig.4.75: Sunken-featured Building 12 (G9/48)

- no.1 TTW, rim and handle from a multi-handled jar with everted rim with parallel sides (type AG6), mixed dump 91921
- no.2 TTW, jar with everted rim, sides parallel (type AB5), mixed dump 91921
- no.3 TTW, jar with everted rim, sides parallel (type AB5), mixed dump 91921
- no.4 TTW, jar with everted rim, sides expanded to wedge shape (type AB6), mixed dump 91921

- no.5 TTW, large jar with everted rim, sides expanded to wedge shape (type AC6), mixed dump 91924
- no.6 TTW, small jar with internal hollow and triangular-section rim (type AA7), ash deposit 91960
- no.7 TTW, large jar with internal hollow and triangular-section rim (type AC7), mixed dump 91924
- no.8 TTW, cooking pot with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), mixed dump 91924
- no.9 TTW, jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), mixed dump 91924
- no.10 TTW, jar with internal hollow and everted rim with elongated lip (type AB17), mixed dump 91921
- no.11 NEOT bowl with inturned rim and thumb external cordon, mixed dump 91921
- no.12 NEOT, straight-sided bowl with expanded rim, mixed dump 91921

Fig.4.76: Refuse pit 90504/90407, Open Area 8 (G9/109, part)

- no.1 TTW, jar with upright and internal hollow (type AB9), fill 90349
- no.2 TTW, jar with internal hollow and triangular-section rim (type AB7), fill 90349
- no.3 TTW, cooking pot with internal hollow and developed external pendant (type AB15), fill 90349
- no.4 TTW, jar with internal hollow, everted rim and rounded edges (type AB16), fill 90349
- no.5 TTW, cooking pot with internal hollow and everted rim, expanded to degenerate wedge shape (type AB14), fill 90349
- no.6 TTW, multi-handled jar with everted rim with sides parallel (type AG6), fill 90366
- no.7 TTW, multi-handled jar with internal hollow, everted rim with sides tapering (type AG9), fill 90366
- no.8 Continental import, base of a glazed jug, buff, micaceous fabric with common large quartz inclusions; orange-brown exterior surface, buff-orange interior, buff core. Glaze is copper rich, green-yellow and patchy; fill 90349

Fig.4.77 on CD: Lower fills of pit 46621, Open Area 10 (G46/2)

- no.1 TTW, cooking pot with plain, flared rim (type AB1), fill 46620
- no.2 TTW, cooking pot with internal hollow, everted rim and rounded edges (type AB16), fill 46620
- no.3 TTW (smooth variant), jar with internal hollow and everted rim with elongated lip (type AB17), fill 46437
- no.4 Pingsdorf jug base, with traces of red painted decoration, fill 46648

Period 1.3

Fig.4.78 on CD: Pitting in Hollow 1, pit 80549 (G8/6)

- no.1 TTW, jar with internal hollow, and developed external pendant (type AB14) and diamond rouletting on body, fill 80542
- no.2 TTW, jar with upright rim (type AB9), fill 80542

Fig.4.79 on CD: Fills of Hollow 1 (G5/64)

- no.1 TTW, jar with internal hollow, everted rim with parallel sides (type AB11), fill 50097
- no.2 TTW, jar with everted rim, internal hollow, expanded to a wedge shape (type AB13), fill 50089
- no.3 TTW, cooking pot with internal hollow, everted rim with a developed external pendant (type AB15), fill 50089
- no.4 EMW, 'ginger jar' with internal bead (type G3) and applied thumbled strip at rim, fill 50097

Fig.4.80 on CD: Pitting in Hollow 1, pit 47153 (G47/33)

- no.1 TTW, jar with everted rim, sides expanded to wedge shape (type AB6), fill 47090
- no.2 TTW, large cooking pot with internal hollow and upright rim (type AC9), fill 47090
- no.3 Coarse TTW, jar with internal hollow, everted rim with parallel sides (type AB11), fill 47090
- no.4 TTW, jar with exaggerated hollow (type AB12), fill 47090
- no.5 TTW, large cooking pot with internal hollow and everted rim, expanded to a wedge shape (type AC13) with diamond-rouletting decoration on the outer rim edge, fill 47090
- no.6 TTW, large cooking pot rim with internal hollow and everted rim expanded to a degenerate wedge shape (type AC14), fill 47090

no.7 TTW, handled jar with everted rim, sides tapering (type AE3), fill 47090

Fig.4.81 on CD: Pitting in Hollow 1, pits 50037 and 50094 (G5/10)

- no.1 TTW, jar with upright rim (type AB9), Pit 50037, fill 50066
- no.2 EMW, jar with simple everted rim (type J1b), Pit 50037, fill 50066
- no.3 TTW, jar with everted rim expanded to a wedge shape (type AB13), Pit 50094, fill 50093
- no.4 TTW, applied thumbed strip from a large storage jar, Pit 50094, fill 50093

Fig.4.82: Pits 40290 and 40183, Open Area 4 (G2/8, part)

- no.1 TTW, jar with triangular-section rim and internal hollow (type AB7), Pit 40290, fill 40289
- no.2 TTW, jar with triangular-section rim and internal hollow (type AB7), Pit 40290, fill 40289
- no.3 TTW, jar with triangular-section rim, internal hollow and developed exterior pendant (type AB8), Pit 40290, fill 40289
- no.4 TTW, large jar with everted rim with internal hollow, and slightly expanded to degenerate wedge shape (type AB14), Pit 40290, fill 40289
- no.5 TTW, storage jar with everted rim and applied clay strip at rim (type AF8), Pit 40290, fill 40289
- no.6 TTW, jar with everted rim with sides tapering (type AB4), Pit 40290, fill 40289
- no.7 EMW, jar with everted rim (type J2b), Pit 40290, fill 40289
- no.8 TTW, jar with triangular-section and internal hollow (type AB7), Pit 40183, fill 40184
- no.9 EMW, 'ginger jar' with upright rim (type G2) and incised decoration on body under rim, Pit 40183, fill 40184

Fig.4.83 on CD: Cemetery 3 (Farmer's Avenue, G1/10, 6/13 and 22/131)

- no.1 TTW, jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), grave 11666, fill 11629
- no.2 NEOT, jar with simple everted rim, grave 11666, fill 11629
- no.3 NEOT, bowl with upright rim, grave 11601, fill 11543
- no.4 TTW, jar with everted rim, sides parallel (type AB5), grave 11614, fill 11613
- no.5 EMW, jar with simple everted rim (type J2b), grave 11690, fill 11688
- no.6 NEOT, jar, grave 11812, fill 11811
- no.7 TTW, jar with internal hollow, everted rim with tapering sides (type AB10), grave 11686, fill 11685
- no.8 TTW, cooking pot with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), grave 11686, fill 11685
- no.9 TTW, jar with exaggerated hollow (type AB12), grave 11077, fill 11078
- no.10a & b EMW, 'ginger jars' with plain rim (type G1), both grave 60467, fill 60453
- no.11 TTW, jar with internal hollow, everted rim with parallel sides (type AB11), grave 60417, fill 60416
- no.12 TTW, cooking pot with internal hollow, everted rim with a developed external pendant (type AB15), grave 60476, fill 60475
- no.13 TTW, cooking pot with internal hollow, everted rim expanded to a wedge shape (type AB13), grave 60434, fill 60418
- no.14 TTW, cooking pot with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), grave 60526, fill 60524
- no.15 TTW, cooking pot with internal hollow and triangular-section rim with developed exterior pendant (type AB8), grave 60573, fill 60573
- no.16 TTW, jar with internal hollow, everted rim with parallel sides (type AB11), grave 22032, fill 22033
- no.17 TTW, jar with internal hollow, everted rim expanded to wedge shape (type AB13), grave 22032, fill 22033
- no.18 TTW, cooking pot (type AB15), grave 11102, fill 11757
- no.19 TTW, cooking pot (type AB8), grave 60455, fill 60454

Fig.4.84: Pit 22287, Open Area 6 (G22/140)

- no.1 TTW, jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), fill 22286
- no.2 TTW, cooking pot with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), fill 22286
- no.3 TTW, spouted jar with slight internal hollow and plain flared rim, fill 22286
- no.4 EMW, small jar with simple, everted rim (type J1b), fill 22139

no.5 EMW, 'ginger jar' with internal bead (type G3), fill 22139
no.6 EMW, 'ginger jar' with upright rim (type G2), fill 22139

Fig.4.85: Pottery waste assemblage from pit 90989, Open Area 7 (G9/79)

- no.1 TTW, jar with everted rim, sides parallel (type AB5), fill 90812
- no.2 TTW, jar with internal hollow, everted rim with tapering sides (type AB10), fill 90812
- no.3 TTW, jar with internal hollow, everted rim with parallel sides (type AB11) with square-rouletting decorative motif on the outer rim edge, fill 90812
- no.4 TTW, jar with internal hollow, everted rim with parallel sides (type AB11), fill 90812
- no.5 TTW, jar with internal hollow, everted rim with parallel sides (type AB11), fill 90812
- no.6 TTW, jar with internal hollow and everted rim expanded to a wedge shape (type AB13), fill 90812
- no.7 TTW, jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), fill 90812
- no.8 TTW, jar with internal hollow, everted rim and rounded edges (type AB16), fill 90812
- no.9 TTW, jar with internal hollow and everted rim with elongated lip (type AB17), fill 90812

Fig.4.86 on CD: Pit 90516, Open Area 8 (G9/109, part)

- no.1 TTW, jar with everted rim, sides parallel (type AB5), fill 90354
- no.2 TTW, jar with everted rim, sides parallel (type AB5), fill 90354
- no.3 TTW with chalk inclusions, large jar with everted rim, sides parallel (type AC5), fill 90354
- no.4 TTW, jar with internal hollow and everted rim with tapering sides (type AB10), fill 90354
- no.5 TTW, jar with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), fill 90354
- no.6 TTW, jar with lid-seated, squared rim (type AB18), fill 90354
- no.7 NEOT, jar with everted rim expanded to a wedge shape, fill 90354

Fig.4.87: Pit 91816, Open Area 16 (G9/39)

- no.1 TTW, small cooking pot with upright rim (type AA2), fill 91874
- no.2 TTW, cooking pot with everted rim, internal hollow and rounded edges (type AB16), fill 91837
- no.3 TTW, jar with triangular section, internal hollow and developed exterior pendant (type AB8), fill 91815
- no.4 TTW, cooking pot with everted rim, sides parallel and exaggerated hollow (type AB12), fill 91828
- no.5 TTW, jar with everted rim, sides parallel and exaggerated hollow (type AB12), fill 91815
- no.6 TTW, jar with internal hollow and parallel sides (type AB11), fill 91828
- no.7 TTW, jar with everted rounded rim and pronounced internal hollow (type AB16), fill 91837
- no.8 TTW, body sherd with scored line decorative motif, fill 91815

Fig.4.88: Pit 91781, Open Area 16 (G9/40)

- no.1 TTW, small jar with internal hollow, everted rim expanded to wedge shape (type AA11), fill 91781
- no.2 TTW, jar with everted rim, internal hollow and developed external pendant (type AB15), fill 91781
- no.3 TTW, jar with internal hollow and everted rim expanded to a degenerate wedge shape (type AB14), fill 91781
- no.4 TTW, cooking pot with internal hollow and everted rim with rounded edges type AB16, fill 91781
- no.5 TTW, storage jar with everted rim sides expanded to wedge shape (type AF9), fill 91781
- no.6 TTW, spout with applied thumbed strip, fill 91781
- no.7 TTW, pedestal lamp base, fill 91781
- no.8 EMSW, jar with internal hollow and triangular-section rim with developed exterior pendant (type AB8), fill 91781

Period 1.4

Fig.4.89 on CD: Ditch 1, phase 2 fills (G1/41)

- no.1 TTW, small jar with everted rim, sides expanded with rounded edges and internal hollow (type AA12), fill 11019
- no.2 TTW, jar with plain flared rim (type AB1), fill 11019

- no.3 TTW, jar with everted rim sides expanded to wedge shape (type AB6), fill 11241
- no.4 TTW, jar with triangular-section rim, internal hollow and developed exterior pendant (type AB8), fill 11019
- no.5 TTW, jar with internal hollow and everted rim with rounded edges (type AB16), fill 11019
- no.6 TTW, 'ginger jar' with plain rim (type G1) decorated with applied thumbled strip around rim, fill 11241

Fig.4.90 on CD: Ditch 1, phase 5 fills (G1/44)

- no.1 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 11105
- no.2 TTW, cooking pot with upright rim with internal hollow (type AB9), fill 10932
- no.3 TTW, cooking pot with simple everted rim (type AB1), fill 10932
- no.4 TTW, storage jar with added clay at rim, everted, sides tapering (type AG4), fill 13293
- no.5 EMW, small cooking pot with simple everted rim (type J1b), fill 11105
- no.6 EMW/LMU, bowl rim (type B2j), fill 11105

Fig.4.91 on CD: Pit 90292, Open Area 6 (G9/63)

- no.1 TTW, jar with everted rim, sides parallel (type AB5), fill 90226
- no.2 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90226
- no.3 TTW, large jar with lid-seated rim with parallel sides (type AC11), fill 90173
- no.4 TTW, jar with rim with exaggerated hollow (type AB12), fill 90226
- no.5 TTW, jar with everted rim expanded to a wedge shape (type AB13), fill 90173
- no.6 TTW, jar with everted rim expanded to a wedge shape (type AB13), fill 90226
- no.7 TTW, jar (with everted rim expanded to a wedge shape (type AB13), fill 90226
- no.8 TTW, jar with everted rim expanded to a wedge shape (type AB13), fill 90226
- no.9 TTW, large non-handled storage jar (type AF9), fill 90226

Fig.4.92 on CD: Upper fills of pit 46635, Open Area 10 (G46/2)

- no.1 TTW, jar with internal hollow, and developed external pendant (type AB14), fill 46618
- no.2 TTW, sagging base, fill 46618
- no.3 EMW, small jar with upright rim (type J1a), fill 46641
- no.4 EMW, small jar with everted rim (type J1b), fill 46641

Fig.4.93 on CD: Pits 40003 and 40093, Open Area 10 (G2/11)

- no.1 TTW, 'ginger jar' rim with internal bead (type G3), pit 40003, fill 40047
- no.2 TTW, 'ginger jar' rim with internal bead (type G3), pit 40003, fill 40047
- no.3 TTW, jar with plain, flared rim (type AB1), pit 40003, fill 40047
- no.4 TTW, cooking pot with internal hollow and triangular-section rim (type AB7), pit 40003, fill 40002
- no.5 TTW, cooking pot with internal hollow and everted rim with tapering sides (type AB10), pit 40003, fill 40002
- no.6 TTW, cooking pot with rim with exaggerated hollow (type AB12), pit 40003, fill 40002
- no.7 TTW, cooking pot with internal hollow, everted rim expanded to a wedge shape (type AB13), pit 40003, fill 40002
- no.8 TTW, large cooking pot with internal hollow, everted rim expanded to a wedge shape (type AC13), pit 40003, fill 40002
- no.9 TTW, cooking pot with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), pit 40003, fill 40002
- no.10 TTW, cooking pot with internal hollow, everted rim expanded to a degenerate wedge shape (type AB14), pit 40003, fill 40002
- no.11 EMW, 'ginger jar' with upright rim (type G1), pit 40003, fill 40002
- no.12 EMW, small jar with upright rim (type J1a), pit 40003, fill 40002

Archaeomagnetic Dating

by Neil Linford

(Plate 4.37)

The burnt clay lining from the possible pottery kiln or drying oven (22285, G22/134, Period 1.2) was sampled for archaeomagnetic dating by Andrew David and Paul Linford of the Ancient Monuments Laboratory. Details of the measurements and accompanying tables and graphs are given in Linford 1991, accompanied by details of the procedures followed for both sampling and dating. Fifteen samples (NCM01–15) were collected using the disc method and orientated to true north with a gyrotheodolite. Similar sampling of gravel associated with pit 90989 appears in Plate 4.37, although the results were inconclusive (Noel 1990).

The sampled lining of 22285 consisted of a dark grey, hardened clay distinct from the underlying natural deposit. It remains uncertain, however, whether this was a deliberate kiln lining or the consolidation of the natural clay due to the intense heat from its operation. At time of sampling, the feature was severely waterlogged leading to the possibility of leaching of ferrimagnetic minerals and the plastic deformation of the material during the sampling procedure.

Measurements of the directions of natural remanent magnetisation (NRM) of these samples are tabulated in the AML report. A single sample (Sample NCM13) was partially demagnetised in 2mT increments to investigate the stability of the remanent magnetisation. The shape of the resultant curve obtained from plotting the decline in the intensity of magnetisation with increasing partial demagnetisation for the sample demonstrates that magnetisation was stable except for a small degree of viscous remanence indicated by the steepening of the curve at low demagnetisation values. The variation of the direction of remanent magnetism for sample NCM13 shows two positions of convergence. The first at a partial demagnetisation of between 6 and 10mT and the second between 20 and 24mT; neither convergence varies considerably from the normal remanent magnetisation direction. These results demonstrate that viscous remanent magnetism was not the primary cause of scatter in the angles of declination and that partial demagnetisation of all samples would not significantly improve the direction of remanent magnetisation obtained.



Plate 4.37 Archaeomagnetic dating of burnt gravel adjacent to 11th-century pit 90989 containing waste from pottery manufacture, Open Area 7 (Period 1.3)

It was thus not possible to obtain a date for the kiln-type feature due to the anomalous scatter of the measured directions of remanent magnetisation. The on-site evidence suggests that non-rigid collapse of the feature had occurred and that the thermoremanent directions had been further corrupted by the waterlogged conditions. This would provide the most likely explanation of both the failure of the archaeomagnetic date and the attempt to determine the direction of slump from the excavators' records of site levels.

Implements

Iron knives by Quita Mould (Fig.4.97)

A total of eleven knives was recovered from Late Saxon deposits and two others occurred residually. Both of the residual items came from the upper fills of the barbican well dating to the mid 15th to early 16th century and are catalogued and illustrated in Chapter 9.III. The first is a pivoting knife (SF6938.19) of 9th–10th-century date; better preserved examples have been found in Norwich previously (I.H. Goodall 1993a, fig.92, nos 782–3). The second is a blade fragment (SF7062.03) with an angled

back which may be a penknife; such angled back blades are more commonly found in pre-Conquest contexts.

A broken blade with a notched back (SF5996) recovered from a refuse pit of 10th–11th-century date is of interest. Knives with V-shaped notched backs have been found in pre-conquest deposits in Fishergate, York and other centres of commerce particularly in deposits of 9th–10th-century date (Rogers 1993, 1276–7). It is tempting to compare the blade with the notched backed knives used to eat fish at table as illustrated in manuscripts from the 12th century onward (de Neergaard 1987, 51 fig.14), however, the earlier blades are notched close to their tang whilst the fish knives appear to have been deeply notched toward the tip.

A knife (SF1111) found in a sunken featured building of 11th-century date (Building 11) had a saw-edged weld line between the back and edge, visible in the X-radiograph, which can be paralleled by scramasaxes from Thetford (I.H. Goodall 1993b, 104, fig.123, no. 53), Chester, London (Pritchard 1991, 131 no. 9) and elsewhere.

Three knives came from graves in the cemetery of St John (Cemetery 4). One example (SF5678) was recorded as being 'grasped' in the right hand of an adult skeleton (sk. 13041). It is more likely, however, that the knife

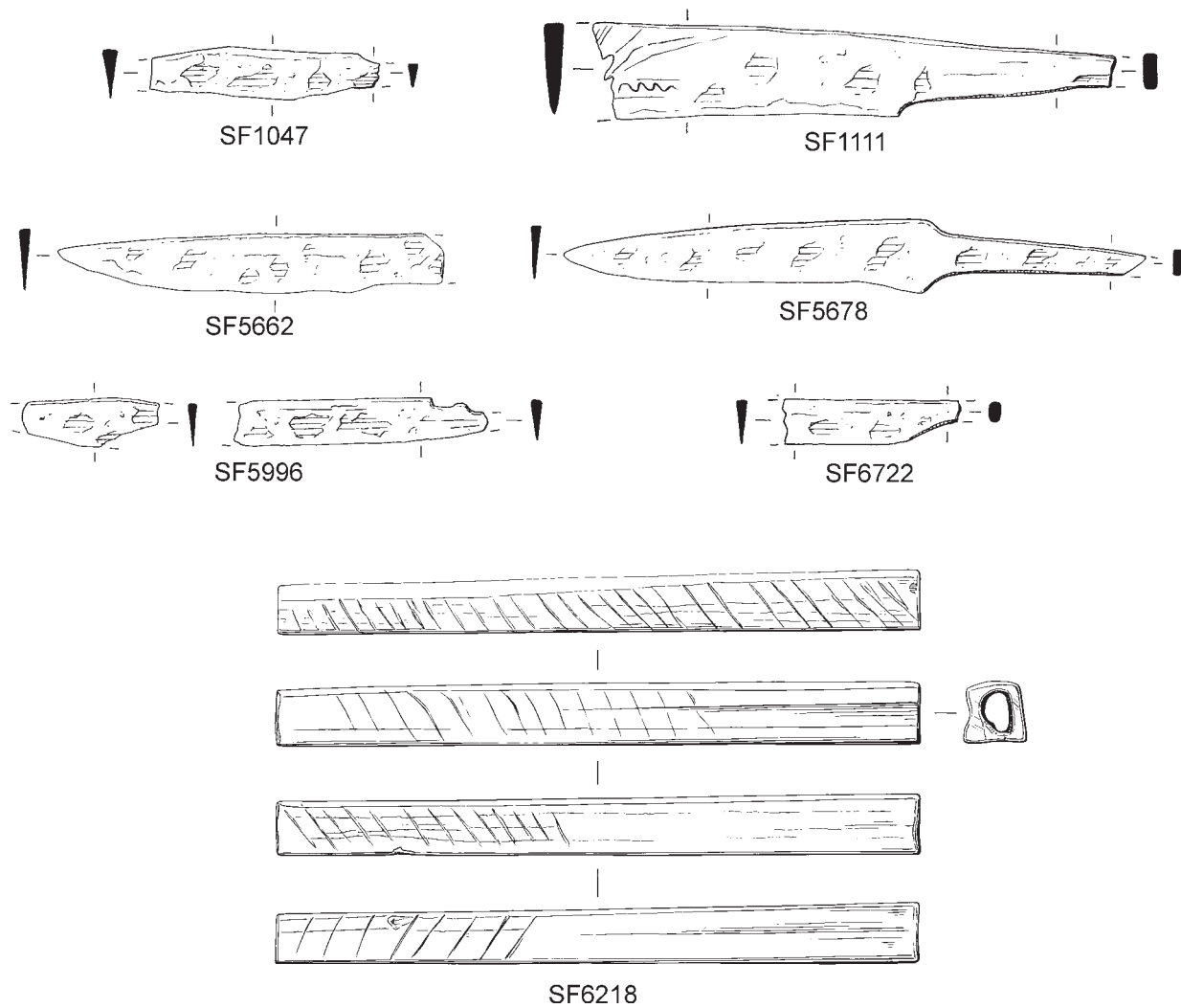


Figure 4.97 Iron knives (SF1047, 1111, 5662, 5678, 5996, 6722); bone handle (SF6218). Scale 1:1, ironwork at 1:2

had been worn suspended from a belt on the right side and that the apparent disposition of finger bones was the result of slumping which was observed on that side of the skeleton. From the same cemetery, a small knife with an angled back (SF1047), generally considered to be a pre-Conquest type (Ottaway type 2A, Rogers 1993, 1273) was found in grave 13098, while a knife tang (SF1021, not illustrated) was found within grave 11238.

- SF1047 Knife** with angled back and straight edge and beginning of centrally placed tang. L: 62mm. W: 13mm
13065, grave 13098, Period 1.4, G1/61
- SF1111 Knife** with straight back and edge, thick centrally-placed tang of rectangular section. Serrated weld line between back and edge visible in radiograph. L: 138mm. W: 26mm.
22375, possible floor of sunken-featured Building 11, Period 1.3, G22/154
- SF5662 Long narrow blade** with straight back and edge curving upward to meet the back at a pointed tip. L: 108mm. W: 14mm
60026, fill of gully 60027, Period 1.4, G6/15
- SF5678 Knife** with straight back and edge meeting at a pointed tip, centrally-placed tang with sloping shoulder. L: 160mm. W: 20mm
13040, skeleton 13041, Period 1.4, G1/61
- SF5996 Narrow blade** with straight, notched back and edge, broken before the tip. L: 68 mm. W: 15mm
90339, fill of pit 90504, Period 1.2, G9/109
- SF6722 Broken knife blade** with straight back and edge and rectangular-sectioned tang set on line with the back. L: 50mm. W: 15mm
47003, fill of pit 47153, Period 1.3, G47/33

Bone implement handle

by Julia Huddle

(Fig.4.97)

A bone handle (SF6218) was recovered from a Late Saxon feature within Hollow 1. Rectangular-sectioned bone handles, sometimes decorated with simple incised decoration are known elsewhere from Late Saxon and early medieval contexts. A previous example from Norwich came from a late 12th- to late 13th-century deposit at Westwick Street (Margeson 1993, 123, fig.87, no. 764). Three are from the Late Saxon site at Thetford, Norfolk (Rogerson and Dallas 1984, 183, fig.201, nos 111–3) and another is known from a late 9th-century context at Lincoln (Mann 1982, 20, fig.18, no. 40). An example from Exeter, however, is from a mid to late 16th-century context (Allan 1984, B51 fig.195 no. 31).

- SF6218 Decorated bone object**, rectangular in section, the bone is hollowed out and the surfaces are highly polished; each face is decorated with incised diagonal lines, one face decorated from end to end, the others only half way; ?implement handle. Caprine or roe deer metatarsal shaft.
80579, fill of slot 80581, Period 1.2, G8/5

Antler spoon

by Julia Huddle

(Fig.4.98)

An elegant antler spoon simply carved and with incised decoration (SF1081) came from a 10th–11th-century pit. It has a teardrop-shaped bowl, which curves in the long axis. Spoons with these spatulate bowls having this characteristic gentle curve along the length of the bowl, and more or less flat across the width of the bowl, are known elsewhere in Great Britain and in Scandinavia (MacGregor 1985, 182). Examples made of bone, antler, ivory and wood have come from Late Saxon/early medieval contexts. Some are plain, such as three bone spoons

recovered from Late Saxon/early medieval deposits at Thetford, Norfolk (Rogerson and Dallas 1984, 182, fig. 198 nos 88–90). One also of bone, but missing its handle, is from St Martin-at-Palace Plain, Norwich from a mid 11th-century context (V. Williams 1987b, 100, fig.81 no. 15).

An example perhaps more closely comparable to the Castle Mall spoon, in that the handle is also simply carved, comes from Thetford and is dated to the late 11th or 12th century (Andrews 1995, 118 fig.87 no. 13). Other spatula-type spoons are known but these are quite ornate in comparison to other cited examples such as several c. early 11th-century spoons from Winchester with Ringerike-Winchester style decoration (Kjølbye-Biddle 1990, 828, nos 2620–4). Other spoons have carved animal heads at the junction of the bowl and handle, such as four spoons from London and one from Chichester (LMMC 1954, 127, pl.XXV nos 1–4; Waterman 1959, fig.15 no. 3). Whilst others have flat strap like handles, the bowls and handles often decorated with incised inter-lace design. Two examples of this type made in wood come from York (Waterman 1959, fig.15 nos 1 and 2). British parallels in antler are less common although one with incised linear decoration on the front of the handle with a spatulate bowl which is pointed rather than curved at the end comes from a 10th–11th-century context at Beverley (Foreman 1991, 191, fig.128 no. 1125).

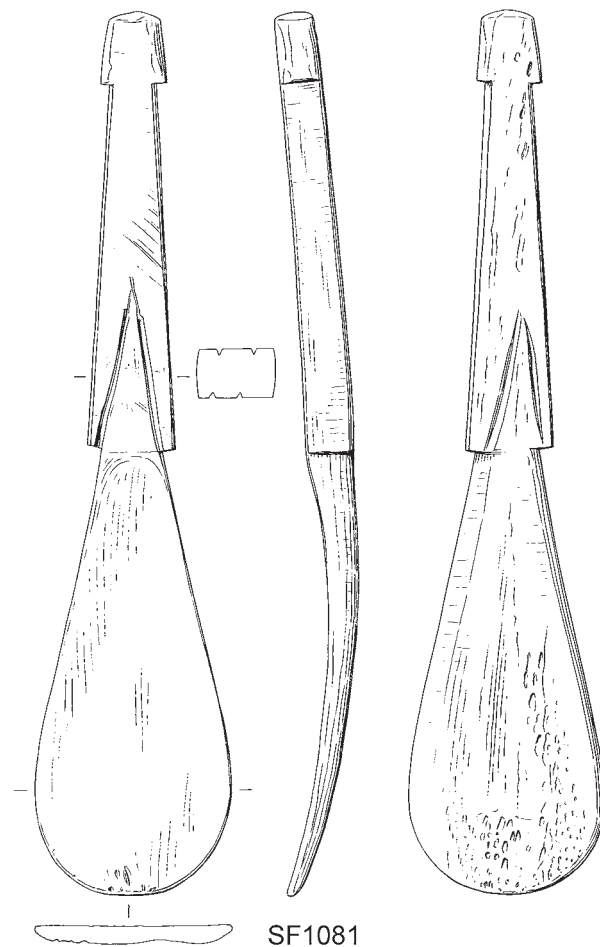


Figure 4.98 Antler spoon (SF1081). Scale 1:1

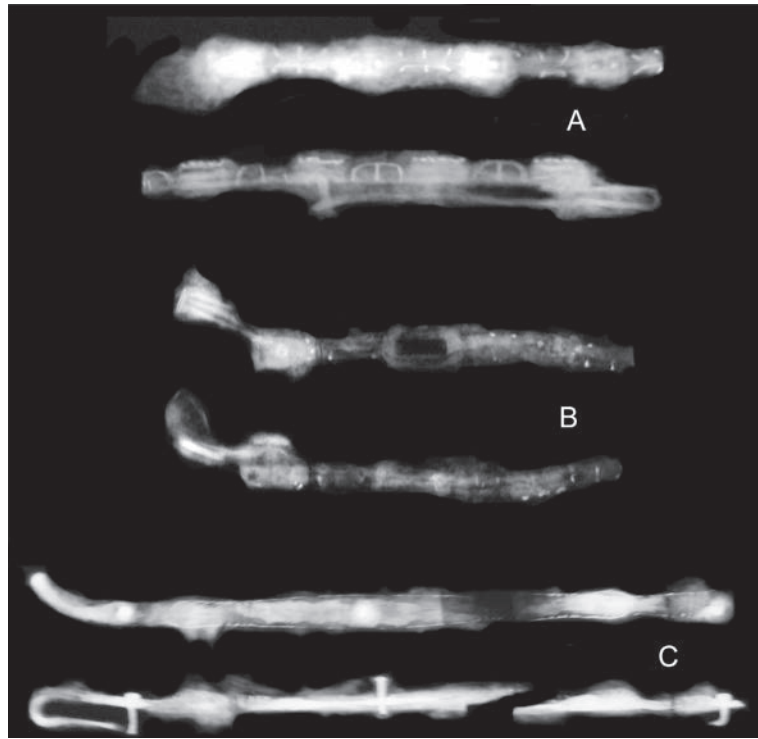


Plate 4.38 X-radiographs of iron casket or book fittings of 10th- to 11th-century date:
 A – SF5914; B – SF5914.1; C – SF5915

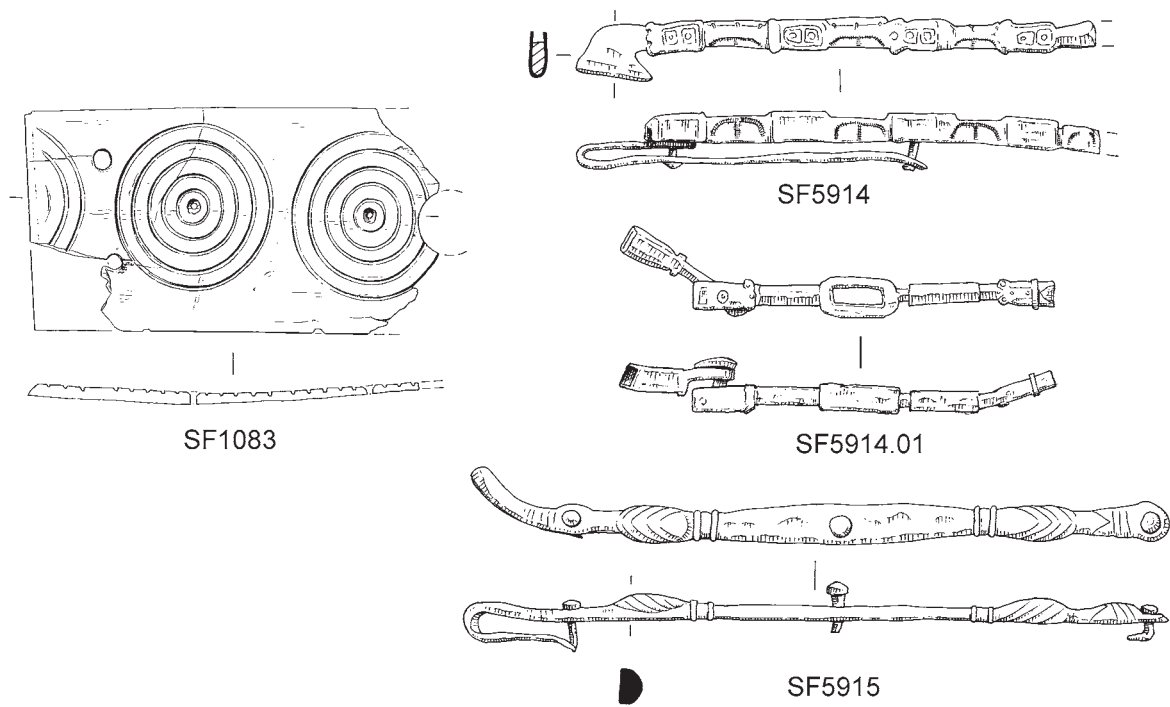


Figure 4.99 Bone casket fitting (SF1083), Scale 1:1; iron casket./book fittings (SF5914, 5914.01 & 5915); see x-ray, Plate 4.38. Scale 1:2

SF1081 Antler spoon with teardrop-shaped spatulate bowl; the handle, which is rectangular in section, is shouldered above the bowl and at the top. On both front and back the outline of the bowl is continued into the handle with two incised lines which meet at a point. L: 116mm.
90386, fill of pit 90389, Period 1.2, G9/109

Furniture Fittings

Decorative bone ?casket fittings

by Julia Huddle
(Fig.4.99)

Two decorated bone strips were recovered, one from a Late Saxon pit (SF1083, Period 1.3) and the other from a 12th-century fill of a castle ditch (see Chapter 6, SF5524, Period 3.2). Decorated box or casket mounts made of split animal rib or antler are well known from Late Saxon and early medieval contexts. Though they are rarely found still attached to the wooden boxes (usually the wood has decayed), they occasionally retain their iron rivets or bone pegs. The decoration often takes the form of compass drawn motifs as seen on the two Castle Mall pieces.

SF1083 Incomplete bone strip with incised dot in circle decoration; two iron stained rivet holes at one end. Large mammal rib.
90612, fill of refuse pit 90613, Period 1.3, G9/101

Iron casket/ book fittings

by Quita Mould
(Fig.4.99, Plate 4.38)

Three highly decorative fittings were recovered from pre-Conquest contexts (SF5914, 5914.01 and 5915), all from the same area of the site (Hollow 1) and two from the same post-hole: associated pottery was of 10th- or 10th/early 11th-century date. Although closely associated, the three fittings appear to come from separate objects. They are comparable with strip fittings from contexts of similar date from Thetford (site 6 Goodall in Rogerson and Dallas 1984, fig.130, no.160–1) and more closely paralleled by those with animal-headed ornament from Anglo-Scandinavian deposits at 16–22 Coppergate, York (Ottaway 1992 fig.268, no. 3322, 3323,3475, 3478 pl. XLIIC and d). The examples from Thetford and York are interpreted as decorative U-eyed hinges possibly from a small casket or book cover.

SF5914 Decorative strip fitting comprising alternating triangular-sectioned panels between raised rectangular-sectioned panels with paired mouldings and raised dots representing debased animal-headed ornament. The decorative arm is attached by a pair of rivets to a separate strip along the back extending into a looped terminal. The arm is additionally decorated with non-ferrous metal inlay. L: 134mm. W: 9mm
80662, fill of post-hole 80663, Period 1.2, G8/5

SF5914.01 Triangular-sectioned arm with central angular slot of rectangular section. The ends have simplified animal head ornament, one is broken but the other is riveted to a second similar arm with a pierced terminal and curving profile ending in a fragment of now rolled flat-sectioned strip. White metal plating present. L: 135mm. Arm W: 5mm
80662, fill of post-hole 80663, Period 1.2, G8/5

SF5915 Arm of plano-convex section with looped terminal, and three domed-headed copper alloy rivets. Arm decorated with raised moulded panels with simplified animal headed ornament with lines of incised oblique chevrons possibly imitating braiding and double raised collar mouldings. White metal plating visible in radiograph. Clenched rivet shank indicates the arm was attached to a surface of 3–4mm thickness. L: 190mm. Max W: 10mm
80676, fills of Hollow 1, Period 1.2, G8/4

Miscellaneous Fittings

Iron chain

by Quita Mould
(Fig.4.100)

Two fragments of chain, each comprising two oval links, were found in pits (SF6375 and 6735.01, latter not illustrated).

SF6375 Chain links, two articulating oval link fragments. L: 30mm.
91837, fill of pit 91816, Period 1.3, G9/39

Iron ferrule

by Quita Mould, Maisie Taylor, Jacqui Watson and Sarah Paynter
(Fig.4.100)

A conical ferrule (SF230) deriving from a now unknown implement, was found in an 11th-century pit. The shaft is fashioned from roundwood and is therefore unlikely to belong to tool or spear because roundwood would be too springy. Spear and similar shafts were made from dowels, which would give rigidity and strength. Due to the immaturity of the wood in the ferrule and rapid growth (the combination of which has led to a collapse of the wood structure as it mineralised) it is difficult to identify with certainty.

SF230 Conical ferrule tapering to a pointed tip with mineral preserved wood from the haft present in the socket. SEM analysis indicates that this is probably *Acer* sp. (Maple) or *Prunus* sp (one of the wild cherries), made from a young stem or sapling. L: 112mm. D: 25mm.
20172, fill of pit 20138, Period 1.3, G2/5

Buildings

Structural Ironwork

by Quita Mould
(Fig.4.100)

Wallhooks, staples, etc

Two wallhooks (SF5943 and 6736), a staple (SF6136), a broken strap hinge (SF6715) and five pieces of nailed binding occurred in features of Late Saxon date.

SF5943 Wallhook with long square-sectioned shank and upturned head. L: 134mm, Head L: 18mm
90353, fill of pit 90516, Period 1.3, G9/109

SF6736 Wallhook rectangular-sectioned strip tapering to a pointed tip at one end with a hooked terminal at the other. L: 56mm
60563, fill of gully 60645, Period 1.2, G6/16

SF6136 Staple
90812, fill of pit 90989, Period 1.3, G9/79

SF6715 Strap hinge
47090, fill of pit 47153, Period 1.3, G47/33

Timber nails and clenched bolts

A total of 124 timber nails including 54 broken nail shanks was recovered from Late Saxon deposits (a modern nail was noted in context 22030). The vast majority were of medium size with flat heads, the complete examples varying in size from 35–90mm and in head length from 12–25mm. A single flat-headed tack with a short shank (length 15mm, head length 13mm) and a rectangular-headed nail were also found. Five clenched bolts were

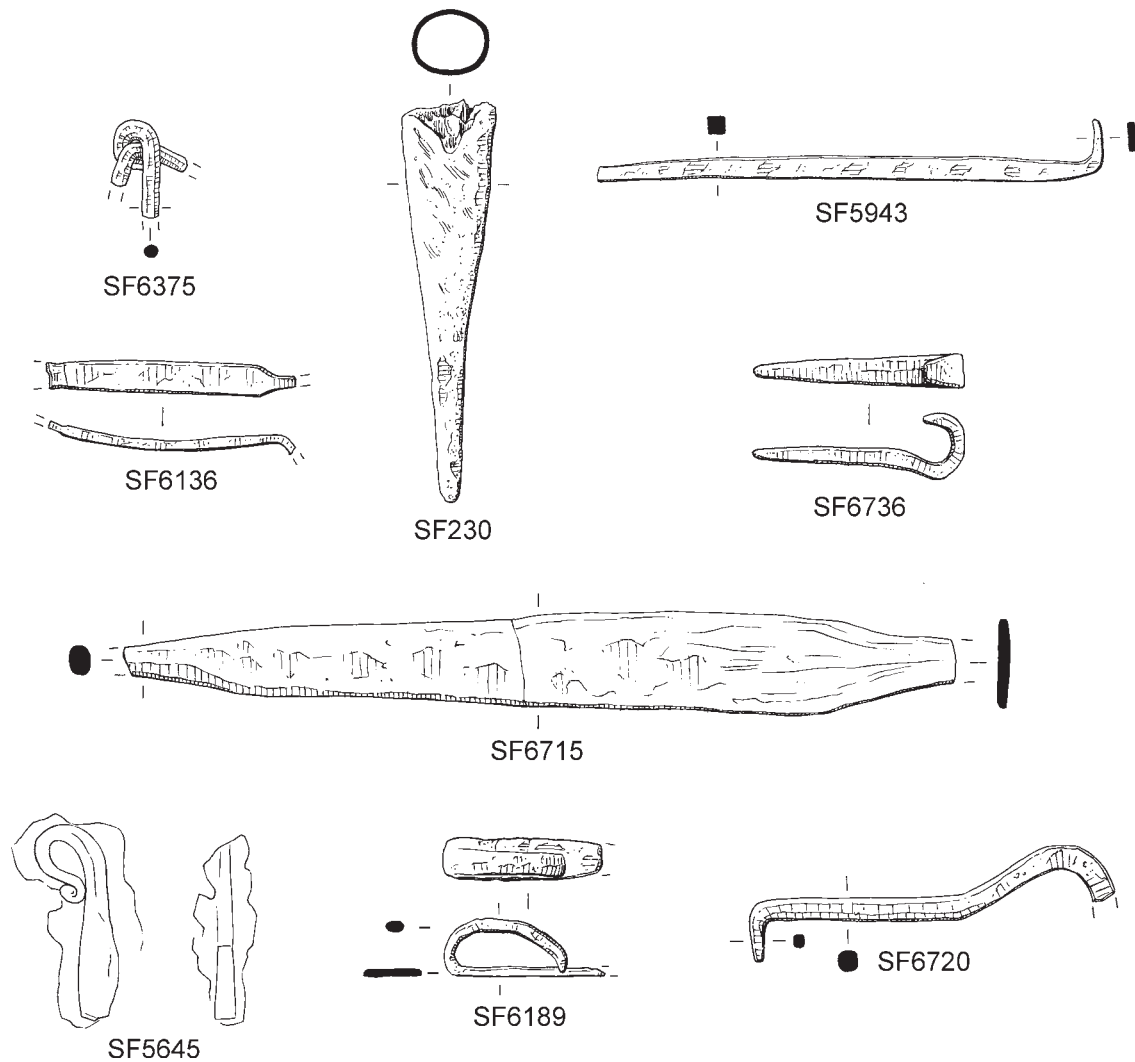


Figure 4.100 Iron objects: chain (SF6375), ferrule (SF230); wallhooks (SF5948 & 6736); hinge strap (SF6715); staple (SF6136); padlock key handle (SF5645); lock tumbler (SF6189); hooked stay (SF6720). Scale 1:2

recovered, one of which is catalogued below (not illustrated).

SF5717 Clench bolt with round head at one end of the shank and a square rove at the other. Not illustrated.
60118, fill of pit 60091, Period 1.3, G6/37

Door and Window Fittings

by Quita Mould
(Fig.4.100 and 9.28)

Iron locks and keys

The majority of the small group of pre-Conquest iron locks and keys was found residually in upper fills of the barbican well and the relevant items are catalogued and illustrated in Chapter 9.III (Fig.9.28). They include a padlock pivoting fin (SF6864.2) from a Goodall type A barrel padlock (Goodall in Biddle 1990, 1009, fig.311, nos 3638–9) which is of a pre-Conquest form not in use after the 12th century. A small double-toothed slide key (SF7062.4), again from barbican well fills, is comparable with examples from Coppergate, York (Ottaway 1992, 674, fig.289 nos 3657, 3658) believed to be of pre-11th-

century date; while examples do occur occasionally in medieval deposits (as is the case with the Castle Mall example), none are known to have been found in such contexts on sites without pre-Conquest occupation. A stem decorated with bands of non-ferrous metal inlay (SF6957.36) also deriving from an upper backfill of the barbican well is likely to date to the pre-Conquest or immediately post-Conquest period, coming from a padlock key of Goodall type C (Goodall in Biddle 1990, 1022, fig.324, no.3726).

Those items deriving from pre-Conquest pit fills include a lock tumbler (SF6189), a possible broken lock-plate (SF6728, not illustrated, pit 22097) and a padlock key handle (SF5645).

SF5645 Key. Padlock key handle with scrolled ring terminal. L: 53mm.

50027, fill of pit 50037, Period 1.3, G5/10

SF6189 Lock tumbler L: 46mm, W: 10mm

80545, fill of pit 80568, Period 1.2, G8/6

Stays

A hooked stay (SF6720) from an 11th-century pit is comparable with later examples from windows in post-

medieval buildings and no doubt served a similar function on a shutter.

SF6720 Hooked stay with straight shank, clenched pointed tip and hooked terminal, likely to have been a ring terminal originally.
L: 95mm
47090, fill of pit 47253, Period 1.3, G47/33

Ceramic Building Materials

by Irena Lentowicz and Richard Kemp (identification)

A total of 2,538 fragments of CBM weighing 28.329kg was recovered from contexts associated with this period (Table 4.12). While this accounted for only 12.4% of the entire assemblage by weight, it made up 31.3% of the total number of fragments studied; this reflected the fragmentary nature of the material during this period and of two of the contemporary fabrics recovered.

Four contemporary fabrics were identified. The most common was Fabric 136, a sandy fabric with abundant quartz and small pebbles. Fabric 129 was also recorded, a silty peach coloured fabric with pebbles and distinctive chalk inclusions. Wattle/reed impressions were present in both fabrics and the distinction between them may indicate two separate (local?) clay sources. Fabric 200 was a vitrified or highly fired ceramic, and though quite frequent it was not as prolific as either Fabrics 136 or 129; indeed much of the fabric recovered in this period came from a single feature (kiln 22285, G22/134 in Period 1.2, see below) where it may have been intrusive. Fabric 300 (unidentified) was very fragmentary; indeed the average fragment size was only 0.2g (compared to 12.6g for Fabric 129, 9.5g for Fabric 136 and 3.4g for Fabric 200).

Ceramic building material is described below with particular reference to the excavated buildings/structures to which it is directly relevant. Fired clay/daub was ubiquitous throughout the fills of most features.

Period 1.2

Over a third of the Period 1 assemblage came from this sub-period, 1157 fragments weighing 8.473kg (29.9% of the period assemblage; Table 4.13). A small proportion of this (4.7%) was residual Roman material, including roof and bonding tiles, while a further 6.7% was intrusive medieval material. Fabric 136 dominated the contemporary fabrics and was well represented throughout most of the features, as was Fabric 129 which was less common but still accounted for a sizeable proportion. A small quantity of Fabric 200 was recorded, and as noted above much of this came from a single feature (a putative pottery kiln; 0.4kg). Only 23g of Fabric 300 was recorded and this was very fragmentary; the fabric was mostly recovered from features associated with Building 1 (G6/4), industrial pits to the south of structure 6/4 (G6/8) and from posts along the north edge of Hollow 1 (G6/3). Miscellaneous fragments accounted for less than 1% of the sub-period total, but included ceramic fragments, fired clay, daub and 'mortar'.

A proportion of the CBM assemblage came from groups directly associated with structures (1.434kg; 16.9% of the sub-period assemblage). Fabrics 300 and 129 were represented in all of the groups, with other fabrics present only in small quantities. Building 1 (G6/4; 1.001kg) produced one of the largest individual assemblages, and both daub and fired clay were recorded in Fabrics 136 and 129. Some fragments in both fabrics displayed impressions of wattle/reed, while some fragments of Fabric 136 were noted as burnt. A residual Roman roof tile was also recorded and may have been re-used. Other structures provided smaller assemblages. Some contained only Fabric 136, for example, Building 6 (G1/5; 0.010kg), Building 4 (G6/20; 0.017kg), post-holes (G8/5; 0.285kg) and Building 12 (G9/48; 0.11kg); and fewer both Fabrics 136 and 129, such as Building 2 (G6/9; 0.009kg) and Building 5 (G6/22; 0.002kg).

The largest individual assemblage came from the putative pottery kiln (G22/134; 1.465kg; 17.3% of the sub-period assemblage). In addition to intrusive medieval roof tile fragments (three fragments weighing 30g), other fabrics included 0.4kg of vitrified Fabric 200 which may

have been intrusive modern road makeup material. The remaining assemblage was made up entirely of Fabric 136 (both fired clay and daub); some of the material appeared to be mould or lining. Much of the rest of the assemblage was recovered from pits (c 5.073kg; c 59.8%), usually comprising a combination of Fabrics 136 and 129.

Period 1.3

A smaller quantity of material was recovered from contexts assigned to this sub-period, 797 fragments weighing 7.183kg (25.3% of Period 1; Table 4.14). Although Fabric 136 was still the most common fabric, it accounted for a smaller proportion of the assemblage as a whole. Fabric 129 was less well represented accounting for less than 5% of the material recovered, while Fabrics 200 and 300 remained small components of the assemblage. Although Fabrics 136 and 129 were recovered from the same features, there did appear to be some polarity in fabric combinations, for example the material recovered from the Farmer's Avenue cemetery (Cemetery 3) was almost entirely residual Roman brick and tile with few fragments of Fabric 129. Also, while pit groups often contained both Fabrics 136 and 129 individual pits within these groups mainly consisted of one or other of the fabrics.

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	123	1.940	6.8
Roman	53	1.416	4.9
Fabric 129	611	6.832	24.1
Fabric 136	1,319	12.480	44
Fabric 200	138	0.516	4.1
Fabric 300	191	0.029	0.1
Medieval	77	3.546	12.5
Post medieval	26	1.570	5.5
Total	2,538	28.329	

Table 4.12 Period 1 — total number of fragments and weight of CBM by fabric

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	36	0.068	0.8
Roman	27	0.396	4.7
Fabric 129	270	1.045	12.3
Fabric 136	598	5.945	70.2
Fabric 200	48	0.430	5.1
Fabric 300	165	0.023	0.3
Medieval	13	0.566	6.7
Total	1,157	8.473	

Table 4.13 Total number of fragments and weight of CBM by fabric in Period 1.2

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	35	0.464	6.4
Roman	20	0.730	10.2
Fabric 129	51	0.323	4.5
Fabric 136	576	4.018	55.9
Fabric 200	54	0.067	0.9
Fabric 300	12	0.002	<0.1
Medieval	33	0.964	13.4
Post medieval	16	0.615	8.6
Total	797	7.183	

Table 4.14 Total number of fragments and weight of CBM by fabric in Period 1.3

Miscellaneous fragments included ceramic fragments, daub, fired clay and mortar, with intrusive brick and wall tiles also represented.

CBM was recovered from only one structure assigned to this sub-period, Building 15 (G9/117; 0.190kg). The largest proportion of this group was intrusive medieval brick, while contemporary material was represented by daub in both Fabrics 136 and 129. The majority of the CBM assemblage came from pits, some 5.603kg representing 78% of the sub-period material, a proportion of which contained only Fabric 136 fragments. Of note amongst the pit assemblages was the material recovered from pit 60066 (G6/6 part; 0.013kg) which, alongside daub in Fabrics 136 and 129, included fragments of fired clay with copper alloy adhesions, possibly representing the linings of a metalworking pit. Another feature attributed to possible 'industrial' activity, pit 46693 (G46/11; 0.265kg) contained only Fabric 136 daub fragments.

Graves in Cemetery 3 (Farmer's Avenue) also contained ceramic building material (G1/10, 0.067kg; and G6/13, 0.255kg; G22/131; 0.490kg). This was made up almost entirely of residual Roman brick and tile, with a small quantity of miscellaneous daub and a small number of Fabric 129 fragments, as well as intrusive medieval roof tile, late medieval brick and wall tiles from Area 22.

Period 1.4

The largest proportion of CBM recovered from Period 1 came from this sub-period, 584 fragments weighing 12.673kg, 44.7% of the Period 1 material (Table 4.15). There was a marked change in the make up of the assemblage with Fabric 129 much more common than Fabric 136; Fabrics 200 and 300 were represented in small quantity while Roman and intrusive medieval and post-medieval material were a consistent element. Miscellaneous fragments included chalk, mortar and plaster.

Almost 18% of the material recovered from this sub-period came from St John's Cemetery (Cemetery 4; G1/61, 2.208kg). Though some of the assemblages from graves were fragmentary, much of the material was made up of individual fragments. Roman material included *opus signinum* and imbrex. Many graves contained daub or fired clay. Medieval material recovered includes roof tile, floor tile and early brick and some of these, along with late brick fragments, are undoubtedly intrusive. Of particular note is the lined grave 13090 which contained mortar fragments and a large fragment of English/Flemish unglazed floor tile (Drury's type FT21; NAU Fabric 140) which was retrieved from the grave lining (13085). The group is detailed further in Chapter 4.II and dating implications for these graves are discussed further in Chapter 4.II.

CBM recovered from structures was much more common in this sub-period, accounting for 19.4% of the assemblage (c. 2.463kg). The largest assemblage came from post-in-slot Building 21 and was comprised entirely of daub Fabric 136 with wattle and reed impressions and lime wash noted on many fragments (G6/21, 1.969kg). In contrast a fuller range of fabrics was recovered from post-in-trench Buildings 17 and 18 on the Timberhill frontage (G1/138, 0.001kg and 1/140, 0.126kg) which

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	52	1.408	11.1
Roman	6	0.290	2.3
Fabric 129	290	5.464	43.1
Fabric 136	145	2.517	19.8
Fabric 200	36	0.019	0.1
Fabric 300	14	0.004	<0.1
Medieval	31	2.016	16.6
Post medieval	10	0.955	7.5
Total	584	12.673	

Table 4.15 Total number of fragments and weight of CBM by fabric in Period 1.4

included daub Fabrics 129 and 136, as well as fired clay Fabric 300. However, the largest component of from Building 18 was intrusive medieval roof tile. Building 22 (G6/17, 0.183kg) also produced daub Fabrics 129 and 136 as well as medieval roof tile. A more limited range of fabrics came from post-holes/structures above pitting in Hollow 1; both daub Fabrics 136 and 129 came from G8/7 (0.115kg). A small quantity of material recovered from post-holes, and included Fabric 129 (Building 21, G1/3, 0.016kg), mortar (Building 19, G1/142, 0.028kg) residual material and intrusive roof tile (Building 16, G46/18, 0.110kg).

Material from ditches accounted for 8.4% of the sub-period assemblage (1.074kg), including the usual range of residual Roman material alongside daub (Fabrics 129 and 136) and a few intrusive pieces. A larger proportion came from pits (5.477kg) accounting for 43% of the recovered material. Much of this came from a single large assemblage recovered from pit 60272 (G6/46, 4.935kg) which contained 38.9% of the entire sub-period assemblage. This consisted entirely of daub Fabric 129 and included one fragment with the impression from a piece of cloth.

Discussion

Throughout all periods a small quantity of Roman material was recovered, the largest proportion coming from Period 1 deposits; in some cases this would have been the result of re-use although the fragmentary nature of the material also indicates that some of this material is residual. Such re-use is demonstrated at many Norwich sites, including the Late Saxon/Norman sunken-featured buildings recorded at Greyfriars (Emery 2007), and is well known at other urban centres such as Thetford and London (see Chapter 3).

Unsurprisingly, the main building material in use at the Castle Mall site during the Late Saxon period was fired clay and daub. This material would have been used not only for walls but also for hearths and structural features within buildings. Fabric 136 was the most common. Many of the daub fragments recovered have an outer flat, hand-smoothed surface and bear the impression of wattle and/or reed (10–20mm diameter) on the underside, with one fragment showing signs of a timber (lath) imprint. Another fragment has the impression of a piece of woven cloth. A few pieces have a smooth, limewashed surface and show signs of 'plaster' adhering, possibly from the interior of a building. The use of the daub either internally and/or externally cannot be determined, although the evidence most probably suggests that these fragments came from buildings having the space between the wall-posts filled with wattle and/or reed. Similar material was recovered from excavations beneath the north-east bailey (Site 416N; Ayers 1985, 44) and included clay blocks or bricks which may have been incidentally fired. Further comments are given in Chapter 13.

Occupations, Industry and Crafts

Metalworking

Introduction

A total of 35.385kg (26.5% of the total site assemblage) of metalworking waste was recovered from deposits assigned to Period 1. Of this period assemblage, 2.570kg (7.3%) came from Period 1.2, 9.437kg (26.7%) from Period 1.3, with the majority (23.378kg; 66%) coming from Period 1.4. Most of the ironworking debris recovered from the site came from 10th–11th-century deposits, a situation reflected at many other sites in Norwich. In contrast, only a small proportion of the non-ferrous metalworking waste recovered came from Late Saxon contexts, although this included five crucible fragments. The assemblage provides evidence for both copper alloy melting, object manufacture and repair, as well as a limited amount of leadworking.

Chronological and spatial distribution of metalworking debris

by Irena Lentowicz and Justine Bayley (identification)

Period 1.2

In contexts spanning the 10th to early 11th century, a concentration of metalworking was noted within and to the east of Hollow 1 in the western part of the excavated area. Structural features within the hollow (G8/5) contained evidence for both ferrous smithing and melting of copper alloy, the latter identified by a droplet of leaded copper (Table 4.16 below). Possibly associated with this structure was pit 80614 (G8/6) which contained a hearth bottom, hearth lining and tuyere as well as smithing slag, along with two crucible fragments. XRF analysis of these recorded a ferrous element with traces of copper from one, and a zinc with traces of copper from the other (Table 4.16).

To the east of Hollow 1, metalworking waste was recovered from a number of structures. This included smithing slag and tap slag from post-holes associated with Building 1 (G6/4) and possible metalworking debris from adjacent pit 60262 (G6/8); fuel ash slag was recorded from a structural cut relating to Building 2 (G6/9); smithing slag from Building 6 (G1/5); and smithing slag and hearth lining from Building 9 (G1/9).

Running between Open Areas 3 and 5 was a series of gullies, from which smithing slag and fuel ash slag were recovered (G6/16). Further debris came from pits to the north of Open Area 2, from a possible yard between Building 1 and Building 11 in Open Area 3 (G2/5), as well as from Open Area 5 (T8 and 49/2 and 22/132). Copper alloy spillage came from a sunken-featured building, Building 11 (G22/133). A hearth bottom was recovered from adjacent pit 22015.

To the north-east, south of ?Building 14 in Open Area 10, was a series of pits containing metalworking debris. To the north, for example, pit 40045 (G2/50, part) had a burnt wood lining and included smithing slag with attached hearth lining, while smithing slag was recovered from pit 46345 (G46/1), hearth lining and iron pan from pit 46552 (G46/12) and a tuyere or convex hearth lining with attached slag from pit 46465 (G46/17). Similar debris also came from pit 12806 (T20/10) and deep pit 40007 (G2/51).

Period 1.3

Metalworking continued in the vicinity of Hollow 1 throughout the 11th century. This included smithing slag from pit 80580 and a hearth bottom from pit 80548 (G8/6 part). Smithing slag, a hearth bottom, cinder and

tap slag came from pit 47253 (G47/33), indicating that smelting and smithing were being undertaken in the same area. Smithing slag also came from fills of Hollow 1 50097 (G5/64) and the presence of copper alloy spillage indicates that both ferrous and non-ferrous metalworking was taking place here.

Smithing slag, fuel ash slag and cinders were recovered from some grave cuts from Farmer's Avenue (Cemetery 3) which was established at this time, indicating the presence of smithing activity in the vicinity.

Associated with sunken-featured Building 11 was a large square pit 22287 (G22/140) from which a hearth bottom was recovered.

A variety of smithing evidence was recovered from features associated with Open Area 7, where localised craft activity was predominantly associated with dumping of ceramic refuse. Metalworking waste included a concretion recovered from pit 90649 (G9/52) and iron ore from wood-lined pit 90717 (G9/79). Similarly from pit 90516 (G9/109) in Open Area 8 smithing slag was recovered. Smithing slag was also recorded from pit 46629 (G46/1) in Open Area 15.

Metalworking activity continued in Open Area 10, associated with Building 16 which was a possible re-build of Building 14. Cinder and hearth lining was recovered from post-holes (G46/18 and 46/28). The upper fills of pit 40045 (G2/50) contained smithing slag and fragments of hearth bottom. Immediately adjacent to the west end of ?Building 16 was a rectangular pit 46418 (G46/17, part) which contained hearth bottom, hearth lining and tuyeres as well as smithing slag. Small pits 46523 and 46527 (G46/14) contained both smithing and tap slag.

Pits 21099 and 21100 (G21/168) in Open Area 16 contained hearth bottom, cinder, fuel as slag and smithing slag. Hearth bottoms were also recovered from pit 91816 (G9/39), pit 90670 (G9/53) and pit 20218 (G202/165) which also included smithing slag.

Period 1.4

Metalworking debris was recovered from Ditch 1 (fills G1/41), the earliest major feature in this part of the site. This included smithing slag, hearth bottom and cinder with attached hearth lining. Later fills contained hearth bottom with attached hearth lining as well as smithing slag (G1/43). Debris was also associated with post-in-trench structures to the west of the ditch, Buildings 17 and 18 (G1/138 and 1/140). This included an iron object and copper alloy spillage (leaded bronze; Table 4.16).

Indirect evidence of metalworking was recovered from graves within St John's cemetery, Cemetery 4 (G1/61). This included fragments of hearth bottom, attached hearth lining, smithing slag, cinder and tuyeres which had probably been disturbed from fills of underlying Ditch 1. Early fills of the cemetery boundary ditch (Ditch 2; G1/47) also contained metalworking waste.

A crucible came from Building 20 (G8/7) and debris from sunken-featured Building 25 (G22/155) included cinder and fuel ash slag. The crucible fragment was overfired and analysis showed a high zinc content with traces of copper (Table 4.16). Possibly associated with this building were pits 90292 (G9/63) and 90223 (G9/64) which contained hearth bottom, smelting slag, smithing slag and cinder.

Smithing and fuel ash slags were associated with Building 26 to the south of Hollow 2, while pits adjacent to the building (Open Area 8) also included metalworking debris in their fills. Tap slag came from pit 57187 (G47/21), smithing slag from pit 47025 (G47/24) and hearth lining and smithing slag from pit 47807 (G47/7).

Metalworking activity continued in Open Area 10. A hearth bottom and attached hearth lining was recovered from pit 46205 (G46/14), smithing slag, hearth bottom and attached hearth lining from pit 46635 (G46/2) and smithing slag from pit 40122 (G2/11).

Hearth bottom and smithing slag came from an unusual feature in Open Area 16, the possible base of an oven or furnace (21070, G21/168), and may indicate *in situ* working.

Context	Group	Period	Context type	Fe	Cu	Zn	comments
80613	8/6	1.2	pit 80614, within Hollow 1		tr	xxx	heavily vitrified outside
80613	8/6	1.2	pit 80614, within Hollow 1	xx	tr		
80679	8/7	1.4	beamslot 80680, Building 20		tr	xxx	overfired, analysed outside

number of 'x's denotes strength of signal, tr = trace, ? = possible

Table 4.16 XRF analyses on crucibles from Period 1 deposits

XRF analysis

by Catherine Mortimer

Small quantities of the metalworking waste from Late Saxon deposits were investigated using surface X-ray fluorescence (XRF) analysis (Mortimer 1996). The material included non-ferrous waste, as well as crucible and fired clay fragments (Table 4.16). Most of the relevant features were within or adjacent to Hollow 1, although one copper alloy spillage examined came from Building 18, a possible granary on the Berstete/Timberhill frontage.

Two of the copper alloy spillages were found to be leaded bronze (89761, G8/5, Period 1.2, post-hole within Hollow 1) and leaded copper (10966, G1/140, Period 1.4, construction trench 10967, Building 18) alloys. Analysis of three crucible fragments dated to this period confirmed that they were also used for melting copper alloys. The precise alloy type cannot be determined, but high levels of zinc were discovered indicating zinc-containing alloys (e.g. brass or quaternary alloy). A small quantity of lead spillage came from two pits in the northern part of the site (SF6798 and 6797; 46417, G46/17 and 47090, G47/33, Period 1.3), although these were not analysed.

Ferrous and non-ferrous scrap, repair and associated evidence

by Quita Mould (ferrous), Alison Goodall (copper alloy) and Elizabeth Shepherd Popescu (lead)

A very small quantity of ironwork from Late Saxon deposits may be scrap from ironworking. It includes two pieces of bar iron (SF5891, context 80583, post-hole 80538, G8/7, Building 20, Period 1.4 and SF6659, 46479, post-hole 46480, G46/15, Open Area 10, Period 1.3), two fragments of wire, four strip fragments and five formless fragments with no diagnostic features. In addition, radio-opaque specks were present in the corrosion products of a decorated U-eyed hinge from a casket or book cover (SF5914.1, Fig.4.99, 80662, fill of post-hole 80663, Period 1.2, G8/5, within Hollow 1), an arrowhead (SF6292, Fig.7.35, 90227, fill of pit 90292, Period 1.4, G9/63) and a broken shank (from fill 90226, also within pit 90292) suggesting that they had been in proximity to metalworking.

Two fragments of possible copper alloy waste (SF1020 and SF5350) were found in the Farmer's Avenue Cemetery (Cemetery 3; Period 1.3) and a pre- or post-Conquest building (Building 18, G1/140, Period 1.4) respectively. In themselves they are insufficient to suggest anything other than very small-scale casting or reworking and repair of metal objects somewhere in the vicinity. The fragments of wire and other pieces of sheet (x 15) may perhaps represent the materials from which artefacts were made or incomplete objects.

Fragments of possible leadworking waste including sheet fragments, possibly including intrusive token blanks (SF6605, 6428 and 6183) and strips (SF6796, 6366, 5999 and 6604) were recovered throughout pre-Conquest deposits. Some were clearly offcuts, while others may have served as crude weights. They were retrieved from a range of features in a number of areas, although most came from Area 9.

Discussion and conclusions

by Elizabeth Shepherd Popescu

Archaeological excavations on the north bank of the River Wensum (particularly along Calvert Street, St

George's Street and Oak Street) have confirmed the presence of extensive ironworking in the Norwich area during the 10th to 12th centuries, using ores quarried from the local iron pan to the north and north-east of Oak Street. Ironworking of the period was also recorded on the south bank at Fishergate (Budd 1994, 18) and has been noted on many other Norwich sites. Evidence for pre-Conquest metalworking specifically beneath Norwich Castle comes from Site 416N within the north-east bailey. Here a small quantity of iron smithing slag was recovered from late 10th-century pits (Bayley 1985, 33). Other local evidence comes from excavations at Greyfriars, some 300m to the north-east of Castle Mall, which again recorded evidence for small-scale ferrous and non-ferrous metalworking in the Saxo-Norman period, some of which was found in association with sunken-featured buildings (Emery 2007). Although much of the material from this site again related to iron smithing, of particular significance here was specialised smelting and refining activity in the form of litharge and crucibles with argentiferous residues which — together with the presence of an Alfredian coin weight — may indicate an association with an early mint. To the west of the castle, excavations beneath the Norman French Borough at the new library may suggest goldworking in the vicinity during the pre-Conquest period (Site 26437N; Percival and Hutcheson in prep.), although much of the area itself appears to have been laid out as fields at this time.

Given the evidence summarised above, the presence of both ferrous and non-ferrous metalworking waste within Late Saxon levels at Castle Mall is unsurprising. Both primary and secondary operations are evident and the same workman may have undertaken both smelting and smithing within a single premises (Crossley 1981, 31). Similar mixed craft/'industrial' assemblages are familiar from many Anglo-Saxon urban centres, such as Thetford (Bayley 1984, 107; Wallis 2004), Lincoln and York (at both Fishergate (Rogers 1993, 1224–1239) and Coppergate (Ottaway 1992)). Excavations elsewhere have indicated that workshops were often located near dwellings. Much of the material recovered from pits at Castle Mall was probably associated with the occupants of adjacent buildings, from which small quantities of metalworking waste were also recovered in some instances. Although hearth material was found in some quantity, only a single example was found in association with a possible oven/furnace base. Physical evidence of forges and metal extraction is otherwise limited to hearth bottoms, tuyeres and other hearth debris, along with tap slag and spillage of copper alloy and lead.

The waste was widespread over several areas indicating that no single area of the settlement acted as a metalworkers' enclave, though there are notable concentrations. A cluster of debris within Hollow 1, for example, may indicate localised activity. The presence here of copper alloy spillage and crucible fragments with traces of copper alloy and other metals indicates that this part of the site was a focus for non-ferrous metalwork (particularly as the crucible fragments recovered from this period all came from the immediate vicinity). Although tap slag was recovered from other areas, there appears to have been a concentration of material in Area 47. Much of this came from intrusive post-medieval and modern features, but had probably been disturbed from Late Saxon or medieval levels.

Textile Manufacture and Needlework

Bone pin beater

by Julia Huddle

(Fig.4.101)

Examples of pin beaters, similar to an unstratified example from Castle Mall (SF5496), are well known from Late Saxon contexts from Norfolk and elsewhere in England. They are usually of sub-oval section, pointed at one end and broader and flatter at the other, often with a dished face at the broader end. Previous examples from Norwich come from St Martin-at-Palace Plain (V. Williams 1987b, 103, fig.81, no. 16), Fishergate (Williams 1994c, 29, fig.17, no. 5) — both from 11th-century contexts — and Greyfriars, from a Late Saxon context (Huddle, in Emery 2007). Seventeen examples were recovered from Late Saxon contexts at Thetford, Norfolk where they were referred to as ‘double-ended implements’ (Rogerson and Dallas 1984, 170–5). These tools are thought to be pin beaters used for weaving. David Brown explains how they might have been used with the two-beam loom for picking up a group of warp threads with the pointed end, the weft thread is passed behind them, and the flatter end of the tool is used to push down the weft thread (Brown 1990b, 27). Brown describes these tools as ‘pricker-cum-beaters’ to reflect their dual purpose.

SF5496 Incomplete bone **single pointed pin beater**; smooth highly polished tool, of sub-oval section, one end is broken, surviving end is cut either side forming a long sharp edge. Mammal bone
30000, unstratified, G3/13

Spindle whorls

by Julia Huddle

(Fig.4.101)

A total of twelve spindle whorls was found at Castle Mall, ten of which are bone and two are stone.⁷ The bone whorls are all made from sawn-off proximal ends of cattle femur and are perforated centrally. Hole diameters vary from 8–14mm and on each whorl they are one or more millimetres larger at one, slightly splayed-out end. The holes are generally circular, although a few are almost square, presumably reflecting the shape of the spindles. One whorl (SF6672, unstratified) is decorated with lightly incised lines radiating from the apex (see Fig.4.101). Similar decoration can be seen on an example from Thetford (Rogerson and Dallas 1984, 176, fig.194, no. 75) and on several from Ipswich (Riddler forthcoming, a).

Such simple bone hemispherical spindle whorls peak in the 10th–11th century at Coppergate, York (Walton Rogers 1993, 1268) and Flaxengate, Lincoln (Mann 1982) and around the 11th century at Winchester (Woodland 1990, 217, fig.45f) and Ipswich (Riddler forthcoming a). Stratified whorls from Norfolk sites are generally recovered from Late Saxon contexts as at Thetford (Rogerson and Dallas 1984), Castle Acre (Margeson 1982, fig.46, no. 4) and St Martin-at-Palace Plain (Williams 1987b, 104, fig.82, nos 22 and 22a). Those from the Norwich Survey excavations, however, are from 13th–15th-century contexts (Margeson 1993, 185, fig.136, nos 1436–1439).

Five of the Castle Mall examples are from 10th–11th-century deposits, one is from an 11th–12th-century context (see Chapter 5.III), one is from a 13th-century

deposit and the remaining three examples are unstratified. Of note are two spindle whorls from Area 9 — one from fills of a sunken-featured building (Building 12, G9/48) and another from a nearby pit (G9/109). One other is from the fills of a post-hole building on Area 6 (Building 1). Spindle whorls are commonly found in fills of Late Saxon buildings and surrounding refuse pits as for example at Thetford (Rogerson and Dallas 1984) and Greyfriars, Norwich (Huddle, in Emery 2007). As with the aforementioned sites, the evidence at Castle Mall does not suggest weaving specialisation in any particular area, but rather a craft pursued in the home during the Late Saxon period. Sue Margeson discusses the domestic activity of spinning widespread amongst women in the Middle Ages and this is likely to be equally true during the Late Saxon period (Margeson 1993, 184).

SF6404 **Hemispherical bone spindle whorl**, formed from the head of a cow femur.
91960, destruction debris within sunken-featured Building 12, Period 1.2, G9/48

SF6672 **Hemispherical bone spindle whorl**, formed from the head of a cow femur, decorated with four roughly incised double lines which radiate out from the apex.
90000, unstratified, G9/127

Pig fibula pins

by Julia Huddle

(Fig.4.101 and 9.34)

Three pig fibula pins were recovered, as well as one bone or antler ?pin shank. Such pins are commonly found in Late Saxon contexts and are thought to be dress pins (MacGregor 1985, 120–1) or needles such as might be used for netting, loop needle-netting and coarse needlework (Crowfoot in Rogerson and Dallas 1984, 167). Only two of the Castle Mall bone pins are from stratified contexts (SF6909 and 7226, both from fills of the barbican well; see Chapter 9.III, Fig.9.34) and both are likely to be residual in this 15th- to early 16th-century context. The third pig fibula pin recovered on site is unstratified (SF4593).

Pig fibula pins are usually perforated at the distal end, which naturally forms the head (see SF5493). Often the only other modification is that some of the articular surfaces are trimmed away, forming a more rounded and smooth head. SF7226 is slightly unusual in that it is not perforated, although an extant circular depression presumably acted as a marker for an unexecuted hole. The object does, however, appear to have been used since the shaft is quite polished.

SF5493 **Perforated bone pin**, made of pig fibula; perforated at distal end with slight trimming at the top to produce almost flat spatulate-shaped head, shaft oval in section and slightly polished; tip is missing.
10000, unstratified

Bone ?needlecases

by Julia Huddle

(Fig.4.101)

Two sections of hollow ?goose ulna were recovered, one from a Late Saxon context (SF6588, Period 1.3, not illustrated) and the other from Period 4.1 (SF5855). The latter has a transverse hole at one end and its surface is quite polished. Elsewhere, similar pieces are occasionally recovered with transverse holes at one end, such as that from Castle Acre (Margeson 1982, 243, fig.46, no. 7) and

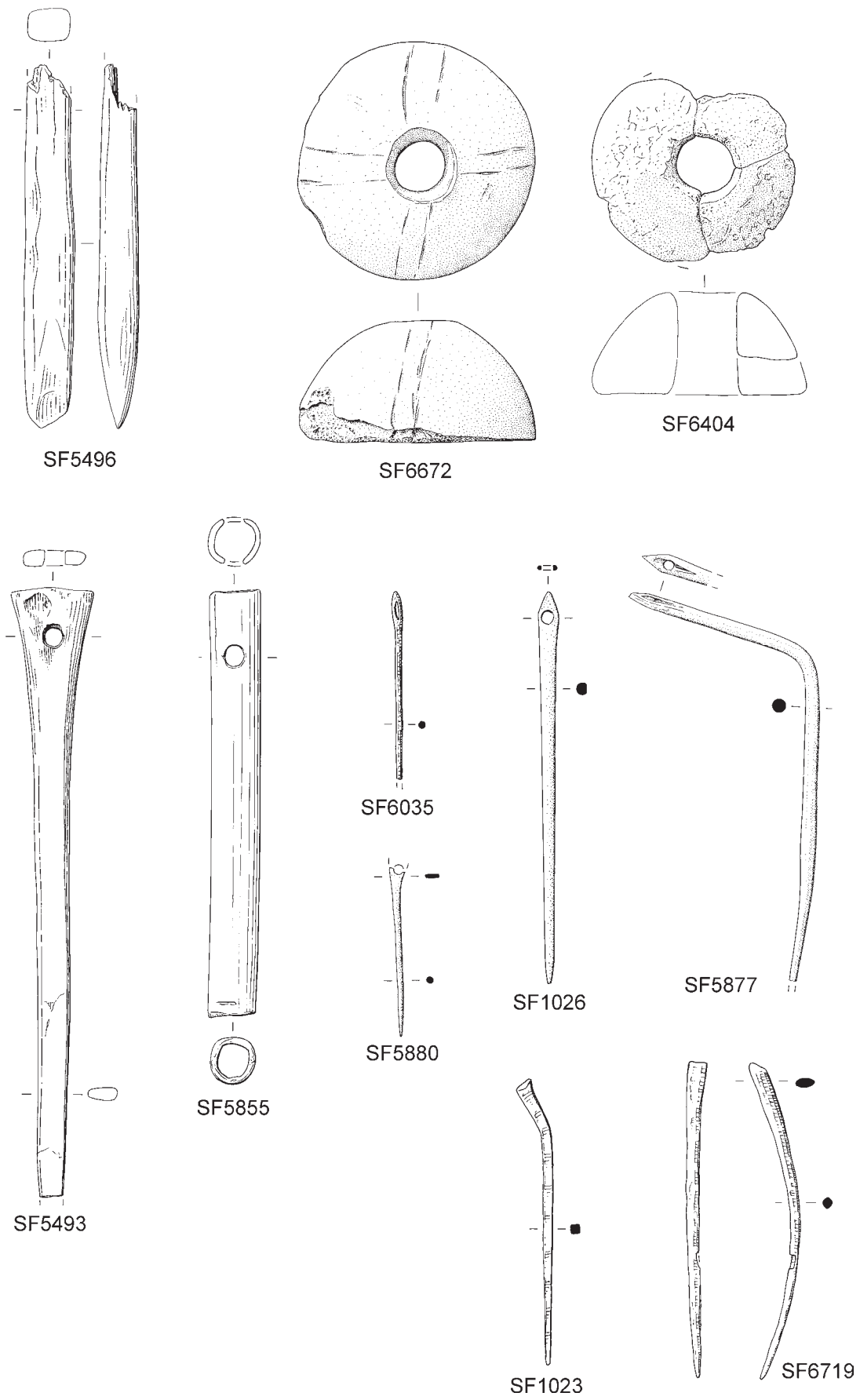


Figure 4.101 Bone objects: pin beater (SF5496); spindle whorls (SF6672 & 6404); pin (SF5493); ?needlecase (SF5855); iron needle (SF6035); copper alloy needles (SF1026, 5877 & 5880); iron fibre processing spikes (SF1023 & 6719). Scale 1:1, ironwork at 1:2

two from the castle site at Northampton (Oakley 1979, 318). Other examples without the lateral perforation include seven found at Thetford (Rogerson and Dallas 1984, 179, fig. 194, nos 64–69).

Sue Margeson has suggested that these tubular bone objects may be needlecases. MacGregor discusses Viking Age needlecases made from hollow goose-sized bird bones, sometimes with transverse perforations, from Scotland and Birka in Sweden (MacGregor 1985, 193, fig. 101, no. 23). These were presumably either plugged at both ends or the needles were pushed into a cloth, which was then tucked into the tube.

SF5855 Section of polished bird bone, sawn or cut at both ends, transverse hole near one end. L: 70mm. D: 7/8 mm. Goose ulna.

80264, fill of ditch 80301, Period 4.1, Group: 8/16

SF6588 Section of bird bone, sawn or cut at both ends, cut marks are visible at both ends. L: 73mm. D: 11/12mm. Goose ulna. Not illustrated.

20223, fill of pit 20225, Period 1.3, Group: 202/165

Iron needles

by Quita Mould

(Fig. 4.101)

The only complete iron needle from the site (SF6035) came from a pre-Conquest context and a broken iron needle stem came from a ditch fill (SF5492, 10978, fill of ditch 11109, Period 1.4, G1/43, not illustrated). Comparable examples are known in York at Coppergate (Rogers 1993, 1271 nos 4968–4974) and Fishergate (Ottaway 1992, 455–5). Ottaway, however, discusses the lack of sites elsewhere in Britain producing needles during the Late Saxon period and cites only four examples from Thetford and four from Lincolnshire (Ottaway 1992, 547).

SF6035 Needle with round sectioned stem, oval eye and gently pointed head. L: 62mm

40047, fill of pit 40003, Period 1.4, G2/11

Copper alloy needles

by Alison Goodall and Julia Huddle

(Fig. 4.101)

Eight copper alloy needles were recovered, of which three came from from Period 1. One is from Period 1.3 (SF5877) and two are from Period 1.4 (SF 5880 and SF1026) the latter from a grave in the cemetery of St John (Cemetery 4); the remainder are from Period 5. The needles are of the types generally found on medieval sites, one (SF5877, Period 1.3) having the eye set in a gutter or groove to take the thread. The form of needles has changed little over the years. Examples of copper alloy needles from Late Saxon deposits are very rare although 7 of the 243 needles from Coppergate, York are of copper alloy; six from 10th-century contexts and one from a late 10th-early/mid 11th-century context (Mainman and Rogers 2000, 2533–2534). Thirteen needles were found in excavations at Eastgate, Beverley from contexts ranging in date from the 12th to the late 14th century and later; these are mostly very long but there seems to be little correspondence between head form and phase (Goodall 1992, 138–41, fig. 76.138–47). At present it is not possible to identify different functions for the different types of needles, but it may be safe to

assume that the smaller examples were used for general sewing of fabrics while some of the larger needles were used for sewing leather, sail-making and more heavy-duty work.

SF1026 Needle with triangular head pierced by an off-centre circular hole. L: 67mm.

11452, fill of grave 11454, Period 1.4, G1/61

SF5877 Needle. Large needle with point missing. Triangular head with a neat vertical groove on both faces, into which the circular eye is set.

40289, fill of pit 40290, Period 1.3, G2/8

SF5880 Needle. Short needle with flattened end containing off-centre broken eye. L: 29mm.

90041, fill of pit 90223, Period 1.4, G9/64

Iron fibre processing spikes

by Quita Mould

(Fig. 4.101)

Evidence for both fibre preparation and the working of cloth was recovered. Twenty individual fibre processing spikes were found during the Castle Mall excavations, principally occurring in 10th–11th-century contexts or associated with 11th-century pottery, suggesting that textile manufacture was being undertaken in the vicinity at the time of the Conquest. The term ‘fibre processing spike’ is used to describe the individual teeth which were originally mounted in groups into a wooden head, often iron bound, and used to comb wool or flax. This was part of the preliminary cleaning process and ensured that all the fibres lay in the same direction prior to spinning. Distinguishing between the teeth of a wool comb and those from a flax heckle is difficult, hence the necessity of a term to describe both. Analysis of the collection from Coppergate, York has allowed Penelope Walton Rogers to suggest some likely distinguishing criteria (1997, 1727–1731) and it would seem that teeth from both a wool comb (SF6719) and a flax heckle (e.g. SF1023) are represented at Castle Mall.

A fragmentary pair of large iron shears was recovered from a pit (SF6793, pit 47831, Period 1.4, G47/18, not illustrated). These may have been used for cutting cloth or shearing sheep.

SF1023 Fibre processing spike, square section. L: 96mm. W: 5mm
10740, occurring residually in fill of grave 11238, Period 1.3, G1/10

SF6719 Fibre processing spike, comb tooth, round section, slightly curving profile L: 106mm. Max W: 8mm
47008, fill of pit 57187, Period 1.4, G47/21

Leatherworking

by Quita Mould

Iron awls

An awl (SF1004, not illustrated) with the point and tang separated by a slight shoulder was recovered from a beamslot within Building 8 (G1/7, Period 1.2). It may have been used in leatherworking.

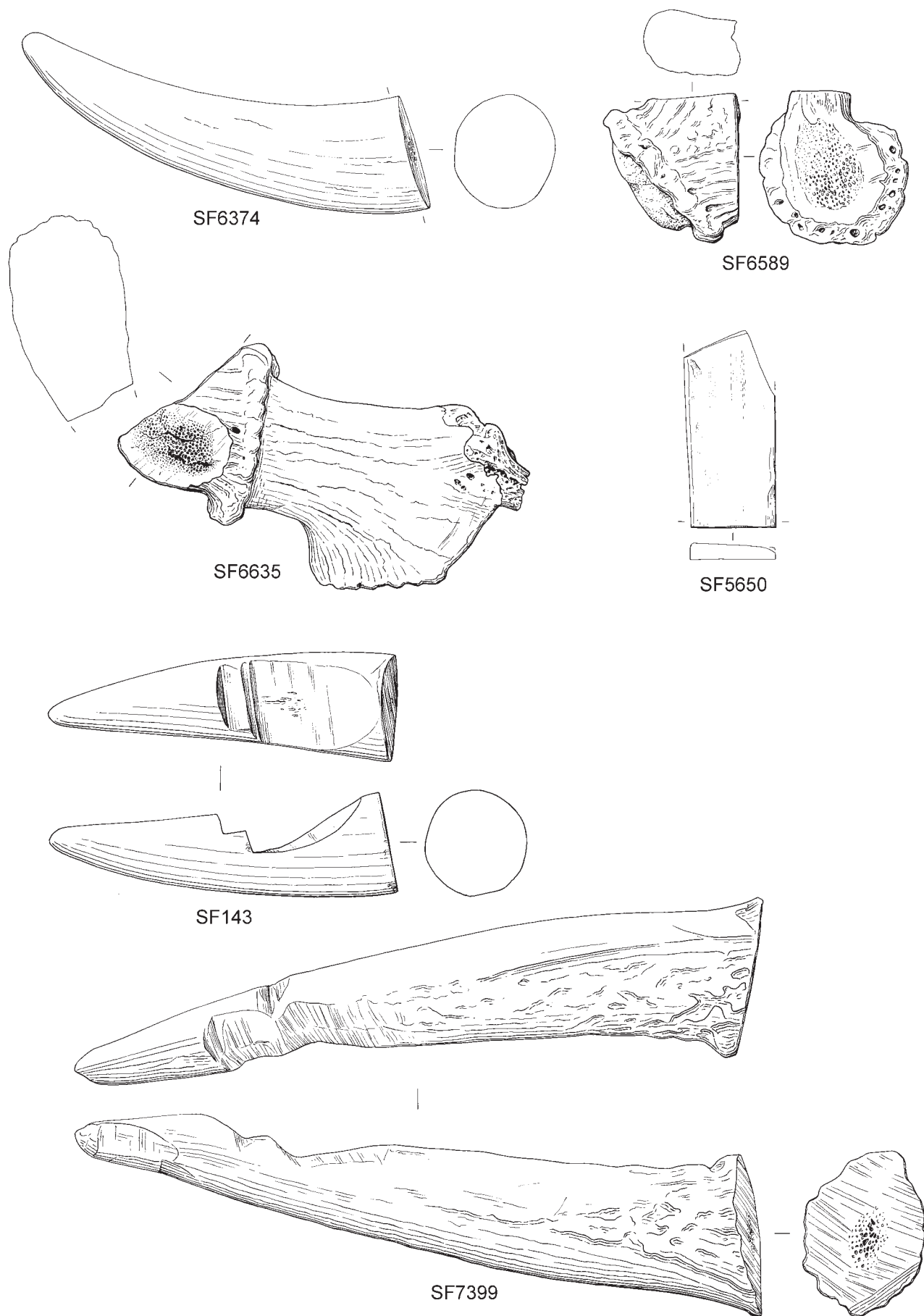


Figure 4.102 Primary antlerworking waste (SF6374, 6589 & 6635). Secondary antlerworking waste (SF5650). Antler wedges (SF143 & 7399). Scale 1:1

Antler- and Hornworking

Primary waste

by Umberto Albarella, Mark Beech, Jacqui Mulville and Julia Huddle

(Figs 4.102–103, 4.108 and 13.2, Plates 4.42–4.44)

A total of 59 horncores came from Late Saxon contexts (cattle x 33; sheep x 14; goat x 12), many of which had been sawn, chopped or cut. A complete pair of large goat horns (Plate 4.44) came from Area 46 (47008, pit 57187, Open Area 9, Period 1.4) while a sheep skull with chopped horncores came from pit 57187 (Period 1.4; Plate 4.43). In addition to the 19 red or fallow deer antlers and antler fragments and a pair of roe deer antlers from pit 47831 (Period 1.3; Plate 4.42), fifteen other pieces of primary waste were recovered, along with a single piece of secondary waste and two antler wedges (see below). One pit in Area 9 to the east of the site (pit 91828, G9/39, Period 1.3) contained a small group of antlerworking waste (5 pieces), together with an antlerworking tool in the form of a wedge (SF7399 — see below).

Spatial analysis indicates that both horn- and antlerworking were practised across the site during the pre-Conquest period, although it must be emphasised that the numbers involved are small. Antlerworking was mainly concentrated to the east, whereas hornworking was primarily practised in the northern, western and central areas (Figs.4.103 and 4.108). It is possible, however, that this distribution reflects patterns of disposal rather than activity, but this appears to be a less likely explanation. In the area under analysis there is a rather high density of buildings and workers would probably dispose of their refuse either in the vicinity of their own workshop or much further afield.

Further comments on Late Saxon antlerworking at the site are given by Huddle below and antler-, bone- and hornworking in the vicinity of the site is considered in more general terms in Chapter 13 (see Fig.13.2), with more detailed evidence given in Part III.

SF6374 Sawn antler. Sawn antler tine end. Red deer antler. 91828, fill of pit 91816, Period 1.3, G9/39

SF6589 Sawn antler. Naturally shed right antler burr, beam and brow tine sawn off close to the burr at an oblique angle. Red deer antler. Unmodified

22211, fill of pit 22074, Period 1.2, G22/130

SF6635 Sawn antler. Left antler burr with part of skull attached. The beam and brow tine are sawn off close to the burr at an oblique angle. Red deer, large left antler attached to part of skull.

46172, fill of pit 46205, Period 1.4, G46/16

Secondary waste

by Julia Huddle

(Fig.4.102)

Despite the fact that only a single piece of secondary antlerworking waste was recovered from Late Saxon deposits (an offcut from a composite comb; SF5650), the primary waste described above is likely to be the result of comb manufacture on or near the site (see Chapter 13.2). Prior to the Conquest, composite combs accounted for the majority of the antler industry. The preference for antler rather than bone resulted from its mechanical properties — antler being more suited to the manufacture of combs (MacGregor 1991, 357; 1985, 25–9). This preference is clearly shown on continental sites such as that at Ribe (Ambrosiani 1981), Lund (Christophersen 1980) and Hedeby (Ulbricht 1978). Antlerworking from English sites has so far been on a much smaller scale by comparison, although the antlerworking debris from Fishergate, York (Rogers 1993) and Greyfriars, Norwich (Huddle, in Emery 2007) for example, similarly provides growing evidence for the manufacture of antler composite combs during the Late Saxon period (see Chapter 13). Other antler artefacts may have been made on the site, such as the fine spoon (SF1081) described elsewhere in this chapter.

SF5650 Strip. Antler strip fragment; ?uncut tooth plate.

50170, fill of pit 50173, Period 1.4, G5/14

Antler wedges

by Julia Huddle

(Fig.4.102)

Four antler wedges were recovered from the site, two of which were found residually in post-medieval fills of the

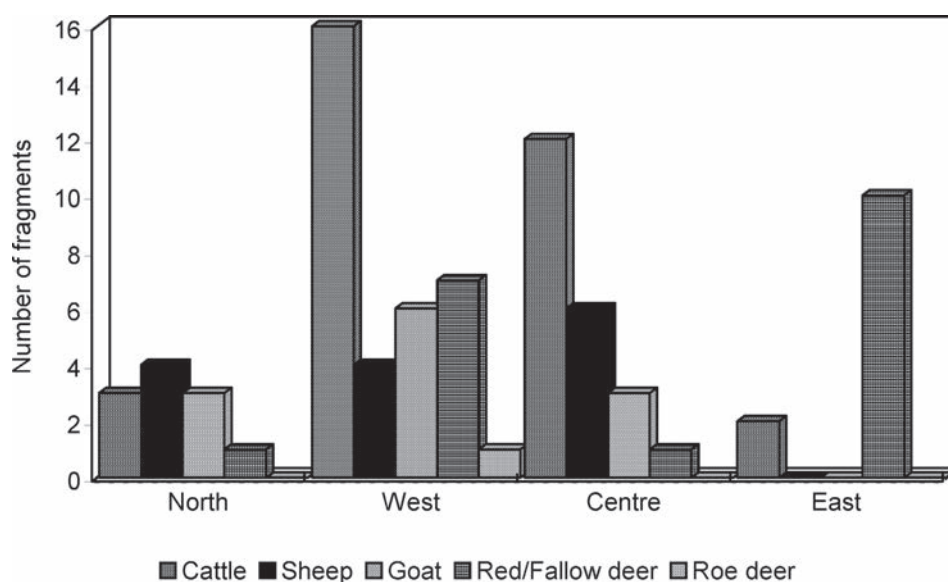


Figure 4.103 Distribution of horncores and antlers in Period 1 by area

barbican ditch (G9/41, Period 6). The other two came from 10th–11th-century deposits in Area 9 (G9/39 and G9/109). Five pieces of antler working (primary waste) were also recovered from pit 91828 (G9/39, Period 1.3), and the wedge found in association (SF7399) may have been used to work this material.

Wedges made from sawn antler tine ends with two or more oblique cuts at the tip forming faceted wedge-shaped ends are commonly recovered from Late Saxon and Viking Age sites in Britain and on the Continent. They are often recovered from sites which have produced antler working waste, such as at Hedeby (Ulbricht 1978), Ribe (Ambrosiani 1981) and Norwich (Margeson and Williams 1985; Huddle, in Emery 2007).

Antler wedges are used to split the thick antler beams into smaller pieces and MacGregor illustrates an antler beam from Hedeby, with a wedge driven in at one end, the beam having been first marked out into strips on the outer compact tissue (MacGregor 1985, 57, fig.34). Three of the Castle Mall wedges (SF143, 7399 and 7610) are also ‘notched’, that is they have a ‘U’ or ‘V’-shaped depression cut out on one side. This notching can be seen for example on several wedges from Greyfriars (Huddle, in Emery 2007), York (Tweddle 1986, 229) and Hedeby (Ulbricht 1978, 83 pl. 45, nos 6, 7 and 15)⁸. Ulbricht notes that the Hedeby examples frequently bear visible hammer marks on the sawn surface supporting the idea that they were used as wedges. She suggests that the notching was caused when the wedges were so tightly driven into the antler (beams) that they became stuck and subsequently were caught by the saw. This interpretation seems feasible for the notches present on the Castle Mall wedges, especially since they are all cut out from the top end of the wedge (the wider end; see Fig.4.102, SF143).

SF143 Sawn antler tine end, with cut-out ‘notch’ at wider end, possible wedge.

92741, fill of barbican ditch 91295, Period 6.2, G9/41

SF7399 Wedge, sawn antler tine, the tip has been modified with two or so oblique cuts forming a faceted point. Two small and one larger cut-out notches towards pointed end. Red deer antler tine

91815, fill of refuse pit 91816, Period 1.3 G9/39

Whetstones

by J.M. Mills and D.T. Moore

(Fig.4.104)

Four whetstones were recovered from Late Saxon deposits; two of Purple Phyllite (SF5065 and 5920) and two of Norwegian Ragstone (SF5554 and 6529). The latter is of an unusual colour and had apparently not been used for sharpening. Two other Purple Phyllite stone were found unstratified (SF562 and 6434, not illustrated). Although visual and petrographic examination of the Purple Phyllite whetstones was carried out, it remains of unknown provenance. One Phyllite stone came from the fill of an 11th-century pit (SF5065, not illustrated) lying isolated on the Timberhill frontage (G1/137, Period 1.3). This example is a long slab-like whetstone with well worn faces and edges; one of the edges is crossed by a series of short grooves which are probably a result of point sharpening, although they are dissimilar from the long grooves usually seen. A second Phyllite whetstone was recovered from a pit (SF5920) and is petite, having been pierced for suspension.

Another (SF238), found residually in late medieval/transitional deposits, had been marked for drilling although the perforation was not completed. This whetstone also has a pair of grooves around three sides of the stone at the point drilled for perforation. The perforated examples are fine-grained and are small, suggesting suspension presumably from a belt. It is not possible, however, to tell if these whetstones were used for honing personal knives or were associated with a particular craft or industry.

Evidence from London (Pritchard 1991, 155), Thetford (Moore and Ellis 1984) and York (MacGregor 1982, 77–80) suggests that the use of Norwegian ragstone was widespread before the Norman Conquest. Purple Phyllite is frequently observed to share its distribution pattern with Norwegian ragstone. Elsewhere in England and at Haithabu (Hedeby) in present-day Germany, Purple Phyllite whetstones are associated with Viking occupation (Moore 1983, 285; Mitchell *et al* 1984 and Crosby and Mitchell 1987). It has been suggested that this stone ceased to be quarried in the 11th century (Crosby and Mitchell 1990, 292). The stratigraphically early finds from Norwich are consistent with these observations and it is possible that the Phyllite whetstones from post-Conquest levels are residual within these deposits.

Comparison with the range of stone types present with those excavated in medieval Winchester (Ellis and Moore 1990, 279–87) is interesting. In Winchester, the metamorphic whetstones (Norwegian Ragstone and Purple Phyllite) account for approximately 40% of the whetstones, whereas for sites in Norwich it tends to be >80% with Phyllite whetstones representing around 12% of the total. Whether this is a result of proximity to stone sources or preferential trading is a matter for conjecture.

SF238 Whetstone. Fine grained stone; rectangular-sectioned; slightly waisted. Broken at one end, close to this end two parallel grooves are worn around the stone. On the two broadest faces a mark seems to indicate the position where a perforation should be drilled although this has not been carried out. 11 x 20 x 15mm ?Purple Phyllite

92639, fill of pit 92640, Period 5.2, G9/99

SF5920 Whetstone. Small delicate example, pierced for suspension at one end. Sub-oval cross-section, other end broken. (in two pieces) 53 x 13 x 50mm. Purple Phyllite .

90353, fill of pit 90516, Period 1.3, G9/109

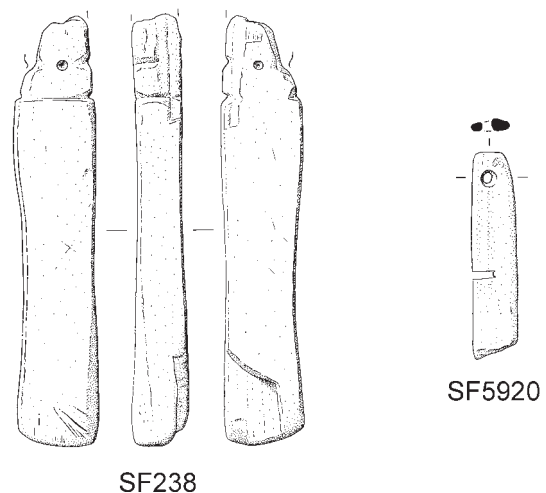


Figure 4.104 Whetstones (SF238 & 5920). Scale 1:2

Querns

by David Buckley

A significant proportion of the total number of quern fragments (x 15; 34.8% of the total) derived from Late Saxon deposits. Trade in lava querns, which appears to have ceased at the beginning of the Saxon period, was re-established during the Middle to Late Saxon period (Parkhouse 1977). Elsewhere it has been shown that some querns recovered from contexts of this date are in fact Roman but this does not appear to be the case with the Castle Mall assemblage. The number can therefore be taken to support evidence for a considerable increase in lavastone trade into the Anglia region during the Middle and Late Saxon period, which is supported also by the evidence from Ipswich (Keith Wade, pers. comm.) and Colchester (Buckley and Major 1987).

One example (SF 5919, not illustrated) is from a flat quern with a collar around the hopper (*cf.* Parkhouse type 111a). This came from a post-hole in Area 8 (80762, Period 1.2) where it may have been used as packing material. These are Late Saxon querns of a form which, according to Röder, were in use until *c.*1000 (Hörter *et al.* 1950; Crawford and Röder 1955, fig.1.7). Its recovery from a 10th-century context is therefore entirely reasonable and it is likely that many of the other fragments, particularly those in Late Saxon/Saxo-Norman contexts, would have derived from similar forms of stone. This comment may also apply to the querns from medieval contexts since a larger time-span is recorded in Southampton (West *et al.* 1975, 307–11).

Commercial Activity

Coins

by John Davies, with Marion Archibald

Coins belonging to the early years of Anglo-Saxon occupation in Norwich are rare. *Sceattas* of the first half of the 8th century were found during excavations at St Martin-at-Palace Plain and at Fishergate (Williams 1987c, 63; Gregory and Metcalf 1994, 13). A penny of the late 9th century was recovered during excavations at Greyfriars (Site 845N, Davies 2007) and a St Edmund penny, of the early 10th century, was found at Barn Road (Rigold 1963). Five Saxon pennies were found at Castle Mall, two of which were struck at the mint of Norwich. The earliest of these is a crowned bust type of Aethelstan (924–939). This was struck at Norwich by the moneyer Eadgar. There are two other pennies of the later 10th century. One is a crowned bust type penny of Eadred (946–955) and the other is a slightly more common long cross penny type of Aethelred II (997–1003). A short cross type penny of Cnut was struck between 1030 and 1035–6 at Lincoln by the moneyer Oslac. The second coin struck at Norwich is a hammer cross type of Edward the Confessor (1059–1062).

An interesting addition to the list of Saxon pennies is a continental coin of the early 11th century (*c.*1000). This coin is a German imitation of a *sachsenpfening* of the Royal mint of Magdeburg (SF5216). Such continental types are not commonly found in England but do turn up occasionally, particularly at sites with a commercial association. It is very unusual to find a German coin of this date in England. Although battered, the coin is not pecked and may have come direct from northern Germany rather than via the Vikings. German coins are much more

common in Scandinavian hoards than English ones, even during the Danegeld era.

Following this early group, no Norman coins were found on the Castle Mall site, nor any other issues until those of the late 13th century (see Period 4, Chapter 7.III). Elsewhere in Norwich, coins of that period are present, as at Greyfriars (Davies 2007) and at Garland's Site on London Street (Clough 1973; see Chapters 2 and 13). There is, however, a gap in the Castle Mall coin list of over 200 years, until the Edwardian period.

SF1 Aethelred II long cross type penny

AD 997–1003
Obv: AEDELRED REX ANG-----
Rev: illegible
BMC iva incomplete
Wt: 0.74g
92779, makeup dump, Period 6.2, G9/43

SF1024 Aethelstan crowned bust penny

AD 924–39
Obv: +AEDELSTAN REX
Rev: +EADGAR MO NORDIC
(moneyer: Edgar; mint: Norwich)
BMC iiii; North 675
Die axis: 0 Wt: 1.94g
11268, fill of ditch cemetery boundary ditch 10769, Period 4.2, G1/48

SF1063 Cnut short cross type penny

AD 1030–35/6
Obv: CNVT REX
Rev: OSLAC ON LIN---
(moneyer: Oslac; mint: Lincoln)
BMC xvi; North 790
Wt: 1.14g
80151, 'road' across south bailey rampart, Period 3.1, G8/20

SF5216 German Sachsenpfening

*c.*1000.⁹
Sachsenpfening Dannenberg type 1330 imitation of an anonymous issue of Magdeburg (Dannenberg 1967, 643).
Wt: 0.93g.
10712, modern stanchion base, Period 7.2, G1/161

SF5737 Edward the Confessor hammer cross type penny

AD 1059–62
Obv: EADWARD REX
Rev: +PVRSTAN ON NORD
(moneyer: ?; mint: Norwich)
BMC xi; North 828
Die-axis 270 Wt: 0.96g
40000, unstratified

SF6714 Eadred crowned bust type penny

AD 946–55
Obv: +EADRED REX
Rev: +NORB----
(moneyer: Norbert)
BMC v; North 713
Die axis 180 Wt: 0.96g
47090, fill of pit 47153, Period 1.3, G47/33

Lead ?weight

by Julia Huddle

A cast lead disc or weight (SF5439, not illustrated; Wt 13g) was recovered from the fill of a grave in St John's cemetery (grave 11088, Cemetery 4).

Diversions

Games and Pastimes

by Julia Huddle
(Fig.4.105)

Buzz-bones

Four perforated pig metapodia were found, one from Period 1.3 (SF6669, not illustrated) and one from Period 1.4 (SF6586 not illustrated). The two others are from Period 2.1, from the same pit in Area 2 (see Chapter 5.III, see Fig.5.54).

Similar examples are known from Late Saxon contexts as at Lincoln (Mann 1982, 12), London (Pritchard 1991, 208), Northampton (Oakley 1979, 313–315), Winchester (Brown and Lawson 1990, 589–591) York (Rogers 1993, 1263), Thetford (Rogerson and Dallas 1984, 182) and Ipswich (Riddler forthcoming a). Examples from the Norwich Survey excavations and elsewhere, both in England and on the Continent, continued in use throughout the medieval period (Margeson 1993, 213–5; Riddler forthcoming a).

These metapodia are perforated laterally by one or occasionally two holes cut more or less in the centre of the shaft. Several suggestions have been put forward for the function of these items including toggles or dress fasteners, bobbins and most recently musical playing pieces or buzz-bones (Lund 1974, 21; 1981, 256; Megaw 1984, 349; Margeson 1993, 215; Riddler forthcoming a). This latter interpretation is now the most favoured, especially given the increasing ethnographical support from the Continent where there are accounts of perforated pig metapodia being used as buzz-bones, in some instances up to the present day.

SF6586 Buzz-bone. Perforated pig metapodial. Not illustrated. 22426 fill of post-hole 22402, sunken-featured Building 25, Period 1.4, G22/155

SF6669 Buzz-bone. Perforated pig metapodial. Not illustrated. 46441, fill of post-hole 46443, Period 1.3, G46/15

Bone skate

A bone skate (SF6590, Fig.4.105) was recovered from the upper fill of a group of 10th–11th-century pits pre-dating burials associated with the Farmer's Avenue cemetery (Cemetery 3). Bone skates are well known from Late Saxon sites and MacGregor discusses their occurrence in the British Isles from the 8th to the 13th centuries (MacGregor 1976, 57–77). At Thetford and Norwich they are generally recovered from Late Saxon contexts.

Two from the Norwich Survey excavations are from 12th–13th-century deposits (Margeson 1993, 218, fig.116 cat nos 1789–90), and one from Greyfriars, Norwich is from a friary context, although it is possibly residual there (Huddle, in Emery 2007). There are accounts for the use of bone skates in various parts of Europe into the modern period (Parrington 1979, 1–25).

SF6590 Bone skate, front (distal end) pointed; slightly upswept front and rear; no perforations. Entire surface of bone is considerably eroded, but there is slight wear visible along skating (anterior) surface. 22075, infilling of pre-cemetery pits, Period 1.2, G22/130

Horse Equipment

Copper alloy stirrup mount

by Alison Goodall
(Fig.4.106)

An unstratified stirrup mount (SF6730) is of one of the more common forms, having a lozenge-shaped plate with a raised cross and bosses at the intersections, and probably dates from the 11th century. A similar stirrup mount, but having open-work decoration, is illustrated by David Williams (1995, fig.6). It is thought that metal stirrups were not introduced into Britain until they came in with Viking raiders at the beginning of the 11th century.

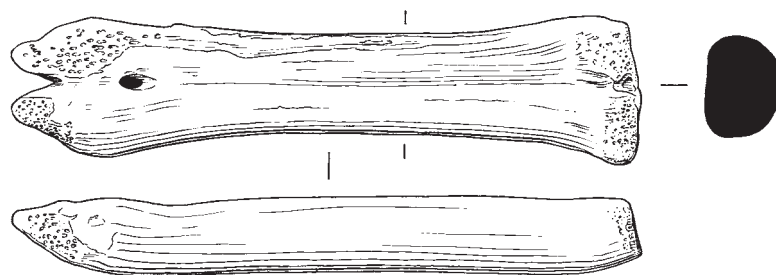
SF6730 Stirrup mount with lozenge-shaped plate, with pierced circular terminal at apex and rectangular flanged projection at base. The plate is divided into four sunken lozenge-shaped panels, each with an engraved single-line border and a circular boss at each corner. The outer border is carried around the base and apex and the apex has a further line defining the terminal hole. The projection base has an iron rivet and the flange is solid. Probably 11th century. 47000, unstratified

Iron horse harness and bits

by Quita Mould
(Fig.4.106)

A broken side link (SF6776) which was used to attach the reins to the bit is of a pre-Conquest type and was found residually. It is comparable with examples from Norwich (Margeson 1993, fig.172, 1820–1) and Winchester (Biddle 1990, fig.334, 3881–5). An iron horse bit link (SF6204) with spirally-twisted arms occurred residually in a post-Conquest pit. Such spiral twisting is common during the 9th to 11th centuries (Ottaway 1992, 643).

SF6776 Side link with pair of pierced ring terminals (one broken off) separated by a moulded neck. L: 50mm, ring diam 20mm 10555, fill of pit 10563, Period 4.2, G1/74



SF6590

Figure 4.105 Bone skate (SF6590). Scale 1:2

SF6204 Horse bit link spirally-twisted with rolled ring terminals at each end. L: 130mm.
40197, fill of pit 40370, Period 3.1, G2/17

Iron horseshoes and horseshoe nails
by Quita Mould
(Fig.4.106)

Seven horseshoes, from a total of 73 from the excavations, were of Clark's type 1 (1995, 85–6) with countersunk nail holes and a straight outer profile. Two examples (SF1070 and 5849, not illustrated) came from Saxon contexts, three were found associated with pottery of 11th–12th-century date and the others occurred residually. The branch of a type 2A horseshoe (SF5730, not illustrated) of 'Norman' type came from a grave within the cemetery of St John (Cemetery 4).

Three fiddlekey horseshoe nails used in horseshoes with countersunk nail holes were found in Saxon contexts. In addition, an 'eared' horseshoe nail of a type usually found in 13th-century contexts (Clark 1995, 87) was recovered from pit 46345 (Period 1.2, G46/1) suggesting later contamination of the deposit.

SF1070 Horseshoe left branch with straight edge and three countersunk holes with round nail holes within, type 1. L: 90mm, Web W: 23mm
80545, fill of pit 80568, Period 1.2, G8/6

SF1031 Horseshoe fiddlekey nail with semi-circular head flattened in the same plane as the shank. L 40mm, head W 22mm Not illustrated.
40113, fill of cess pit 40083, Period 1.2, G2/19

Weapons and Armour
by Quita Mould
(Fig.4.106)

Iron arrowheads

Three arrowheads were recovered from Late Saxon deposits, one of which has a lozenge-shaped head with a distinct neck and may be of medieval date and therefore intrusive (SF6147; see Chapter 7.III). The third example (SF6512) is a common type, which could be used for hunting or in warfare (Jessop type MP3; Jessop 1996, 196 and fig.1). It is possible that a conical ferrule (SF230, see above) may also be an arrowhead/spearhead, although it is significantly larger than the others which may suggest that it was a ferrule on a hafted implement.

An armour-piercing arrowhead (SF6292) of type M7 dates to the 11th to 14th century (Jessop 1996, 198). Other examples of this type have been found in 11th-century contexts at Goltho, Lincolnshire (I.H. Goodall 1987, 185–6, nos 185–7) and in 12th-century deposits at Castle Acre (I.H. Goodall 1982, nos 152–55).

SF6292 Arrowhead with round-sectioned socket tapering to a lozenge-sectioned point, now broken. L: 68mm socket D: 8mm
90227, fill of pit 90292, Period 1.4, G9/63

SF6512 Arrowhead with lozenge-shaped head of flat section, narrow neck and round-sectioned socket. L: 69mm blade W: 22mm
12804, fill of pit 12824, Period 1.2, GT20/8

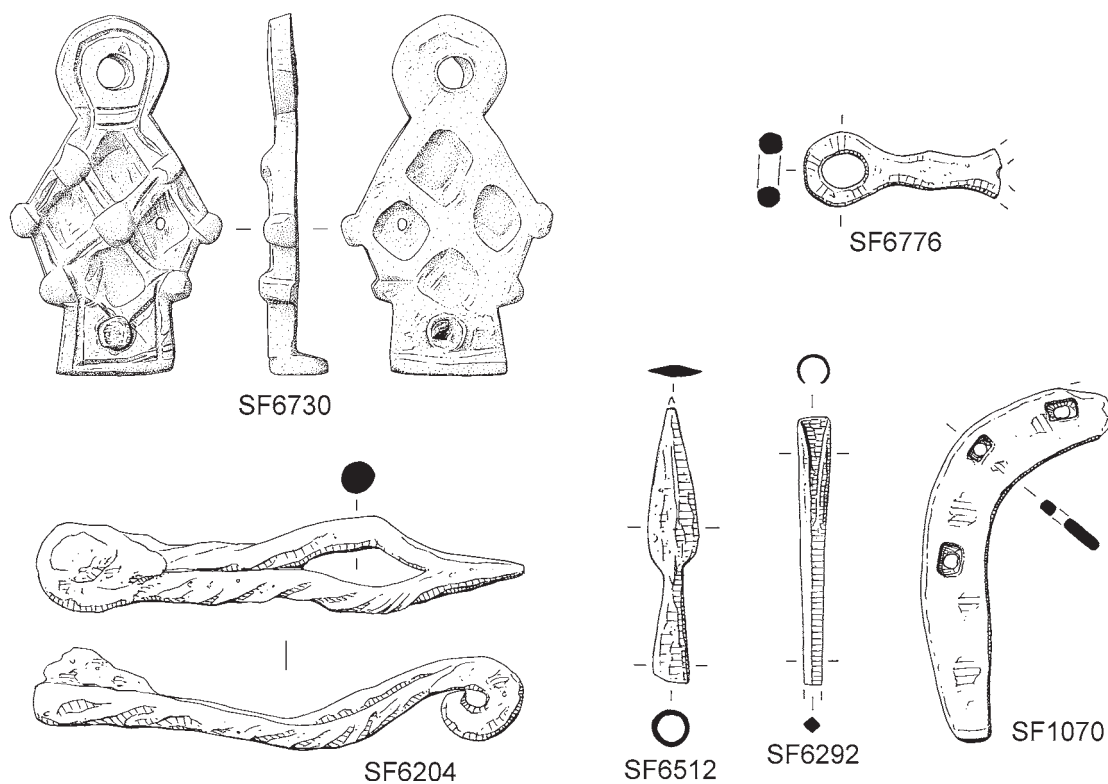


Figure 4.106 Copper alloy stirrup mount (SF6730), Scale 1:1. Iron horse harness side link (SF6776). Iron horse bit link (SF6204). Iron horseshoe (SF1070). Iron arrowhead (SF6512). Scale 1:2

Coffins and Coffin Fittings

Stone coffin

by Steven Ashley
(Plate 4.56)

A stone coffin recovered opposite the *Plough Inn* (now *Le Rouen* (*sic*) public house) was apparently found without a lid (*Fishers Almanac and Annual* 1911: Plate 4.56, p.267), the presence of which would, perhaps, have helped to provide a closer date of probable manufacture. However, a number of closely datable examples of monolithic coffins, with or without plain lids, and with recessed head-niches are known from excavations at St Albans Abbey and Winchester. Those found at St Albans comprise nos G14, of AD 1119 or 1146, and G2 of AD 1151 (Biddle and Kjølbye-Biddle, in prep.). The Winchester examples, G154 and G71 are dated respectively to AD 972–80 and 980–92 (Kjølbye-Biddle 1990). Of these examples, the closest parallel to that from Norwich is no.G2, from St Albans. A date of manufacture for the Norwich coffin could, however, fall anywhere within the 10th to 12th (and possibly 13th) centuries AD. It probably relates to the Farmer's Avenue cemetery (Cemetery 3; see Chapter 4.VI).

Description

A monolithic stone coffin of shelly limestone (Plate 4.56), is broken and has been reconstructed. Part of the foot missing. The coffin is 2.160mm long and tapers from 740mm at the head to ?originally 280mm at the foot (170mm survives). The external depth is 360mm at the head, tapering to 330mm at the foot. The coffin has an internal depth of c.290mm. At the head there is a reserved rectangular block, cut into which is an approximately semi-circular head-niche. The block is recessed 100mm below the top edge of the coffin, is 170mm deep, and is chamfered on its shoulders on both sides of the head-niche.

Coffin fittings

by Quita Mould
(Fig.4.107)

Two small rectangular iron staples (SF1045 not illustrated and 1046) were found *in situ* within a flint and chalk-lined grave of a burial of a sub-adult leper. The staples had been used in the construction of a coffin, their clenched arms indicating that the boards of the coffin were about an inch thick.

SF1046 Iron staple of rectangular section with clenched arms, found resting on the right pelvis of skeleton. L 48mm, arm 25/25/5mm
13055, skeleton 13090, Period 1.4, G1/61

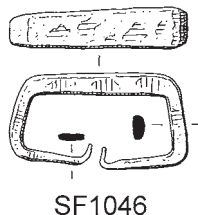


Figure 4.107 Iron coffin staple (SF1046). Scale 1:2

IV. ZOOLOGICAL AND BOTANICAL EVIDENCE

Mammal and Bird Bone

by Umberto Albarella, Mark Beech and Jacqui Mulville
(Figs 4.103, 4.108 and 4.109, Plates 4.39–4.44)

Assemblage Summary

A total assemblage of 1,461 mammal, bird and amphibian bones and teeth (NISP) was hand collected from Late Saxon deposits at Castle Mall, with an additional 145.5 bones from Site Riddled Samples (SRS) and 219.5 from Bulk Samples (BS). This represents 24.4% of the site assemblage (excluding the barbican well shaft assemblage detailed in Chapter 9.IV). No deposits of Late Saxon date were encountered at Golden Ball Street. The range of taxa recorded at Castle Mall is indicated in Table 4.17, with full details of the mammal and avian bone assemblages given in Part III.

Spatial Analysis

Possible variations between the animal bone assemblages from different areas and types of context at Castle Mall were considered during analysis, with the intention of identifying possible variations and similarities between areas as well as assessing the extent to which these have influenced the frequency of the species at different periods. Due to the nature of the archaeological evidence, the study of lateral variation in animal bone distribution in terms of comparison between different activity areas could only be undertaken for the Late Saxon period. For later periods, comparison was limited to the study of the contents of pit and ditch fills.

Period 1, which spans the Anglo-Saxon occupation of the site, may include some deposits relating to the earliest post-Conquest phase (included in Period 1.4). The site was occupied throughout the Late Saxon period by a series of different 'plots' or Open Areas (*i.e.* buildings surrounded by pits) — probably having both domestic and industrial/craft functions. It was not possible to compare bone assemblages from each individual plot as this would have resulted in an excessive division of the assemblage into very small samples. The plots were therefore grouped into four broad geographical areas: centre, north, east and west (Fig.4.108) and the frequency of the main domestic taxa was calculated for each (Fig.4.109). This comparison identified substantial differences between the areas. Plots to the east of the settlement produced a much larger number of domestic fowl bones, whereas those to the north had a larger number of pig bones. The interpretation of the different spatial distributions is far from easy and should be attempted in the light of other archaeological evidence. One possibility is that they reflect differences in food taste between different families; another is that they indicate variation in the disposal of food refuse. Wilson (1994) has pointed out that greater amounts of large bone fragments are generally present in the periphery of a settlement. In view of this observation it is possible that the eastern area, with its high number of small chicken bones, might be closer to the real centre of the site. It seems reasonable to suggest that the central part of a settlement is kept clear of the largest food and butchery refuse.

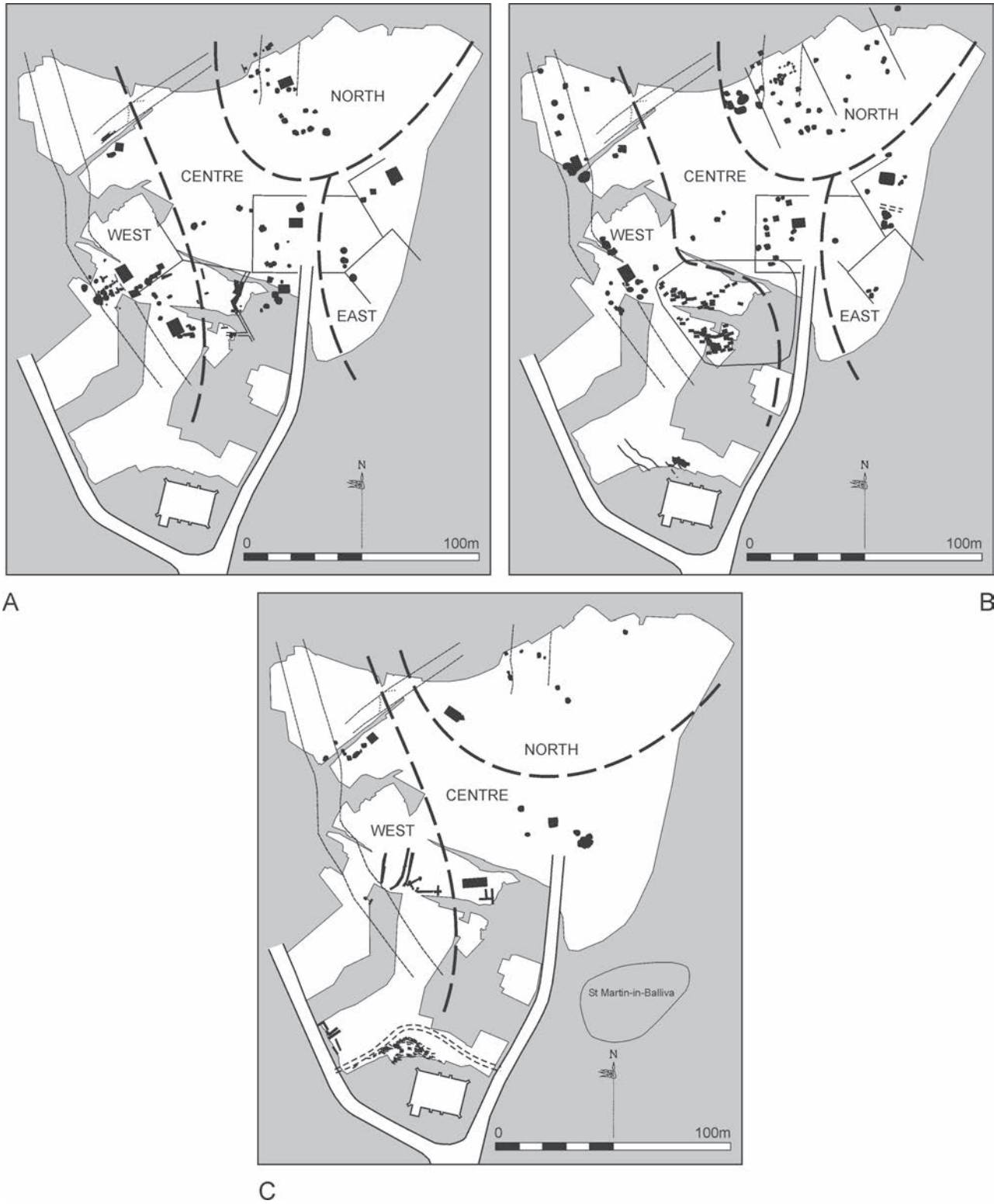


Figure 4.108 Spatial distributions used for plotting mammal & avian bone in Period 1. A = 1.2 (10th to early 11th century); B = Period 1.3 (11th century); C. Period 1.4 (mid to late 11th century). Scale 1:2500

The distribution of craft waste (specifically horn- and antler-working) was also studied in different areas and the results — illustrated in Fig.4.103 — are detailed alongside associated evidence in Chapter 4.III.

A high concentration of partial skeletons was found in a series of pits (G9/109) in Open Area 8 adjacent to

Building 12 and its possible replacement, Building 15 in the eastern part of the settlement (Table 4.18 and Fig.4.22). This suggests that these pits were used to discard dead bodies (including three cats, a pig, a domestic fowl, two horses, a goshawk and a dog, as well as four bones from a buzzard, Plates 4.39–4.41). The deposits had remained

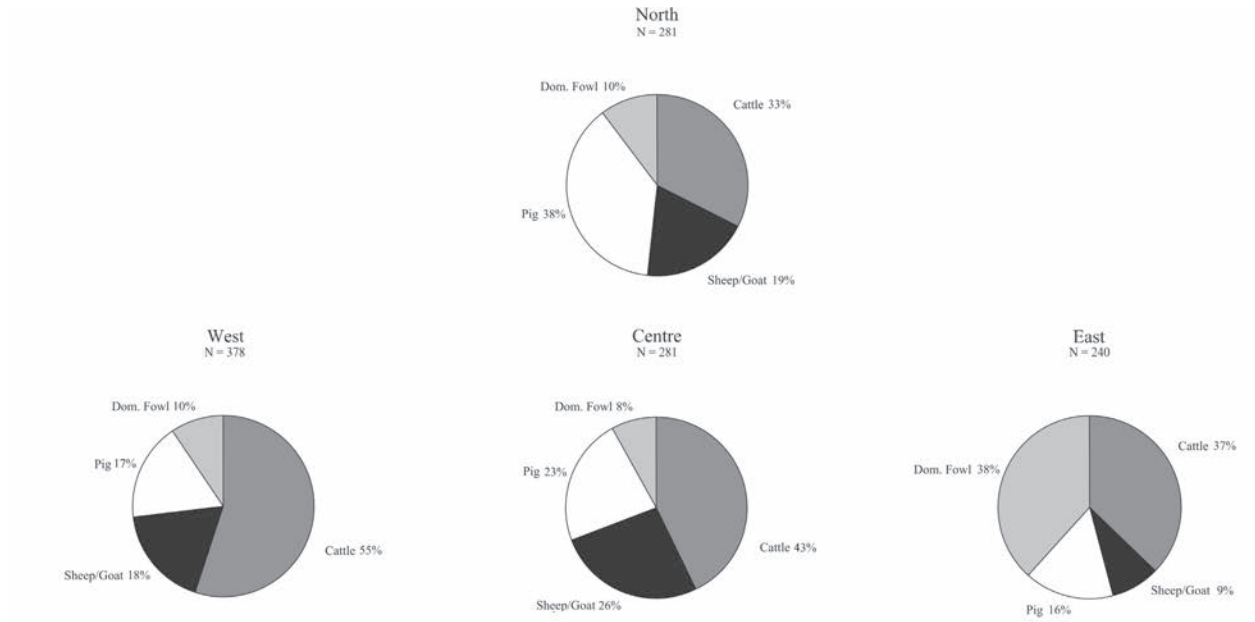


Figure 4.109 Relative proportion of the main species within different areas in Period 1



Plate 4.39 Horse partial skeleton (juvenile) from pit 90516, Open Area 8, Period 1.3



Plate 4.40 Horse partial skeleton (juvenile) from pit 90516, Open Area 8, Period 1.3



Plate 4.41 Goshawk partial skeleton from pit 90516, Open Area 8, Period 1.3

<i>Taxa</i>	<i>Hand collected</i>	<i>SRS</i>	<i>BS</i>	<i>Total</i>
Cattle (<i>Bos taurus</i>)	540.5	37	41.5	619
Sheep/goat (<i>Ovis/Capra</i>)	236	29.5	35.5	301
sheep (<i>Ovis aries</i>)	(51)	(5)	(4)	(60)
goat (<i>Capra hircus</i>)	(9*)	(-)	(-)	(9)
Pig (<i>Sus domesticus</i>)	276.5*	48	49.5	374
Equid (<i>Equus</i> sp.)	43.5*	2	-	45.5
Dog (<i>Canis familiaris</i>)	51.5*	-	3.5	55
Dog/fox (<i>Canis/Vulpes</i>)	-	-	4	4
Cat (<i>Felis catus</i>)	73*	6*	23*	102
Red deer (<i>Cervus elaphus</i>)	+	-	-	+
Fallow deer (<i>Dama dama</i>)	1	-	-	1
Roe deer (<i>Capreolus capreolus</i>)	1.5	-	-	1.5
Hare (<i>Lepus</i> sp.)	-	1	0.5	1.5
Rabbit (<i>Oryctolagus cuniculus</i>)	4.5	-	-	4.5
House/wood mouse (<i>Apodemus/Mus</i>)	-	-	2	2
Field vole (<i>Microtus arvalis</i>)	-	-	2	2
Rat/water vole (<i>Rattus/Arvicola</i>)	1	-	-	1
Domestic fowl (<i>Gallus gallus</i>)	191*	20	34*	245
Goose (<i>Anser anser</i>)	22	1	2	25
Duck (<i>Anas</i> sp.)	9	-	1	10
Buzzard (<i>Buteo buteo</i>)	-	-	4	4
Goshawk (<i>Accipiter gentilis</i>)	4	-	-	4
Pigeon (<i>Columba</i> sp.)	2	-	-	2
Small corvid	1	-	-	1
Bird	-	-	2	2
Amphibian	3	1	15	19
(Toad (<i>Bufo bufo</i>))	-	-	(1)	-
Total	1,461	145.5	219.5	1,826

Sheep/Goat also includes the specimens identified to species. Cases where only 'non-countable' bones were present are denoted by a '+'. Pig metapodii and ruminant half distal metapodii have been divided by two, while carnivore and lagomorph metapodii have been divided by four. Due to the difficulty in distinguishing between upper and lower incisors in equids and upper and lower canines in carnivores, all have been recorded and then divided by two. All totals which include material from partial skeletons are denoted by '*': this material is described in further detail in Table 4.19.

Table 4.17: Numbers of mammal, bird and amphibian bones and teeth in Period 1 by collection category (NISP)

<i>Period</i>	<i>Area/Group</i>	<i>Context</i>	<i>Related feature</i>	<i>Collection method</i>	<i>Species</i>	<i>Notes</i>	<i>Plate</i>
1.2	G9/109	90469	pit 90504	BS sieve	cat	16.5 bones	
1.2	G9/109	90398	pit 90504	hand	dom. fowl	12 bones	
1.2	G9/109	90366	pit 90389	hand	pig	3 bones	
1.2	G22/138	22023	pit 22015	hand	goat	10 bones + teeth	
1.2	G22/145	22110	pit 22111	hand	cat	13 bones + teeth	
1.3	G9/109	90354	pit 90516	hand	horse (juvenile)	15 bones	Plate 4.40
1.3	G9/109	90354	pit 90516	SRS sieve	cat	4.5 bones	
1.3	G9/109	90491	pit 90516	hand	goshawk	8 bones	Plate 4.41
1.3	G9/109	90501	pit 90516	hand	dog	13.5 bones	
1.3	G9/109	90506	pit 90516	hand	horse (juvenile)	11 bones	Plate 4.39
1.3	G9/109	90506	pit 90516	hand	cat	18 bones + teeth	
1.4	G9/63	90227	pit 90292	hand	dog	5 bones	
1.4	G2/11	40002	pit 40003	BS sieve	dom. fowl	5 bones	
1.4	G2/11	40047	pit 40003	hand	pig	13 bones	

The number of bones and teeth given are the number of countable specimens from each skeleton

Table 4.18 Summary of partial animal skeletons found within Period 1 pits

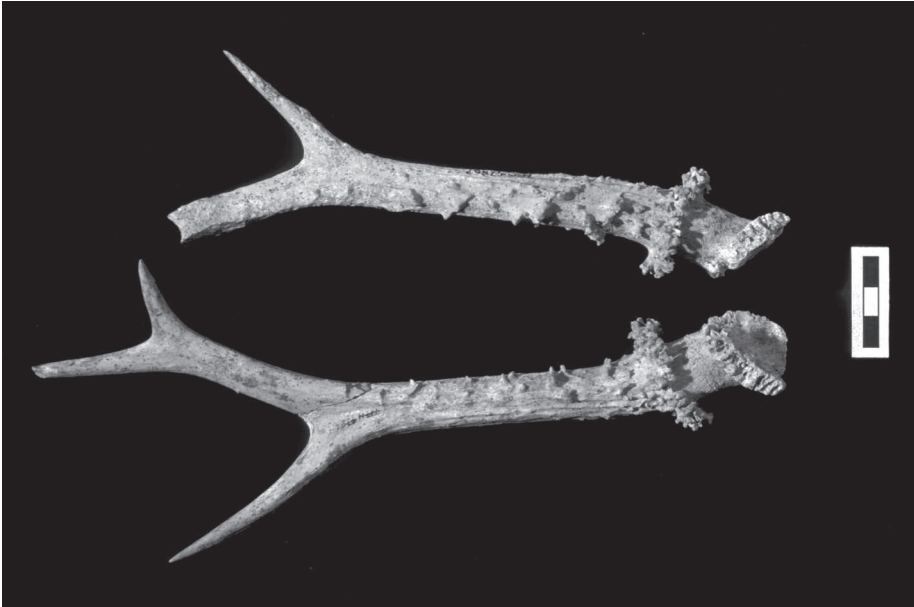


Plate 4.42 Roe deer antlers from pit 47831, Open Area 9, Period 1.3

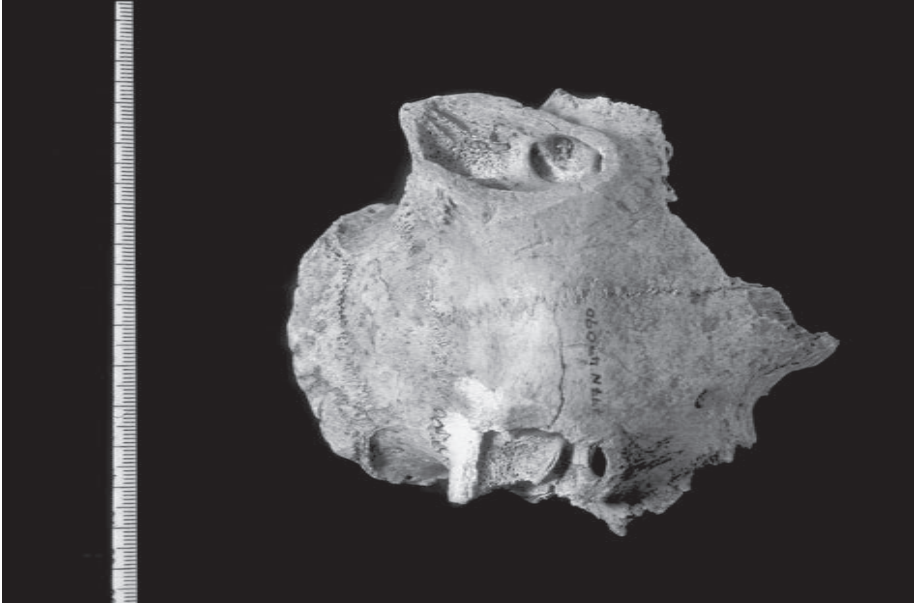


Plate 4.43 Sheep skull with chopped horns from pit 47153 above Hollow 1, Period 1.3



Plate 4.44 Goat horncores from pit 57187, Open Area 9, Period 1.4

undisturbed, as indicated by the presence of bones in articulation. The two partial horse skeletons were both from very young animals, possibly neonatal, with all piphyses, including the scapula, unfused. This suggests that not only the main food animals, but also horses were at least occasionally reared on site.

Pigs

A substantial increase in the number of pigs was noted in Period 1.4, in the immediately pre-Conquest or possibly in the early post-Conquest period. This could be interpreted as a consequence of the high status that the site acquired with the erection of the castle, but it is more probably due to some change in animal exploitation or in use of the site which was brought about by the arrival of the Normans. In general there is a high variability in the percentage of pigs present at castle sites and, even though many exceptions occur, they tend to have a larger number of pigs (see further discussion on this issue in Chapter 13 and Part III).

?Norman introductions

One pit in Open Area 6 (90292, G9/63, Period 1.4), adjacent to sunken-featured Building 25, contained a fallow deer *matatarsus*. The associated building apparently went out of use in the post-Conquest period. Fills of the pit yielded a large quantity of 11th-century pottery, and it is possible that some post-Conquest material was included. Even if the bone is post-Conquest in date, its rather early occurrence is noteworthy (see Part III). Fallow deer disappeared in England after the last glaciation and were again imported, possibly by the Romans. Rather than a full reintroduction to the wild, the Romans probably brought with them some animals to be kept in semi-captivity. In fact, fallow deer bones are rare if not absent from Saxon sites and become common only with the Norman Conquest (see Lister 1984 for a review). Castle Mall is one of the earliest sites which may provide evidence for a reintroduction of fallow deer by the Normans. The early occurrence of this species in Norwich is confirmed by another find from an 11th- to early 12th-century context at St Martin-at-Palace Plain (Cartledge 1987).

The Castle Mall specimen has been positively identified as a fallow deer on the basis of its size and of the morphological characteristics suggested by Lister (1996). This bone also displays knife cuts on the mid shaft which attest to the skinning of the animal.

There is surprising evidence for the presence of rabbit bones in Period 1 (the fill of post-hole 11790 associated with Building 8, G1/7, Period 1.2). This species, like fallow deer, was introduced to England by the Normans (Corbet and Harris 1991), but probably not before the 12th century (Veale 1957). It is thus possible that the Castle Mall bones attest to an earlier introduction of the rabbit into this country. However, due to the burrowing habits of the species, the possibility that the bones are a contaminant from an upper level must be considered as a more likely explanation.

Hunting

Birds of prey were only found in deposits assigned to Period 1 (both Period 1.3). They are represented by four buzzard bones, possibly belonging to the same individual and the partial skeleton of a goshawk (Plate 4.41). Both birds derived from a mid 11th-century context in Open

Area 8 (from the same fill of pit 90516, G9/109) and, as in the case of the fallow deer, it is not certain whether this pre- or post-dates the Conquest (although the ceramic assemblage indicates a probable immediately pre-Conquest date). This pit fill also contained a number of other partial skeletons (see above and Table 4.18).

If the buzzard was just a scavenger (see O'Connor 1993b), then the presence of the goshawk is of more interest. The bird is one of the four species most commonly used in falconry (the others being the peregrine, the merlin and the sparrowhawk). This type of hunting was particularly common in the Middle Ages and the occurrence of this practice at Castle Mall seems the most plausible explanation for the presence of the goshawk. A few birds of prey have been found buried in human graves in European sites, but generally when a trained hawk died it was just thrown on the waste tip (Prummel in press). Whereas falcons were strictly associated with the highest aristocracy, sparrowhawks and goshawks were also used by the lower nobility and rich commoners (Prummel in press). In particular, the goshawk was the typical bird of the yeoman (Grant 1988). Although it is tempting to connect the hawking practice with the arrival of the Norman nobility, the possibility that it belonged to a Saxon or a royal servant cannot be excluded. Domesday Book mentions that Norwich made a pre-Conquest payment (annually?) to of a goshawk to the Earl (Brown 1984, (61) 117b).

Also of note among the pre-Conquest assemblage is a roe deer trophy (Plate 4.42) from pit 47831 (Open Area 9, Period 1.3, adjacent to ?Building 13): this probably represented a status object rather than a specimen of any practical use.

Fish Bone

by Alison Locker

In this and subsequent summaries of the fish identified from each period only the common names of the fish are given and the periods are not subdivided except for the barbican well in Period 5 (Chapter 9). The main focus in these summaries is comparison between the major food fishes in each period. A fuller discussion of the fish, their economic importance, trade and fishing practices is to be found in Chapter 13 and also in Part III.

A total of 4,589 fish bones were identified from deposits dated to Period 1, fairly equally divided between Periods 1.2, 1.3 and 1.4. A summary table of the number of bones identified to species/family level is shown in the table below (Table 4.19), with more detailed evidence presented in the Occasional Paper. The Anglo-Saxon fish assemblage is the largest of all periods except for Period 5 and also has the second largest number of species and families identified, 33 against 36 in Period 5. The bulk sieved (BS) material is most representative of the surviving fish, as it includes the smallest bones and amounts to 89% of all identified fish bone from this period. Excluding the elasmobranchs and rays (whose cartilaginous remains survive poorly) herring is 62.4% by number of the bony fish in the BS column, eel is 18.3% (exaggerated as eel has approximately double the vertebrae of other species), while cod and large gadids are 11.8%, whiting 1.9% and mackerel 1.6%. Cod and large gadids (the latter are likely to be cod as the most common

<i>Taxa</i>	<i>Hand collected</i>	<i>SRS</i>	<i>BS</i>	<i>Total</i>
Elasmobranch indet.	1	0	30	31
Ray	0	0	10	10
Roker	0	8	17	25
Eel	0	0	741	741
Herring	0	25	2,523	2,548
Sprat	0	0	3	3
Salmonidae	0	0	1	1
Smelt	0	0	5	5
Pike	0	1	12	13
Tench	0	0	72	72
Roach	0	0	3	3
Cyprinid	2	0	4	6
Cod	70	136	261	467
Large Gadid	51	177	220	448
Small Gadid	0	1	0	1
Haddock	2	2	6	10
Whiting	0	5	77	82
Pollack	0	0	1	1
Saithe	0	0	2	2
Ling	1	0	0	1
Gurnard	0	0	2	2
Scad	0	0	1	1
Sea Bream indet.	0	1	2	3
Black Sea Bream	0	0	1	1
Red mullet	0	0	3	3
Thin Lipped Grey Mullet	0	0	1	1
Mackerel	0	1	67	68
Turbot/ Brill	0	0	2	2
Plaice	0	0	1	1
Plaice/Flounder	1	1	20	25
Halibut	0	0	2	2
Sole	0	0	1	1
Flatfish indet.	1	0	8	9
Total	129	361	4,099	4,589

Only material identified to species and/or family level is indicated. Indeterminate fragments including fins and rays were not quantified, though all potentially identifiable material was recorded.

Table 4.19 Numbers of identified fish bones from Period 1 by collection category (see Part III, Tables 81–83)

large gadid) have been shown as a combined percentage of bone numbers in this and subsequent summaries of the fish data. The other marine species are less than 1% each. Freshwater fish are poorly represented, with pike at 0.2% and the combined cyprinid species totalling 1.9%, which includes parts of two tench skeletons and is over represented.

The bulk of the assemblage comes from the herring and cod fisheries of the North Sea. The herring fisheries of East Anglia are thought to have been well established by the 7th century. At this time Norwich may still have been a fishing port in its own right, but by the mid 12th century progressive silting meant only shallow bottomed river craft could reach Norwich, cargo being unloaded from sea going vessels at Great Yarmouth by this date.

Although by number herring dominates the assemblage, in terms of food large numbers of small fish are being compared with much larger fish like cod. Analysis of the data on herring and the gadids as a quantity of food, based on individual portion sizes explained more fully in Part III and Locker 2001, suggested that herring was not the dominant species eaten in this period, being 44% while cod was 52%. Other gadids were insignificant with haddock 0.5% and whiting 3%. Other species like the rays may have been important, though their survival is poor. Mackerel would have been an important local seasonal catch while scad, sea breams, mullets and flatfishes were also available, but eaten in small numbers as represented by this sample.

There was no evidence for differential disposal of fish in different areas of the site as suggested for the animal bones. The tables of the fish from selected buildings and features (see Part III, Tables 87–92) emphasises the large numbers of herring and the consistent importance of cod over other gadids. The cod were of varying size, between 40–125 cm in length, based on 34 measured bones. By NISP (number of identified specimens) herring and all gadids were 76.4% of all identified bony fish. Rays were also identified from all these structures, supporting their importance, though this cannot be quantified in comparison with other species. In this early period the fish reflect a comprehensive exploitation of local marine resources from traps and lines in the estuary and along the shoreline to netting and line fishing out to sea.

Plant Macrofossils

by Peter Murphy

(Figs 4.110–4.113, Plates 4.45–4.46)

Samples analysed from Late Saxon deposits came from two quite distinct types of context. Thirty-three samples were examined from structural contexts and floor levels associated with timber buildings. Many of the resultant plant macrofossil assemblages are thought to represent the remains of stored crops, charred when buildings were destroyed by fire. They are thus in primary context. The remaining twenty-eight samples came from cut features, predominantly pits, but also a ditch and grave fill. Their contexts are of no assistance in interpretation, which must be based on assemblage composition alone. Preservation in these fills was principally by charring, though mineral-replaced plant and animal macrofossils were present in some latrine pit fills. Methodologies employed during collection and analysis are detailed in Appendices 3 and 4.

Charred plant remains from buildings

Timber buildings at Castle Mall were of three main types: sunken-featured buildings, post-and-slot structures and post-built structures. Whilst the first two types were apparent during excavation, some post structures (e.g. in Area 6) were only defined from complex post-hole groups during post-excavation analysis. During assessment, it became apparent that some samples from structural features included abundant charred material — charcoal and/or charred cereals and weed seeds, meriting full analysis.

The taphonomy of assemblages from post-holes and other structural features is undoubtedly complex (Van Vilsteren 1984). It is often unclear whether charred material from their fills was introduced via cracks and gaps caused by movement of the post during the life of the building or during demolition. However, where timber buildings have been destroyed by fire the excavated fills include charred remains of structural timber with floor debris and, in some cases, charred remains of crops stored within the building. Particularly good examples of the latter include early medieval sunken-featured buildings at Ipswich, whose floors were covered with dense spreads of charred cereals (Murphy 1987a; 1991). Whilst extensive charred granary deposits were not noted at Castle Mall, grain-rich samples from structural features do point to use of some of these buildings as granaries,

and in one case there is evidence thought to indicate grain processing within the building.

Building 1 (G6/4, Period 1.2)

(Fig. 4.110)

This was a structure/building of post-in-slot and post construction. Fills suggested that some of the posts decayed *in situ*, but others included charcoal, burnt clay and reddened sand. The evidence was, however, insufficient to confirm with certainty that the building had been destroyed by fire. Artefacts and stratigraphic position suggest that it was in use during the first half of the 11th century.

The forty-five samples taken from the fills of slots and post-holes were scanned during assessment (Table 4.20 on CD). Charcoal densities were rather low, but charred cereal, pulse and weed seed remains were consistently present, though often in small quantities. Seven samples containing relatively large assemblages of charred material were extracted for analysis, though some of these assemblages (e.g. BS 405, 420) are strictly too small to be reliable.

Assemblage composition in these samples is variable. Bulk Samples 411, 414 and 423 (slot/post-hole fills 60143, 60155 and 60169 respectively) produced assemblages of varying size, dominated by short wheat grains of *Triticum aestivum*-type, with some other cereal grains (oats, *Avena* spp; barley, *Hordeum* sp; rye, *Secale cereale*), ‘weed’ seeds and occasional fragmentary pulse seeds, hazel nutshell fragments (*Corylus avellana*) and a charred elder seed (*Sambucus nigra*). Cereal chaff is rare or absent. These samples seem mixed in character, but may include a component of semi-processed wheat grains.

Bulk Samples 426 and 528 (post-hole fills 60181 and 60335) are quite different in character, with a high proportion of ‘weed’ seeds and oat grains. Many of the oat grains are small. It is possible that these samples include a component of crop processing (probably sieving) waste, but again probably incorporate material from more than one source.

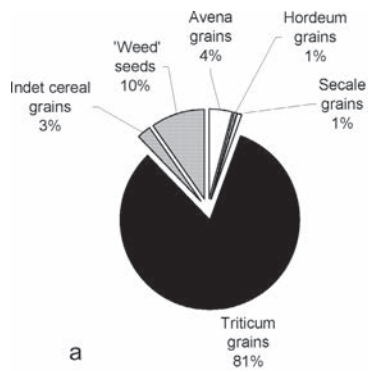
The composition of two of the larger samples is summarised in Fig. 4.110. The samples from Building 1 do not show the same internal consistency as those from Buildings 17 and 18 (see below): they are obviously not all derived from the same source and interpretation is therefore problematic.

Building 11 (G22/154, Period 1. 2 and 1.3)

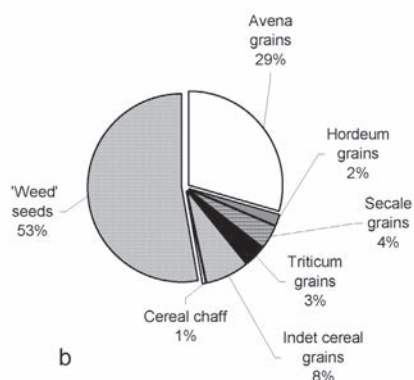
(Fig. 4.112)

This was a rectangular sunken featured building, with a lining of posts supporting a planked revetment. Finds from its fill included fragments of lava quern. Fills of ash, charcoal and burnt daub imply that it was destroyed by fire, in the 11th century on artefactual grounds. Samples were collected from post-hole fills (22142, 22459, 22466, 22469), the revetment (22472) and layers of fire destruction debris/back-filling (22218, 22340, 22355, 22376).

All available samples were analysed (Table 4.21 on CD), but only one produced an interpretable assemblage of charred plant material. This was from 22142, a fill of a corner post-hole (22463). The flot was composed mainly of rye grains (*Secale cereale*), with small numbers of other cereal grains, virtually no cereal chaff (apart from a scrap of oat awn), a hazel nutshell fragment and some



a



b

Figure 4.110 Plant macrofossils from Building 1, Period 1.2 (G6/4):

- a – BS414, context 60155, N=144
 b – BS426, context 60181, N=173

weed seeds, predominantly of corn-cockle (*Agrostemma githago*). The single charred seed of opium poppy (*Papaver somniferum*) in this context may represent a weed rather than a crop. Sample composition is summarised in Fig.4.112. The sample is thought to have been derived from a batch of semi-cleaned rye, stored within the building and charred when it was destroyed by fire.

Building 12 (G9/48, Period 1.2)
 (Fig.4.111)

This group comprised a sunken-featured building, ceramically dated to the 10th or early 11th century, the sides of which were lined with post-holes. Within the feature were floor levels, two areas of reddened soil thought to represent the positions of hearths (91988, 92008) a distinctive ash layer (91955) and demolition infills. Samples were collected from post-hole fills (91974, 91980, 91983, 91990, 92006) and layers within the feature (Table 4.22 on CD).

The charred assemblages of crop remains from these samples, though differing in absolute density (grains/litre of soil) were broadly similar in composition. The highest densities came from post-hole fills 91974 and 91980 (see Fig.4.111 for a summary of the composition of material from 91974). Grains of oats (*Avena* sp) predominated: floret bases establish the presence of *Avena sativa*. Barley grains (*Hordeum* sp) were fairly consistently present and bread wheat grains (*Triticum aestivum*-type) often

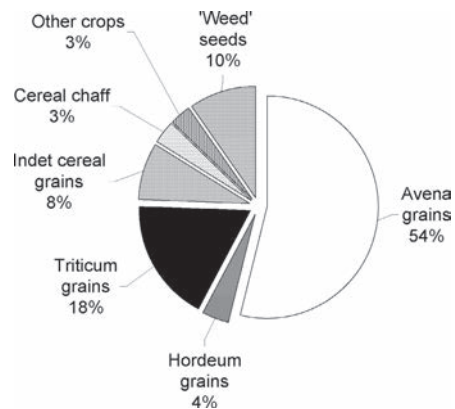


Figure 4.111 Plant macrofossils from Building 12, Period 1.2 (G9/48). BS1411, context 91974, N=283

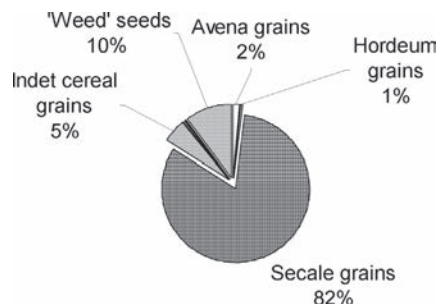


Figure 4.112 Plant macrofossils from Building 11, Periods 1.2 & 1.3 (G22/154). BS1538, context 22142, N=396

common. A high proportion of the oat and barley grains had germinated prior to charring, though quantification was impossible due to distortion during charring. Cereal chaff was rare. Two samples included seeds of flax/linseed (*Linum usitatissimum*); one included pea-type cotyledons (*Pisum*-type); and one produced a capsule lid of beet (*Beta vulgaris*).

Weed seeds were uncommon apart from fruits of goosegrass (*Galium aparine*) and grasses in some samples. Also present were stems of *Ericaceae* (heathers), occasional sedge and spike-rush fruits and an unusually wide range of fruits, nuts and seeds from trees/shrubs. These include some potentially edible species (hawthorn, *Crataegus monogyna*; hazel, *Corylus avellana*; bramble, *Rubus fruticosus*; elder, *Sambucus nigra*) as well as nuts of hornbeam (*Carpinus betulus*) and a cupule fragment of oak (*Quercus* sp). Macrofossils of trees and shrubs occurred in all feature types, but were most abundant in the ash layer 91955. This layer also produced shells of snails characteristic of woodland habitats (*Carychium* sp, *Clausilia bidentata*, *Discus rotundatus* and *Lauria cylindracea*), as well as a marsh snail, (*Succinea* sp). These shells were all discoloured to grey or black as a result of partial burning. Occasional burnt snail shells were noted in samples from other contexts.

The taphonomy of the deposits is obviously complex, although two main components seem to be present;

1. *charred crop-processing residues*: despite good preservation, cereal chaff was virtually absent, implying that cleaned batches of grain and other crops were being processed (possibly in part in the two hearths, although these were clearly out of use by the date of the ash deposit). It appears that poor temperature control resulted in some material being charred and that this material then became incorporated into post-hole fills and layers within the building. A high proportion of oat and barley grains present had germinated before charring, which suggests that one activity was the drying of malt. Evidence for the use of a barley/oats mixture for malting has previously come from early medieval buildings at the Buttermarket, Ipswich (Murphy 1991). Other crop remains may indicate grain/seed drying or toasting.
2. *fuel residues*: the remains of trees/shrubs and also the *Ericaceae* charcoal may represent charred residues from fuel. Shells of woodland snails were presumably accidentally imported to the site attached to firewood.

The samples differ in the relative proportions of these two components: cereals predominate in the post-hole fills and remains of trees/shrubs were more common in the ash layer. Nevertheless, they do all seem to relate to the same set of activities. Context 91955 is therefore interpreted not as a fire destruction layer, but as the accumulation of charred material and ash raked out from hearths during the use of the building.

Building 25 (G22/155, Period 1.4 and Period 2.1–2.2)

This was a small square sunken-featured building of probable pre-Conquest origin, with twelve peripheral post-holes and one central one. Fills of the construction cut (some of which apparently post-dated the Conquest) again implied destruction by fire, probably in the 11th to 12th century. An extensive series of samples was taken from post-hole fills and back-fills of the sunken featured building itself, although assessment showed that densities of charred material other than charcoal were low. In view of the uninformative results from most samples in Building 11, only the largest assemblage from Building 25 was analysed, from 22429, a post-hole fill assigned to Period 1.4 (Table 4.21 on CD). This was, nevertheless, sparse, comprising only 51 identifiable components, mainly cereal grains: oats (*Avena* sp) predominated. Obviously such a small assemblage cannot be interpreted with any confidence.

Buildings 17 and 18 (G1/138 and G1/140, Period 1.4) (Fig. 4.113)

The fragmentary remains of two post-in-trench buildings lay on the Timberhill frontage: both may have originated in the 11th century. The extreme similarity of charred samples from the two context groups strongly suggests that they were contemporary.

The samples (Table 4.23 on CD) were all dominated by grains of hulled barley including asymmetrical laterals and therefore mainly or wholly of six-row hulled barley (*Hordeum vulgare*). The grains showed no signs of germination prior to charring and therefore did not represent malt. Grains of other cereals, principally oats (*Avena*) but also rye (*Secale cereale*) and bread-type wheat (*Triticum aestivum* s.l.), and seeds of pea (*Pisum*

sativum) occurred at low frequencies: presumably these represented contaminants of the barley. Cereal chaff was absent. Relatively small numbers of weeds seeds were associated with the cereals. These included taxa normally indicative of dry, sandy soils (e.g. *Spergula arvensis*, *Raphanus raphanistrum*, *Rumex acetosella*) but also some achenes of *Anthemis cotula*, a characteristic weed of heavy clay soils. This mixture of ecotypes may imply storage of batches of cereals from more than one farm.

The samples are virtually identical, both in terms of density and composition, and must have had a common source: Fig.4.113 summarises the composition of samples from 10826 and 10996. They undoubtedly are semi-cleaned batches of cereals and could represent debris from a granary fire. Although the fills of the structural features were charcoal-rich, there was no clear evidence that the building had been destroyed by fire, and it is therefore uncertain whether the cereals were functionally related to the building (i.e. had been stored in it) or whether they were re-deposited with the back-fills of the features.

Building 26 (G47/14, Period 1.4)

This post-built structure was tentatively identified from the numerous post-holes in the area during post-excitation analysis and may date to the 11th century. The post-holes were not generally sampled, though a single sample was taken from post-hole 47894 (BS1788, 30 litres). It produced only small amounts of charcoal, uncharred seeds of *Sambucus nigra* (elder) and a shell of *Trichia hispida* sp. There was too little material for any interpretation to be possible.

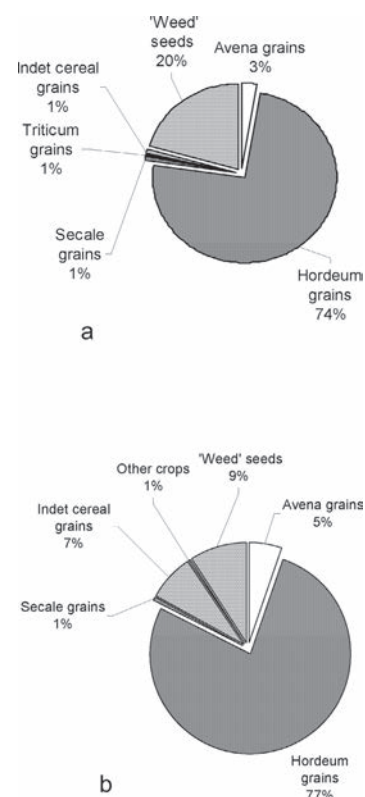


Figure 4.113 Plant macrofossils from Buildings 17 and 18, Period 1.4 (G1/138 & 1/140)
a – Building 17, BS79, context 10826, N=150
b – Building 18, BS106, context 10996, N=188

Conclusions

Unlike the early medieval buildings from the Buttermarket, Ipswich, those from Castle Mall did not produce readily-apparent charred granary deposits. However, samples from post-holes, beam-slots and sunken-featured building fills at Castle Mall did produce lower density grain-dominated assemblages which are interpretable as the remnants of cleaned stored crops, charred when buildings burnt down. In Buildings 17 and 18, barley was the main crop represented; in some samples from Building 1 bread wheat-type was dominant; in a sample from Building 11 rye predominated. The association of quern fragments in the latter building provides additional evidence for cereal processing. Amongst other functions, these buildings were used for grain storage.

The results from Building 12 are thought to indicate that drying or roasting of an oat/barley malt, fuelled with wood, took place in this sunken-featured building. Clearly the operation of two hearths in a confined space would have produced an unbreathable atmosphere and it therefore seems that the superstructure must have been open to allow ventilation.

Plant macrofossils from other Late Saxon features

(Plates 4.45–4.46)

Charred material

Assemblages of charred cereals and crop weeds from separate excavation areas showed, with a few exceptions, remarkable consistency in composition and there was little variation in overall assemblage composition between Period 1.2 and 1.3 (Tables 4.24–4.26 on CD). There were some exceptions, which will be discussed separately below. In general, however, the assemblages were dominated numerically by grains of oats (including *Avena sativa*), which comprised 51–56% of total cereal grains. Barley grains (*Hordeum* spp) were moderately frequent; rye (*Secale cereale*) rare, except in one sample (see below); and wheat grains (*Triticum* sp(p)) exceedingly rare, accounting for less than 2% of grains. A high proportion of the oat and barley grains had germinated before charring. Cereal chaff was uncommon, and seeds of terrestrial herbs (weeds and grassland taxa) occurred in variable, but generally low amounts. Other charred crop remains were of flax (*Linum usitatissimum*), peas (*Pisum sativum*) and horse-beans (*Vicia faba* var. *minor*). Charred hazel nutshells (*Corylus avellana*) were fairly consistently present, and charred remains of fruits occurred. Charred macrofossils of heathland plants (*Erica* and *Calluna*) and wetland taxa (most commonly *Carex* and *Eleocharis*) were noted.

Clearly these charred assemblages are likely to have included material from more than one source. However, the fairly consistent presence of germinated oat and barley grains implies that much of this material represents charred waste from malt-drying (cf. Building 12 above). Drying of oats and barley malt evidently resulted in the production of abundant charred material. Wheat and rye were much less well represented, perhaps because they were consumed differently, as meal or flour, so that charring was less likely. Only one sample (BS1167) from pit fill 91094 (pit 91074, G9/51, Period 1.2, Open Area 7) included a high proportion of rye grains. This included very few weed seed or chaff contaminants, and may

represent a batch of prime grain charred in storage (cf. Building 11 above).

Only one sample (BS116) from ditch fill 11017 (Ditch 1, G1/41, Period 1.4) included a high proportion of cereal chaff. The sample was largely composed of barley remains — both grains and rachis fragments — with weed seeds, grass/cereal culm nodes and macrofossils of wetland and heathland plants. Preservation of both grains and chaff was poor, with much deformation. However, a few asymmetrical grains probably from lateral spikelets were seen, implying that the crop was *Hordeum vulgare*, six-row hulled barley. In intact ears of this crop a grain: rachis node ratio of about 3:1 would be expected. In this sample, the ratio was 1.48:1 (assuming that most or all of the unidentified grains were poorly preserved barley). Together with the presence of culm nodes, this suggests that the sample may have related to an early stage of crop cleaning. However a single sample of this type is insufficient to establish that crop cleaning was taking place in the immediate vicinity: processing waste could have been imported to the site for use as fuel or other purposes.

An exceptional charred assemblage came from pit 40164=46287 (BS317, pit fill 40084; Period 1.2). Although it included a few charred cereal remains, much of the material comprised charred fruitstones and seeds of hawthorn (*Crataegus monogyna*), apple (*Malus sylvestris*), cherry (*Prunus avium*), bramble (*Rubus fruticosus*) and elder (*Sambucus nigra*). Weed seeds were also common, and included many small fragments of corn-cockle (*Agrostemma githago*), black bindweed (*Fallopia convolvulus*) and wild radish (*Raphanus raphanistrum*). Charcoal was abundant, together with fish bones. This type of assemblage is more commonly preserved as mineral-replaced macrofossils, representing human sewage. It appears that the sample was from a latrine pit, the material perhaps becoming charred as a result of smouldering destruction debris from an adjacent building, destroyed by fire, falling or being dumped into the feature.

Although negative evidence is necessarily suspect, the absence of charred nutlets of *Cladium mariscus* (saw-sedge) in Period 1 samples analysed may be of significance. It is argued elsewhere in this volume that these nutlets may have been related to the burning of sedge peat as a fuel. Large-scale peat extraction in the East Norfolk river valleys in the early medieval period resulted in the excavation of extensive peat pits, later flooded to form the Broads. There is no evidence that the products of these turbaries were reaching the Castle Mall site in the Late Saxon period.

Mineral-replaced macrofossils

Some pit fills from all sub-periods included mineral-replaced dietary residues: fruitstones, seeds, grains and testa fragments. Taxa represented included oats (*Avena* sp), peas (*Pisum sativum*), apple, sloe (*Prunus spinosa*), bramble, elder and opium poppy (*Papaver somniferum*). ‘Exotic’ fruits, such as fig or grape, were not noted in samples from Period 1. Also associated were mineral-replaced seeds and testa fragments of weeds, (probably originally contaminants of wholemeal grain foods), monocotyledonous stems, phosphatic concretions, occasional scraps of textile and arthropods. Fish bones were often common. These are typical latrine-pit assemblages.

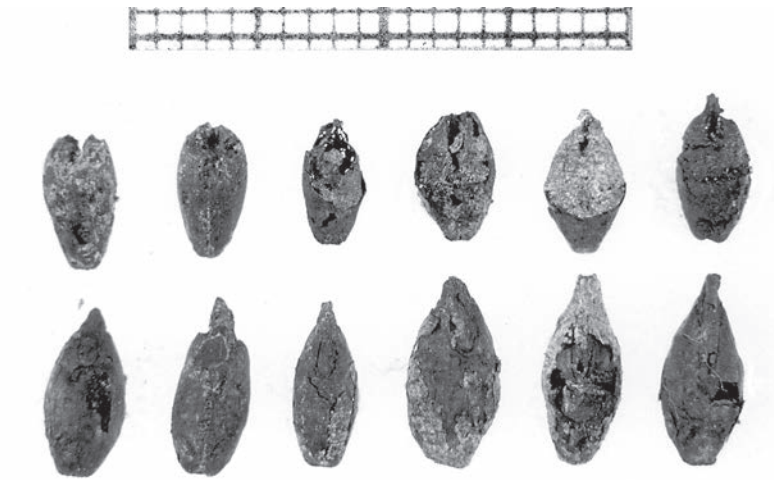


Plate 4.45 Germinated grains of barley (*Hordeum* sp.). Context 90299, fill of pit 90300, Period 1.2. Scale 20mm

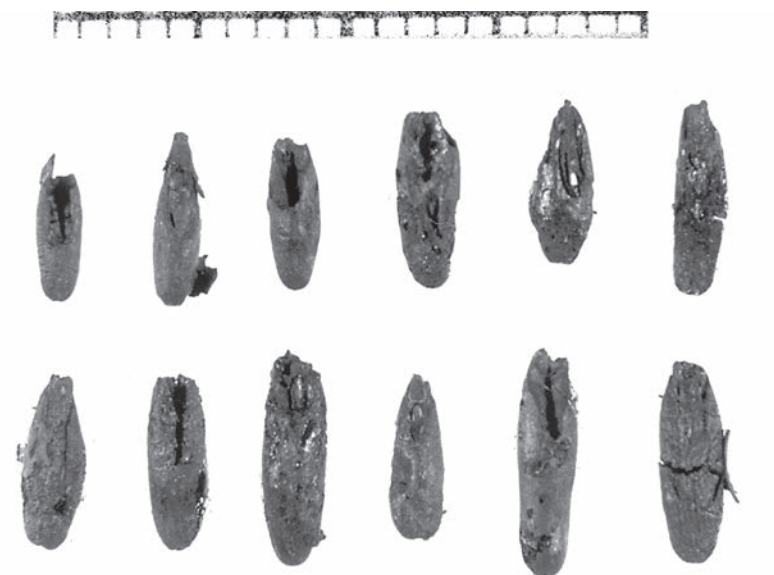


Plate 4.46 Germinated grains of oats (*Avena* sp.). Context 90299, fill of pit 90300, Period 1.2. Scale 20mm

Invertebrates

by Mark Robinson

Arthropods

A few calcium phosphate-replaced Diptera puparia and lengths of Diplopoda were the only arthropod remains from latrine pit fills 20078 and 20080 (pit 20062, G2/8, Open Area 4, Period 1.3, Table 4.25 on CD). They included an example of *Thoracochaeta zosteræ* from 20080. The larvae of this fly feed on decaying seaweed but its puparia is particularly characteristic of medieval and early post-medieval cess pit fills (Belshaw 1988). It seems that *T. zosteræ* must have been able to feed on sewage under the conditions which usually prevailed in cess pits (or there is a closely related and as yet undescribed species of *Thoracochaeta* that feeds on sewage).

The mineral-replaced remains of *Diplopoda* (millipedes) from these samples and the *Isopoda* (woodlice)

that joined them in the assemblages from some of the pits in subsequent phases were probably in part a reflection of the selective preservation of these arthropod groups because their exoskeletons contain calcium carbonate. However, dead plant remains must have been present for them to feed on.

Land and freshwater molluscs

Shells were generally uncommon, due to the de-calcified character of the deposits. However, some samples included shells discoloured due to the effects of burning, notably from pit 90223 (BS713, pit fill 90040, G9/64, Open Area 6, Period 1.4). Freshwater taxa generally predominated, though terrestrial species were also present. The significance of larger assemblages of this type is discussed further in Chapter 13: in summary it seems probable that these shells originally reached the site attached to litter, flooring materials or fuel.

Charcoal

by Rowena Gale

Four charcoal samples from fuel residues associated with a possible kiln structure and associated pit in Open Area 5 associated with ?Building 10 were examined and identified (?kiln 22285, G22/134; pit 22236, G22/135; Period 1.2). Most samples contained a substantial quantity of charcoal but, in some, a large proportion was made up of small slivers that were not suitable for identification; the largest samples (fills 22227 and 22325) were sub-sampled. Details of the methodology employed are given in Appendix 4.

The results are summarised in Table 4.27. The taxa identified included: *Acer* sp. (maple), *Corylus* sp. (hazel), *Fraxinus* sp. (ash), Pomoideae (subfamily of the Rosaceae, which includes: *Crataegus* spp., (hawthorns); *Malus* sp. (apple); *Pyrus* sp. (pear), *Sorbus* spp. (rowan, whitebeam and wild service); these genera are anatomically similar), *Quercus* sp. (oak), *Salicaceae* which includes *Salix* sp., (willow) and *Populus* sp. (poplar). Again, these genera are anatomically similar.

Oak, ash, maple and poplar/willow were common to most fills; a high proportion of the oak and ash included heartwood. Oak and ash, in particular, are long-lasting fuel woods with high calorific values; ash has the advantage that it burns well when green. Other woods identified included hazel and hawthorn type, but these occurred sporadically, suggesting that they were used less frequently.

Pottery kilns usually operate at significantly lower temperatures than, for example most metal-working processes, and a wood fuel may be generally adequate. Charcoal production was a lengthy and costly procedure.

The consistent use of heartwood rather than narrow roundwood suggests that wood was cut or gathered from mature trees rather than coppiced species in managed woodland. Heathland may have included pockets of mixed deciduous woodland, perhaps including oak, ash, maple, hazel and hawthorn. Alder, willow/poplar and elm were more likely to have been growing on damper soils associated with meadows, rivers or streams.

V. HUMAN BONE

Introduction

Four cemeteries with origins in the Anglo-Saxon period were recorded at the Castle Mall site, all of which were subjected to radiocarbon dating: two proved to be Early/

Middle Saxon (Cemeteries 1 and 2, Period 1.1, Chapter 4.II) and two were Late Saxon, extending into the post-Conquest period in the case of the southernmost cemetery (Cemeteries 3 and 4, Periods 1.3 and 1.4, Chapter 4.II; Period 4.2, Chapter 7.II). The human bone from each cemetery is discussed separately by Anderson below, with the exception of 'Cemetery 1' (a single grave radiocarbon dated as Middle Saxon and another lying beneath it) which appears with Cemetery 4 as both were recorded on site as a single entity. Radiocarbon dating evidence is presented by Bayliss *et al* in a single report, by cemetery. Burials in Cemeteries 2 and 3 were the subject of DNA analysis by Töpf and Hoelzel: the results are presented at the end of this section. Initial findings of biomolecular analysis of skeletons from Cemetery 4 in relation to a research project into leprosy transmission are included as an addenda. Multi-element analysis was attempted for the burials at Cemetery 4 (Saich, Appendix 11).

Supplementing the analyses published here, selected elements of the related research archive are available on line at <http://ads.ahds.ac.uk> (see Chapter 1.VI).

Cemetery 2: ?Middle Saxon

by Sue Anderson with forensic comment by Sue Black (Fig.4.9, Plate 4.5)

Summary

Human skeletal remains from one burial and 42 disarticulated contexts are discussed below. The articulated remains represent a minimum of 22 adults and 21 children. Pathologies included a possible case of Paget's disease. Three radiocarbon dates were obtained (OxA-6386–6388) and indicate use of the cemetery during the Middle Saxon period.

Introduction

Disarticulated remains from Areas 3, 4 (north), 5, 8, 9, 21, 45, 46, 48 and 49 fell within the area enclosed by the Barbican ditch, the majority coming from the northern parts of Areas 45 and 46. The bone was retrieved from a range of contexts spanning the pre-Conquest to modern periods. Its spatial distribution is illustrated in Fig.4.10 and the archaeological evidence is described in Chapter 4.II, Period 1.1.

Method

Where possible, measurements were taken following the methods described by Brothwell (1981). Sexing was based on size and robusticity, unless the bone in question was an innominate, in which case the usual sexual criteria were considered (Workshop of European Anthropologists

Feature	Fill	Sample No.	<i>Acer</i>	<i>Corylus</i>	<i>Fraxinus</i>	<i>Pomoideae</i>	<i>Quercus</i>	<i>Salicaceae</i>
22285	22003	BS 1510	2	-	34	2	46	21
	22157	BS 1588	3	2	60	-	58	15
	22227	BS 1589	6	-	15	-	79	13
22236	22325	BS 1594	15	-	40	-	39	29

Table 4.27 Charcoal from ?kiln 22285 and associated pit (Period 1.2)

1980). Ageing techniques also follow Brothwell (1981) and the Workshop of European Anthropologists (1980). In general, however, this material was only recorded in the form of simple lists of bones present. Additional details are provided in Anderson 1996c.

Number of individuals

A single identifiable 'articulated' skeleton was recovered from the barbican area; an apparently *in situ* burial of a small child in Area 45. The remaining 81 contexts from 70 features or unstratified deposits all consisted of very fragmentary remains of, generally, two or more individuals. Estimation of a minimum number of individuals has proved difficult owing to the scattered nature of the material. An approximate total of 43 individuals is suggested, of which 27 were from Areas 45 and 46.

Condition

The bones were often in poor condition, very fragmentary or eroded. Most of the bones had been redeposited in rubbish pits, but it is also possible that a number had been moved around more than once.

Demographic Analysis

Of the 43 individuals identified in these contexts, 21 were children or sub-adults below the age of 18 years at death. In this type of material, the varying sizes of juvenile bones makes estimation of the number of children relatively easy. Adult material is more difficult and it seems from the number of children that the adult figure of 22 is probably an underestimate. Based on other groups, in which roughly 30% of the total are children, it is possible that the true number of adults in this small group could be closer to 40.

Table 4.28 lists 'groups' of features together with their probable minimum numbers of adults and children. A more detailed list can be found in Anderson 1996c. Unstratified remains are not included.

Nineteen of the 21 children can be divided into the age groups indicated in Table 29.

The figures suggest a fairly even spread of juvenile ages at death in this small group, although the larger bones of sub-adults appear to be more commonly represented. Unfortunately adult ages at death could not be estimated for this group, although in a few cases signs of degenerative change and disease were noted. Very few individuals could be sexed.

Pathology

Degenerative change was noted in a finger phalanx (45199), a left clavicle (45027), and a right scapula (45098), all at Grade I-II (Brothwell 1981). The partially articulated child from Area 45 (45210, Plate 4.5) had porotic cribra orbitalia of both orbits. One femur (46690) shaft showed signs of periosteal inflammation in the form of graining of the shaft.

Two examples of trauma were seen. One fragment of a skull (45104) had an unhealed cut. A fragmentary right ulna (45108) showed a midshaft fracture and osteoarthritis at the elbow joint. A first metacarpal in this context also had osteoarthritic change at both ends and may have belonged to the same individual.

A possible case of Paget's Disease was found in an adult right innominate (46018). This was enlarged with homogenous thickened cancellous bone, in some places

with almost complete loss of the intra-trabecular spaces. The disease is relatively common in one or more bones of individuals over the age of 40 years, and is particularly common in bones of the axial skeleton.

Discussion

The human skeletal remains from this area predate the construction of the castle, apparently representing the cemetery of an earlier Saxon settlement in the area. Much of the human bone from the barbican area was recovered from the line of the former Bell Avenue. This area was partly levelled in the early 18th century, presumably removing or truncating any graves which had remained undisturbed beneath the earthworks. The presence of human bone in backfills of the barbican ditch (Areas 3 and 9) would seem to support this suggestion.

The main focus of the cemetery would appear to have been in the northern part of Area 45, where some grave-like features were located (see Chapter 4.II, Period 1.1). The subsequent scattering of the bone across Areas 4 and 46 and possibly into Areas 48 and 49 may have occurred during the construction of Bell Avenue in 1862. It is uncertain whether other human bones found across Areas 3 and 5 also derived from this cemetery. Further comments on the location of other displaced material in the vicinity of the Castle Mall excavations are given in Chapter 4.VI.

In conclusion, it is likely that the fragmentary remains collected from the barbican area are the last remnants of a once substantial cemetery which was swept away in the post-medieval period when the area was landscaped. Presumably the disturbed burials ended up in part of the barbican ditch which was not archaeologically excavated, or perhaps they were carted away to be used as fertiliser. The single 'articulated' burial is difficult to explain as it is so clearly disturbed. The position of the bones does not suggest a crouched inhumation. The most likely explanation is that the burial is redeposited, but it is possible that a body with empty space around it, for example in a large coffin or chamber, could be moved around in this way either during transportation and lowering into the grave, or whilst in the ground by animal scavengers. If it were redeposited this must have occurred within a few years of its original burial, before soft tissue decay was complete (see Black below). It seems that, in the absence of any documentary evidence, the origin and eventual fate of this cemetery may never be known.

Forensic Comment

by Sue Black
(Plate 4.5)

Study of the photograph of reinterred sk.45210 in a forensic context has permitted the following tentative comments, although numerous caveats apply due to unknown variables. The bones of the skull appear to have been maintained in a relatively close anatomical form, despite having splayed apart. The extent of splay is more than would be expected if decomposition had occurred *in situ*. However, the skull must have been approximated in anatomical position for the bones to be placed in the same proximity. The same is true of the left humerus, radius and ulna. The radius and ulna have maintained their anatomical position although they are slightly removed from the humerus. It is likely therefore that decomposition at the joints was sufficiently well

Features	Adults	Children
Area 3 (30008, 30036, 30042)	1	2
Area 4 (40074, 40076, 40169)	1	0
Area 5 (50099, 50134, 50213)	3	1
Area 9 (91201, 92738, 92747)	3	1
Area 45 (45025, 45029, 45113, 45134, 45186, 45229)	2	1
Area 45 (45088, 45100, 45230, 45191, 45200)	2	3
Area 45 (45097, 45122)	1	1
Area 45 (45027, 45044, 45060, 45050, 45150, 45214, 45147, 45165, 45211, 45185, 45099, 45108, 45160)	3	6
Area 45 (45087, 45112, 45158, 45196)	1	0
Area 45 (45079, 45170)	1	1
Area 46 (46014, 46019, 46109, 46114, 46140, 46116, 46144, 46161, 46205, 46552, 46691)	3	2
Area 49 (49084, 49141, 49201, 49224, 49225, 49245)	1	3
Total	22	21

Table 4.28 Cemetery 2 — features from all periods containing human bone

advanced although ligamentous adhesions were sufficient to maintain topographical relations of the forearm bones. No hand or foot bones were recovered: hands and feet are frequently not located in burials of decomposed remains (due to animal activity, preferential decomposition *etc.*). In the Norwich burial, the right femur has remained in close position to the ischium indicating again that, whilst decomposition may have been progressive, the hip joint remained intact. This joint is particularly well protected in soft tissue terms and articulation can remain even in advanced stages of decomposition.

The ribs were found in close anatomical relation, with the relationship to the sternum apparently being maintained. If this was indeed the case (rather than a photographic effect), it is very interesting. The plastron (sternum, ribs and costal cartilages) decompose rapidly because of the general lack of overlying soft tissue and their ready exposure to decomposition factors. If they are still in position then it is an indication that this area of the body might have been encased in something that delayed decomposition, such as clothing or a shroud. The presence of clothing could also account for the positioning of the humerus in relation to the radius and ulna. The three bones have maintained something of a topographical arrangement but they are significantly displaced which could have occurred if the body was either wrapped or clothed. This type of decomposition would have been extensive. A body lying above ground, under normal conditions, would take upwards of 6 months during summer time to reach this stage of decomposition or if over the winter period then it could be as long as 9 months. If the body had been buried and then later removed to a second site the degree of decomposition would be consistent, under normal conditions, with a timescale of approximately 1–1.5 years.

Cemetery 3: Late Saxon (Farmer's Avenue)

by Sue Anderson
(Figs 4.114-4.119, Plates 4.47-4.49)

Summary

Human skeletal remains from 89 graves (85 articulated skeletons) and 29 disarticulated contexts are

Age group	No.	%
0–2	5	26.3
2–6	4	21.1
6–10	3	15.8
10–14	3	15.8
14–18	5	26.3
Total	19	-

Table 4.29 Cemetery 2 — child age groups

discussed. The articulated remains represent a minimum of 58 adults (21 males, 36 females, 1 unsexed) and 26 children. In general, the skeletal remains of people buried in this cemetery suggest that they were similar in physical appearance to other groups in the region. Demographically, they were unusual in having a greater number of women than men, but this may be due to the fact that the entire cemetery was not excavated. Non-metric traits also suggest a generally similarity amongst East Anglian Saxon groups, and possible family groups were identified within the cemetery. Dental and pathological lesions produced patterns similar to those occurring in other Saxon groups, although prevalence of cribra orbitalia was relatively high at this site and may suggest a diet deficient in iron. Physical stress particularly affected the spines and feet/ankles of the people in this group, and it was suggested that this may be related to occupation and environmental factors. Several interesting pathologies were observed, including a possible case of tuberculosis of the wrist, and a fractured hip.

Introduction

Although excavated in three separate areas (Areas 1, 6 and 22), this group of skeletons is derived from a single cemetery (Fig.4.37). The fifteen radiocarbon samples taken from the group indicate a late 9th- to mid 11th-century date. The boundaries of the cemetery were not defined during the excavation and it is unlikely that the skeletons discussed here represent the entire burial population. Eighty-nine grave cuts were identified during the excavation, together with a number of contexts containing disarticulated material.

Method

Measurements were taken using the methods described by Brothwell (1981), together with a few from Bass (1971) and Krogman (1978). Sexing and ageing techniques follow Brothwell (1981), and the Workshop of European Anthropologists (1980), with the exception of adult tooth wear scoring which follows Bouts and Pot (1989). Stature was estimated according to the regression formulae of Trotter and Gleser (Trotter 1970). All systematically scored non-metric traits are listed in Brothwell (1981), and grades of cribra orbitalia and osteoarthritis can also be found there. Pathological conditions were identified with the aid of Ortner and Putschar (1981) and Cotta (1978). Additional details are provided in Anderson 1996a.

Comparative material

Comparisons are made with the groups listed in Table 4.30.

The Middle to Late Saxon sites listed above form the main corpus of inhumed skeletal material from Norfolk and Suffolk. Although a number of other sites have produced human remains, either they have not been analysed or they have a very small minimum number of individuals and are thus of little use for comparative purposes. Even the groups listed above are relatively small, and the total number of individuals represented is only about half the number of people found in a single Early Saxon cremation cemetery at Spong Hill (McKinley 1994).

The groups from Ipswich, Thetford and Norwich are considered to be urban or 'high status' in character, whilst those from North Elmham, Brandon, Caister and Burgh are thought to be rural, possibly with a monastic element. The most useful comparator is the group from Norwich Castle's north-east bailey (Site 416N), as it is geographically and temporally very close to the Farmer's Avenue group. The St John Timberhill cemetery is compared with Farmer's Avenue in the following section, but some figures are included here for the sake of completeness.

Site name	Date range	MNI*	Analyst
Brandon Stauch Meadow	7th–9th c.	153	Anderson (1990)
Burgh Castle	7th–10th c.	167	Anderson and Birkett (1991, 1993)
Caister-on-Sea	8th–11th c.	139	Anderson (1991a, 1993)
Ipswich School Street	10th–11th c.	95	Mays (1989)
Thetford Red Castle	Late Saxon	85	Wells (1967a)
Norwich Castle Bailey	Late Saxon	c.130	Stirland (1985)
Thetford 'St. Michael'	11th–12th c.	101	Stroud (1993)
North Elmham	10th–12th c.?	206	Wells (1980)
St Helen's, York	10th–16th c.	1041	Dawes (1980)
The Hirsel, Coldstream	11th–16th c.?	331	Anderson (1994)
Rivenhall, Essex (Groups B–E)	10th–17th c.	139	O'Connor (1993a)
All Saints, Barton Bendish, Norfolk	11th–18th c.	79	Stroud (1987)

*MNI = Minimum Number of Individuals

Table 4.30 Cemeteries 3 (Farmer's Avenue) and 4 (St John, Timberhill) — comparative material

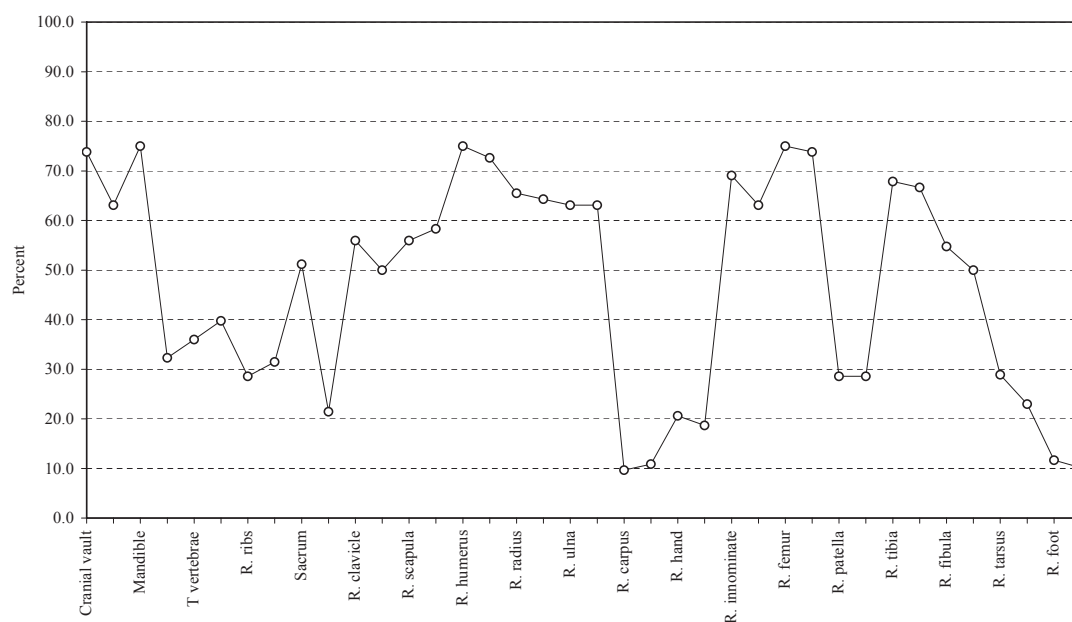


Figure 4.114 Cemetery 3 (Farmer's Avenue): representation of skeletal elements: total group

Very few medieval cemeteries of any size have been excavated in East Anglia, and few non-monastic urban groups are available from anywhere in England. The groups from York and Coldstream have been chosen because they are large secular urban and rural groups respectively. Rivenhall and Barton Bendish are similar sites but with relatively small skeletal groups. The Rivenhall group is larger than listed above, but those skeletons of Saxon and 18th/19th-century date have been excluded for the purposes of this comparison. Details for the Norwich medieval cemetery at St Margaret *in Combusto* were not available at the time of writing (Stirland forthcoming).

Number of individuals

Eighty-four articulated skeletons and 29 contexts of disarticulated remains were submitted for analysis. Twelve of the disarticulated contexts were associated with articulated skeletons. In addition, extra bone not belonging to the main burial was identified from 25 graves. Most of this material consisted of a few small fragments such as teeth, pieces of cranium, or hand/foot bones, and is not included in the estimate of minimum number of individuals. Three skeletons and parts of two others had been lost after the excavation.

The analysed material represents a minimum of 106 individuals (84 articulated and 22 disarticulated). In general, the disarticulated material has only been included in the report where it is certain that there is no duplication, for example in the analysis of dental remains or the measurement of skulls.

Condition

A macroscopic assessment of the condition of the bone was made. Such an assessment is very subjective and is based on the writer's experience of other skeletal groups. In general the skeletal material from this site was felt to be in average or below average condition in comparison with the ideal, but other local sites tend to produce bone in a similar or worse state of preservation.

Table 4.31 presents the degree of completeness of each skeleton against general bone condition. Completeness was based on a count of 40 elements of the skeleton (cranial vault, right and left maxilla, right and left mandible, cervical, thoracic and lumbar spine, sacrum, sternum, right and left ribs, clavicles, scapulae, humeri, radii, ulnae, carpal bones, hands, innomines, femora, patellae, tibiae, fibulae, tarsal bones, feet). Note that a skeleton might score 100% completeness despite lacking a number of smaller bones of the hands, feet, ribs, spine and skull. Representation of these elements

	Condition			Total	
	Above average	Average	Below average	No	%
Completeness					
<20%	1	2	10	13	15.5
20–40%	0	4	16	20	23.8
40–60%	1	5	8	14	16.7
60–80%	0	5	10	15	17.9
>80%	7	11	4	22	26.2
Total	9	27	48	84	-
%	10.7	32.1	57.1	-	-

Table 4.31 Cemetery 3 (Farmer's Avenue) — condition of skeletal material

Site name	Type	% juveniles	Mean age at death
Brandon Staunch Meadow	High status rural	20.3	7.7
Burgh Castle	Monastic?	15.2	10.3
Caister-on-Sea	High status rural	23.0	7.9
Ipswich School Street	Urban	17.0	-
Thetford Red Castle	Urban	28.2	2.6
Norwich Castle Bailey	Urban	53.8	4.6*
Farmer's Avenue	Urban	30.9	5.8
Timberhill	Urban	19.0 (30.2)	9.3 (8.1)
Thetford 'St. Michael'	Urban	48.7	4.7*
North Elmham	Rural	18.9	6.6
St Helen's, York	Urban	30.5	-
The Hirsell, Coldstream	Rural	45.3	5.1
Rivenhall	Rural	33.8	6.0*
All Saints, Barton Bendish	Rural	29.1	4.2*

* calculated from published information

() includes disarticulated

Table 4.32 Cemeteries 3 (Farmer's Avenue) and 4 (St John, Timberhill) — comparisons of juveniles

(based on a percentage of the MNI) is shown graphically in Fig. 4.114 and a table of the results is held in the project archive.

Comparison with similar data from other sites suggests that the Farmer's Avenue skeletons were better preserved and more complete than those from the Ipswich, Brandon, Rivenhall, Barton Bendish and York sites, in a similar condition to those from Norwich and The Hirsell, and less well-preserved than the material from Thetford, Burgh Castle, Caister and North Elmham.

Demographic Analysis

Juveniles

Of the 84 articulated individuals, 26 (30.9%) were juveniles below the age of 18 years. A further ten children were identified in the disarticulated remains. The percentage of children at other East Anglian sites varies considerably, probably due to the fact that none of the cemeteries has been fully excavated. Table 4.32 presents the figures for these sites, together with the mean age at death where this has been calculated.

The only skeletal group in this region which has been fully excavated is the cremation cemetery at Spong Hill (McKinley 1994). Estimation of age has been possible within broad limits, and produces a figure of 25.6% juveniles (this is increased to 28% if the potentially 'missing' infants are included).

Cemeteries of the Middle–Late Saxon period throughout Britain tend to produce an average of 20–30% children (Anderson 1991b). The figure for Farmer's Avenue, although higher than most contemporary groups listed here, is within normal limits for this type of site. The high percentages found at Norwich Castle Bailey and Thetford 'St Michael' are unusual and are most likely a result of the small area of churchyard available for excavation. The same may apply to the later churchyards at The Hirsell and Rivenhall.

The distribution of juvenile age at death for Farmer's Avenue articulated skeletons is presented in Table 4.33 (assessment of age was not possible for one child). Inclusion of the disarticulated remains does not alter the proportions significantly.

It is possible to divide the infants into smaller age groups as follows: 0–6 months, 1 (14.3%); 6–12m, 2 (28.6%); 12–18m, 0; 18–24m, 4 (57.1%). This, together with the percentage dying in the 2–6 year category, suggests that a peak of mortality in this group was reached after the age of 18 months. Perhaps these children had problems during their weaning, or perhaps they fell prey to childhood infections.

Whatever the cause, more than half these children were dead before the age of six. This is comparable with the figure found at Norwich Castle Bailey for the under-fives (62.9%), although this includes many more perinatal skeletons than were found at Farmer's Avenue. This is comparable with the rural medieval churchyards of Barton Bendish, where nearly 75% of children died before the age of 5 years, and The Hirsell, where over two-thirds died before the age of 6 years. Thetford 'St Michael' also produced a high percentage of children under 5 (65.9%), but most of these were less than two. Similarly, most children at Thetford Red Castle died in the 0–2 year period. However, at Brandon, Burgh Castle, Ipswich School Street and Caister, most children were

over six years old at the time of death, whilst the majority from North Elmham died between 2–6 and 6–12 years. At St Helen's, York, the greatest child mortality occurred in the age group 6–10 years.

A number of reasons can be suggested for these differing patterns. The suggested high infant mortality at Norwich Castle Bailey, for example, may be a result of poor hygiene or malnutrition, or it may simply be that the excavation took place in an area traditionally used for infant burial (for example, close to the church building: Boddington 1987; Cramp forthcoming). Alternatively, the presence of a possible baptistry in the churchyard (Ayers 1985, 25) may have encouraged burial of young (unbaptised?) children nearby. At Brandon, preservation was very poor and yet a small group excavated to the north (Cemetery 2, medieval?) produced many infant and juvenile burials — again this may be a result of the sample selected. Perhaps at some sites more older children have been found because they had achieved a greater status at the time of death than infants (Mays 1995). This could be the case at North Elmham and Caister. Interpretation of this kind of data will remain difficult until more complete cemeteries are available for study. It may then be possible to decide whether the differences which occur are the result of a reasoned policy or simply a random process.

It should also be remembered that the deaths observed in these samples did not occur all at once. The possible period of use of the Farmer's Avenue cemetery (over 150 years) suggests that on average there was one child burial every five years in the excavated area. Interpretation of any trends suggested by the data should always take this statistic into account.

Adults

Of the 58 articulated adults recovered at Farmer's Avenue, 21 were male (of which 8 were ?male), 36 were female (8 ?female), and one was unsexable. The disarticulated remains produced a further two ?males, one female, four ?females, and six unsexables. The numbers of males and females (including disarticulated remains) and the sex ratios found at this and other sites are presented in Table 4.34.

Those marked with asterisks were found to be statistically significantly different at the 1% level. Again, any interpretation must be approached with caution owing to the incomplete nature of these groups. Most of these sites are within the normal (archaeological) range of one man to 0.8–1.2 women. Unfortunately current techniques in skeletal analysis do not allow for the sexing of children, and it may be that their exclusion is one of the factors which produces abnormal sex ratios.

<i>Age group</i>	<i>No.</i>	<i>%</i>
0–2	7	28.0
2–6	9	36.0
6–10	4	16.0
10–14	2	8.0
14–18	3	12.0
Total	25	

Table 4.33 Cemetery 3 (Farmer's Avenue) — juvenile age at death

The difference between Norwich Castle Bailey and Farmer's Avenue presumably does not reflect a difference in the populations of the two parishes. It is most likely to reflect preferred areas of burial (men to the north, women to the west?) and the non-random nature of the samples. Analysis of the complete cemetery at Raunds, Northamptonshire (Boddington 1987) has suggested a preferential use of the west of the cemetery by females.

One other possibility could be the dedications of the two churches, and the sex ratios at the two sites may be a result of personal choice, if this were allowed, in the place of rest. Perhaps one saint appealed more to women and the other to men. Until we know more concerning the catchment areas of early urban churchyards it is difficult to draw conclusions.

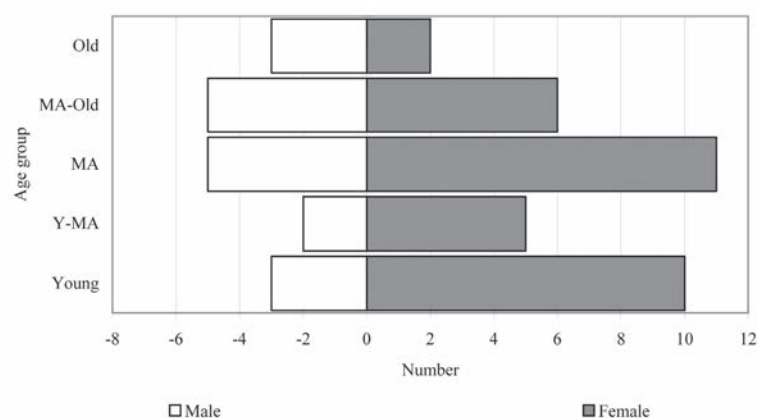


Figure 4.115 Cemetery 3 (Farmer's Avenue): adult age groups by sex

Site name	M+?M	F+?F	Ratio
Brandon Staunch Meadow	53	40	1:0.8
Burgh Castle	79	64	1:0.8
Caister-on-Sea	50	49	1:1
Ipswich School Street	35	28	1:0.8
Thetford Red Castle	22	32	1:1.5
Norwich Castle Bailey	39	22	1:0.6*
Farmer's Avenue	23	41	1:1.8*
Timberhill	67	81	1:1.2
Thetford 'St. Michael'	19	20	1:1
North Elmham	82	76	1:0.9
St Helen's, York	338	394	1:1.2*
The Hirsell, Coldstream	85	88	1:1
Rivenhall	45	49	1:1.1
All Saints, Barton Bendish	33	14	1:0.4*

Table 4.34 Cemeteries 3 (Farmer's Avenue) and 4 (St John, Timberhill) — adult sex ratios (figures include disarticulated remains)

Age group	Male		Female		Total	
	No	%	No	%	No	%
Young	3	16.7	10	29.4	13	25.0
Young/middle-aged	2	11.1	5	14.7	7	13.5
Middle aged	5	27.8	11	32.4	16	30.8
Middle-aged/old	5	27.8	6	17.6	11	21.2
Old	3	16.7	2	5.9	5	9.6
Unaged adult	3	-	2	-	6*	-
Total aged	18		34		52	

* includes one unsexed adult

Table 4.35 Cemetery 3 (Farmer's Avenue) — adult age at death

The adults can be divided into broad age categories as shown in Table 4.35. This information is presented graphically in Fig.4.115. It suggests that more women died young and more men were in the older age groups at the time of death. This pattern occurs in other groups and has been attributed to death in childbirth. The frequencies of men and women in each age group were tested using the chi-square statistic and were not found to be significantly different. To give a rough idea of the ages represented by the categories, 'Young' would be approximately 18–25 years, 'Middle-aged' would fall in the range 35–45 years, and 'Old' would be over 55 years. However, in recent years techniques of ageing adult skeletons have been shown to be hopelessly inaccurate (Molleson and Cox 1993), and the results must be taken as a suggestion of *biological* rather than true chronological age. It is likely that the age of a number of individuals at this site has been considerably underestimated, and for this reason a mean age at death of the adult group has not been calculated.

The other regional sites have varying patterns of adult age distribution. There was little difference between the sexes at Brandon, Burgh Castle and Thetford 'St Michael'. At Caister and Ipswich School Street there were high proportions of women in the 'young' age group, although at Caister there were similar numbers of 'old' men and women. At North Elmham the expected pattern was reversed, with more old women and more young men, although the difference throughout the age categories was not great. The majority of individuals of both sexes from Norwich Castle Bailey were past middle age (Stirland's 'old' category). At Barton Bendish most individuals were in the young/middle-aged and middle-aged groups, and similar patterns were found at The Hirsal and St Helen's, York.

Comparison of the percentages of total individuals within broad 'Young' (including 'Y-MA'), 'Middle-aged' and 'Old' (including 'MA-Old') categories at each site produced no clear pattern of distinction between urban and rural sites in the Middle and Late Saxon periods. Probably the closest results to those found at Farmer's Avenue, with roughly one-third of the total group in each category, are from Burgh Castle and Thetford 'St Michael'. Ipswich School Street and Brandon have over 50% of adults in the 'Young' category, whilst at Caister just over 50% are in the 'Old' category. The medieval sites of The Hirsal, St Helen's and Barton Bendish all have around 15.5% 'young' adults, whilst the 'middle-aged' group (including young/middle-aged) ranges from 61.6% at St Helen's to 68.4% at The Hirsal, and the 'old' group is around 20%, conforming to the 'normal distribution' in statistical terms. The Rivenhall group had a particularly high proportion of 'old' individuals (47.3%).

From the evidence available, and bearing in mind the tendency of ageing techniques to underage individual skeletons, it seems likely that the majority of East Anglian Saxons were reaching at least middle age, and many were probably in their sixties or seventies when they died.

Metrical and Morphological Analysis

Summary tables of male and female measurements are provided in a table in the site archive. Measurements for individual skeletons are to be found in the archive report (Anderson 1996a).

Stature

Stature was calculated using the regression formulae of Trotter and Gleser (Trotter 1970). The results are more accurate if a long bone formula with a lower standard deviation can be used. The leg bones have the lowest standard deviation, and the best formula to use for both sexes is the one involving the lengths of both the tibia and the femur. For Farmer's Avenue it was possible to use this equation on eight men and fourteen women. Single leg bones could be used in a further four males and ten females. Statures were calculated for four other individuals (one man, three women) using the radius.

The means and ranges of estimated stature for adult males and females are recorded in Table 4.36.

All other groups in this region have similar means. Male means range from 169.7cm at Thetford Red Castle to 175.9cm at Burgh Castle, whilst female means range from 157.5cm at North Elmham to 163.1cm at Burgh Castle. Means of the two northern medieval groups are slightly less. The people from Burgh Castle were exceptionally tall for the period, the male mean being almost 4cm greater than the next highest (North Elmham, 172.1cm) and the female 2cm higher than the nearest rival (Caister, 161.1cm). Farmer's Avenue is well within the normal range of estimated heights in East Anglia and elsewhere. In fact the means for both sexes are almost exactly the same as those of a north-eastern group at Monkwearmouth (Anderson 1991b).

Cranial indices

Very few cranial indices could be calculated. Only two male and five female skulls have anything like the full range of measurements. The two male crania have a mean breadth/length index of 73.0, which is similar to the figures at Brandon, North Elmham and Burgh Castle (all 73.1) and slightly less than that for Caister (75.0). The index was calculated for eight females with a mean of 75.9, compared with 75.5 at Burgh Castle, 75.1 at Caister, 73.5 at Brandon and 73.3 at North Elmham. Means at medieval sites were all higher: the males ranged from 78.9 at The Hirsal, 79.1 at Rivenhall, to 79.4 at St Helen's, York; the females ranged from 76.8 at Rivenhall, through 78.2 at The Hirsal, to 81.1 at St Helen's, York. Only the latter was as high as the means for men and women at Thetford Red Castle (80.1 and 80.4 respectively), which are unusual for a Saxon group. Unfortunately means are not available for the other Thetford and Norwich sites, and the Ipswich group had very few complete crania.

It is customary to divide cranial indices into categories reflecting the relative proportions of the skull. At Farmer's Avenue the majority of skulls (60%) fall into the dolichocranial or narrow-headed category. Three females had mesocranial or medium-headed skulls, and one had a brachycranial or short rounded skull. All meso- and brachycranial individuals were in the northern part of the site (Areas 6 and 22), but this may be due to better

Sex	No.	Mean	Range
Male	13	171.9cm (5'8")	165.0–185.4cm (5'5"–6'1")
Female	28	159.6cm (5'3")	147.5–168.3cm (4'10"–5'6")

Table 4.36 Cemetery 3 (Farmer's Avenue) — estimated adult stature

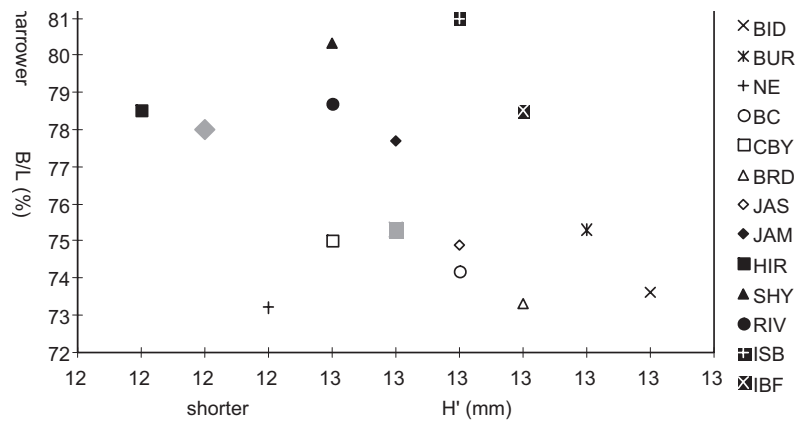


Figure 4.116 Cemeteries 3 & 4: cranial index against vault height

preservation of complete skulls in these areas rather than to any real trend.

Two fairly distinct ‘types’ of skull were recognised from the cranial indices. One was a long, low, relatively broad type (one male and two females) and the other was a medium length, high, relatively narrow skull (two females). Although other cranial and facial indices were calculated, the small quantities of these make further generalisations unwise.

A comparison with other Saxon groups in the area, with the exception of Thetford Red Castle, suggests that the pattern of mainly dolicho- and mesocranial individuals is normal for the period. There is a general trend towards brachycephaly throughout Europe in the medieval period, although the cause of this is unknown at present. There is some indication that it may be related to climate, a broader head being of greater advantage for heat retention in colder conditions (Mays 1998, 99), but there is no evidence that a change in climate actually

causes a change in head shape. Perhaps movement of people is a more likely explanation.

A plot of cranial breadth/length index against cranial height was made to compare the Castle Mall means with Saxon and Medieval groups for which figures were available (Fig.4.116). Early Saxon groups from the North East (Norton NE, Marlow 1992), Cambridgeshire (Burwell BUR, Brash *et al.* 1935) and the Midlands (Bidford-on-Avon BID, Brash *et al.* 1935), Late Saxon and medieval groups from Jarrow (JAS/JAM, Anderson 1991b) and high medieval groups from Ipswich (St Edmund de Pountenay ISE, Birkett n.d.; Blackfriars IBF, Mays 1991) are also plotted for comparison. It can be seen from this that Farmer’s Avenue forms part of a cluster with Middle-Late Saxon sites in East Anglia, but St John’s (Timberhill) is located at some distance from the other Saxon groups, and is closer to the medieval groups (plotted in solid black). The proximity of Jarrow to the East Anglian sites is perhaps surprising, but it could reflect the position of that site on the east coast — like

	FA	TSM	ISS	CBY	BRD	BC	TH	FY4	FY6	IBF
FA	-	0.012 (51)	0.105 (60)	0.030 (43)	0.120 (34)	0.054 (51)	0.022 (78)	0.022 (64)	0.099* (62)	0.082* (60)
TSM	0.003	-	0.147* (45)	0.104 (33)	0.133 (25)	0.044 (35)	0.081 (51)	0.031 (51)	0.031 (51)	0.043 (43)
ISS	0.004	0.004	-	0.064 (36)	0.155 (28)	0.151 (37)	0.128* (60)	0.102 (51)	0.132* (51)	0.055* (58)
CBY	0.003	0.003	0.004	-	0.125 (34)	0.139* (39)	0.033 (43)	0.106 (42)	0.134* (40)	0.065 (32)
BRD	0.005	0.006	0.007	0.004	-	0.086 (34)	0.190* (34)	0.164* (32)	0.284* (32)	0.197* (26)
BC	0.002	0.002	0.007	0.002	0.004	-	0.166* (51)	0.182* (44)	0.242* (44)	0.193* (36)
TH	0.002	0.002	0.003	0.002	0.004	0.002	-	0.107* (62)	0.143* (62)	0.084* (60)
FY4	0.004	0.002	0.004	0.007	0.005	0.002	0.002	-	0.016 (62)	0.045* (51)
FY6	0.002	0.001	0.003	0.001	0.003	0.001	0.001	0.001	-	0.038 (52)
IBF	0.002	0.002	0.003	0.002	0.004	0.002	0.001	0.002	0.002	-

Table 4.37 Cemeteries 3 (Farmer’s Avenue) and 4 (St John, Timberhill) — Mean Measure of Divergence

Burgh Castle it would have been one of the first points of entry for Germanic peoples. Alternatively, it may be closer to the East Anglian populations simply because it is closer in date to them than to the groups from Burwell and Bidford-on-Avon.

Post-cranial indices

The means of the platymeric and platycnemic indices, which measure the relative flattening of the shaft of the femur and the tibia respectively, may be found in the site archive. All are similar to those found in other Saxon groups. No discussion is attempted here because the significance of the indices is not understood and any interpretation is therefore meaningless.

The robusticity of the femur (Bass 1971, 170) was calculated where possible. This suggested a slight difference between men and women, but the ranges overlapped to a great extent. The male mean was 12.9 for the right femur and 13.0 for the left, compared with the female means of 12.5 (right) and 12.4 (left). The males ranged from 11.9 to 14.0, whilst the females ranged from 11.0 to 14.2. Comparison with Burgh Castle and Brandon suggests that the Farmer's Avenue population is generally slightly more robust.

Non-metric traits

Non-metric traits are variations from the 'normal' skeletal anatomy and are scored on a present/absent basis. A number have been shown to be genetic in origin and this may be the case for others. The percentages of each trait, out of numbers of individuals in which that area of the skeleton was available, are recorded in a table in the archive.

A statistical comparison of scores for males and females (Perizonius 1979) showed that only four traits were significantly different at the 5% level. These were right extra infraorbital foramen (more men than women), left lambdoid wormian bones (more women than men), Allen's fossa of the right femur (more women than men) and plaque formation of the left femoral head (more men than women). None was significant at the 1% level. This level of difference (4.7%) might be expected to occur by chance.

Unfortunately non-metric traits are difficult to compare between groups because different analysts use different lists of traits and different recording methods. Comparison is possible with those sites analysed by the present writer (Brandon (BRD), Burgh Castle (BC), Caister (CBY), St John's (Timberhill) (TH)), with Thetford 'St Michael' (TSM), Ipswich School Street (ISS), Ipswich Blackfriars (IBF; Mays 1991), and Fishergate York (Saxon and Medieval groups FY4 and FY6; Stroud and Kemp 1993). Not enough detail is available for the other sites.

The most commonly used method of non-metric trait comparison between sites is the statistic known as the Mean Measure of Divergence (MMD). A number of different formulae are available for its calculation, the one chosen here being that published by Thoma (1981). Studies on the various methods have suggested that there is little difference between them (Finnegan and Coopridge 1978). The results presented in Table 4.37 are only a preliminary study and it is hoped to carry out further work in more detail for publication elsewhere.

In the table, the MMD for each pair of sites is shown above the diagonal, and the variance below the diagonal.

Differences are significant (*) if they are greater than twice the square root of the variance. The numbers of traits (shown in brackets below the MMD) include bilateral traits counted separately, and post-cranial as well as cranial traits have been included. There are various other methods of dealing with bilateral traits but work on this is beyond the scope of the present report. The full list of traits used for comparison between each pair of sites is available in archive, as they varied slightly between sites recorded by the author and those recorded by other analysts.

The closer the MMD is to zero, the closer the two populations are to each other. These results suggest that the Farmer's Avenue (FA) group is not significantly different from any of the populations in its proportions of traits. It is closest to Thetford 'St Michael' (TSM), followed by St John's (Timberhill) (TH) and, surprisingly, Fishergate, York (FY4). The two York groups are not significantly different from each other, but the two Ipswich groups are. This is presumably because the friary would have attracted non-local inmates and burials. In fact the group from Ipswich Blackfriars is closer to the Fishergate period 6 group, which was from the cemetery of a Gilbertine Priory. St John's (Timberhill) is significantly different from all the Ipswich and York groups, as might be expected, but Farmer's Avenue seems to show a close similarity to the Saxon pre-Priory group from Fishergate, York. It is noticeable that St John's (Timberhill) (a Late Saxon/Norman group), Ipswich Blackfriars (a medieval friary) and Fishergate, York (period 6, a northern medieval priory) have the greatest numbers of significant differences when compared with the East Anglian Saxon groups.

The MMD has been used to suggest genetic relationships between populations. It would not be unexpected to find that groups of the same period living in the same area were derived from a basically similar genetic pool. The difference between Caister and Burgh Castle, two contemporary and geographically proximal groups, is difficult to explain, but metric differences between the two groups have been commented on elsewhere (Anderson 1991a).

One other use for non-metric traits is to suggest the possibility of family relationships within a cemetery. Metopism, the retention of the suture which divides the frontal bone of the skull in infants, was found in three adults from the north-west part of the cemetery (60466, 60415 and 60502; graves 60467, 60417 and 60504). This trait has been shown to be inherited in other groups and often produces clusters in cemeteries. Other skeletons associated with this group might be expected to show possible relationships. Three individuals have an ossicle at the lambda (60614, 60415, 60501; graves 60615, 60417 and 60476) three have a parietal foramen on the left side only (60415, 60424 (grave 60436), 60501), three have a posterior atlas bridge (60614, 60415, 60458) and two have sterno-manubrial fusion (60415, 60458 (grave 60455)). In view of the apparent spatial and trait relationships shown by this group, not all of which are noted above, it is suggested that they may have a family connection. A possible outlier to this group is 11786 (grave 11102), who shows many traits in common with the main group and who also has similar traits to the two children 11788 (grave 11816) and 11764 (grave 11845). A linear grouping of family burials would not be unex-

pected in later churchyards, although it is difficult to prove in Saxon groups.

Other groups have been identified with less certainty. The group of similar graves to the east of Area 1 shows a number of traits in common, including mandibular tori (11770, 11653; graves 11771 and 11666), palatine tori (11578, 11701, 11775; graves 11601, 11702 and 11776), and more than one zygoma-facial foramen on each side (11653, 11701). A further group may occur in the diagonal strip to the west of Area 1, although this is more tenuous and also shows some similarities to the second group.

Although it seems likely that people from the same family would choose to be buried close to their relatives, it is not possible to prove family relationships using non-metric traits, as environmental factors can also play a part. The results of this study can only be used to make *suggestions* of potential groups, but where individuals are buried together and share several traits, a genetic relationship seems more likely than simple chance. Participation in this type of burial rite would probably involve the use of grave markers and allocation of family plots, since burials would have occurred over many years, often with long time periods in between.

Dental Analysis

Parts of the dentition of 34 women (28 maxillae, 32 mandibles), 14 men (14 maxillae, 14 mandibles) and 23 juveniles (20 maxillae, 23 mandibles) were present.

Of the adult dentitions, 87 of the original 1408 tooth positions were either uncertain or missing. This left 1321 positions which could be studied. From these, 228 teeth (17.3%) had been lost after death, 65 (4.9%) before death and 28 (2.1%) were unerupted or congenitally absent. This left a total of 1000 teeth which could be studied.

The 23 juvenile dentitions provided a further 430 identifiable positions, of which 70 contained permanent teeth, 142 deciduous teeth, 69 unerupted permanent teeth, 27 unerupted deciduous teeth and 122 had been lost post-mortem.

Ante-mortem tooth loss

Ante-mortem loss of one or more teeth had occurred in 8 of the 14 males (57.1%) and 9 of the 34 women (26.5%), 35.4% overall. These were spread as shown in Table 4.38.

The greatest tooth loss occurred in male maxillae. This is partly a result of the small numbers of male dentitions available coupled with the fact that one male (11619/11657) had lost most of his upper teeth. If he is excluded, the male maxillary figure is reduced to 14/173 or 8.1%, still considerably higher than the female figure. Differences between male and female ante-mortem tooth loss are a common finding amongst Saxon groups. One reason for these differences may be the larger proportion of older individuals amongst the men, although other factors may be involved. A difference in diet seems unlikely, but occupational use of the teeth could cause greater loss amongst those involved. The most likely cause, however, is old age together with the greater propensity for tooth decay, abscesses and gum disease which this brings.

The combined figure for both sexes and jaws is within normal limits for the period, but is quite low compared to prevalences found in Ipswich, Thetford Red Castle and North Elmham. The figures for Middle to Late Saxon sites

in the region are as follows: Norwich Castle Bailey 4.0%, Thetford 'St Michael' 4.5%, Brandon 4.9%, Caister 6.2%, Burgh Castle 6.3%, Ipswich School Street 10.5%, North Elmham 11.1%, Thetford Red Castle 15.9%. The figures for medieval sites are: The Hirsell 6.9%, Barton Bendish c.15%, St Helen's, York 17.5%. One of the difficulties encountered when comparing dental pathologies is that they are often age related, so the best method would be to compare prevalences for each age group. Except for very large cemetery populations, such figures are generally not calculated owing to the small numbers which division into groups would produce.

The molar area is most affected in both males and females and in both the upper and the lower jaw, the normal pattern in Saxon and later populations. The first molar is generally the worst affected tooth, partly because it is the first molar to erupt and is therefore exposed to pathogenic organisms for longer than the other back teeth. The molar region generally is more at risk due to its size, morphology and function. The grinding teeth will easily retain small pieces of food in the fissures if no attempt is made to clean them.

Caries

One or more carious teeth were found in 14 females (41.2%) of whom 7 had more than one lesion, and in 7 males (50.0%) of whom 5 were affected in more than one tooth. The overall rates are shown in Table 4.39.

As with ante-mortem tooth loss, the men are affected to a greater degree than the women and again this is probably related to age.

Comparison with other local groups suggests that the prevalence of caries at Farmer's Avenue was well within the normal range. The figures for other sites are as follows: Brandon 1.0%, Thetford Red Castle 1.6%, Caister 1.8%, Burgh Castle 1.9%, Norwich Castle Bailey 2.6%, Thetford 'St Michael' 6.1%, North Elmham 6.4%, Ipswich School Street 10.0%. Most are higher than the medieval group from The Hirsell (2.0%), which is exceptionally low in comparison with its contemporaries. For example, St Helen's, York 6.1%, Barton Bendish 10.2%, and Rivenhall 19.9%. In general there is found to be an increase in the prevalence of caries through time, and this can be seen to some extent in the above figures. The anomalies may be due to differences in scoring methods. Comparisons should really be made between age groups, but these small groups are not amenable to such a study.

Like tooth loss, caries is most common in the molar region, but it also occurs in the premolars, and is found in incisors and canines occasionally. The majority of lesions

Sex	Jaw	Positions	Lost	%
Male	Maxilla	182	23	12.6
	Mandible	221	14	6.3
Female	Maxilla	417	8	1.9
	Mandible	501	20	4.0
Both	Maxilla	598	31	5.2
	Mandible	720	34	4.7
Both	Both	1321	65	4.9

Table 4.38 Cemetery 3 (Farmer's Avenue) — ante-mortem tooth loss

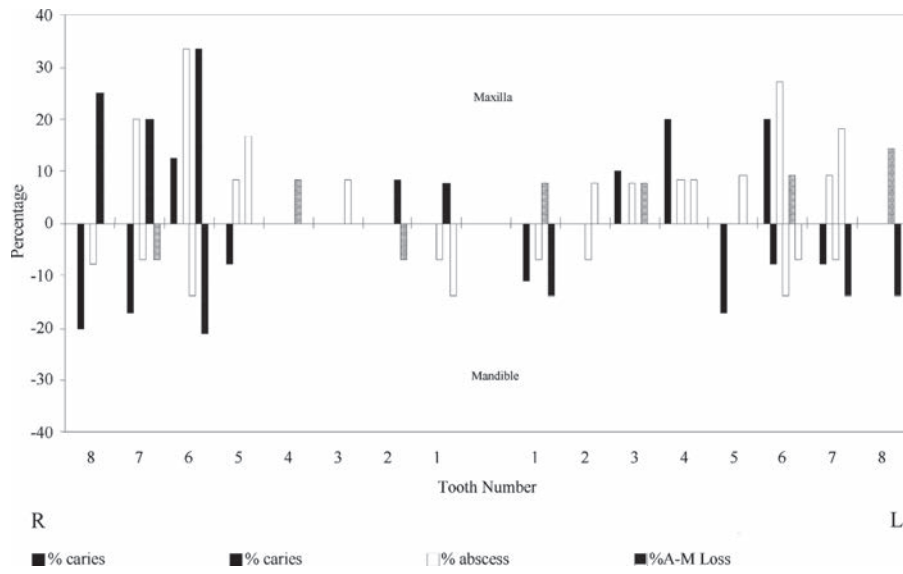


Figure 4.117 Cemetery 3 (Farmer's Avenue): dental pathology, males

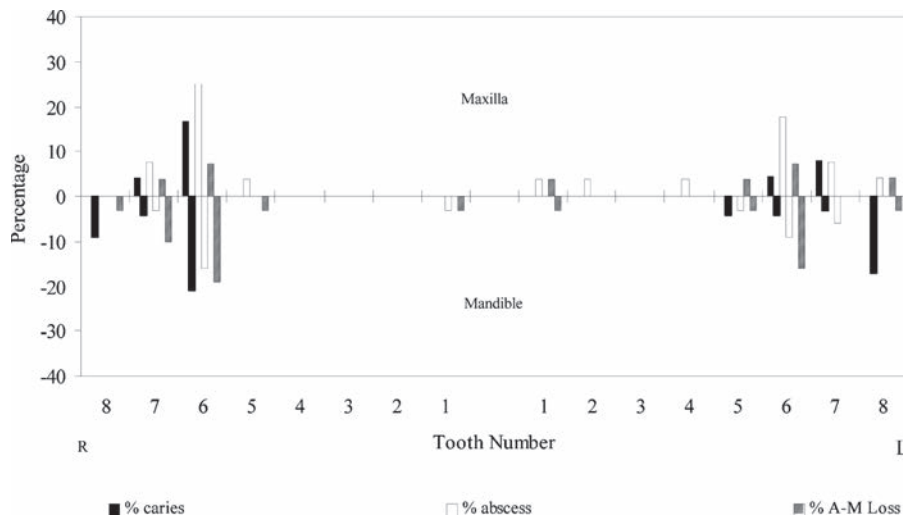


Figure 4.118 Cemetery 3 (Farmer's Avenue): dental pathology, females

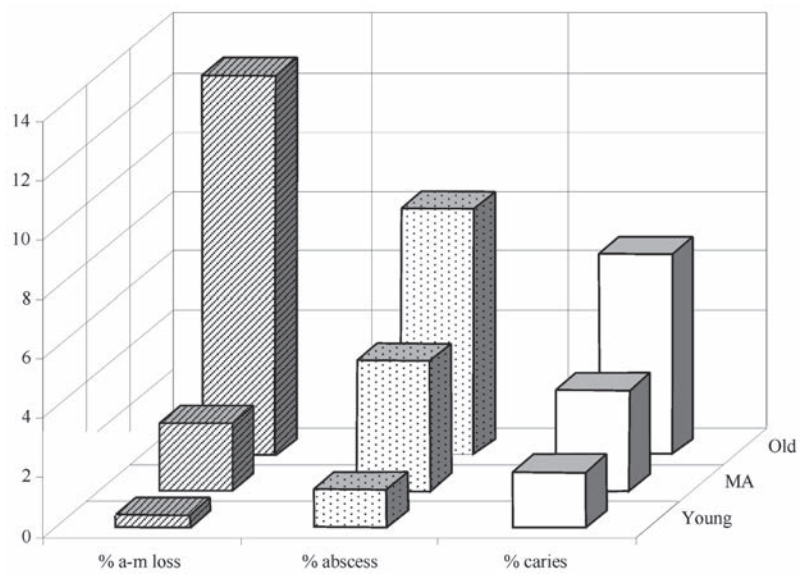


Figure 4.119 Cemetery 3 (Farmer's Avenue): dental disease by age group

had started in the interstitial region, generally where two teeth touched but sometimes at the neck of the tooth. Some lesions were occlusal, and two large examples had been partly filled with calculus. Very few lesions were buccal in origin.

One juvenile tooth, an upper second deciduous molar in a child aged 7–8 years (11784), was found to be carious. Out of the total number of erupted teeth in juvenile dentitions, this gives a prevalence of 0.5%.

Abscesses

Seven men (50.0%) and 16 women (47.0%) had at least one dental abscess. Of the men, one had a single abscess, two had two, and four had three or more (to a maximum of seven). Of the women, eight had one abscess, two had two, and six had three or four. Frequencies are recorded in Table 4.40.

The men are again affected to a greater degree than the women, and both sexes have a greater prevalence in the maxilla than the mandible. Comparison with other local groups suggests that this sex difference is a common finding, and may again be related to age.

Frequencies for combined sexes and jaws at other sites are as follows: The Hirsell 0.2%, Norwich Castle Bailey 1.1%, St Helen's, York 1.2%, Burgh Castle 2.0%, North Elmham 2.0%, Thetford 'St Michael' 2.0%, Brandon 2.5%, Thetford Red Castle 2.6%, Ipswich School Street 3.0%, Barton Bendish 3.9%, Caister 5.4%. The Farmer's Avenue prevalence is higher than that recorded at most of these sites. The high percentage at Caister was thought to be related to the proportionately high number of individuals reaching middle age and beyond. The high prevalence at Farmer's Avenue is difficult to explain, but attrition may be a factor.

Of the 34 female abscesses, only nine were found to occur under a carious tooth, whilst eight of the 23 male abscesses had this association. Where caries was not seen in connection with an abscess, the cause of the latter was

Sex	Jaw	Teeth	Carious	%
Male	Maxilla	130	6	4.6
	Mandible	187	10	5.3
Female	Maxilla	304	8	2.6
	Mandible	379	15	4.0
Both	Maxilla	434	14	3.2
	Mandible	566	25	4.4
Both	Both	1000	39	3.9

Table 4.39 Cemetery 3 (Farmer's Avenue) — caries

Sex	Jaw	Positions	Abscess	%
Male	Maxilla	182	13	7.1
	Mandible	221	10	4.5
Female	Maxilla	417	21	5.0
	Mandible	501	13	2.6
Both	Maxilla	598	34	5.6
	Mandible	720	23	3.2
Both	Both	1321	57	4.3

Table 4.40 Cemetery 3 (Farmer's Avenue) — abscesses

probably a high level of attrition which had resulted in opening of the pulp cavity of the tooth. In all cases where the tooth was present without caries, with the exception of one female incisor, the attrition score was 5+ or greater (Brothwell 1981; Bouts and Pot 1989). Perhaps the Farmer's Avenue group generally had a coarser diet than the Castle Bailey group, or they may have had a slightly greater life expectancy.

The vast majority of lesions occur in the molar region, and most of these affect the first molar. Occasionally abscesses around the roots of the incisors or the premolars were found.

One case is worthy of description. A very large lingual abscess around the roots of the upper left second and third molars of a woman (11659) had caused erosion of the palate through to the nose and had presumably caused a purulent nasal discharge during life. Both teeth also had separate buccal abscesses (Plate 4.47).

Periodontal disease

Periodontal disease, a generalised infection or inflammation of the gums and alveolar bone caused by poor oral hygiene, was noted in seven women and two men.

One male (11570) had severe pitting and resorption especially on the left maxilla in the premolar and molar regions, but also around both lower third molars. The other (11667) had a large abscess around the lower anterior teeth which was accompanied by new bone formation anteriorly and thickening of the left side of the mandible.

In the females, the changes ranged from pitting of the alveolar bone which could have been the result of gingivitis (60381), through marked alveolar resorption around the molars (11689), to considerable alveolar resorption and pitting (60528), pitting and new bone formation on the maxilla (11723, 22031, 60458) and probable inflammatory changes to the roots of most teeth (11786).

General dental pathology

Figures 4.117 and 4.118 show the percentages of caries, abscesses and ante-mortem tooth loss per tooth in male and female maxillae and mandibles, as discussed above.



Plate 4.47 Cemetery 3 (Farmer's Avenue). Interior surface of the palate of sk. 11659 showing large perforation due to abscess

A summary of this and other information relating to the dental analysis can be found in the archive.

As discussed above, the number of lesions correlates with age. Although it was not possible to compare Farmer's Avenue with the other sites, the data for Farmer's Avenue males and females combined is shown in Fig.4.118. This shows a marked increase in the prevalence of ante-mortem loss, abscesses and caries in the old age group. The figures are shown in Table 4.41. The numbers in brackets following each age category are the numbers of individuals in that category ('Y-MA' are counted as young, and 'MA-Old' as old).

Unerupted/congenitally absent teeth

The overall frequency of 'unerupted' teeth amongst the adults was 2.1%. Other sites have produced similar figures. At Brandon it was 1.1%, Burgh Castle 1.8%, Thetford 'St Michael' 2.1%, Caister 2.3%, and Norwich Castle Bailey 0.7%. Medieval figures are slightly higher: The Hirsell 2.8%, St Helen's, York 2.9%.

The third molars were, as elsewhere, the most common teeth to have remained unerupted or to be congenitally absent. The overall frequency for third molar absence/agenesis was 14.7%, but was 12.6% in females and 20.0% in males. This sex difference is unusual, as it is more common to find that women have a greater prevalence of this condition. The most likely explanation is the relatively small number of male dentitions available for study in this group. In both sexes the greater proportion of absent third molars was in the maxilla, and this was also the case at Burgh Castle, and amongst the males at Caister, but the Caister females and the people of Brandon and North Elmham were more affected in the mandible.

The overall prevalences of third molar absence at some other sites are as follows: Brandon 11.5%, North Elmham 16.4%, Burgh Castle 17.3%, Caister 17.6%, Thetford 'St Michael' 17.7%, The Hirsell 19.6%, St Helen's, York 27.5%. The Farmer's Avenue figure is within normal limits, although to the lower end of the range. The relatively low occurrence of this anomaly in the females is unusual, because the lack of a third molar is often attributed to the smaller size of the female jaw. The evolutionary trend in both sexes is towards smaller jaws and the lack of available space often means that the third molar, being the last tooth to erupt, either becomes impacted, or remains in the jaw and is resorbed before it reaches full size. Sometimes, probably determined by genetic propensity, the tooth will not develop at all. Unfortunately, without a complete radiographic examination of the jaws it is not possible to distinguish between uneruption and agenesis unless the third molar area of the jaw happens to be broken.

A few other teeth were either congenitally absent or had not erupted, and sometimes the corresponding

<i>Age category</i>	<i>% Caries</i>	<i>% Abscess</i>	<i>% A-m loss</i>
Young (19)	1.9	1.3	0.4
Middle-aged (13)	3.4	4.4	2.3
Old (15)	6.8	8.3	12.8

Table 4.41 Cemetery 3 (Farmer's Avenue) — general dental pathology

deciduous tooth had been retained. The upper left second incisor was congenitally absent from the dentition of a woman (11659). One female (11653) had retained all four deciduous second molars, whilst a male (11535) had retained one (lower left). Another male (60424) had retained both upper deciduous canines to the lateral sides of the permanent ones, although both milk teeth had been lost post-mortem leaving only the sockets as evidence, and a diastema was noted in the same position on the left mandible. Similarly two women (60444 and 60590) had sockets for the upper left deciduous canine, and retention in the latter case had resulted in impaction of the permanent canine. There may be a family relationship between these three people, but although all from Area 6, they are not buried in close proximity to each other.

Dental calculus

Dental calculus, or tartar, was scored on a four-point scale (Brothwell 1981), and the results are presented in Table 4.42.

Although more women than men had deposits of calculus, the men were affected to a slightly greater degree. Heavier deposits were usually recorded in older individuals. Results were similar at Brandon and Caister.

The table records the heaviest degree of calculus seen in each dentition. Differing amounts were seen in different parts of the mouth. In the mandible the heaviest deposits were seen on the lingual surface of the anterior teeth, whilst the labial and buccal surfaces of the upper teeth were most affected. This pattern is expected for populations of this period. It should be noted that, despite its tenacity during life, calculus is easily dislodged from the teeth after prolonged burial, so it is unlikely that the above figures represent the full extent of the condition in this group.

In general, calculus reflects a poor level of oral hygiene by modern standards. However, it may also reflect eating habits. Prolonged chewing of food such as meat can reduce the formation of tartar, whilst soft foods such as bread and porridge would produce heavy deposits if nothing else were eaten.

<i>Amount</i>	<i>Male</i>		<i>Female</i>		<i>Child</i>		<i>Total</i>	
	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>
None	3	21.4	5	14.7	1	33.3	9	17.6
Slight	2	14.3	6	17.6	0	-	8	15.7
Medium	5	35.7	15	44.1	2	66.7	22	43.1
Considerable	4	28.6	8	23.5	0	-	12	23.5
Total	14		34		3		51	

Table 4.42 Cemetery 3 (Farmer's Avenue) — dental calculus

Enamel hypoplasia

Hypoplasia is the result of disruption in the growth of the enamel on the developing tooth. Although it may be related to general disruption in growth of a child due to malnutrition or illness there is no definite evidence to support this view at present. It can occur as pitting of the enamel, but is more commonly seen in the form of slight ridges on the teeth. It is most common on the anterior teeth, but also occurs on the premolars and molars to a lesser extent.

It was found in 25 of 33 female dentitions (75.8%), 7 out of 12 males (58.3%) and 10 out of 12 children (83.3%). The overall frequency is therefore 73.7%. This compares well with the 80% found in the Norwich Castle Bailey group, 76.0% at The Hirsell, 71.4% at Burgh Castle, 63.9% at Caister, and 60.0% at Brandon, but is considerably higher than the rates recorded at Ipswich School Street (32.4%), Barton Bendish (36.8%) and Thetford 'St Michael' (30.6%). The difference may be due to scoring methods used, or it may be that the Thetford and Ipswich children were 'healthier' than their contemporaries in other urban and rural groups.

Two individuals showed marked hypoplastic defects. An adult male (60424) had pitting as well as bands, and the deciduous canines of a child aged *c.*4–5 (11764) had large areas without enamel.

An estimate of the age of occurrence of the hypoplastic defect was made for each individual in which it occurred, based on calcification and eruption tables (WEA 1980). The majority of adults were affected between the ages of 3 and 5 years, although occasionally bands were seen at the 2 year and 6 year stages of development. The majority of children also fitted this pattern, but those with milk teeth often showed lesions at around birth to 6 months. These age groups tend to suggest a link with childhood illnesses, but the evidence is not conclusive. Where the ridges seem to occur on a roughly annual basis for two or three years in a row, they could reflect poor nutrition during the winter months, for example.

Skeletal Pathology

Pathological analysis is based on articulated remains only, unless otherwise stated. Comparisons with other groups are more difficult for pathological data, as methods of scoring are variable. Where possible, similarities and differences with other local and regional groups will be noted. (*NB* although recorded, the Burgh Castle pathology was not synthesised before the death of the analyst, Dr David Birkett.)

Congenital anomalies

Very few examples of congenital anomalies (other than those already discussed as non-metric traits) were found in this group. Most of them would have produced no symptoms in the individual concerned.

Detached neural arch (spondylolysis) occurred in the fifth lumbar vertebra of two individuals (11011, 11806), although in the former only the left side of the arch was detached. The condition was also seen in the fourth lumbar vertebra of one other individual (11727). Whilst there may be a genetic predisposition to this condition, the lesion can be the result of a developmental defect or physical stress in later life.

A related condition, spina bifida occulta, also occurred in 11806, affecting the first and second sacral segments. It

affected the first sacral segment in two individuals (11625 and 60381) and the second in one sub-adult (60424). This is a very mild form of spina bifida in which some transverse arches of the sacrum do not unite. No cases of full sacral spina bifida occulta were observed in this group.

One individual (60381) had unusually large medial ends to both clavicles in relation to the general size of the bones. This may be a congenital anomaly or it could simply be within normal variation.

The most interesting congenital anomaly in this group was the presence of bilateral cervical ribs on the seventh cervical vertebra of a sub-adult (60501) aged 15–18 years (Plate 4.48). The left is shortened and bent, apparently due to contact with the first thoracic rib, where there are signs of articulation. There is evidence for contact between the left clavicle and second thoracic rib, with signs of rubbing and inflammatory reaction on both bones. The rib is most affected with the inflammatory response spreading along the outer surface of the bone to the anterior (for *c.*45mm) and to the posterior (*c.*35mm). The right cervical rib was longer and had not affected the first thoracic rib, but the right clavicle and second rib were similarly affected. Although cervical ribs are often asymptomatic, the size of these suggests that some symptoms may have occurred. Classic symptoms include diminished pulse, slight bluish tinge to the skin (cyanosis), neuralgic pain, and digestive (trophic) disturbances. Sometimes there are neurogenic disorders, but true paralysis is rare (Cotta 1978).

Arthropathies and degenerative disease

The most common joint diseases in the skeleton are osteoarthritis and osteophytosis. The latter is generally mild and consists of proliferation or lipping of bone around the joint. Osteoarthritis is more serious, and usually becomes most noticeable once the soft tissue in the joint space has degenerated. Both are most frequently found in the joints of the spine. All available joints were scored on the four-point system of Sager (in Brothwell 1981). Grade I of this system corresponds with osteophytosis (lipping of the edges of the joint surface), whilst Grades II and III represent increasingly advanced osteoarthritis, and Grade 0 represents a lack of degenerative change.

Osteophytosis was found in 33 out of 44 adults (75.0%), made up of 13 out of 15 males (86.7%) and 20 of 29 females (70.0%). Osteoarthritis was noted in 10 males (66.7%) and 14 females (48.3%), overall 54.5%. In general, greater severity corresponded with greater age, unless the osteoarthritis was linked with an injury.

Tables of maximum severity in each bone can be found in an appendix to the research archive report, and a breakdown of joints affected per individual is available in the archive catalogue (Anderson 1996a). From these it can be calculated that osteophytosis (occurring in Grades I–III) was present on 76.1% of all male cervical vertebrae compared with 33.3% of female; 59.6% of all male thoracic vertebrae and 36.9% of female; and 42.1% of all male lumbar vertebrae and 40.6% of female. Of the 202 male vertebrae which could be assessed, 58.4% had osteophytes, whilst 37.1% of the 453 female vertebrae were affected.

Osteoarthritis of the vertebrae (Grades II and III) showed a similar sex difference: 45.7% of male and 22.9% of female cervical vertebrae; 32.3% of male and 15.6% of female thoracic vertebrae; 17.5% of male and

22.0% of female lumbar vertebrae. The overall scores were 31.2% of all male vertebrae and 19.0% of all female vertebrae. The differences between the sexes in the cervical, thoracic and overall prevalences for both osteophytosis and osteoarthritis are statistically significant at the 1% level.

Significant differences for Grades II-III were also found in other joints of the skeleton. These were the right temporo-mandibular joint (male 50.0%, female 16.7%) and right humerus head (male 33.3%, female 0%). Grades I-III were significantly different in both scapular glenoids, both humerus heads, and the distal right radius and ulna. In all cases the men were affected to a greater extent than the women.

A summary, based on numbers of individuals rather than number of bones, is provided in Table 4.43.

This shows that the areas most affected by osteoarthritis (II-III) in the men were, from greatest to least prevalence, the neck, mid spine/ribs, lower spine, sternal joints, right shoulder, left elbow and both hips. In the women the areas most affected were the mid spine/ribs, lower spine, sternal joints, neck, pelvic girdle, left shoulder, left hip, right shoulder and right hip. Significant differences were found between the sexes for the neck, left shoulder and right wrist. Osteophytosis produced significant differences in the right wrist, right ankle and both feet.

Comparisons with other sites are difficult owing to the different methods of scoring employed. General patterns appear to be similar at Norwich Castle Bailey, but at Brandon, Caister and Ipswich there was little difference between the sexes and different joints were more commonly affected. At Caister, after the spine, the shoulders and elbows were most frequently involved, whilst at Brandon it was the shoulders and hips and at North Elmham the feet, shoulders and hips. At Barton Bendish, arthritis appeared to be most common in the temporo-mandibular joint, the hips and the pelvis. Raw figures from The Hirsell suggest a slight difference between the sexes, with men being most affected in the hips and shoulders, and women in the pelvic area and knees. The spine is always the most commonly affected region and generally the shoulders appear to have a relatively high risk of involvement. Percentages found in the spine are



Plate 4.48 Cemetery 3 (Farmer's Avenue). Small cervical ribs on the seventh cervical vertebra of sk.60501

particularly high in the male cervical vertebrae, but are otherwise similar to those at North Elmham, and higher than those from Ipswich School Street.

Arthritic change has many different causes, including genetic predisposition, sex, weight and movement (Waldron 1994). The sex differences found in this population may simply be due to a different predisposition within the two groups, or it may be related to different tasks allocated to men and women on a daily basis, or it may be due to the greater number of older men in this population sample. The actual cause is impossible to deduce from the available evidence and it is most likely that a number of interrelated factors are involved.

A few other degenerative changes were noted in this group. Large osteophytes of a type normally associated with ankylosing hyperostosis were found in one woman and four men, but ankylosis (fusion) had only occurred in one male (11305). Two women had 'strings' of new bone on the fronts of their thoracic vertebrae, and this is probably a related condition. Ankylosing hyperostosis, and the related disease of DISH (diffuse idiopathic skeletal hyperostosis), occurs more commonly in men and seems to be age-related, and associated with late-onset diabetes. Although it can result in total fusion of the spine, it is not a crippling disease as the joint spaces are maintained and some movement is possible. Calcified thyroid and/or costal cartilage was noted in three men, and again this is a process related to ageing.

Osteoporosis, although primarily a disease of the bone, is difficult to diagnose in skeletal material since any weight loss or thinning may be a result of the burial environment rather than ante-mortem change. However, cortical thinning of most bones was seen in three women and one man, and the vertebrae of a fourth female had very thin osteoporotic cancellous bone with possible slight crushing of the eighth and ninth thoracic bodies. It is likely that these individuals suffered from the disease, possibly due as much to poor calcium consumption or hormonal changes as to old age.

General spinal pathology

Schmorl's nodes are depressions in the superior and inferior surfaces of the vertebral body, caused by rupture of the intervertebral disc. They occur in the thoracic and lumbar regions of the spine, are related to physical stress and are often found in young adults. In this group they were seen in the thoracic vertebrae of 9 women (60.0%) and 8 men (72.7%), and in the lumbar vertebrae of 10 women (71.4%) and 5 men (62.5%). Overall 67.7% of the 31 assessable individuals were affected in one or more vertebra (63.2% of 19 females and 75.0% of 12 men). Most people were affected between the seventh thoracic and fourth lumbar vertebrae, although in general the males had lesions in more vertebrae than the females. The normal finding in populations of this type is that the male prevalence of the condition is higher than the female and that men are affected in more vertebrae than women. Prevalences are not always supplied, but those for Caister and Ipswich School Street are less than those found here, and the North Elmham and Norwich Castle Bailey groups also appear to have been affected to a lesser extent. Similar results were found at Barton Bendish and The Hirsell.

Three individuals, all male, showed evidence of bent spines in the form of scoliosis and/or kyphosis.

	Males					Females					Total					OA(II-III) %			
	N	0	I	II	III	N	0	I	II	III	N	0	I	II	III	M	F	Total	
Neck	11	3	0	4	4	25	11	8	3	3	36	14	8	7	7	72.7	24.0	38.9	+
R. shoulder	11	3	6	0	2	21	12	5	3	1	32	15	11	3	3	18.2	19.0	18.8	
L. shoulder	10	2	7	0	1	22	13	4	5	0	32	15	11	5	1	10.0	22.7	18.8	+
Sternal joints	11	7	1	2	1	19	13	0	6	0	30	20	1	8	1	27.3	31.6	30.0	
Mid spine/ribs	14	3	0	7	4	26	3	6	13	4	40	6	6	20	8	78.6	65.4	70.0	
R. elbow	10	7	2	0	1	21	16	3	2	0	31	23	5	2	1	10.0	9.5	9.7	
L. elbow	11	7	2	1	1	27	23	3	1	0	38	30	5	2	1	18.2	3.7	7.9	
R. wrist	10	6	3	0	1	24	23	1	0	0	34	29	4	0	1	10.0	0.0	2.9	★+
L. wrist	8	5	2	0	1	24	20	1	2	1	32	25	3	2	2	12.5	12.5	12.5	
R. hand	11	8	2	0	1	26	19	5	0	2	37	27	7	0	3	9.1	7.7	8.1	
L. hand	10	7	2	1	0	27	21	4	1	1	37	28	6	2	1	10.0	7.4	8.1	
Lower spine	10	4	3	0	3	24	7	7	5	5	34	11	10	5	8	30.0	41.7	38.2	
Pelvic girdle	10	4	5	1	0	26	15	5	5	1	36	19	10	6	1	10.0	23.1	19.4	
R. hip	11	6	3	2	0	28	16	7	5	0	39	22	10	7	0	18.2	17.9	17.9	
L. hip	11	5	4	2	0	30	18	6	6	0	41	23	10	8	0	18.2	20.0	19.5	
R. knee	12	9	2	0	1	27	23	2	2	0	39	32	4	2	1	8.3	7.4	7.7	
L. knee	11	8	2	0	1	27	24	2	1	0	38	32	4	1	1	9.1	3.7	5.3	
R. ankle	10	7	3	0	0	24	23	0	1	0	34	30	3	1	0	0.0	4.2	2.9	★
L. ankle	10	7	3	0	0	20	20	0	0	0	30	27	3	0	0	0.0	0.0	0.0	
R. foot	11	6	4	0	1	18	14	4	0	0	29	20	8	0	1	9.1	0.0	3.4	★
L. foot	9	4	5	0	0	14	12	2	0	0	23	16	7	0	0	0.0	0.0	0.0	★

★ Total OA/OP significantly different (chisq) between males and females

+ Total OA (II-III) significantly different (chisq) between males and females

Table 4.43 Cemetery 3 (Farmer's Avenue) — osteophytosis and osteoarthritis

Sk. 11305, an old man, had a probable scoliosis and kyphosis of the lower back, possibly related to the ankylosing hyperostosis which had fused the right side of the eleventh thoracic to first lumbar and the left side of the third to fifth lumbar vertebrae. A middle-aged or old man (60541) had a scoliosis on the fifth lumbar/first sacral area, with the S1 wedged to the right and a slight twist in the sacral neural arches (S1-2). Large osteophytes had formed between the two vertebrae on the right side. The majority of scolioses occur in childhood, unless related to specific infections. Scolioses occurring later in life can be caused by sciatica or chronic renal problems, amongst other things. Generally the cause is unknown (idiopathic scoliosis), but in these two cases the former is likely to be related to degenerative changes whilst the latter probably occurred during the formation or fusing of the sacral segments.

A young ?male, 11806, had slight wedging of the eleventh thoracic to first lumbar vertebrae suggestive of kyphosis. This may be an example of Scheurmann's Disease (kyphosis juvenilis or osteochondritis of the spine), as the individual had very large Schmorl's nodes or necrotic lesions in the lower thoracic and lumbar spine (only T8-L5 survived). The causes of this disease are not fully understood at present, but it seems likely that there is some genetic and constitutional predisposition, as well as an element of physical stress. The individual would probably have suffered a stiff back, and later in life may have developed muscular pains and sciatica.

Metabolic and nutritional disorders

Diseases which affect the metabolism are largely dietary or hormonal in origin. Not all of these involve skeletal tissue, but those which do include iron deficiency anaemia and deficiency of Vitamin C (scurvy) and Vitamin D (rickets and osteomalacia). Osteoporosis, partly a result of hormonal changes and dietary deficiency, has already been mentioned in connection with degenerative disease (see 'Arthropathies and degenerative disease').

Cribriform orbitalia is a lesion of the roof of the eye socket which consists of anything from slight pitting or porosis to deposition of new fibrous bone. It has been associated with iron deficiency anaemia. In this group it was found in 10 out of 17 children (58.8%), 16 out of 28 women (57.1%) and 3 out of 10 men (30.0%). Of the 39 individuals for whom both orbits were assessable, 14 had lesions in both orbits and six (all adult females) in one orbit only. The lesions have been classified following the scheme devised by Knip (in Brothwell 1981), and occur as shown in Table 4.44.

Most populations show a similar high rate of the mildest porotic type in comparison with the other classes, all have a higher rate in children than adults, and generally little difference is seen between the sexes or between right and left sides. The overall prevalence at Farmer's Avenue (52.7%) is high in comparison with other populations, however. At Ipswich School Street the figure was 23.5%, at Caister it was 25.8%, at The Hirsell 18.5% of individuals, at Thetford 'St Michael' it was 25.5%, and at Brandon 32.7%. Prevalences at Norwich Castle Bailey, North Elmham, Thetford Red Castle, St Helen's, York, and Barton Bendish were probably similarly low.

		<i>Total</i>			<i>Class</i>		
		<i>N</i>	<i>+</i>	<i>%</i>	<i>Porotic</i>	<i>Cribrotic</i>	<i>Trabecular</i>
Male	R	10	3	30.0	1	1	1
	L	8	3	37.5	1	1	1
Female	R	23	10	43.5	5	3	2
	L	26	12	46.2	6	2	4
Child	R	14	9	64.3	5	1	3
	L	11	6	54.5	4	0	2
Total	R	47	22	46.8	11	5	6
	L	44	21	47.7	11	3	7

Table 4.44 Cemetery 3 (Farmer's Avenue) — cribra orbitalia

Considering the high rate of cribra in this population, it is surprising that no definite examples of porotic hyperostosis were found. This condition involves pitting and thickening of the outer surface of the skull, particularly involving the parietal bones, and is also associated with iron deficiency anaemia. Pitting was seen on the parietal fragments of one 18 month old infant with porotic cribra orbitalia of both orbits, but the evidence was very slight owing to the condition of the bone. Slight pitting and sometimes thickening was also seen on the parietals of six women, five of whom had cribra, and one man, but in no case was it clearly attributable to porotic hyperostosis. A chronic scalp infection might be expected to have a similar effect.

The best example of probable dietary deficiency was seen in a child of *c.*12 years (11650), who had periostitis of both maxillae, including the sinuses and nasal floor, with thickening, pitting and new bone. This case may have been infectious in origin, although other pathology seen in the skull suggests another cause. The right orbit showed advanced cribra orbitalia of the trabecular type with some new bone (the left was missing), and the skull, although not pitted externally, was striated on the frontal and parietals. Internally, on the endocranial surface of the occipital, the upper right fossa, the groove for the superior sagittal sinus and part of the right transverse sulcus were thickened with extensive new bone growth and porous labyrinthine lesions. Although it is not common to find a reaction inside the skull, this may be an example of anaemia. However, the periosteal changes to the maxillae could be caused by scurvy or rickets. Unfortunately very little of this skeleton survived, but no other pathology was found on the few bones available for study.

No definite evidence was found for rickets in this group, and scurvy is difficult to diagnose in skeletal material. Some individuals showing signs of gingivitis or periodontal disease could have been affected, but a non-specific infection of the gum would be the more likely cause.

One other metabolic disorder may have been present in the skulls of two middle-aged/old women. Hyperostosis frontalis interna involves increasing cortical thickness of the frontal bone, which produces a ridged appearance on the inner surface. It almost always occurs in women and is a result of hormonal changes following menopause (Ortner and Putschar 1981). In the skulls of 11578 and 11689 the changes were very slight.

Circulatory disturbances

Diseases falling into this category are the result of a disruption in the blood supply to an area of bone. This could be caused by physical stress, prolonged pressure or trauma, or it may occur spontaneously.

Osteochondritis dissecans is the most common form of circulatory disturbance found in archaeological groups. Lack of blood supply to a small area of a joint surface results in the breaking away of the area, which may later be resorbed leaving a small circular or ovoid lesion. Occasionally the loose fragment is reunited with the main body of the bone, or it may remain in the joint space and cause great pain. The disease is associated with physical stress and occurs most frequently in young active males. It is particularly common in the knee.

In this group, osteochondritic lesions were found in eleven women and six men. A number of articular facets were involved and have been generalised into joint areas as in Table 4.45.

Prevalences are difficult to calculate owing to the number of joint surfaces involved in each area, but it seems that the men in this group were more likely to be affected in the feet and ankles than the women (roughly 30% compared with 5%). The lesions in the big toe joint were largely in the proximal first hallucial phalange and were often bilateral. This has previously been suggested as a possible developmental defect (D. Birkett, pers. comm.), but at least three cases have the appearance of true osteochondritis. Both cases in the knee and one in the elbow were partly healed.

One other possible circulatory disturbance, Scheurmann's Disease, was discussed in connection with spinal pathology (see above).

<i>Area</i>	<i>Male</i>		<i>Female</i>	
	<i>Lesions</i>	<i>Individuals</i>	<i>Lesions</i>	<i>Individuals</i>
Shoulder	0	0	1	1
Elbow	0	0	5	4
Knee	0	0	2	2
Ankle	7	3	1	1
Foot	4	3	1	1
Big toe joint	4	2	6	4

Table 4.45 Cemetery 3 (Farmer's Avenue) — articular facets by joint area

Infectious diseases

Periostitis is an inflammatory condition of the outer layer of a bone, and is a common finding in most archaeological groups. Although its cause is generally unknown, it is usually recorded as a non-specific infection. At Farmer's Avenue, ten women and seven men had evidence for the disease in one or both legs, and in some cases the bones of the feet were also affected. Periosteal reactions varied from minor pitting and 'graining' (new bone growth with the appearance of wood grain) to thickening and a lumpy appearance, and were particularly common on the tibiae and fibulae but were also seen on the femora of two women and one man. Only one case could be described as gross, this being the lower right leg of a middle-aged/old woman, 11577. The right tibia was grained and thickened over most of the shaft with new bone laterally, whilst the right fibula showed an extreme periosteal reaction with wax-like new bone, graining and enlargement. The left lower leg was unaffected but appeared osteoporotic.

The ribs of two women, 10549 and 60545, had periosteal changes to the inner surfaces, possibly as a result of long-standing pleural infections, and one man, 11701, showed graining of the outer surface of the right eleventh rib. This individual also had new bone on the anterior body of the ninth thoracic vertebra, part of the left side of which was destroyed by a possible lytic process. Although such destructive lesions of the vertebral body can be associated with specific infections such as osteomyelitis, brucellosis or tuberculosis, the evidence here is inconclusive.

A periosteal reaction was seen in the left shoulder of a middle-aged/old male, 60541. This consisted of new bone growth (fibre bone) to the ventral and inferior surfaces of the scapular neck, spreading to the dorsal surface but less marked in that area. The bone was in poor condition but appeared to be slightly deformed (lateral edge pushed round to dorsal?). New bone growth was also present on the humerus shaft but unfortunately the head was missing. This could be an inflammatory response to a traumatic injury of the shoulder. The same man had a possible crush fracture of the left foot (see 'Trauma' below).

Other possible inflammatory responses to infection were seen on the vertebrae of a middle-aged female, 11786, with rounded new bone growth around the Schmorl's nodes on the tenth to twelfth thoracic vertebrae, and on the anterior of the sacrum of a young woman, 11574, perhaps due to an infection within the pelvic cavity.

The most unusual infectious pathology was found in the skeleton of a young woman, 60614. Slight graining was present on both femoral shafts, and medium graining and new bone formation on both tibial shafts, especially laterally on the left and medially on the right. In addition, there was gross destruction of the left wrist bones and joints (Plate 4.49). Most affected were the distal radius and the remaining carpal bones, but the proximal ends of the metacarpals, particularly the second and third, were also involved. The carpals appear to be a lunate or triquetral fused to the hamate, and a scaphoid or trapezium. Both pieces show gross lytic lesions and probable cyst holes or cloacae. There appears to be some regrowth and 'rounding' of edges. The distal radius has a large channel running from the centre of the joint to the anterior edge and there are other 'cyst' holes on the facet, as well as

new bone covering the articular surface. The articular area and distal end is slightly enlarged, especially to the anterior with flaring of the end of the bone. The distal ulna shows signs of slight pitting which would presumably have developed into arthritis had the individual lived longer, but is otherwise unaffected. The proximal ends of the second and third metacarpals show some lytic lesions, but also some new bone formation around the margins of the joints. The proximal end of the fourth metacarpal is slightly deformed and the fifth shows signs of wear. Such gross changes may be the result of a localised osteomyelitis or septic arthritis following injury to the wrist, but they are equally likely to have been caused by tuberculosis.

The wrist is a relatively common site for localised tuberculosis. In adults it begins at the radiocarpal joint and quickly spreads through the rest of the joints (Ortner and Putschar 1981). On healing, the carpal bones would eventually fuse to each other, to the radius and probably to the metacarpals as well. In the case reported above, ankylosis of two carpal bones had already occurred, but unfortunately most were missing. It seems likely that the lesions had already started to heal at the time of death.



Plate 4.49 Cemetery 3 (Farmer's Avenue). Deformation of the left wrist joints, possibly caused by tuberculosis, in sk.60614

Sinusitis, an inflammation of the sinuses, may sometimes be caused by an infection, although other factors can be involved. Air pollution can cause irritation to the mucous membrane and would also cause inflammation in the sinuses. In view of the presence of open hearths in most Saxon houses this is a likely cause. Sixteen cases (ten women, six men) were noted in this group, eight of which were bilateral. In eight cases the likely cause was breakthrough of one or more abscesses or the presence of periodontal disease, followed by infection. The other eight may have been related to dust and smoke inhalation.

Trauma

Evidence for traumatic injury was common in the form of small exostoses, although these were not found in their normal high frequencies. Two occurred in the distal fibulae of women (11689 right, 60381 left). Another female, 60572, had one on the superior midshaft area of the right clavicle. A male, 11636, had exostoses bilaterally on the ilia at the sacro-iliac joint, possibly suggesting trauma to the pelvic area. Another male, 60639, had a small exostosis on the interosseous border of the right radius, probably related to a forearm fracture (see below). All these lesions were probably caused by torn ligaments or muscle attachments.

A large exostosis on the anterior midshaft of the left femur of a man, 11305, was probably an example of myositis ossificans. The eminence runs diagonally across the bone from medial to lateral, is *c.* 75mm long and rises 6mm above the central bone surface. The distal end had been lost. Pitting around the area suggested an inflammation of the periosteum. This lesion results from the calcification and later ossification of a haematoma within a muscle. It is caused by crushing of the soft tissues in a blunt injury or by 'recurrent microtraumas' (Cotta 1978).

Evidence for fractures was found in the skeletons of eleven individuals, five women and six men. The feet and ankles were affected the most. A small fracture was found in the right calcaneus of a woman, 11659, at the anterior across the joints with the cuboid and talus. The lesion was well healed, but slight upward displacement of the bone had occurred and there was eburnation along the fracture line on the joint with the cuboid. Possible crush fractures of one or more metatarsals were seen in three men. Sk. 11305 had a possible partial fracture of the right second metatarsal with a rounded lump of ?callus on the superior side of the shaft, sk. 60279 had a similar lesion of the right fourth metatarsal, and sk. 60541 had new bone formation on the lateral surfaces of the left third and fourth metatarsals with misalignment of the articular facets. A woman, 60444, also had rounded new bone growth on the second to fourth metatarsals of both feet, but these may have been callouses rather than the result of a fracture. A possible injury to the right ankle joint of a woman, 60437, had resulted in formation of osteophytes and inflammatory changes to the distal tibia and talus, with apparent deformation of the joint. The bone was in poor condition, but the fragments are suggestive of a possible crush fracture followed by arthritic change. A similar lesion was seen in a man, 11273, but in this case the fracture had resulted in ankylosis of the talus and calcaneus, with slight malalignment of the talus and large areas of callus formation on the medial side. All

these injuries were probably accidental and are probably related to a combination of poor footwear and uneven ground.

An old man, 11305, and a middle-aged/old woman, 60381, had depressed fractures to the left frontal bone, both with pitting in the centre of the lesion. The woman also had possible injuries to two ?left fingers, one of which had ankylosed at the proximal-middle phalangeal joint. Both injuries could be a result of direct violence by a right-handed assailant, particularly if the woman's hand was injured at the same time as her head (there is no evidence for this), but could just as easily be caused accidentally. A second woman, 60614, had an unhealed 'cut' on the right parietal, but this may have been post-mortem damage.

Other fractures included a lesion on the left ulna of a woman, 11577, possibly a greenstick injury which did not involve the radius, and a well-healed injury to the left ninth rib of another woman, 11775. Again, these injuries could have been the result of violence but could equally have occurred by accident.

A ?middle-aged man, 60639, had sustained the most dramatic injuries in this group. A fracture of the right innominate (hip bone) ran from the sciatic notch through to the acetabulum. There was partial healing but two fracture lines were still visible in the acetabulum, and the sciatic notch was slightly misaligned. The left side was normal and there was no evidence for a fracture of the right femur, although most of the neck of this bone is missing. However, the right radius and ulna had well healed fractures towards the distal ends of the shafts. There was some distortion of the radius, the proximal part having been pushed forward slightly. The ulna was almost straight and was probably too long for the radius, resulting in arthritic changes at the distal end. It seems likely that all these fractures occurred at the same time, although the cause is difficult to determine. An awkward fall onto the hip and outstretched hand from a high place or a collision with a fast-moving large animal or vehicle are possibilities.

An unreduced dislocation of the right shoulder was seen in a man, 11570. A false glenoid has formed on the anterior of the scapula and there is deformation of the humerus head. The head is enlarged posteriorly, especially the greater tubercle which extends over the anatomical neck. There is pitting and thickening over the surgical neck. This type of injury occurs during a backwards fall in which the arm is outstretched behind the individual. Crush fracture of the humerus head and dislocation are common results of such a fall.

Similar patterns of fractured bones and other traumatic lesions were found at Caister, North Elmham, Thetford Red Castle, Thetford 'St Michael' and Ipswich School Street, although at Brandon the majority of fractures were probably related to violence. Most groups had fractures of the skull, forearm, hands, ribs and lower legs or feet. In all cases men were affected more than women, and in terms of percentages the same is clearly true of Farmer's Avenue.

Neoplasms

Benign osteomata are the most commonly recognised bony neoplasms. They are usually found on the cranial vault but can occur anywhere on the skeleton. In this group, six individuals had one or more of these bony

wart-like growths, only one of which occurred on the skull. A woman, 11775, had a large osteoma on the right side of the occipital close to the lambdoid suture. Two women, 11578 and 60502, had small osteomata on their mandibles, one on the right inferior margin and one on the chin. Another woman, 60572, had a relatively large example on the right humerus just above the coronoid fossa. Possible cases were also found on the left second metatarsal of a woman, 60466, and two finger phalanges of a male, 60541.

One other type of benign tumour, an osteochondroma, was found in two individuals from this group. The tumour takes the form of a small exostosis which forms near the growth plate of a long bone, most commonly the proximal end of the tibia. This was the area affected in a middle-aged/old female, 11577, who had a possible osteochondroma on the right tibia near the joint with the fibula. Another possible example was seen on the medial border of the right femur of a sub-adult ?male, 11535, approximately 60mm superior to the distal diaphyseal end. This suggested that the lesion had originated when the individual was about 10 years old. Unfortunately neither example is 'classic', and both could be the result of traumatic injury.

No cases of malignant tumours or erosions were identified in this group, and in this they are the same as most other contemporary groups.

Miscellaneous lesions

A few lesions were not easily identifiable and are included here.

One sub-adult male, 11535, aged *c.*16–18 years, showed slight bilateral coxa valga. This is a condition in which the angle between the neck of the femur and the shaft is abnormally large. In this individual, it was *c.*145° on the right and *c.*140° on the left, compared with *c.*128° in normal adults. This slight deformity of the proximal femur is common in congenital dislocation of the hip but there is no evidence for dislocation in this case. It may also occur with partial paralysis or disuse of the legs. Both femora, the right more than the left, are narrow with thin shafts which is suggestive of some disuse atrophy. Although there were some other abnormalities in this skeleton, such as retention of a deciduous molar, extremely heavy wear or decay of both upper first molars resulting in the loss of both crowns, a possible osteochondroma of the right femur and osteochondritis dissecans in the left ankle, there was nothing in the bones to suggest a cause for paralysis.

There was some deformity in the feet of a mature adult male, 11011. Both fifth metatarsals were abnormally curved with a slight concavity along the outer edge. This may be a case of metatarsus adductovarus, usually a congenital anomaly in which the forefoot is drawn towards the median line of the body. However, there is also hallux valgus of both feet, a deformity in which the big toe is pushed towards the other toes whilst the first metatarsal moves away from the other metatarsals and causes an angular deformity of the metatarso-phalangeal joint. This is commonly caused by poor footwear during the growth of the foot, and it may be that the other anomalies in this man's foot were also developmental deformities. A similar deformity was noted in the second to fourth metatarsals of a middle-aged/old female, 60458.

The acetabuli of an old woman, 60437, appeared very shallow and there were signs of remodelling on the inner surface of the pelvis where the acetabuli were thinnest. This could be related to the age of the individual, particularly as the leg bones showed signs of osteoporosis. Despite the lack of depth to the hip socket, there did not appear to have been any dislocation, but unfortunately the skeleton was in poor condition and interpretation was difficult.

An unusual lesion was noted on the skull of an old man, 11305. The frontal and parietal bones were slightly pitted, but they were also covered with small, sclerotic rounded deposits of periosteal new bone with an appearance similar to nettle rash on skin. The deposits were a maximum of 2mm in diameter and did not extend below the temporal line. They could represent a reaction to infection, but they do not present a normal picture of inflammatory response.

A condition known as ischial bursitis, an inflammation of the lowest part of the pelvis possibly related to continual small movements on a hard seat, was seen in two individuals. A middle-aged/old woman, 60381, had new bone growth and porosis on both ischial tuberosities, although the left was affected to a greater degree than the right. An old man, 11305, also had the condition bilaterally. These two individuals are interesting in that they share a number of pathological conditions. The presence of a possible scalp infection in the man has already been noted above, but the woman also seems to have had an inflammatory response in the cranial vault bones. Her skull was unusually thick, especially at the parietals and occipital, with pitting and new bone growth ectocranially. Both have large osteophytes of the type associated with ankylosing hyperostosis (unusual for a woman), Schmorl's nodes of the lower thoracic and lumbar vertebrae, and severely arthritic spines. Their patterns of degenerative change are also very similar, particularly in the tarsal naviculars, which have very large osteophytes on the superior edge. The man had a scoliotic and kyphotic lower spine, and two vertebrae from the woman suggested a possible acquired kyphosis. Both had periosteal graining of the tibiae and fibulae and the right second metatarsal showed inflammatory and possibly traumatic changes. In addition, they are the only two individuals in this group to have depressed fractures of the frontal bone. They have no unusual congenital anomalies in common, with the possible exception of a septal aperture, and their positions in the cemetery suggest that a family association is unlikely.

It is generally felt to be unwise to attribute skeletal changes to a particular occupation (Waldron 1994), especially as it is difficult to be certain which, if any, of the lesions might be attributable to a single job. Although the conditions listed above are all relatively common, as a group they are worthy of note, and may suggest that the two individuals had similar occupations, or at least occupations which involved similar actions and parts of the body, but the actual identification of these occupations is not possible from such tenuous evidence. Scoliosis/kyphosis in conjunction with ischial bursitis have been suggested as traits which would be expected in 19th century weavers (Wells 1967b), whilst myositis ossificans of the femur (present in the man, see 'Trauma' above) has been associated with shoemaking in medieval London (Mann 1993). However, the techniques

involved in Saxon weaving might be expected to be somewhat different to the post-medieval method, whilst shoemaking would probably not cause spinal and ischial problems. It should not be forgotten that a whole variety of causes could be suggested for each of the lesions seen in these skeletons, and whilst it is attractive to interpret the pathological changes as occupational in origin, it may be no more than coincidence that these two people were affected so similarly.

One other woman, 60444, was felt to have an abnormally thick cranial vault, and slight pitting and striation was present on the parietals. Most of the frontal was lost. The mandible also appeared to be slightly thickened bilaterally in the areas below the second incisors to the first premolars. With regard to the discussion above, it should be noted that this woman also showed inflammatory or traumatic responses on the second to fourth metatarsals of both feet. Unfortunately the spine and pelvis were not preserved.

Erosive lesions of unknown aetiology were seen in three females and one male. A middle-aged female, 11727, had a small ?cyst hole in the distal end of the left first metacarpal which ran through the medial 'tubercle'. A middle-aged/old female, 60528, had a lytic lesion in the lesser tubercle of the right humerus, and another on the left third metacarpal joint with the fourth. A mature ?male, 60601, had a small roughened cyst-type peri-articular erosive lesion on the proximal end of the right third finger phalanx at the lateral side. The proximal end of the left fourth metatarsal of a middle-aged/old female, 60458, had a rounded lytic lesion in the peri-articular area. Although these lesions may be related to arthropathies, they cannot certainly be identified as such.

Changes in the bones of three juveniles were noted, but some of these may be attributable to normal growth. Fragments of long bones from a 3 year old, 11773, showed signs of pitting or thickening, but no pathological changes were seen on the skull, ribs or vertebrae. The bones were in very poor condition, but the lesions could be a result of anaemia or an infection. Endocranial fibre bone was seen on the left parietal of a 3–4 year old child (22051), perhaps caused by an inflammation of the meninges or a response to dietary deficiency. Most bones of a sub-adult aged 15–18, 60501, had fibre bone growth on the surfaces, but it is possible that this was exposed by post-mortem erosion.

Discussion

The 114 contexts of human bone submitted for analysis were thought to represent a minimum of 106 individuals (84 articulated and 22 disarticulated). The articulated remains consisted of 58 adults (13 males, 8 ?males, 28 females, 8 ?females, 1 unsexed) and 26 children. The disarticulated material contained a minimum of 12 adults and 10 children.

The proportion of children to adults is within expected limits, although higher than a number of other sites in the region and lower than the figure for the Norwich Castle Bailey group. The differences may have more to do with the incomplete recovery of most cemetery groups than any other factor. The same is true of slight differences in the patterns of infant mortality seen at these sites. Farmer's Avenue produced fewer infants than other Late Saxon churchyards, but this may be because the church building was not excavated and the cluster of tiny burials was not

found. It does seem that infants were more commonly buried close to the church at other sites, perhaps because their shallow graves were less likely to disturb the foundations as much as for any 'protection' which proximity to the House of God might offer.

The relatively high female to male ratio of almost two to one may also be explained by the area of churchyard available for excavation. Analyses of skeletons from more complete churchyards have shown a slight sexual difference in the area allocated for burial. Again the difference between the Norwich sites may be related to the fact that the church building was found in the Castle Bailey excavation. Factors which will never be identified archaeologically may play a part, one example being personal preference in the place of burial.

There was no significant difference between the frequencies of men and women in each age group. Although it is recognised that current methods of ageing the human skeleton tend towards underestimation of chronological age, estimation of biological age may in fact provide a more accurate picture of the individual's usefulness to society. True age is of little consequence if the individual feels much older. In general the results suggest that most Saxons had the potential to reach old age, and many did.

Age distribution for all adults was found to be closest to the figures found at Thetford 'St Michael' and Burgh Castle. There was no distinct patterning in comparisons of the rural and urban groups.

Metrical analysis showed that the Farmer's Avenue group was unremarkable in its average stature and general cranial type for a Late Saxon group, and a plot of three cranial measurements suggested that they were very close in general head shape to their local contemporaries. Other measurements suggested a slightly greater femoral robusticity and relatively shorter arms in this population than in other groups, but the difference was not great.

Statistical analysis of non-metric traits suggested that the people of Farmer's Avenue were very similar to other East Anglian groups, but that they also showed trait similarities with a Late Saxon group from York. Other groups in the area showed significant differences between each other, but St John's (Timberhill) and York showed the greatest differences from East Anglian Saxon groups.

Within the site, evidence was found for possible family groupings. A particularly strong case could be made for a group in the north-west corner of the excavated cemetery, where three cases of metopism were found. In general terms, there was nothing particularly unusual in the frequencies of non-metric traits in this group, and there was no real difference between the sexes.

Dental disease was found to be highly correlated with age and area of the mouth, but was also related to sex. As expected, the older individuals were the worst affected and the molars were the most commonly involved teeth. Men tended to be affected to a greater degree than women, despite the fact that the frequencies of old men and old women are not significantly different at this site. One possible reason is the small number of male dentitions available for study. Prevalences of ante-mortem tooth loss, caries, abscesses and non-eruption were within the range found at other East Anglian Saxon sites. Patterns of calculus and enamel hypoplasia distribution were similar at most sites.

Very few congenital anomalies were observed in this group. Most were found in the spine, particularly spina bifida occulta and spondylolysis. The most unusual anomaly was the presence of bilateral cervical ribs in a sub-adult.

Degenerative disease was found most commonly in the spine, as is normal in most archaeological groups. Arthritic change was most common in the bodies of the neck vertebrae and the articular facets of the mid and lower spine. Other areas commonly affected were the shoulders, hips and pelvic girdle. Significant differences were found between the prevalences of osteoarthritis in men and women for the neck, left shoulder and right wrist. Differences between the sexes have been noted at other sites and although it is possible that these may be related to different tasks carried out on a daily basis, other factors are involved in the onset and development of the disease.

Diseases of the spine were relatively common in this group in comparison with contemporary East Anglian populations. The results tend to suggest that greater than average physical stress was placed upon the vertebrae of these people, and the amount of arthritis would tend to confirm this even if other factors do play a part.

A high level of lesions thought to be correlated with iron deficiency anaemia was found in this group, although only those affecting the eye socket were recorded with any certainty. One possible case of scurvy was identified, but unlike the group from Norwich Castle Bailey there were no examples of rickets. A metabolic disorder of post-menopausal women, hyperostosis frontalis interna, was found in two women, and osteoporosis probably affected four individuals. The results suggest that there was a relative lack of iron in the diet of this group, but that levels of vitamins C and D and calcium were probably adequate for most people.

A number of people had inflammatory changes to the bones of the leg, particularly affecting the shins. Periostitis is a disease of unknown aetiology and a number of factors may be involved in its presence. It may be a result of infection, sometimes arising in another part of the body, or it could occur as a result of varicose veins or some other irritant in or injury to the soft tissue surrounding the bone. The shin may be particularly prone to this, as it has very little soft tissue coverage. Periosteal reactions also occurred on the inner surface of the ribs in some people and in the shoulder of one man. In these cases it was probably linked to soft tissue infection or trauma. In addition there was one possible case of localised tuberculous infection of the wrist.

Sinusitis was quite common, and in this group half the cases were related to dental disease whilst the other half may have been caused by atmospheric pollution. This is to be expected when oral hygiene is poor and smoky open hearths are in constant use.

Physical trauma was widespread, but did not conform to the usual pattern of a few fractures and many less serious lesions. In this group, fractures were more common than simple exostoses, and particularly affected the feet and ankles, as did aseptic necroses. Most of these injuries would have been accidental, but other fractures were seen which could have been a result of violence, particularly those of the forearm and skull. A fractured hip associated with a fractured forearm was the most

unusual case of trauma in this group, and was probably the result of a high fall or possibly a 'traffic' accident.

Benign neoplasms occurred in a few individuals, but most would have presented no obvious outward symptoms. The osteochondromata may have caused some tenderness in the area of leg they affected, but were unlikely to have turned malignant.

Miscellaneous lesions included deformities of the feet, a possible partial paralysis of the legs, erosive lesions of the hands and feet, and possible occupational stress-induced lesions in two similarly affected individuals.

In general, the people buried in the cemetery of this unknown church in the south-western corner of Saxon Norwich were physically similar to their contemporaries in other parts of East Anglia and elsewhere. Differences in patterns of demography were found, but these may be related to the incomplete excavation of most sites. Diseases of bones and teeth were not unusual, but a few were more common in this group than in others.

Patterns of disease in bones will give a poor representation of general disease in archaeological populations, unless it is remembered that soft tissue illness was considerably more common. Indeed, those individuals whose bones seem most healthy and disease-free may have been the very ones whose lack of constitutional robustness made them highly susceptible to fast-acting diseases which killed them before ever reaching their bones. Most pathology seen in the skeleton is an indicator of the degree to which a particular individual was able to cope with physical stress. The evidence of pathological changes in this group suggests that there may have been a lack of some essential components in the diet of these people, and that this may have occurred to a greater degree than in other similar groups. Although poor nutrition was common, it may have been a seasonal problem affecting rich and poor alike, and it may not have reduced adult life expectancy to any noticeable degree, although it would have affected the children. There was also a fairly high proportion of stress-related diseases of the spine and ankles/feet, coupled with a greater than average prevalence of trauma. Much of this is probably related to the environment and/or occupation of individuals affected. Other diseases which have been found to occur commonly in Saxon groups, such as osteoarthritis, sinusitis and inflammation of the shin bones, were found in similar quantities here, and again may be environmentally induced. In general terms, however, there is very little evidence for chronic or debilitating illnesses in this group, other than those related to the ageing process.

Although Norwich was an 'urban' settlement by the standards of the time, it has been noted that no clear pattern can be seen in the comparison of skeletal remains from rural and urban Saxon sites in East Anglia. Presumably this reflects the fact that the difference between 'rural' and 'urban' settlements was not as obvious as in later periods. In particular, working of the land would have taken place within the town as well as outside, there would have been some contact with livestock, means of transport and surfaces of roads would have been similar, and methods of cooking and heating and types of food available to both would have been basically the same. The major differences to be found in an urban settlement were probably seen in the greater variety of occupations which could produce different patterns of stress, and the

population density which had the potential to cause more acute infection and more violence.

Cemeteries 1 and 4: St John at the Castle Gate (later de Berstrete, now St John the Baptist, Timberhill)

by Sue Anderson
(Figs 4.120–4.124, Plates 4.50–4.55)

Summary

Human skeletal remains from 189 burials and 42 disarticulated contexts are discussed in the following text. The articulated remains represent a minimum of 149 adults (59 males, 76 females, 14 unsexed) and 35 children. In general, the skeletal remains of people buried in this cemetery suggest that they were similar in physical appearance to other groups in the region, including the contemporary group at Farmer's Avenue (described above). Non-metric traits also suggested similarities between the two sites, and possible family groupings were identified within the cemetery. Dental and pathological lesions produced patterns similar to those occurring in other Saxon and medieval groups, although prevalence of cribra orbitalia was relatively high and may suggest a diet deficient in iron. Physical stress particularly affected the spines and feet/ankles of the people in this group, and it was suggested that this may be related to occupation and environmental factors. The most unusual aspect of this cemetery was the presence of a high level of leprosy, possibly affecting a fifth of the total group. A number of other interesting pathologies were observed, including a good example of Perthes disease, a fractured elbow with pseudarthrosis, and a possible case of poliomyelitis.

Introduction

This group of skeletons is derived from the northernmost part of the churchyard of St John at the Castle Gate (de Berstrete, now St John the Baptist, Timberhill). Although a boundary ditch for the cemetery was identified to the north, the area excavated represents only a small part of the original cemetery (the southern part of which and the associated church are extant). Graves were tightly packed, with the consequence that there was much disturbance of earlier burials, and a large amount of disarticulated bone was recovered. Radiocarbon dating of 18 samples indicates a single burial of probable 7th-century date (a similar date being likely for the undated grave beneath; Chapter 4.II, Period 1.1), with a late 10th- to mid 11th-century date being indicated for the remainder of sampled

burials (Chapter 4.II, Period 1.4, Figs 4.51). A limited timescale is indicated for the measured samples (up to 65 years) and the question of a pre-/post-Conquest date for at least some of the burials is addressed in Chapter 4.VI. A number of late burials were also recorded (Chapter 7.II, Period 4.2, Fig.7.24), cutting into early 14th-century fills of the cemetery boundary ditch and indicating that burial may have continued over a total duration of well over three hundred years.

Two hundred and twenty-four separate contexts of 'articulated' burials and 'loose' skulls were submitted for analysis, together with a large quantity of disarticulated material.

Method

See Farmer's Avenue for method statement (above, Cemetery 3). Additional details are provided in Anderson 1996b. Note that this AML report was written before radiocarbon dates were available, and a medieval date was assumed for the cemetery.

Comparative material

Comparisons are made with the groups listed for Cemetery 3 (Farmer's Avenue).

Number of individuals

From the 224 'burials' identified on site, it was possible to identify 189 articulated burials together with 42 discrete disarticulated contexts. The majority of articulated burials (137) had some disarticulated material with them (155 extra groups). Twenty-four disarticulated contexts consisted of single skulls only, 21 of which had been recorded as 'skeletons'. Four skeletons and parts of seven others had been lost after the excavation.

The articulated burials represent a minimum of 184 individuals, and the disarticulated remains represent at least 81 other people, making a total minimum number of 265. Some work has been carried out in an attempt to match disarticulated material with articulated skeletons, thus reducing the minimum number to a realistic level. As with the Farmer's Avenue group, disarticulated material is only included in the report when it is reasonably certain that there is no duplication.

Condition

The assessment of condition is based on a macroscopic examination, and as such is very subjective. On this basis, very little of the skeletal material excavated from St John's (Timberhill) was in good condition. The majority was average or below average. Completeness was also recorded (see Farmer's Avenue report for the method

Completeness	Condition			Total	
	Above average	Average	Below average	No.	%
<20%	1	30	31	62	29.8
20–40%	2	21	19	42	20.2
40–60%	1	17	10	28	13.5
60–80%	2	16	13	31	14.9
>80%	3	32	10	45	21.6
Total	9	116	83	208	-
%	4.3	55.8	39.9	-	-

Table 4.46 Cemetery 4 (Timberhill) — condition of skeletal material

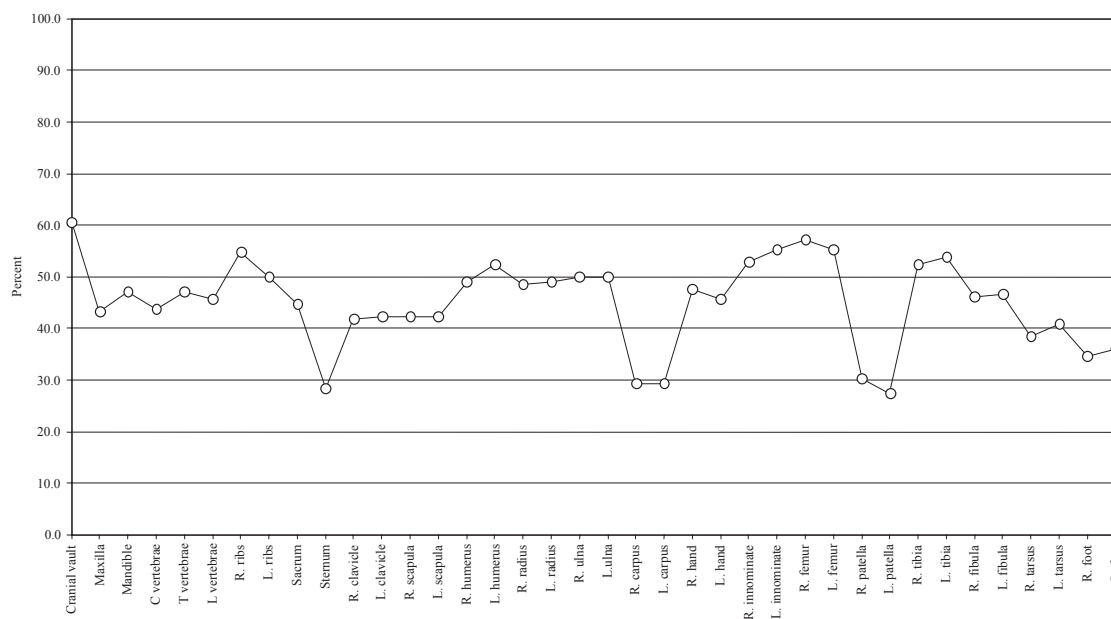


Figure 4.120 Cemetery 4 (St John, Timberhill): representation of skeletal elements: total group

used), and Table 4.46 presents the degree of completeness against bone condition in all recorded ‘skeletons’.

Representation of these elements (based on a percentage of the MNI) is shown graphically in Fig.4.120 (see also Appendix 3).

The results show that the St John’s (Timberhill) skeletons were less complete than the Farmer’s Avenue group, but were in slightly better condition.

Demographic Analysis

Juveniles

Of the 184 articulated individuals, 35 (19.0%) were juveniles under the age of 18 years. A further 45 children were identified in the disarticulated remains, giving an overall rate of 30.2%. The results seem to suggest that many juvenile skeletons have been heavily disturbed, particularly as some are represented by only one or two bones. Presumably they were less carefully collected than larger adult bones when graves were disturbed by gravediggers.

The figures are included in Table 4.32 for Farmer’s Avenue, from which it can be seen that urban and rural churchyards alike seem to have a fairly high percentage of juvenile burials in comparison with Timberhill, although the inclusion of disarticulated remains puts the group within normal limits. The relatively high mean age at death at St John’s (Timberhill) suggests that some children are missing, and this may be due to the fact that the area of churchyard excavated is at some distance from the church building. More young children might be expected to cluster around the church, as is the case at The Hirsell, where infants are buried very close to the foundations. It is possible that child life expectancy was higher in the St John’s (Timberhill) group for some reason, but this seems to be a less likely explanation.

The distribution of juvenile age at death for this group is presented in Table 4.47. In addition to the aged chil-

dren, ten were recorded simply as ‘child’ and seven as ‘sub-adult’.

Eleven of the 16 infants could be divided into smaller age groups as follows: foetal–6 months, 2 (18.2%); 6–12 months, 5 (45.5%); 12–18 months, 1 (9.1%); 18–24 months, 3 (27.3%). Over half these infants died before the age of one year. This suggests that there was a peak in mortality just after birth, perhaps at the time of the first childhood illness. Very few newborn infants were present in this group, although the presence of a possible pre-term foetus (represented by a single bone) suggests that they would have been considered for burial in this churchyard — unless of course this child was buried whilst still *in utero*.

The majority of infants occurred in the disarticulated groups. Their inclusion in the total figures produces a more even spread throughout the age categories than would be suggested by the articulated remains alone. Unlike Farmer’s Avenue, more than half the children buried in this area of the St John’s (Timberhill) churchyard died *after* the age of 6 years, which is closest to the pattern seen in the ‘high status’ rural Middle Saxon groups, and the medieval urban churchyard of St Helen’s, York. However, as is clear from analysis of both St John’s (Timberhill) and St Helen’s, the bones of infants and young children were more easily scattered in well-used burial grounds than those of older children and adults, and it is necessary to treat these results with some caution.

Adults

Of the 149 articulated skeletons, 59 were males (of which 33 were ?male), 76 were female (22 ?female), and 14 were unsexable. The disarticulated remains produced a further 8 ?males, 5 ?females and 22 unsexable adults. Comparisons of sex ratios are presented in Table 4.34 for Farmer’s Avenue.

St John’s (Timberhill) is within normal variation for a site of this type, although like Farmer’s Avenue women

outnumber men. Again this may be related to the part of the churchyard which was excavated. A churchyard serving a normal population would be expected to have a sex ratio of approximately 1:1, as at Thetford, North Elmham, The Hirsell and Rivenhall. The unusual ratio found at Barton Bendish must be related to the area sampled.

The adults can be divided into broad age categories as shown in Table 4.48. Approximate age ranges for these categories are discussed above (p.200).

A bar chart of male and female age groups is presented in Fig.4.121. There is a much higher rate of young deaths, particularly male, in this group than at Farmer's Avenue, but death in old age is similar. Differences between men and women were only statistically significant in the Young/Middle-aged group. However, at St John's (Timberhill) there is a problem in that large numbers could not be aged more precisely than 'adult' or 'mature adult' (*i.e.* not young). Eleven males, three females and four unsexed adults were classified as 'mature'. If these could be included in the Young/Middle-aged category the pattern of male mortality would probably be very similar to that of the females. Even if the 'mature' individuals were included, the peak of mortality in this group would still be in the 'Young' age group, which is most comparable with the earlier population at Brandon and the contemporary Ipswich School Street.

The differences between the groups may again be caused by the area of the churchyard available for excavation. Sample bias alone could account for it, but it may be that younger men were being buried in the churchyard periphery, or to the north of the church, because they had not had time to accumulate the wealth or status required to be buried in or near the church building. Alternatively,

if this area of the churchyard was only in use for a short time, it may represent a period of high young adult male mortality as may be seen in, for example, a war or riot. There is nothing in the pathological evidence to support this, but it may be that pathological evidence of another form (infection rather than trauma) holds the answer.

Metrical and Morphological Analysis

Summary tables of measurements are provided in tables in the site archive. Measurements for individual skeletons are to be found in the archive report (Anderson 1996b).

Stature

Stature was calculated using the regression formulae of Trotter and Gleser (Trotter 1970). For St John's (Timberhill) it was possible to use the equation with the least standard deviation (femur + tibia) for 25 individuals. Single leg bones could be used for a further 36 individuals. Statures were calculated for 22 other individuals using arm bones.

The means and ranges of estimated stature for adult males and females are recorded in Table 4.49.

These means are slightly less than but very similar to those found at Farmer's Avenue, particularly in the case of the females.

Cranial indices

The disturbed nature of this cemetery meant that very few skulls were in a condition suitable for measurement. The means and ranges of the cranial (breadth/length) index are recorded in Table 4.50.

Farmer's Avenue and other East Anglian Middle to Late Saxon groups have considerably lower means. There is a general trend from dolichocephaly (narrow-

<i>Age group</i>	<i>Articulated</i>		<i>Disarticulated</i>		<i>Total</i>	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
0-2	4	11.8	12	41.4	16	25.4
2-6	7	20.6	5	17.2	12	19.0
6-10	6	17.6	6	20.6	12	19.0
10-14	5	14.7	4	13.8	9	14.3
14-18	12	35.3	2	6.9	14	22.2
Total	34		29		63	

Table 4.47 Cemetery 4 (Timberhill) — juvenile age at death

<i>Age group</i>	<i>Male</i>		<i>Female</i>		<i>*Total</i>	
	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>
Young	18	43.9	17	25.7	41	36.0
Young/middle-aged	4	9.8	18	27.3	22	19.3
Middle-aged	7	17.1	13	19.7	21	18.4
Middle-aged/old	5	12.2	13	19.7	18	15.8
Old	7	17.1	5	7.6	12	10.5
Unaged adult	26	-	15	-	70	-
Total aged	41		66		114	

* includes 36 unsexed adults

Table 4.48 Cemetery 4 (Timberhill) — adult age at death

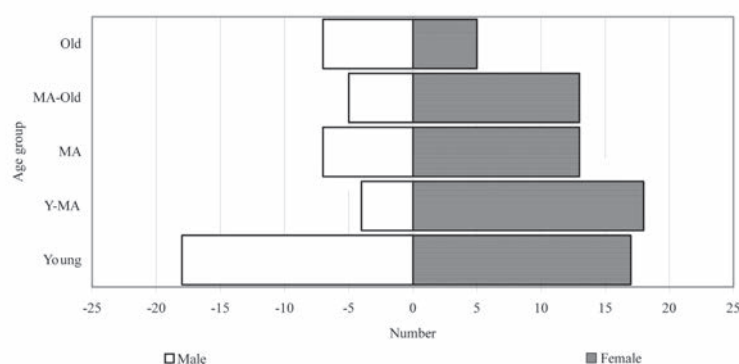


Figure 4.121 Cemetery 4 (St John, Timberhill): adult age groups by sex

headedness) to brachycephaly (broad-headedness) in the medieval period, as noted in the Farmer's Avenue report. The inclusion of some later individuals in the St John's (Timberhill) group could perhaps skew the figures slightly towards a more medieval pattern, but this seems unlikely given the small quantity involved. The difference between Saxon and medieval skulls is shown in Fig. 4.116, a plot of the cranial breadth/length index against cranial height. Again, St John's (Timberhill) was found to be more like the medieval groups than the Saxon (see Farmer's Avenue report).

The majority of skulls (66.7%) fall into the mesocranial category at this site. Only two (9.5%) were dolichocranial, the remainder (23.8%) being brachycranial or hyperbrachycranial. The three brachycranials were buried in the same area (11203, 11235, 11245), and this together with other evidence may suggest that they have a genetic link. Two of these skeletons were radiocarbon-dated to the 7th/8th–12th centuries. On the evidence of their physical type, a date towards the end of this range would seem reasonable.

Two main 'types' were noted from the cranial indices. One was of medium length, height and breadth (one male, one sub-adult and one female), all buried in the same general area (13201, 11328/13009, 13169). The other was a medium/broad, low skull (three females and a male), for which no spatial groupings occurred.

Sex	No.	Mean	Range
Male	31	170.4cm (5'7")	154.6–179.8cm (5'1"–5'10")
Female	50	159.4cm (5'3")	144.1–175.4cm (4'9"–5'9")

Table 4.49 Cemetery 4 (Timberhill) — estimated adult stature

Sex	No.	Mean	Range
Male	7	77.9	72.7–84.0
Female	11	78.1	70.1–90.8

Table 4.50 Cemetery 4 (Timberhill) — cranial index

Post-cranial indices

The means of the platymeric and platycnemic indices, which measure the relatively flattening antero-posteriorly of the femur and medio-laterally of the tibia respectively, may be found in the site archive. In comparison with those calculated for Farmer's Avenue, the male indices at St John's (Timberhill) are higher whilst those of the females are similar or less.

The robusticity of the femur was calculated where possible. A slight difference was found between men and women, but the ranges overlapped completely. The lowest male robusticity was lower than the lowest female index, but this was due to the exceptional length of the femur of the individual involved. The male means were 13.2 for the right and 13.1 for the left femur, compared with female means of 12.7 for the right and 12.9 for the left. The males ranged from 10.5 to 15.0 and the females from 11.0 to 14.4. The results suggest that the St John's (Timberhill) population generally had slightly more robust bones than the Farmer's Avenue group.

Proportionality of the limbs was calculated from the means of the left long bone lengths (see Farmer's Avenue report for formula). The male ratio was 70.5, the female 68.8. This suggests that the St John's (Timberhill) group had proportionately longer arms in relation to their legs in comparison with Farmer's Avenue.

Non-metric traits

Non-metric traits are variations from the 'normal' skeletal anatomy and are scored on a present/absent basis. A number have been shown to be genetic in origin and this may be the case for others. The percentages of each trait, out of numbers of individuals in which that area of the skeleton was available, are recorded in a table in the site archive.

A statistical comparison of scores for males and females (Perizonius 1979) showed that eight traits were significantly different at the 5% level. These were the right epipteric bone and left Allen's fossa (more women than men), and the left asterionic ossicle, right and left mandibular torus, right and left Poirier's facet, and right third trochanter (more men than women). None was significant at the 1% level. This level of difference (9.5%) is greater than might be expected to occur by chance. A number of these traits may be related to robusticity (third trochanter, Poirier's facet) or lack of it (Allen's fossa),

and if these are discounted the difference between the sexes is no longer significant.

Comparison with other sites is included with the Farmer's Avenue report (see Table 4.37 and related discussion).

Non-metric traits can be used to suggest genetic relationships within a cemetery (see Chapter 4.II, Period 1.4 and Fig.4.53). Metopism is a particularly good indicator of family groups. At St John's (Timberhill) it was particularly well clustered at the north-west side of the cemetery. On the basis of this and other traits, relationships can be postulated between 11235, 11245, 11114, and other skeletons in the immediate vicinity ('Family 2'). Another skeleton, 10189/11440, although not particularly close to this group, could belong on the evidence of recorded traits. In this general area, five skeletons had palatine tori (10189/11440, 11203, 11245, 11163/11165, 11115), four had epipteric bones (11245, 11235, 11050, 11114), four had more than one zygoma-facial foramen on each side (11245, 11187, 11115, 11116), two had parietal notch bones (11235, 11117), and two had pre-condylar tubercles (11203, 11087). Other more common traits were also found.

The relatively uncommon trait of sagittal wormian bones occurred in two possible groupings: 11438 and 11504 ('Family 4'), both of whom also had multiple mental foramina and more than one zygoma-facial foramen, and 11488 and 11402 ('Family 5'), both of whom also had ossicles at the lambda.

A few other groups were identified, but with less certainty. The group of skeletons in the south-west corner of the excavated area (13256-13263 *etc.* 'Family 6') have a number of traits in common, as do skeletons and skulls in the central southern area (13119, 13121, 13122). Clustering of parietal notch bones occurs in the south-east corner (13017, 13035, 13156¹⁰, 13169, 11328, 'Family 8') and other non-metric traits and congenital anomalies (see below) also suggest a relationship in this area. Although 13156 has been dated to the Middle Saxon period, it should be noted that the burial with the most traits in common (13169) was *cut* by this grave, and is therefore likely to be of the same period, and the next closest (13035) is undated. The later burial, the only other one in the group to be dated, is 11328 (AD 770-1210). There is therefore no reason, on dating evidence, to suggest that these individuals could not belong to the same family.

As with the Farmer's Avenue group, the results of this study can only be used to make *suggestions* of potential groups: the links between individuals within the Timberhill groups are, however, slightly stronger than those seen in Farmer's Avenue, although the limits of the groups are less distinct. It may be that the reason for continued reburial in certain parts of the St John's (Timberhill) cemetery was not simply the lack of space, but a desire to be buried with, even on top of, one's relatives. Perhaps this suggests that this part of the churchyard was filled in a relatively short space of time, a matter of a few generations.

Dental Analysis

Parts of the dentitions of 34 men (25 maxillae, 26 mandibles), 65 women (51 maxillae, 57 mandibles), 24 unsexed adults (15 maxillae, 16 mandibles) and 42 children (26 maxillae, 39 mandibles) were available for study.

Of the adults, 476 of 3040 original tooth positions were uncertain or missing, leaving 2564 positions which could be studied. From these, 621 teeth (24.2%) had been lost after death, 135 (5.3%) before death, and 62 (2.4%) were unerupted or congenitally absent. A total of 1746 teeth remained.

The 42 juvenile dentitions provided a further 761 identifiable positions, of which 332 contained permanent teeth, 139 deciduous teeth, 85 unerupted permanent teeth, 22 unerupted deciduous teeth and 183 were lost post-mortem.

Ante-mortem tooth loss

Loss of one or more teeth before death had occurred in 17 of 34 males (50.0%), 23 of 65 females (35.4%), and 10 of 24 unsexed adults (41.7%), 40.6% overall. This is higher than the figure for Farmer's Avenue, possibly due to the slightly greater proportion of older individuals at Timberhill, but the difference in this respect is so slight that other factors must also be involved. The general spread of ante-mortem tooth loss is shown in Table 4.51.

The greatest tooth loss occurred in male mandibles. Females also had greater losses in the lower jaw than the upper. Unlike Farmer's Avenue, the difference between men and women is not great, and presumably it is the amount of tooth loss in women which has affected the overall rate discussed above. The difference in female propensity for ante-mortem tooth loss must be related to the fact that the St John's (Timberhill) women had a greater life expectancy than their neighbours.

The combined figure for both sexes and jaws is higher than that for Farmer's Avenue (4.9%), although still relatively low compared with some other Late Saxon groups (see Farmer's Avenue report).

The molars and premolars are the most affected teeth, as is the normal pattern for groups of this period. Usually the first molar would be most affected, but at St John's (Timberhill) the second molar was found to be lost more commonly than the first in male maxillae. The reason for this is unknown, although it may be related to the high rate of caries found in the second molar generally (see below). Female jaws and male mandibles generally conform to the expected pattern.

In addition to adult ante-mortem tooth loss, one sub-adult, 11526, had lost an upper incisor, but in this case the loss was probably a result of pathological processes, since this individual may have been a leper (see below, 'Infections').

Caries

One or more carious teeth were found in 16 males (47.1%), 29 females (44.6%), 6 unsexed adults (25%), 51 overall (41.5%). A similar overall rate (43.8%) occurred at Farmer's Avenue. Of the 27 individuals with more than one carious tooth, four males, nine females and four unsexed adults had two lesions, one male and five females had three, two females had four lesions, one female had six, and one male had seven. Figures for each area of the dentition are recorded in Table 4.52.

The female maxilla is the most affected area, although the male maxilla and mandible also have relatively high prevalences. If overall figures for the sexes are calculated, the females have 5.7% compared with a male figure of 5.3%. This suggests a much smaller difference between

Sex	Jaw	Positions	Lost	%
Male	Maxilla	341	19	5.6
	Mandible	400	26	6.5
Female	Maxilla	686	22	3.2
	Mandible	813	36	4.4
M+F+?	Maxilla	1150	48	4.2
	Mandible	1414	87	6.2
M+F+?	Both	2564	135	5.3

Table 4.51 Cemetery 4 (Timberhill) — ante-mortem tooth loss

Sex	Jaw	Positions	Abscess	%
Male	Maxilla	341	29	8.5
	Mandible	400	12	3.0
Female	Maxilla	686	38	5.5
	Mandible	813	16	2.0
M+F+?	Maxilla	1150	81	7.0
	Mandible	1414	28	2.0
M+F+?	Both	2564	109	4.3

Table 4.53 Cemetery 4 (Timberhill) — frequency of abscesses

men and women than was found at Farmer's Avenue, and like ante-mortem tooth loss may reflect the higher life expectancy of women in this group.

Comparison with other groups suggests that St John's (Timberhill) was towards the upper end of the range for a southern urban secular population of the period. It was higher than Farmer's Avenue, where the overall prevalence was 3.9%.

The molar region was the most affected area, although caries was also found occasionally in the premolars, canines and incisors. Unusually, the second and third molars seem to be more affected than the first molar in this group, particularly in the maxillae. Most originating points were in the interstitial or interstitial cervical region of the affected teeth, although occlusal lesions were also common in the molars. Very few buccal lesions were recorded.

One juvenile, aged 13–16 years (13101) had a carious lower left permanent second molar. This represents a prevalence of 0.2% of the 471 erupted teeth in juvenile jaws.

Abscesses

One or more abscesses occurred in 19 men (55.9%), 23 women (35.4%) and 4 unsexed adults (16.7%), a total of 46 individuals (37.4%). Nine men, ten women and three unsexed adults had a single abscess. Two abscesses occurred in three men, five women and an unsexed adult. The remaining seven men, eight women and one unsexed adult had three or more, to a maximum of seven. Frequencies for each area of the dentition are shown in Table 4.53.

The men were affected to a greater extent than the women, and the maxilla was affected more than the

Sex	Jaw	Teeth	Carious	%
Male	Maxilla	239	14	5.9
	Mandible	289	14	4.8
Female	Maxilla	483	41	8.5
	Mandible	582	20	3.4
M+F+?	Maxilla	776	69	8.9
	Mandible	970	35	3.6
M+F+?	Both	1746	104	6.0

Table 4.52 Cemetery 4 (Timberhill) — caries

Age category	% Caries	% Abscess	% A-m loss
Young (62)	3.7	1.4	1.2
Middle-aged (25)	6.4	5.3	4.9
Old (25)	10.1	10.2	13.5

Table 4.54 Cemetery 4 (Timberhill) — general dental pathology

mandible in both sexes. The same pattern and similar figures were found at Farmer's Avenue.

The overall prevalence for combined sexes and jaws at Farmer's Avenue is the same as the St John's (Timberhill) frequency. Both are within normal limits for the period.

Thirteen of the 41 male abscesses and 15 of 45 female lesions were found to occur in association with a carious tooth. Twenty male positions affected with abscesses lacked the tooth through post-mortem, or occasionally ante-mortem, loss. The remaining eight positions had non-carious teeth, but attrition scores in these cases had reached at least 6– (Bouts and Pot 1989). Tooth loss had occurred in 22 female positions with abscesses. In most of the remaining cases tooth wear had reached the stage where the pulp cavity may have been exposed (5+), but seven teeth had an attrition score of 4+ or less. These were all upper premolars or first molars, and the abscesses may have been caused by lack of dental hygiene.

Periodontal disease

Periodontal disease was noted in seven women, one man and an unsexed adult, although in some cases the signs of inflammation noted may be attributable to other causes.

The inferior surface of the palate of a male, 13146, was very pitted, possibly a result of leprosy. Similar pitting was also seen on the palates of two women (11092, 11114). Two females (13177, 11344) had pitting on the palate which could be attributed to draining of an abscess.

Considerable gum recession and alveolar resorption had occurred in three cases, all women. The third molars only were affected in 11116, and deep resorption had occurred around the upper left first molar of 11344. In the case of 11263, considerable gum resorption was shown by the position of the calculus.

Small possible abscesses were recorded around the upper incisors of an unsexed adult, 13273a, but the cause could be an inflammatory response and may be related to leprosy.

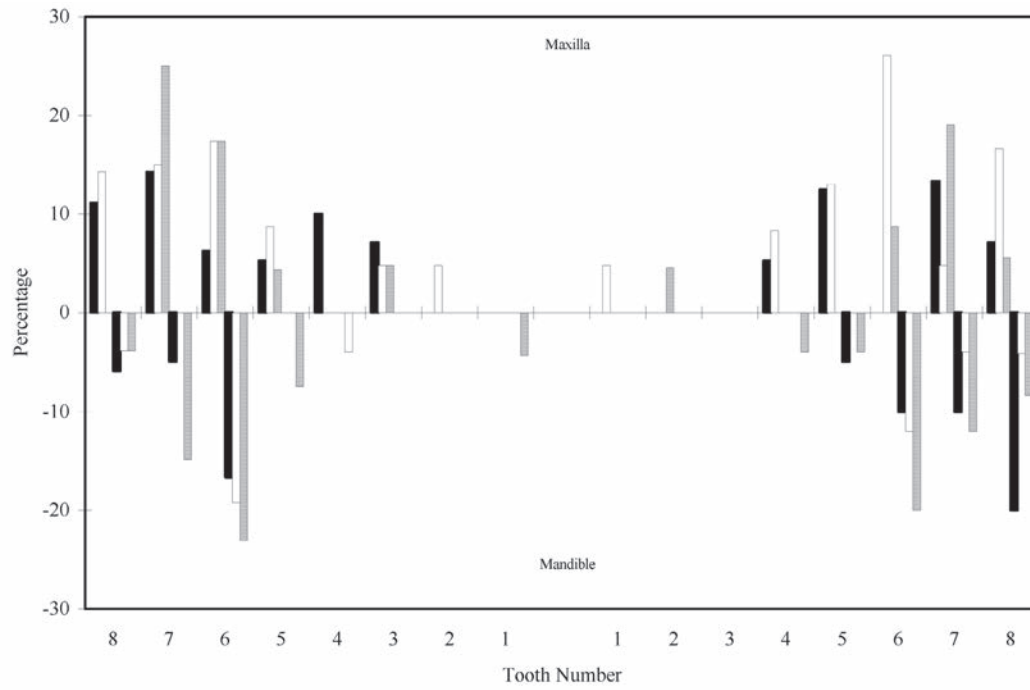


Figure 4.122 Cemetery 4 (St John, Timberhill): dental pathology, males

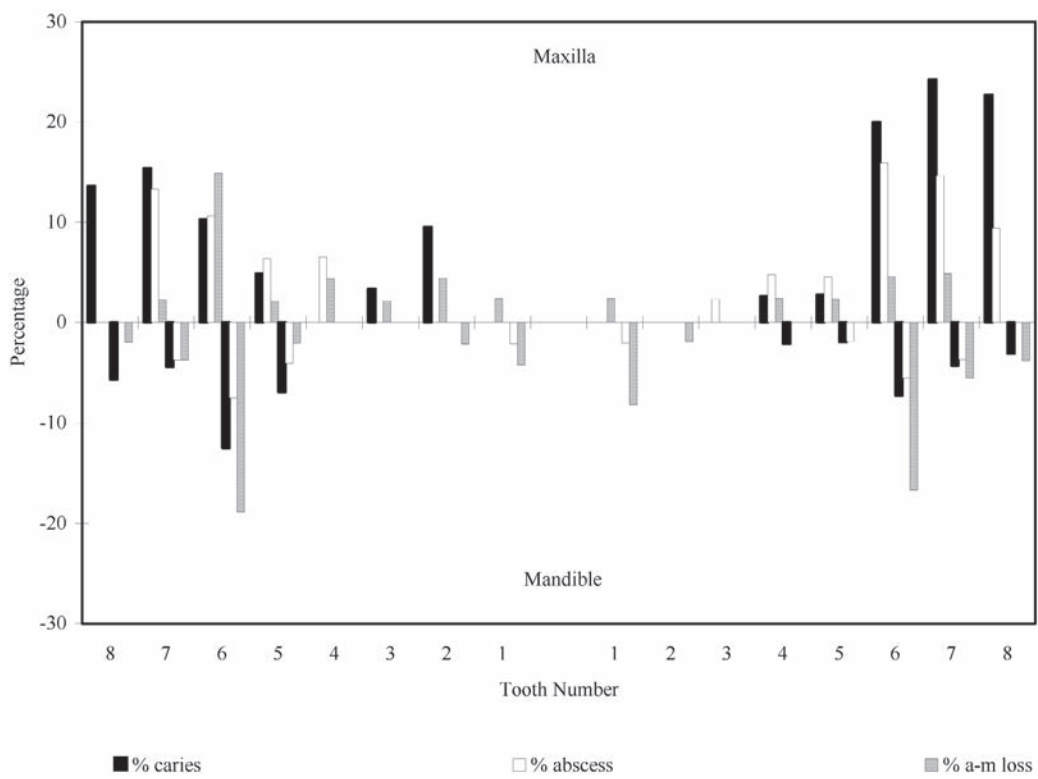


Figure 4.123 Cemetery 4 (St John, Timberhill): dental pathology, females

A number of other cases of palatal pitting, generally on the nasal surface, have been attributed to leprosy, and are discussed in the section on Infections.

General dental pathology

Figures 4.122 and 4.123 show the percentages of caries, abscesses and ante-mortem tooth loss per tooth in male and female maxillae and mandibles, as discussed in the previous sections. A summary of this and other informa-

tion relating to the dental analysis is included in the site archive.

The number of lesions in each dentition is highly correlated with age. Fig.4.124 shows the percentages of the three main dental diseases for young, middle-aged and old individuals. The pattern produced is similar to that found at Farmer's Avenue, but in every category the frequency of disease is higher at Timberhill. All three diseases show a marked increase in the 'old' age group. The percentages are shown in Table 4.54.

The numbers in brackets following each age category are the numbers of individuals in that category ("Y-MA" are counted as young, and "MA-Old" as old).

The difference between Farmer's Avenue and St John's (Timberhill) may reflect a difference in eating patterns. Caries is thought to increase in the medieval period due to increased carbohydrates in the diet, and there is a small medieval element represented in the St John's (Timberhill) group. Prevalences of dental disease might also be expected to increase if life expectancy were higher, which it appears to have been for the women at Timberhill, if not for the men.

Unerupted/congenitally absent teeth

The overall frequency of 'unerupted' teeth amongst the adults was 2.4%. This is slightly higher than the figure for Farmer's Avenue (2.1%), but within normal limits in comparison with other groups.

The third molars were the most common teeth to be congenitally absent or to have remained unerupted. The overall frequency at St John's (Timberhill) for third molar absence or agenesis was 18.8%. For males the figure was only 8.4%, compared with 24.7% in females. This is the expected pattern, although normally the sex difference is not so great. A possible explanation for the lack of third molars in female mouths in particular is that the human

jaw is getting smaller and that the effect of this is to lose the back teeth. Studies on mice have suggested that if the jawbone is shortened the third molars are reduced in size and may be resorbed before they are due to erupt. If the tooth forms normally, uneruption or impaction may occur because there is no space in the jaw for the final tooth.

Unlike Farmer's Avenue, where the maxilla was affected to a greater degree than the mandible, the condition at St John's (Timberhill) showed similar prevalences in both upper and lower jaws.

St John's (Timberhill) shows a much greater prevalence of this condition than Farmer's Avenue, and approaches the figures for the medieval groups noted in the Farmer's Avenue analysis.

Four or five individuals were found to have absence or non-eruption of one or more other teeth. Three were female, one was male and one was an unsexed sub-adult. A middle-aged woman, 13130, had a partially erupted lower left canine and an impacted lower right, with the socket for the right deciduous canine still visible but partially closed. Similarly, but this time in the upper jaw, a woman, 13261, had retained her right deciduous canine in front of the permanent one. The same type of congenital anomaly was noted in three individuals from Farmer's Avenue, but it seems to be a relatively common problem with the canine teeth. Another case was found at Ipswich Blackfriars (Mays 1991), for example.

The upper lateral incisors of another woman, 11279, were congenitally absent. An unsexed sub-adult, 13115, had congenitally absent second premolars, although the upper right was not assessable, and the lower right deciduous molar had been retained. A further possible case of absence of two or three second premolars was noted in a middle-aged/old male, 13181. This individual had lost at least two molars before death, so it was difficult to be certain.

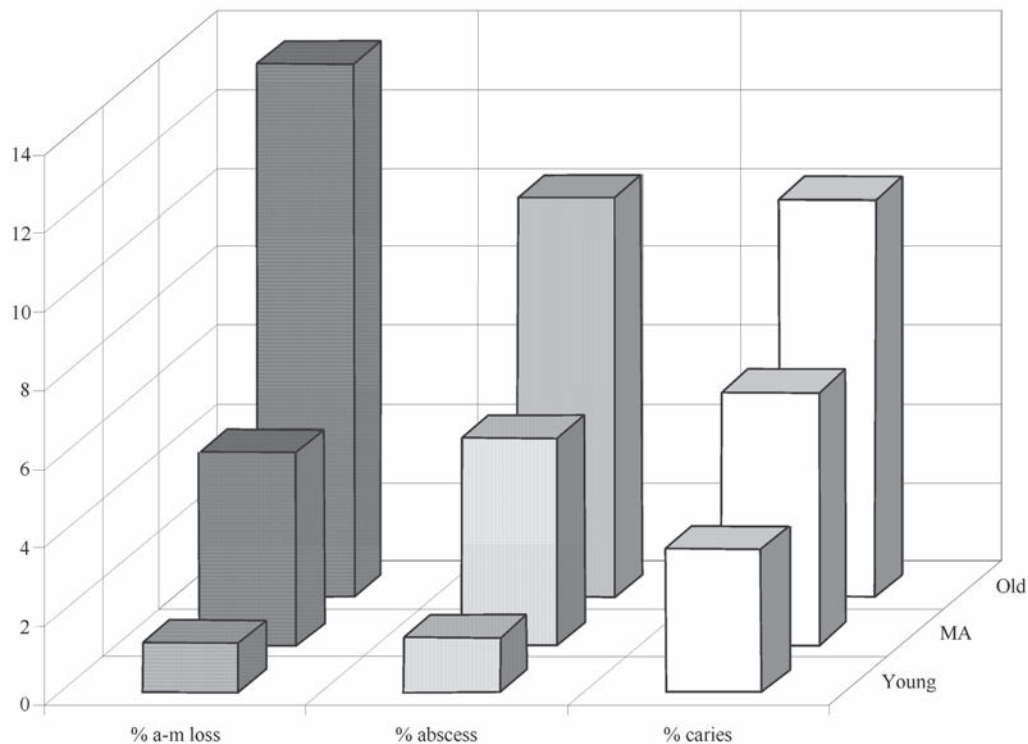


Figure 4.124 Cemetery 4 (St John, Timberhill): dental disease by age group

In addition to absence of teeth, two individuals had very small teeth. One woman, 11263, had a very small, peg-like upper right lateral incisor, and another, 13119, probably had a small single-rooted upper right third molar, unfortunately lost post-mortem.

Dental calculus

Dental calculus, or tartar, was scored on a four-point scale (after Brothwell 1981), with the results shown in Table 4.55.

The St John's (Timberhill) results conform to the normal pattern, with women being generally affected more frequently than men but to a slightly lesser degree. The two children with 'considerable' calculus were both sub-adults, but even so it is unusual for children to have such heavy deposits. In these two cases it was probably a result of a mouth infection which made chewing difficult or painful (both were possible lepers).

The spread of calculus within each dentition also conformed to the norm. In the mandible the heaviest deposits were on the inner or lingual surface of the front teeth, whilst in the maxilla the outer, labial and buccal, surfaces were most affected.

In general, the results are similar to those found for Farmer's Avenue, although more people had heavy calculus in that group. Perhaps individuals there were eating more soft foods, porridges and gruels than the people of Timberhill.

Enamel hypoplasia

This condition consists of banding or pitting of the surfaces of the teeth, due to a disruption of growth of the enamel. It is most commonly seen on the incisors and canines, particularly those in the lower jaw, but can occur on any tooth. It may be related to prolonged periods of illness or malnutrition.

Hypoplasia was found in 11 of 23 male dentitions (47.8%), 26 of 50 female dentitions (52.0%), and 10 of 22 juvenile dentitions (45.5%). The overall frequency, including unsexed adults, was 50.5%. This is much less than the 73.7% prevalence found at Farmer's Avenue, perhaps suggesting that the St John's (Timberhill) individuals had a slightly healthier childhood.

Only one individual showed marked hypoplastic defects. All surviving teeth of an adult female, 11503, had 2–4 bands of hypoplasia, causing a wrinkled appearance and suggesting a problem which occurred at yearly intervals between the ages of *c.* 1–6 years.

An estimate of the age at which hypoplastic defects were formed was made for each individual in which it was observed. The majority of adults had been affected between the ages of 2 and 5 years, although occasionally evidence was seen for occurrence at 6 or 10 years. The

few children who showed signs of the condition were older juveniles and sub-adults with few or no deciduous teeth, so the pattern of age distribution was the same as found in the adult group.

Miscellaneous dental anomalies and trauma

A few congenital and developmental anomalies of the teeth were noted, including shovelling of all upper incisors in a young male, 10492/11441, and an enamel pearl on the upper left third molar of a young/middle-aged female, 13279.

Two possible cases of occupational use of the teeth were identified. All occlusal surfaces on the right maxillary teeth of a middle-aged male, 10038, were highly polished and flattened, but unfortunately the mandible was missing. In an old female, 11163/11165, again only the maxilla was present, but all remaining teeth on the right side had a striated appearance on the occlusal surfaces. In both cases the appearance of the attrition was different to that associated with normal wear patterns and may suggest long-term use of the teeth for a specific purpose.

Evidence of possible trauma was seen in the teeth of two males and a child. A young male, 10492/11441, had lost the upper right canine, probably in late adolescence, but the root of the tooth was still embedded in the jaw suggesting that it had been broken in an accident or a violent episode, or possibly that an extraction had been attempted. An old man, 11453, also had an injury to the upper right canine, although in this case the tooth had been retained with the loss of the mesial edge. The upper left first molar of a 10–12 year old child, 11187, had a fractured bucco-distal cusp, presumably as a result of eating something hard, such as full-grain bread or a piece of bone.

Pathology

The pathological analysis includes case studies of disarticulated remains as well as articulated burials, but where prevalences have been calculated these refer to articulated skeletons or complete disarticulated skulls only.

Comparisons with other groups are difficult for pathological data, owing to the different methods of scoring employed and the fact that most pathological reports necessarily consist of case studies of the various diseases observed. Comparisons will be made with Farmer's Avenue, and with other groups whenever possible.

Most diseases have been described in the report on Farmer's Avenue, and details will not be repeated here.

Congenital anomalies

A number of interesting congenital anomalies occurred in this group, as well as the more usual spinal anomalies.

Amount	Male		Female		Unsexed		Child		Total	
	No	%	No	%	No	%	No	%	No	%
None	4	14.3	7	11.9	0	-	6	28.6	17	14.3
Slight	5	17.9	14	23.7	6	54.5	5	23.8	30	25.2
Medium	15	53.6	33	55.9	3	27.3	8	38.1	59	49.6
Considerable	4	14.3	5	8.5	2	18.2	2	9.5	13	10.9
Total	28		59		11		21		119	

Table 4.55 Cemetery 4 (Timberhill) — dental calculus

Detached neural arch (spondylolysis) was seen in the lumbar vertebrae of four articulated skeletons and three disarticulated contexts. It affected the fifth lumbar in four cases (11290/13008, 13130, 13072, 13065), the fourth and fifth in one (10026 fill), the third and fourth in one (11459) and in one disarticulated context (13172) a detached fifth lumbar arch was found. Two possible family groups emerge from these individuals. Skeletons 11290/13008, 13130 and disarticulated context 10026 fill were all close together, as were 13072 and 13065 (=13177?).

Spina bifida occulta was found in four individuals. In three (11092, 10229, 10492/11441) it affected the first and second sacral segments only, but in one, 13072, it affected the whole sacrum. Possible relationships were identified between 10492/11441 and 10229, whilst 11092 could be related to 11459 with detached neural arches.

Too many or too few vertebrae are common findings, although they are often difficult to recognise in archaeological material. One male, 11055, had an extra thoracic vertebra, and presumably also extra ribs since facets for the rib heads appeared to be present. Another, 13017, may have had an extra thoracic or lumbar vertebra, but only the lower part of the arch had survived. One male, 11507, appeared to be lacking a thoracic vertebra, but the skeleton was in poor condition so it was not possible to be certain.

A large supracondyloid process was present on the left humerus of an old woman, 11261. This anomaly mimics the presence of a bony arch which occurs in the humerus of most canivores and some other animals. It would have had little effect, other than to deviate the median nerve and the brachial or ulnar arteries which normally run through this area, and may in fact be beneficial as it is thought to protect these from compression in animals (Johnston 1935).

A probable case of pectus excavatum or 'funnel chest' was identified in a young/middle-aged woman, 11405. The sternum is convex in appearance, curving inwards at the lower end at an angle of approximately 45° from the vertical. The manubrio-sternal joint had fused, probably also a congenital anomaly. This type of deformity is often associated with abnormal bending of the spine (kyphosis and scoliosis), but there was no sign of this in the remaining vertebrae. It may cause problems with the functioning of the lungs or heart, although clearly it had not prevented this woman from reaching adulthood.

A young woman, 11488, had an unusual formation of the right superior facet of the atlas, with two small prominent facets. The posterior facet was rounded and convex, the anterior was an elongated oval, and the posterior arch was unusually narrow. Unfortunately the left side was lost. Remaining fragments of the lower part of the occipital were abnormally curved. The remains were poor, but they may suggest a possible congenital malformation or absence of the basi-occipital, similar to that described in a Romano-British skull from York (Brothwell 1958). The most likely explanation, however, is that the left side of the atlas was fused to the occipital. There was probably also some displacement of the head from the normal posture, which may have been the cause of early osteophytosis of the rib tubercles. Unfortunately no other vertebrae were present.

A disarticulated female skull (13078, =13158?) had an unusual anomaly in that the right mastoid process

was large and rounded but did not protrude downwards. There was no mastoid notch on the medial side, but processes for muscle attachments were present. The normal functions were unlikely to have been impaired.

Other cranial anomalies included an abnormally curved or 'rocking' mandible in a young woman (13094), a keel-shaped cranial vault in a middle-aged ?male (13201/13088/13236), and slight keeling along the metopic suture of a middle-aged ?female (11114).

Arthropathies and degenerative disease

There are two major manifestations of degenerative change in the skeleton. These are osteophytosis and osteoarthritis. Tables of maximum severity in each bone can be found in the site archive, and a breakdown of joints affected by individual is available in the archive catalogue (included with Anderson 1996b).

Vertebral osteophytosis was found in 20 out of 26 males (76.9%) and 42 of 50 females (84.0%), with an overall prevalence of 81.6%. Osteoarthritic change in the vertebrae was seen in 13 males (50.0%) and 24 females (48.0%), overall 48.7% of individuals with one or more vertebrae. Usually Grade III was only found in older individuals.

A breakdown into the three main regions of the spine shows that osteophytosis was most common in the cervical region in men (57.7% of vertebrae), followed by the thoracic spine (54.6%) and the lumbar region (44.6%). In women it was the lumbar area which was most commonly involved (47.6%), followed by the cervical region (39.5%) and the thoracic spine (37.6%). Differences between the sexes for the cervical and thoracic prevalences are statistically significant. Of the 373 male vertebrae which could be assessed, 52.3% had osteophytes, whilst 41.1% of the 715 female vertebrae were affected. This difference is statistically significant at the 0.1% level.

Osteoarthritis of the vertebrae (Grades II–III) showed the same pattern of involvement. It was most common in male cervical vertebrae (28.2% of vertebrae), followed by the thoracic (16.9%) and the lumbar (11.7%) areas. In women, the lumbar vertebrae were most affected (16.5%), followed by the cervical (15.8%) and thoracic (15.2%) regions. Differences between the sexes for the cervical region are statistically significant at the 5% level. The overall scores were 17.7% of all male and 15.7% of all female vertebrae. This difference is not significant.

Spinal osteophytosis generally showed a similar pattern of involvement at Farmer's Avenue, although the males there were usually affected more and the females less than those of Timberhill. The sexes in this group are closer together, and less statistically significant differences were found. Osteoarthritis of the spine was more prevalent in both sexes at Farmer's Avenue.

Significant differences between men and women for Grades II–III were also found in other joints of the skeleton. These were the right temporo-mandibular joint (28.6% males, 5.3% females) and left proximal radius (13.3% males, 0% females). Osteophytosis (Grades I–III) was significantly different for the left humerus capitulum and trochlea, and the distal left radius and ulna (*i.e.* the left elbow and wrist joints). In all cases men were affected more than women. Although a slightly different pattern was seen at Farmer's Avenue, joints of the arms and the

	Males					Females					OA(II-III) %					Total		
	N	0	I	II	III	N	0	I	II	III	N	0	I	II	III	M	F	Total
Neck	18	3	5	6	4	37	14	12	8	3	55	17	17	14	7	55.6	29.7	38.2
R. shoulder	20	12	3	5	0	36	13	9	14	0	56	25	12	19	0	25.0	38.9	33.9
L. shoulder	17	5	5	7	0	37	21	7	8	1	54	26	12	15	1	41.2	24.3	29.6
Sternal joints	16	9	4	3	0	29	23	2	4	0	45	32	6	7	0	18.8	13.8	15.6
Mid spine/ribs	22	2	5	10	5	43	4	8	21	10	65	6	13	31	15	68.2	72.1	70.8
R. elbow	21	14	6	0	1	33	23	10	0	0	54	37	16	0	1	4.8	0.0	1.9
L. elbow	21	16	3	1	1	37	29	8	0	0	58	45	11	1	1	9.5	0.0	3.4
R. wrist	21	15	6	0	0	34	25	6	0	3	55	40	12	0	3	0.0	8.8	5.5
L. wrist	19	11	7	1	0	34	30	3	0	1	53	41	10	1	1	5.3	2.9	3.8
R. hand	21	14	7	0	0	40	25	11	2	2	61	39	18	2	2	0.0	10.0	6.6
L. hand	21	13	7	0	1	37	28	9	0	0	58	41	16	0	1	4.8	0.0	1.7
Lower spine	21	6	9	5	1	42	13	14	11	4	63	19	23	16	5	28.6	35.7	33.3
Pelvic girdle	24	10	10	3	1	46	18	20	8	0	70	28	30	11	1	16.7	17.4	17.1
R. hip	26	13	9	4	0	39	16	15	7	1	65	29	24	11	1	15.4	20.5	18.5
L. hip	21	9	9	2	1	47	18	22	7	0	68	27	31	9	1	14.3	14.9	14.7
R. knee	28	19	9	0	0	32	20	9	3	0	60	39	18	3	0	0.0	9.4	5.0
L. knee	27	18	8	1	0	36	25	10	1	0	63	43	18	2	0	3.7	2.8	3.2
R. ankle	24	16	7	1	0	27	19	8	0	0	51	35	15	1	0	4.2	0.0	2.0
L. ankle	26	20	6	0	0	28	21	6	1	0	54	41	12	1	0	0.0	3.6	1.9
R. foot	22	15	7	0	0	19	13	5	1	0	41	28	12	1	0	0.0	5.3	2.4
L. foot	22	14	6	2	0	22	14	8	0	0	44	28	14	2	0	9.1	0.0	4.5

★ Total OA/OP significantly different (chisq) between males and females

Table 4.56 Cemetery 4 (Timberhill) — osteoarthritis and osteophytosis

temporo-mandibular joint were also more commonly affected in men than in women in that group.

A summary table, based on numbers of individuals rather than number of bones, is provided in Table 4.56.

By individual, the areas most commonly affected by osteoarthritis in the men were the mid spine/ribs, the neck, the left shoulder, the lower spine and the right shoulder. In the women the most affected areas were the mid spine/ribs, the right shoulder, the lower spine, the neck and the left shoulder. Both sexes were also commonly affected in the pelvic, hip and sternal joints. Some differences between the sexes were seen, but only the prevalence of osteophytosis in the left wrist was significant.

The prevalence of osteoarthritis in the shoulder joints of both men and women is noticeably higher than that seen at Farmer's Avenue. This may suggest that a number of people in the group carried out tasks which habitually involved the shoulders. The specific joints involved were generally the lateral clavicle and the acromion, which tend to be brought together by the action of the deltoid muscle. The actions produced by this muscle are roughly equivalent to the type of action required to hit a ball with a bat using an underarm swing. Such an action could be used in a variety of tasks, including threshing, scything, using a sickle, beating cloth or leather hangings, and possibly hammering. Unfortunately it is not possible to suggest a specific task or occupation which would cause osteoarthritis in this area of the skeleton, particularly as other factors may be involved.

When compared with Farmer's Avenue, these results suggest less of a difference between the sexes at St John's (Timberhill) in terms of areas of the skeleton affected by

joint disease. In general osteoarthritis was less common in the Timberhill group in most areas of the skeleton, with the notable exception of the shoulder joints. The overall prevalence is probably less because there were more 'young' individuals at Timberhill than at Farmer's Avenue.

Very few other degenerative diseases were noted at Timberhill. One woman had large osteophytes on the right side of her fifth to eighth thoracic vertebrae, of a type normally associated with ankylosing hyperostosis although none had fused. Calcified thyroid and/or costal cartilage was noted in three women and five men, the majority of whom also had lipping of the muscle attachment areas. Ankylosing hyperostosis and diffuse idiopathic skeletal hyperostosis (DISH) are generally uncommon in Saxon and medieval secular groups, but they are found commonly in monastic groups. Waldron (1985) has suggested that there may be a link between the overindulgent lifestyle practised by those buried in the religious houses, in comparison with that of contemporary peasants, and the appearance of the disease. This is not necessarily indicative of monkish behaviour, as monastic houses also offered burial space to richer members of society.

Senile osteoporosis may have been present in four women and four men. Usually it affected most bones, although some individuals were affected in one area, such as the spine or the feet. In all cases the bones were lightweight with thin cortices.

		<i>Total</i>			<i>Class</i>			
		<i>N</i>	<i>+</i>	<i>%</i>	<i>Porotic</i>	<i>Cribriotic</i>	<i>Trabecular</i>	<i>Closed</i>
Male	R	25	7	28.0	2	3	1	1
	L	19	4	21.1	1	2	0	1
Female	R	41	21	51.2	13	6	2	0
	L	42	18	42.8	9	7	2	0
Child	R	18	13	72.2	6	5	2	0
	L	15	9	60.0	5	3	1	0
Total*	R	86	42	48.8	22	14	5	1
	L	79	32	40.1	15	13	3	1

* Includes unsexed adults

Table 4.57 Cemetery 4 (Timberhill) — cribra orbitalia

General spinal pathology

Schmorl's nodes were seen in the thoracic vertebrae of 11 women (57.9%) and ten men (62.5%), and in the lumbar vertebrae of 12 women (54.5%) and 8 men (61.5%). Overall 65.1% of the 43 assessable individuals were affected in one or more vertebrae (64.7% of 17 males and 65.4% of 26 females). The seventh thoracic to fourth lumbar vertebrae were particularly involved, although lesions could occur as high as the fourth thoracic. More vertebrae were affected in men than in women as a general rule. Prevalences at Farmer's Avenue were only slightly higher, and the overall pattern of distribution was the same.

Wedging of one or more vertebrae, with resultant kyphosis or scoliosis, occurred in one woman and five men. The second lumbar vertebra of the woman, 13040, was wedged to the anterior causing kyphosis, possibly due to a fracture or old age. A similar lesion was seen in the first lumbar vertebra of an old man, 10069. A young ?male, 10031, had slight wedging of the first sacral segment to the right, but the fifth lumbar vertebra was wedged to the left, probably compensating for any possible scoliosis. Two males had thoracic vertebrae which were wedged to the right, the seventh in 10264 and the ninth and tenth in 13181, in both cases causing slight scoliosis. Another male, 11034, had wedging of the twelfth thoracic vertebra to the right, also with slight scoliosis.

Six cases of anterior epiphyseal dysplasia of the vertebrae, or Scheurmann's Disease, were seen, all but one in women. In most cases either the fifth or the fourth and fifth lumbar vertebrae were involved, but in one woman it may have affected the fifth cervical vertebra.

<i>Area</i>	<i>Male</i>		<i>Female</i>	
	<i>Lesions</i>	<i>Individuals</i>	<i>Lesions</i>	<i>Individuals</i>
Elbow	2	1	1	1
Wrist	1	1	0	0
Knee	1	1	1	1
Ankle	22	11	3	3
Foot	1	1	1	1
Big toe joint	7	4	2	2

Table 4.58 Cemetery 4 (Timberhill) — articular facets by joint areas

Metabolic and nutritional disorders

Cribra orbitalia was found in 14 out of 20 children (70.0%), 24 out of 45 women (53.3%) and 7 out of 25 men (28.0%). Two out of four unsexed adults were also affected, giving an overall prevalence of 50.0%. Of the 71 individuals for whom both orbits were assessable, 27 had lesions in both orbits and five (all female) in one orbit only. Only one individual with lesions in both orbits was affected to different degrees in each. A summary of the findings is shown in Table 4.57.

In addition, two cribriotic orbits belonging to two children, an infant with bilateral porotic lesions, and an adult with bilateral trabecular lesions were noted in the disarticulated remains.

The difference between males and females was tested using the chi-square statistic and was not found to be significant. The women and children in this group have a slightly greater prevalence of cribra than those at Farmer's Avenue, whilst the men have a lower prevalence in comparison with the Saxon males. However, the overall figures from both Norwich sites are considerably higher than those from other groups for which figures are available.

Porotic hyperostosis may have affected the skulls of five children, particularly a 2 year old, 11194, with areas of porosity at the rear of both parietals, and an infant, 13192, with pitting on fragments of cranial vault. Two disarticulated infants (13037, 13043) also had signs of the disease. The skulls of one unsexed adult, 30 females and 16 males showed pitting on the parietals, sometimes with a lumpy appearance or striations. This may represent healed porotic hyperostosis or an inflammation of the scalp. Lesions of this type have been noted in other groups, for example The Hirsell, but with lower prevalences. At The Hirsell, slightly higher rates of parietal pitting than cribra orbitalia were noted, and the same is true at St John's (Timberhill) (57.3% parietal pitting compared with 44.5% cribra in adults). The two types of porosis are often present in the same skull, so a common cause is possible.

The results suggest a high prevalence of iron deficiency anaemia in the Late Saxon people of this part of Norwich in comparison with their contemporaries in both urban and rural groups. One reason could be the presence of infections in the population, since this will reduce an individual's ability to absorb iron (Stuart-Macadam 1989). The presence of iron is thought to encourage the



Plate 4.50 Cemetery 4 (St John de Berstrete/Timberhill). Possible rickets showing flaring long bone metaphyses of a 2–3 year-old, with cupping at the junctions of the metaphyses and epiphyses. Lower halves of both tibiae were bent (sk.13073)

growth of microbes, so the body will compensate by taking up less dietary iron even to the point of becoming anaemic.

Possible evidence for rickets (Vitamin D deficiency) was seen in two children. The first, aged *c.*9–11 years, 11250, showed signs of the disease in several long bones, particularly the left tibia and femur and the distal radius, all of which appeared to have flared ends and thin cortices. Similar flaring was seen in the long bone metaphyses of a 2–3 year old, 13073 (Plate 4.50), but in this case there was also cupping at the junctions of the metaphyses and epiphyses and the lower halves of both tibiae were bent. The skull had no obvious signs but may have been abnormally wide with open fontanelles. This latter case is the more likely of the two.

One other child, 13163, a 4–5 year old, had slight pitting of the tibia shafts with possible flaring of the distal end of the left. These changes may be the result of a metabolic disorder.

Hyperostosis frontalis interna was noted in the skulls of two women (11261, 13078), both middle-aged or older. In both cases the lesions were slight.

Circulatory disturbances

Osteochondritis dissecans was found in 21 men, 8 women, an unsexed adult and two children. A number of articular facets were involved and have been generalised into joint areas as shown in Table 4.58.

Both children and the unsexed adult were affected in joints of the ankle. In addition, two individuals in the disarticulated material had osteochondritic lesions: a sub-adult was affected in the knee (femur) and an unsexed adult in the ankle (talus).

It is clear from this that, like Farmer's Avenue, people at Timberhill were most likely to have lesions in the ankle joints, and the disease was generally more common in men than in women. Unusually, the two cases seen in the knees of articulated skeletons were in the patella rather than at the distal femur. One of these was partly healed, but no other lesions had any signs of healing.

One other example of a circulatory disturbance was observed, in the skeleton of a young male, 10224. This was a case of Perthes disease, an aseptic necrosis of the head of the femur. It is most common in males and occurs between the ages of 3–9 years, lasting approximately 2–4 years (Cotta 1978). The disease causes pain, tenderness and some problems in walking. It is characterised by a breakdown of the femoral capital epiphysis, followed after some months by remodelling and eventual healing, leaving a deformity of the joint. In the Timberhill example, the left hip joint was involved with a smooth mushroom-shaped deformity of the femoral head, shortening of the femoral neck, and enlargement of the acetabulum (Plate 4.51). There was no evidence for slipping of the epiphysis. This case was unusual in that there was a large 'cyst' hole at the posterior of the acetabulum, just below the origin of the rectus femoris muscle. The lesion may be similar to the supra-acetabular cyst described by Wells (1976), possibly caused by seepage of synovial fluid. The area was remodelled but not inflamed. Similar changes to the femoral head can occur in Gaucher's disease, a congenital abnormality of lipid metabolism, but osteoporosis and other changes would be expected in this disease and no signs of these were seen in this skeleton.

Infectious diseases

Evidence for infection or non-specific inflammation was found in at least 73 articulated and 25 disarticulated individuals in this group.

Periostitis of the lower leg was seen in 53 of 117 assessable individuals (45.3%). This can be compared with the overall rate of 28.3% seen at Farmer's Avenue. At St John's (Timberhill) the lesions have been divided into three categories, and the results are shown in Table 4.59.

It is particularly unusual to see medium and gross lesions in children, and it is worth noting that only one case amongst the Farmer's Avenue *adults* was felt to be gross. The reason for the difference between this group and Farmer's Avenue is the presence of a specific disease which can cause inflammation of the tibia and fibula, namely leprosy (see below).

Other signs of non-specific inflammation or infection were seen in a number of skeletons. Periosteal new bone growth was seen on the inner surface of two right mid ribs of a child aged 30 months to 4 years, 13060, and similar but more advanced lesions were noted on the mid

right and left ribs of an old woman, 11261. These changes could be the result of a pleural infection.

Periosteal changes to the femur occurred in two children (11250, 13073), two women (13035, 13130) and one man (10492/11441). A number of cases were also seen in the bones of the foot, but some of these may be connected with leprosy.

Lesions were also seen in the distal radius, an unusual site, in three women (11092, 11163, 13130) and one man (11287). The women were all affected on the left radius, although one (13130) had changes to both radii and ulnae as well as the first left metacarpal, and some leg and foot bones. The male had a small patch of new bone on the distal right radius. Three of these individuals may have had leprosy, and the fourth apparently had widespread inflammatory changes to her skeleton. The cause of the lesions seen in the lower forearms of these individuals is uncertain, but could have an indirect relationship to the other diseases affecting them. Perhaps the changes were due to a habitual occupation which caused the wrist to be constantly rubbed or to suffer from micro-traumas, or perhaps they were related to the use of crutches.

Two cases of inflammatory change in the sacrum were noted. In a young male, 10492/11441, the lower two segments of the sacrum appeared thickened with porous cortical bone and slight wedging of the fourth segment to the right. This may have been a result of an injury. In another young male, 13038, the changes may have affected the whole sacrum, but unfortunately it was very fragmentary. The few remaining pieces suggested that there was no superior facet for the fifth lumbar vertebral body, the area being smooth and rounded. The left ala showed pitting and roughened new bone deposition and the first segment had a large 'cyst' in the posterior surface. A fragment of arch showed a similar cyst-like lesion. The rest of the spine was in poor condition, but one lumbar vertebra also showed pitting on the dorsal surface, and some pitting was also seen on the right ilium. The changes could be the result of tuberculosis,

	Total			Category		
	N	+	%	Slight	Medium	Gross
Male	37	16	43.2	7	5	4
Female	42	19	45.2	11	7	1
Child	30	12	40.0	5	4	3
Total*	117	53	45.3	26	18	9

* Includes unsexed adults

Table 4.59 Cemetery 4 (Timberhill) — periostitis

but the remains were too fragmentary to make a positive diagnosis.

One example of osteomyelitis was seen in the right tibia of a young ?male aged *c.* 16 years, 13072. A cloaca was present on the medial side of the tibial tuberosity, and two or three channels penetrated the proximal growth plate. The slight rotation of the proximal end of the tibia, so that the medial side was slightly higher than the lateral, suggests that the infection may have followed a greenstick fracture of the lower leg. There was some evidence for callus formation on the medial side and patches of new bone on the posterior with a small exostosis on the posterior-medial border. The fibula was not affected, although it may have been slightly shortened as a result of the twisted proximal tibia.

Another case was seen in the legs of a middle-aged/old female, 11163/11165. Both tibiae were grained and thickened all over the diaphyses and there was slight new bone formation on the fibulae. The distal third of the femur was also affected, as was the right (disarticulated in 11105). Both femora were broken at the distal end, and both contained irregular large ?hollow growths of new bone within the cancellous structure. These probably surrounded cysts or abscesses in life.

Leprosy

The most interesting disease to be found in the St John's

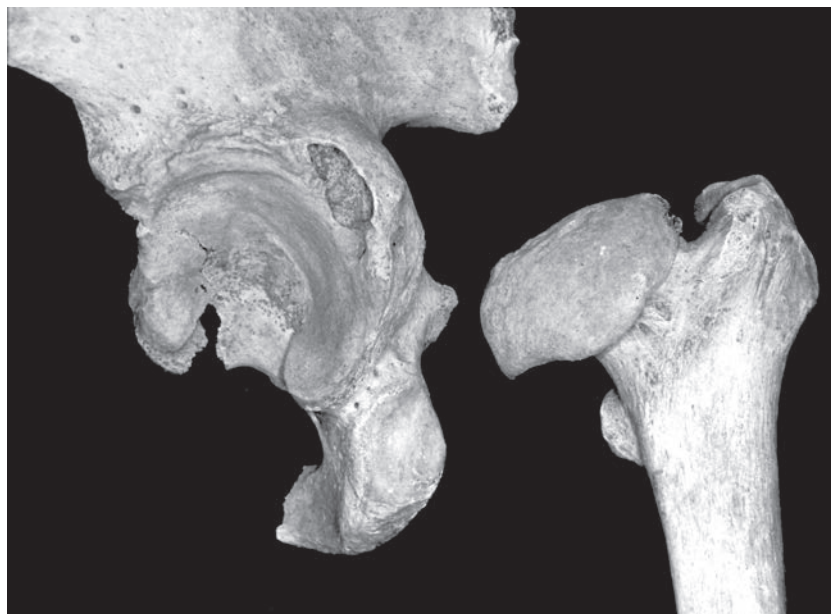


Plate 4.51 Cemetery 4 (St John de Berstre/Timberhill). Left femoral head and acetabulum showing deformation and enlargement, possibly as a result of Perthes' disease (sk.10224)

Sk No	Sex	Age	Maxillary Alveolar Process	Anterior Nasal Spine	Superior Palate	Inferior Palate	Lacrimal Groove etc.	Cribrra Orbitalia	Maxillary Sinusitis	Hands	Feet	Tib/Fib	Leper?
10189/11440	F	MA	No	I°	No	Slight	-	Porotic	-	?	Periost	Slight	Yes?
11042	F	Adult	-	-	-	-	-	-	-	Slight?	-	-	Yes?
11092	F?	Y-MA	-	-	Slight	V.pitted	-	None	Yes	VPGs	-	-	?
11103	F	Young	Yes	I°?	V.pitted	V.pitted	-	Trabec	Yes	No	Periost	Gross	Yes
11114	F?	MA	No	No	No	Pitted	-	Porotic	Yes	-	-	-	?
11117	M?	16-20?	Pitted	No	No	Slight	-	None	No	Yes	Yes	Medium	Yes
11235	F	Young	Slight	Yes	V.pitted	Pitted	-	None	No	No	-	-	Yes
11287	M?	Young	?	Yes	V.pitted	Pitted	-	None	Yes	Periost	-	Medium	Yes
11328/13009	C	c.16	Yes	Yes	V.pitted	No	No	None	Yes	No	No	Gross	Yes
11411	U	16-20?	-	-	-	-	-	-	-	-	Yes?	Gross	Yes?
11428	M?	Adult	-	-	-	-	-	-	-	-	No	Gross	?
11485	U	Adult	-	-	-	-	-	-	-	-	V.poor	Gross	?
11509	M?	MA-Old	-	-	-	-	-	-	-	-	Yes?	Slight	?
11510	M?	Young	-	-	-	-	-	-	-	Pitted	Pitted	Medium	?
11518	C	12-15	V.pitted	-	Pitted	Pitted	-	Trabec	Yes	Yes	Yes	No	Yes
11519	F	Adult	-	-	-	-	-	-	-	Yes	Poor	Medium	Yes?
11520	M	Mature	-	-	-	-	-	-	-	Yes	?	Gross	?
11526	C	15-18	Yes	Yes?	Pitted	Pitted	No	Trabec	No	-	-	Medium	Yes
11529	M	Adult	-	-	-	-	-	-	-	-	Yes	Gross	Yes
13019	C	c.15-16	-	-	-	-	-	-	-	-	Poor	Medium	?
13035	F	20-30	No	No	No	Pitted	-	Trabec	Yes	VPG	-	Slight	?
13055	C	c.16-19	?	II°	-	Pitted	Yes	?	-	No	?	Medium	Yes?
13091	C	c.15-16	-	-	-	-	-	-	-	VPGs	Yes?	Slight	Yes?
13095/13082	C	Sub-ad	Pitted	-	Pitted	Pitted	-	Porotic	Yes	-	-	-	Yes
13097	F	Y-MA	?	-	Pitted	Pitted	-	None	Yes?	No	Periost	Medium	Yes
13101	C	13-16	Yes?	-	V.pitted	V.pitted	-	Porotic	Yes	-	Yes	Slight	Yes
13111/13121	F	Y-MA?	Yes	Yes	Pitted	Pitted	-	None	No	VPGs	-	No	Yes
13119	F?	25-30	?	-	Slight	V.pitted	-	Cribriotic	Yes	Pitted	Pitted	Slight	?
13133	U	c.16-20	-	-	-	-	-	-	-	-	Yes	-	Yes
13146	M?	c.20-23	No	-	Slight	V.pitted	-	Cribriotic	Yes	No	Yes	Medium	Yes
13173	F	MA	-	-	-	-	-	-	-	Yes	Periost	Slight	Yes
13181	M	MA-Old	?	II°	No	Slight	No	None	Yes	No	No	Medium	Yes?
13201/13088/13236	M?	MA	No	I°?	No	Pitted	-	None	Yes	-	Yes?	No	?
13237	F?	c.20-25	-	-	-	-	-	-	-	Yes	-	Medium	Yes
13273	U	MA?	Yes	III°	V.pitted	V.pitted	-	-	No	-	-	-	Yes

Table 4.60 Cemetery 4 (Timberhill) — leprosy

(Timberhill) group is leprosy. This has been noted above in connection with oral pathology and periostitis of the shin bones. For a reasonably conclusive diagnosis of leprosy, it is necessary to have certain areas of the skeleton, these being the face, the hands and feet, and the lower legs. At Timberhill, only 103 individuals were assessable from the face, 101 from the hands, and 92 from the feet. Only 48 skeletons were assessable using all four areas.

The various diagnostic criteria for leprosy have been covered by many authors and will not be repeated here (see Andersen *et al.* 1992 and 1994, Andersen and Manchester 1992). However, undoubtedly the best indicators are the changes in the maxillary and nasal areas, which result from specific *Mycobacterium leprae* infection, and these were found in at least 19 skeletons (Plate 4.52). Many others had pitting of the inferior palate, or pitting of the metatarsals, and some were found with volar phalangeal grooves but without other significant changes. These have not been included in the figures although it is possible that they suffered from the disease.

In total, a possible 35 lepers have been identified in this group, of which 24 are fairly certain (their position is plotted in Fig.4.54; see further details in Chapter 4.II, Period 1.4). Table 4.60 lists the individuals most likely to have been affected with the disease, using the criteria identified by Møller-Christensen (1961).

If these were the only lepers in the cemetery, the prevalence of the disease would be 13.3%. However, it seems likely that many were not recognisable due to poor preservation. The presence of periostitis of the shins is not diagnostic on its own, so many of these individuals have had to be discounted, and even if some bones of the hands and feet are present, the disease does not often affect these to an equal degree. Of the 180 skeletons assessable in one or more aspects, the prevalence is 19.4%, but even this figure is probably too low. This figure can be compared with the 1.6% prevalence at Ipswich Blackfriars and the 24% prevalence at the hospital of St James and St Mary Magdalene in Chichester (Lee and Magilton 1989). The

latter was founded as a leper hospital in the early 12th century and probably continued as such until the 15th century, eventually becoming an almshouse until its closure at the end of the 17th century.

One case in particular requires an individual description. A young ?male aged c.16-20 years, 11117, had pitting around the nasal aperture and front teeth but was otherwise unaffected in the rhinomaxillary region. In the right hand, the three remaining proximal phalanges had volar phalangeal grooves (VPGs). The metacarpals of the left hand were pitted at the distal ends and articular surfaces, there were deep VPGs of the proximal phalanges and the articular surfaces had been destroyed, suggesting pyogenic arthritis and claw-hand deformity (Manchester n.d.). The distal end of the proximal thumb phalanx was almost totally destroyed. Some concentric diaphyseal remodelling of the middle phalanges had occurred, together with graining especially dorsally, and septic arthritic changes at the proximal ends. The distal phalanx of the thumb showed similar changes.

In the right foot there was surface inflammatory pitting of all tarsal bones and slight pitting and graining of the metatarsals. No remodelling of the third to fifth metatarsals had occurred, but the distal ends showed absorption of the cortical bone leaving the joint surface with a close-pitted appearance. Most graining and pitting had occurred in the distal third of the third metatarsal. The distal end of the second metatarsal was destroyed by septic arthritis and the proximal phalanx showed similar but less gross changes. Septic arthritis of the first metatarso-phalangeal joint resulted in loss of bone and ankylosis with claw-toe deformity (Plate 4.53). The distal phalanx was pitted and showed some remodelling at the distal end only. The proximal second to fourth phalanges had hourglass deformities. In the left foot the changes were less severe. There was some periosteal graining of the distal thirds of the metatarsals and proximal halves of the proximal phalanges. The proximal hallucial phalanx particularly showed graining on the dorsal proximal half. Osteophytosis of the first metatarso-phalangeal joint had

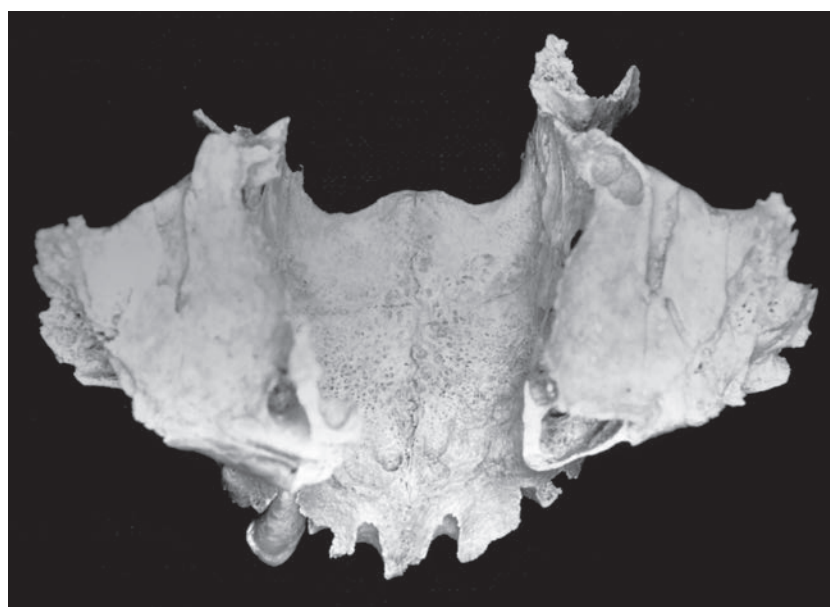


Plate 4.52 Cemetery 4 (St John de Berstrete/Timberhill). Superior surface of the palate (nasal floor) showing pitting and porosity probably caused by leprosy (sk.13009)

occurred and there was a small osteochondritic lesion on the articular surface of the proximal phalanx. The right tibia shaft was grained and thickened and there was new bone growth on the distal half of the right fibula. Very slight periosteal changes were present on the left tibia and fibula. The almost complete lack of facial changes in this skeleton, coupled with the pathological changes observed in the extremities, suggests that this individual suffered from the high resistant or tuberculoid form of leprosy (Lee and Magilton 1989). It is likely that, had he lived, the disease would have progressed to the low resistant or lepromatous form of the disease. It is worth noting in this context that leprosy was unlikely to have been the direct cause of this young man's death.

Of the 35 identifiable lepers, only four were thought to have suffered from the tuberculoid strain, whilst 16 were thought to be lepromatous. Unfortunately, tuberculoid lepers are less likely to be identified in fragmentary



Plate 4.53 Cemetery 4 (St John de Berstrete/ Timberhill). Right foot showing shortening and ankylosis of the proximal metatarso-phalangeal joint and similar destructive process in the second, probably a result of leprosy (sk.11117)

remains since the changes occur largely in the extremities, which may account for the difference between the two types in this cemetery.

In Britain, it has been suggested that leprosy reached its peak between the 11th to 13th centuries, after which it steadily declined for the next 300 years (Manchester and Roberts 1989; Richards 1977). During the two centuries following the Norman Conquest there was a huge increase in the foundation of leprosaria (Roberts 1986). At least four are known in Norwich, all outside the walls. The closest to St John would have been the leprosy house outside St Stephen's Gate, although presumably this would have had its own burial ground for at least part of its life. The Timberhill cemetery clearly has a much higher content of leprosy skeletons than is normally found in a parish churchyard, presumably because it predates the foundation of the earliest leper hospital in Norwich, St Mary's, in the early 12th century (Rawcliffe 1995). It certainly seems unlikely that all the lepromatous lepers found in this group could have escaped detection, but whether they remained amongst their families or were only reunited at burial is uncertain (see further discussion in Chapter 4.VI).

Leprosy today is predominantly a disease of the poor, flourishing in crowded and unhygienic conditions, and particularly common in families and rural populations. In the past, the increased population densities found within cities may have been a factor in its transmission (Manchester and Roberts 1989). At Timberhill, although possible lepers were spread throughout the excavated area of the cemetery both spatially and stratigraphically, some were concentrated in areas of possible family groups identified from congenital traits. In particular, 11235, 11117 and 11042 are in one 'family' group, whilst 13055, 13093, 13119, 13111 and 13181 are in another. Two other possible groups which produced no trait evidence are 11529, 11518 and 11526; and 11519, 11520 and 13019.

At least one possible leper had evidence for pathological changes associated with other diseases. A young female, 13237, in very poor condition probably suffered from presenile osteoporosis, possibly due to a nutritional deficiency or an infection. Small patches of inflammatory change were present at the distal femora, proximal humeri, metacarpals and phalanges. The distal right radius and distal femora were slightly flared, and the femora appeared slightly twisted to the medial. There was loss of both cortical bone and cancellous structure. The metacarpals were pitted and there was thinning of the cortices. Two of the remaining four finger phalanges had lost their distal ends through resorption and the cortices were extremely thin. The tibiae had thinned cortices distally, but graining and thickening medially and laterally from the midshaft upwards. Cortical thinning does not usually occur in leprosy. The lower border of the mandible was thickened and the inner table of the cranial vault also appeared thickened. There were lytic lesions of both sacro-iliac joints, more pronounced on the right than the left, and especially affecting the superior part. The outward appearance resembles a lesion attributed to brucellosis by Ortner and Putschar (1981, 140), although there is no evidence for this in the remaining fragments of vertebrae. Other possibilities include tuberculosis, osteomyelitis and sarcoidosis.

Another middle-aged/old female, 13051, may have had tuberculosis but the fragmentary nature of the verte-

brae makes this diagnosis uncertain. The fragmentary remains of the fifth lumbar vertebra appeared thickened with layers of new bone on the outer surface. This could be the result of a compression fracture with partial fusion of the anterior body to the sacrum. There may have been some lytic destruction. The fourth lumbar vertebra was not present.

One other possible example of a specific infection was found in this group, unfortunately in a disarticulated bone. A right tibia in context 13069 showed gross inflammatory changes and bending towards the lateral side. The interosseous line was clearly visible but the rest of the surface anatomy was completely changed. There were no cloacae and no evidence for thickening of the cortices. One example of 'bony bridging' over a blood vessel was seen, and this is typical of treponemal infection (Ortner and Putschar 1981, pl.332). The most likely diagnosis in this case would be syphilis, but unfortunately the evidence of a single long bone is not sufficient to be certain of the presence of this disease.

Inflammation of one or both maxillary sinuses was noted in 55 of 76 assessable individuals (72.4%). The males had the greatest prevalence (84.2%) followed by the females (73.8%) and the children (57.1%). This is considerably higher than the Farmer's Avenue group, where the overall prevalence was approximately 40.0%. The difference may be due in part to the slightly greater prevalence of maxillary abscesses at Timberhill, but sinusitis was associated with maxillary abscesses in 10 men and 12 women in this group, less than half those affected. Another possibility is that the high frequency could be related to the presence of leprosy in this group. The table shows that 14 out of 19 assessable 'lepers', or 73.7%, were affected. However, even if these are discounted, the prevalence at this site is still over 70%, which suggests that other factors were involved. These could include a greater degree of air-borne pollution affecting this group, or increased risk of respiratory disorders due to greater population density. Both seem unlikely to have been very different for the two groups, unless housing density was greater towards Timberhill.

Trauma

Exostoses were the most common form of traumatic injury in this group. They affected three women, seven men, an unsexed adult, and bones in four disarticulated contexts. They were particularly common in the leg bones, especially those of the lower leg. The tibia and/or fibula were affected in the unsexed adult (13071, who also had an exostosis of the calcaneus), one woman (13257), five males (11502, 11510, 13017, 13072, 13127), and one disarticulated tibia (11363). One example, 13017, may have been an osteochondroma rather than a traumatic exostosis, and the bony protuberance on the disarticulated tibia may have been a fragment of an ankylosed fibula.

Exostoses of the femur were found in one female, 13040, and two disarticulated contexts, 10090 and 13137. Other bones affected were the right humerus of a man, 13038, a disarticulated left humerus, 11489, a right lateral cuneiform of a man, 13201, and both ischia and the iliac crest of a woman, 13173. In most cases these lesions were the result of a torn muscle attachment.

Possible ossified haematomata were found on the right fifth metacarpal of a woman, 11459, and a disarticulated right tibia, 11532. These lesions result from 'bruising' of



Plate 4.54 Cemetery 4 (St John de Berstrete/ Timberhill). Bones of the left wrist of an old man, 11502, almost completely ankylosed

the bone, after which the clotted blood becomes part of the bone tissue.

Similar but more serious lesions were present in the form of myositis ossificans. A young/middle-aged ?male, 13266, had a large uneven exostosis at the anterior proximal end of the right femur, in the area of the origin of the vastus medialis and vastus lateralis muscles. These muscles extend the leg at the knee, and a tear in this position would probably involve pushing the leg backwards beyond its normal limit. Such an injury might be expected to occur in an awkward fall from a high place, or possibly in a riding accident if the leg were caught up. Another right femur from a disarticulated context, 10836, had a similar large uneven exostosis at the distal end in the area of the insertion of the adductor magnus. This type of injury is particularly common in riders (Wells 1963).

A possible stab wound was seen on the third metatarsal of the right foot of a woman, 11263. The lesion was in the form of a pit with raised edges and some signs of inflammation. No other bones were affected.

The bones of the left wrist of an old man, 11502, were almost completely ankylosed (Plate 4.54). All carpal bones, except the pisiform, and the second and third

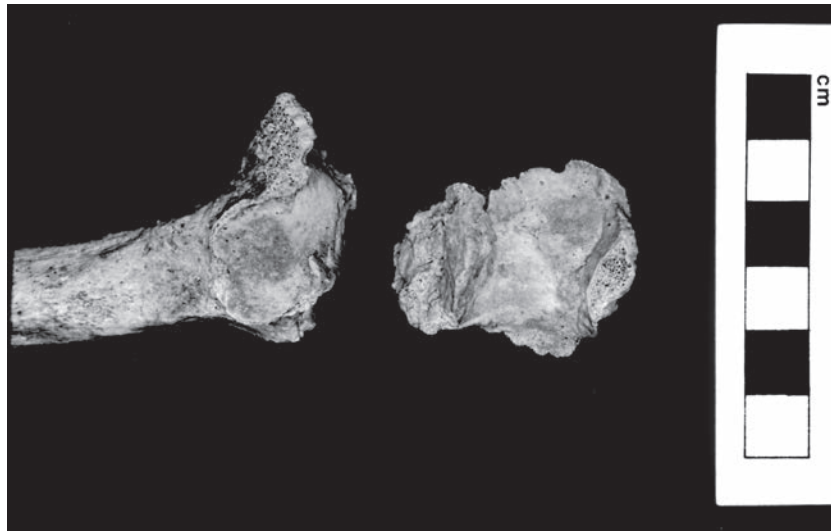


Plate 4.55 Cemetery 4 (St John de Berstrete/Timberhill). Fracture of the left ulna olecranon of sk.13201 showing non-union and pseudarthrosis

metacarpals had fused together. The capitate appeared to be slightly dislocated towards the dorsal, with proliferation of new bone around its base and at the proximal end of the second metacarpal. There was sclerosis of the joints between the radius and ulna and the carpus. No sign of infection was found. The evidence suggests a dislocation or traumatic injury to the wrist causing subsequent ankylosis.

Evidence for fractures was found in the skeletons of three women and eight men, and bones from five disarticulated contexts. In this group, most fractures occurred in the upper part of the body, in contrast to the Farmer's Avenue group where feet and ankles were most affected. The right middle finger of a woman, 13169, may have sustained a fracture as there was slight malalignment of the intermediate phalanx and secondary arthritis of the joints. The middle finger of another individual, from disarticulated context 10090, was fractured across the midshaft of the proximal phalange. This bone may have belonged to a female identified in the fill of grave 10026, who had sustained a fracture to the distal end of the right radius. The right hand of a man, 10027, may have been fractured, since the fifth metacarpal was abnormally curved and slightly shortened, with a small amount of callus on the outer and palmar surfaces.

Rib fractures occurred in the skeleton of a woman, 13259, who had well healed lesions in five lower ribs, all towards the front or side of the body except one in the eleventh rib which was near the 'neck' of the bone. A small amount of callus was present and there was no sign of inflammation. It is likely that the injuries had occurred a number of years before death. A disarticulated rib from context 11105 was also fractured.

Only one head injury was found, on the right side of the frontal bone of a woman, 11511. This consisted of a small 'dent' approximately 3cm above the orbit.

Fractures of the left ulnae had occurred in two men. A middle-aged ?male, 11034, may have had a very old and well-healed fracture at the distal end of the bone with some malalignment. In the other man, 13201/13088/13236, the ulna was fractured across the olecranon (elbow joint) and had not healed, causing a pseudarthrosis (Plate 4.55).

This type of injury is usually caused by direct violence, or a fall onto the elbow with the forearm flexed. The left femur of this individual also showed signs of a fracture in the femoral neck, but a radiograph would be needed to confirm this.

The lower leg and knee was affected in four individuals. A possible fracture of the proximal quarter of the right fibula of an old man, 13017, was suggested by the presence of fairly smooth callus on the lateral surface. Fragments of a disarticulated fibula which probably belonged to 13201/13088/13236 showed signs of a possible fracture. The possible fracture of a right tibia of 13072 has been discussed above in connection with osteomyelitis. A disarticulated patella from the grave of 13093 may have been fractured and enlarged.

Finally, a middle-aged/old male, 13181, had two traumatic lesions which may have occurred as a result of the chronic osteoarthritis he suffered in his left hip. The left acetabulum was cracked at the point of fusion of the pubis, possibly a pathological fracture caused by pressure on the diseased joint, or alternatively the cause of the arthrosis. The right ankle bones showed signs of a crush fracture. The talus was slightly flattened and roughened on the superior surface with corresponding lesions on the distal tibia. The talus facet for the lateral malleolus of the fibula was squashed and abnormally thin. This pressure fracture may have been the result of continual weight bearing on the joint in an attempt to ease the pain in the left hip. A slight mushroom deformity of the right femur, and a scoliosis caused by wedging to the right of the ninth and tenth thoracic vertebrae, may also have resulted from a dependency on the right leg, evidenced by slight disuse atrophy of the bones of the left.

Neoplasms

The most common type of benign tumour in skeletons is the osteoma. This type of bony wart occurred on frontal bones of a man, 13258, and a woman, 11477. Other possible osteomata were found on the mandible of a female, 11459, the right first metacarpal of a ?female, 13125, and the middle third and fourth finger phalanges of a male, 11497.

Osteochondromata, benign neoplasms which form from cartilaginous exostoses next to the growth plate of a long bone, were found in the tibiae of two children. A small exostosis was present on the medial side of the left tibia of a child aged 10–12, 11187, and a fragment of right tibia belonging to a 13–16 year old, 13101, showed a similar lesion. A possible male from disarticulated context 10836 had an osteochondroma of the left tibia, and a disarticulated right tibia (11091=11034) also had an old exostosis.

Miscellaneous lesions

Slight bilateral coxa vara was seen in a middle-aged female, 11290/13008. This takes the form of an unusually small angle between the neck of the femur and the shaft, of less than 90°. This condition may be congenital, but the relatively slight degree in this case suggests that it may have been acquired. Symptomatic or acquired coxa vara occurs in a number of diseases, including rickets, osteomalacia and senile osteoporosis. The most likely cause, given the relative lack of other pathology in this woman, would seem to be osteoporosis or a slight congenital abnormality.

Metatarsus adductovarus affected both feet of a mature male, 13212. The metatarsals were bent towards the medial and there was a slight deformity of the distal facet of the right medial cuneiform. Although the condition was bilateral, it was less pronounced in the left foot. The condition is either congenital in origin, or an *in-utero* deformity.

Abnormal bending and/or rotation of the leg bones was seen in four individuals. Both femora of a 16–18 year old ?female, 13105, were slightly rotated and abnormally bowed antero-posteriorly. Slight new bone growth around the upper half of the linea aspera of both femora and the soleal line of the right tibia suggested that the changes may still have been occurring at the time of death. A middle-aged/old male, 11055, also had unusually bowed femora, and the tibiae of a young man, 13044, were curved antero-posteriorly. Another middle-aged/old male, 13181, was affected in both tibiae and femora, which were slightly rotated to the medial, particularly proximally. In all cases, these changes are likely to be stress induced ‘deformities’ which were related to habitual positioning of the legs and subsequent change of the skeletal anatomy over long periods. Antero-posterior bowing might be expected to occur in someone who was often on horseback, for example.

In the case of 13181, the changes to the bones of the legs may be related to other pathologies seen in this skeleton, such as a crush fracture to the ankle and the left hip (see above, section on Trauma). In addition, the right humerus of this individual, although incomplete, was clearly much shorter than the left. This type of abnormality often occurs as a result of paralysis of the limb, for example in poliomyelitis, and it is conceivable that other changes in the skeleton of this individual could be related to such a disease having affected him in childhood. Poliomyelitis is a viral infection which, today, is generally contracted where sewage pollution is a problem, a situation likely to occur in the medieval urban environment.

Two other possible examples of disuse atrophy suggesting paralysis were found in this group. The right femur of an adult female, 11519 was very narrow medio-

laterally (19mm at the middle of the shaft compared to the female average of 26mm). The right tibia was also smaller antero-posteriorly than normal (24mm compared with an average of 31mm), although medio-laterally it was above average. Similar narrowing of the femur may occur in tuberculosis, but the proximal part of the bone was missing from this skeleton, making diagnosis difficult. Some disarticulated bones in context 11476 may have belonged to a young male. There may have been disuse atrophy of the left femur, and the proximal half of the left radius was bent towards the lateral. Possible explanations for this include smallpox in childhood (Ortner and Putschar 1981, 228) or rickets/osteomalacia.

The fourth and fifth left ribs of a middle-aged/old male, 11055, had articulating button exostoses between them at the necks of the bones. The fourth rib had no tubercle. The cause of this lesion is unknown, although it could be congenital or developmental in origin. A similar example was found at Jarrow (Anderson, Wells and Birkett forthcoming).

Another possible congenital or developmental anomaly was found in the skeleton of a middle-aged ?male, 13201/13088/13236. There was an anomalous facet on the right cuboid for articulation with the navicular, causing articulation between the navicular and the calcaneus. This appeared to have caused some problems as the joint surface was reactive and pitted with osteophyte formation.

The acetabuli of a middle-aged female, 13173, appeared shallow but were broken and incomplete. The femoral heads were normal.

One example of a possible scalp infection similar to that noted at Farmer’s Avenue was seen in a mature ?male, 10723. Again, the lesions had the appearance of nettle rash and affected the parietal bones. The frontal bone was fragmentary, as were the remaining few bones of the skeleton.

Ischial bursitis was noted in the skeletons of five women and three men. It was bilateral in all but one case where both tuberosities were assessable. In one case, a middle-aged/old female, 11471, this was associated with an enlarged, flattened and lipped anterior inferior spine of the left ilium with dorsal pitting. This area is the origin for the anterior head of the rectus femoris muscle, and the lesions suggest tearing of the muscle attachments. The greater trochanter of the left femur was also slightly roughened, at the point of insertion of various muscles which rotate the hip laterally. It is possible that all these lesions could be related to a single traumatic incident in which the leg was pulled violently backwards and to the side.

Two cases of Os acromiale were found. In a young/middle-aged female, 13169, the condition occurred on the left side only, whilst in a middle-aged ?male, 11507, only the right side was affected and a pitted and reactive false joint surface had been formed. Occasionally this type of lesion is caused by a fracture of the shoulder, but it is more commonly due to simple non-union of the acromial epiphysis (Miles 1994). Occupational associations have been suggested, the most well-known being the possibility that continual use of a long bow from adolescence could prevent union of the epiphysis (Stirland 1984). In connection with this, it was noted that the example in the woman was associated with a fracture and osteoarthritis in the middle finger of the right hand, a lesion which could

also result from practising archery. Both individuals had degenerative changes to the shoulders and lower back, and the man was also affected in the right elbow and left wrist, whilst the woman was affected in the hip and knee joints.

A number of individuals had 'cyst' holes of unknown aetiology in one or more bones. A young/middle-aged female, 10026, had a rounded hole with a smooth floor in the proximal left humerus between the proximal articular surface and the lesser tubercle. A similar lesion was present in another young/middle-aged female, 11405, this time on the medial surface of the right humerus just below the anatomical neck, and a much smaller hole was also present on the left. A possible abscess or cystic cavity was present in the centre of the right humerus capitulum (joint with radius) of a middle-aged/old female, 11459. The cavity had two openings, both with smooth rounded edges. An old man, 13017, had a smooth-floored cystic lesion at the distal end of the left radius, antero-medially, just proximal to the joint surface. The distal end of the bone was enlarged and there was some porosis of the joint surface. Similar but smaller lesions were present on the distal ulnae and left lunate of a ?middle-aged ?male, 11034. A possible periarticular erosive lesion was found in the distal first metatarsal of a young/middle-aged female, 13169. All these lesions could be the result of benign bone cysts or abscesses, but those in the region of joint surfaces may be related to arthritic diseases, particularly rheumatoid arthritis.

Other lytic lesions of unknown aetiology were found in four individuals. A mature unsexed adult, 13071, had destructive lesions to the distal end of the left proximal hallucial phalanx, possibly caused by septic arthritis, and possibly a non-specific change in leprosy. The skeleton was incomplete and no other evidence for the disease was found. Lytic lesions of the wrist occurred in an adult male, 11493, and a ?middle-aged female, 11290/13008. In the male the joints affected were the proximal third metacarpal and distal capitate. The destruction of a well-defined area within this joint space suggested the presence of a cyst or abscess. Similar lesions were found in the right scaphoid-lunate joint of the female. A small smooth-sided lesion was noted on the right distal nasal border of a middle-aged/old male, 11115, which could be related to rhinomaxillary changes in leprosy but which was not obviously identifiable as such.

One child, 13019, aged *c.*15–16, had osteophyte formation on most bones of the tarsus, with some sclerosis. The talus and calcaneus appeared to have been fused at the medial edge of the large joint, but the joint space was maintained. These lesions may have been caused by a crush fracture of the ankle joint, or they may be related to leprosy.

The sixth and seventh thoracic vertebrae of an old woman, 11261, were fused at the anterior bodies, and the fifth may also have been ankylosed. The cause was not ankylosing hyperostosis, and ankylosing spondylitis is also unlikely in view of the sex of the individual and lack of further spinal or sacro-iliac fusion. Other causes of fusion, such as crush fracture or tuberculosis could not be ruled out, although there was no real evidence to suggest the cause other than simple degenerative change.

Thin layers of new bone growth on the endocranial surface of the skull of a young child, 13171/13174, may

be the result of an inflammation of the meninges, or could possibly be due to anaemia.

One young/middle-aged ?male, 13266, showed possible evidence for Paget's disease. Only the right innominate was affected, but the skeleton was not complete. Another innominate with signs of the disease was found in disarticulated context 10836, and this may have belonged to 13266. The cortices of both innominates had changed to thick lamellar bone in the typical Paget's pattern. However it is equally possible that the disarticulated innominate belonged with a disarticulated tibia from the same area, 13172, with similar changes. Both tibiae of 13266 were recovered. Alternatively, the three bones could represent three separate individuals affected by the disease, which commonly affects only a single bone. The cause of the disease is unknown and it may occur without any outward symptoms. It usually affects men over the age of 40 with a rough prevalence of 3% (Ortner and Putschar 1981).

Discussion

In total, 398 separate contexts of human bone were submitted for analysis. These represented 189 articulated burials and 42 disarticulated contexts, together with disarticulated bone from grave fills not identified as such on site. The minimum number of individuals was estimated at 265 (184 articulated, 81 disarticulated). The articulated individuals consisted of 149 adults (26 males, 33 ?males, 54 females, 22 ?females, 14 unsexed) and 35 juveniles. The disarticulated remains contained a minimum of 35 adults and 46 children.

The inclusion of the disarticulated remains places the proportion of children to adults within normal limits. The figure is similar to most local groups including Farmer's Avenue. Patterns of juvenile age distribution and mean age at death are similar to those found in medieval urban churchyards, but this may simply be due to the greater disturbance occurring in urban cemeteries, resulting in the loss of the bones of very young children.

Like Farmer's Avenue, the male to female ratio was abnormally high, but in this case the percentage of females was not quite so great. This group of skeletons is unlikely to represent the true demographic profile of the population from which it is derived, simply because it is a non-random sample of a churchyard which may have been in use for an extended period of time.

There was a significant difference between numbers of males and females in the young/middle-aged group, although this may be explained by the difficulties encountered in ageing some skeletons. The high proportion of young individuals of both sexes in this group was unusual.

Average stature was similar to other contemporary groups, although the northern medieval populations were generally shorter. Saxon groups tend to be slightly taller than medieval groups, and this was found to be the case here. Cranial measurements suggested a difference between the two Norwich groups, largely due to a smaller skull height and larger breadth at Timberhill, which places it closer to medieval than Saxon groups. However, medieval groups, with the exception of The Hirsell, generally had taller and slightly broader skulls than those available for measurement at Timberhill. In terms of femoral robusticity, the Timberhill group was

slightly more robust than the Farmer's Avenue people, and their arms were longer in relation to their legs.

A comparison with Farmer's Avenue suggested that the Norwich sites were essentially very similar in their non-metric trait frequencies. Timberhill was statistically significantly different from sites in Brandon, Burgh Castle, Ipswich and York, despite the similarity of the Farmer's Avenue group to the Saxon group at Fishergate, York.

Non-metric traits also provided some evidence for possible family groupings in this cemetery. Groups were suggested in the north-west, south-west and south-east corners of the cemetery, although the limits of groupings were not so easily discernible as those at Farmer's Avenue owing to the continual re-use of these areas. Generally, the non-metric trait frequencies were unremarkable and little difference was found between the sexes.

Patterns of dental disease were remarkably similar to those found at Farmer's Avenue, although the prevalences of ante-mortem tooth loss and caries were slightly higher at Timberhill. In comparison with other groups the prevalences of these two diseases were within normal limits, whilst the prevalence of abscesses was relatively high. Once again, older individuals and men were most affected by dental disease. Patterns and frequencies of calculus and enamel hypoplasia were within the expected range.

Congenital anomalies were relatively common in this group, and particularly involved the axial skeleton. Distribution of spondylolysis and spina bifida occulta within the cemetery suggested some possible family groupings.

Degenerative disease was less common in this group than at Farmer's Avenue, perhaps due to the greater percentage of young individuals at Timberhill. Arthritis and osteophytosis was most common in the spine and the shoulders in both sexes. Fewer differences were found between men and women in this group.

Diseases of the spine were common, although less so than at Farmer's Avenue, which had a very high prevalence in comparison with contemporary groups in the region. In contrast, most medieval groups showed similar patterns of spinal pathology to Timberhill.

Prevalence of lesions associated with iron deficiency anaemia was similar at Timberhill and Farmer's Avenue, but at both sites the frequencies were considerably higher than those of contemporary groups. There was also some evidence for vitamin D deficiency in the form of rickets, although the pathological changes were not conclusive. Hyperostosis frontalis interna affected two women, and senile osteoporosis was present in eight individuals. Levels of iron deficiency anaemia in this group may be related to high levels of infectious disease, but this would not seem to be the case at Farmer's Avenue, at least in terms of infections which leave traces in bone.

An interesting example of a circulatory disturbance was found in one skeleton, a case of Perthes disease. Other aseptic necroses included Scheuermann's disease of the vertebrae, and the more common osteochondritis dissecans.

High levels of inflammatory change in the lower leg bones were probably related to the presence of leprosy in this group, which had a relatively high prevalence of nearly 20%. The frequency in this group was close to that found in a leper hospital in Chichester and suggests

the possibility that this churchyard may have served a nearby, but if so unidentified, leper house. Non-metric trait evidence suggests that lepers may have been brought back into their family groups for burial. Evidence for other infections was less easily interpreted, but there were probably cases of osteomyelitis, tuberculosis and possibly syphilis, as well as more common non-specific infections and sinusitis. Study of the latter suggests a difference between the two contemporary groups which seems unlikely to be explained by varying degrees of atmospheric pollution and respiratory disease in the town.

In contrast to Farmer's Avenue, it was the less serious types of injury which were the most common traumatic lesions in this group. Exostoses and osteochondritic lesions were particularly common in the lower legs and feet. Fractures, on the other hand, were more frequent in the upper half of the body, particularly in the hands, forearms and ribs. One particularly interesting case was a fracture of the elbow which had not healed, producing a pseudarthrosis of the ulna olecranon fossa.

Only benign neoplasms were found in this group, occurring in the form of ivory osteomata and osteochondromata.

Miscellaneous lesions included stress-related abnormalities of the legs and feet, a possible case of poliomyelitis, two examples of non-union of the acromial epiphysis, and at least two cases of Paget's disease.

In conclusion, the results of this analysis suggest a basic physical similarity between the people buried at St John's (Timberhill) and their local contemporaries, as well as a probable genetic affinity with the group at Farmer's Avenue. In some respects, the results seem to indicate that these skeletons belong to the period of cross-over between Saxon and medieval society. Their physical type, although similar to other Late Saxon groups, is sometimes closer to that of later populations, and their dental pathology could easily fit either time period. Much of their stress-related pathology reflects a similar lifestyle to that seen at Farmer's Avenue.

In terms of the cemetery itself, the closely packed nature of the graves suggests the beginnings of a more urban, medieval, style of churchyard burial with little room for expansion, but this could equally be the result of a continuing wish to remain with one's family after death.

The greatest difference between this cemetery and others of similar date and status is the presence of large numbers of individuals who probably suffered from leprosy. This suggests a tolerance for the disease which is not usually associated with later medieval people. The more normal pattern is to find one or two lepers in a group of this size, unless the cemetery is associated with a hospital. In many cases their disease must have been obvious to anyone who saw them, although it is possible that they remained with and were cared for by their families. At least one leper may have belonged to a high status family: the sub-adult, 13055, was buried within a stone-lined grave, presumably because of this status rather than any desire to isolate the body. Their presence in this cemetery may be related to the fact that they pre-date the earliest known foundation of a leper hospital in Norwich, and the concentration of the disease, which was not present at Farmer's Avenue, tends to suggest either an unknown leper house or, perhaps less likely, a very localised outbreak of the disease before one was founded.

Further discussion on this important issue appears in Chapter 4.VI.

Radiocarbon Dating

by Alex Bayliss, Elizabeth Shepherd Popescu, Gordon Cook, Christopher Bronk Ramsey and Nancy Beavan-Athfield
(Figs 4.125–4.135)

Introduction

The possibility of using radiocarbon dating to address questions of chronology raised by the Castle Mall excavations was initially considered in 1996. The recent introduction of Bayesian methodology for the analysis of radiocarbon evidence combined with the archaeological evidence (Bronk Ramsey 1995; Buck *et al* 1996), suggested that a more refined chronology might be produced which could be useful in the period in question. This project was one of the first where such an approach was adopted for deposits of this date and should be regarded as something of a test case.

An initial series of radiocarbon samples from Castle Mall was submitted to address two chronological problems:

1. to determine the date of the small group of displaced human remains (a minimum of 43 individuals) within the confines of the later castle barbican (Cemetery 2, Chapter 4.II, Period 1.1). These had been disturbed by later activity, only one burial remaining *in situ*, and could have dated from the prehistoric to post-medieval periods;
2. to refine the dating of the densely-packed cemetery of St John (Timberhill) (Cemetery 4, Chapter 4. II, Period 1.4 and 4.2; formerly St John de Berstrete). A post-Conquest date for this part of the cemetery seemed fairly secure on both artefactual and stratigraphic grounds (late 11th/12th to 14th century+). The most unusual aspect of this cemetery is the presence of a high level of leprosy, which may indicate a connection with a leper hospital (Anderson, above). The geographical position of this 'leper cemetery' within the medieval city was intriguing and led to the objective of dating the burials more closely. Leper hospitals are interpreted as a Norman introduction (Rawcliffe 1995, 27) and were normally placed outside towns.

Due to the unexpected results produced by the first series of samples which brought into question the ceramic dating sequence (see below), a second set of samples was submitted. These samples were designed:

1. to investigate more closely the date of a number of graves apparently cutting into late 12th- to 13th-century fills of the Castle Fee boundary ditch in the eastern part of the Timberhill cemetery;
2. to resolve the apparent anomaly between an ansate brooch of 8-9th century type which accompanied one burial in the Farmer's Avenue cemetery (Cemetery 3) and the associated ceramic assemblage which suggested a late 10th- to mid 11th-century date. Much of this cemetery of 89 graves was subsequently sealed by the castle's south bailey rampart (c.1094–c.1122).

Sampling

The initial series of sixteen samples from St John's cemetery was submitted to the Oxford Radiocarbon Accelerator Unit. All samples were bones from articulated skeletons. These were selected to provide dates on as many lepers as possible, whilst maintaining a representative spatial coverage of the excavated area and targeting burials in stratigraphic sequences. Burials lying in sequences were selected preferentially because stratigraphy provides relative dating information which can be combined with radiocarbon evidence using mathematical modelling to produce more precise dating. A model was devised which incorporated the archaeological information along with simulated radiocarbon results (Fig.4.125). This was used to determine the number of samples which should be submitted in the first phase of dating.

Two samples were submitted from the disturbed group of burials within the later barbican area; one came from fills of a mid 14th-century pit and the second was retrieved from a modern service trench.

In the second part of the dating programme, fifteen samples from the Farmer's Avenue cemetery were submitted to the Scottish Universities Research and Reactor Centre at East Kilbride. At the same time, two additional samples from graves in the Timberhill cemetery above fills of the Castle Fee ditch were also submitted.

Radiocarbon Analysis and Quality Assurance

Thirty-six radiocarbon age determinations were obtained on samples of human bone between 1996 and 1998. Nineteen were processed by the Oxford Radiocarbon Accelerator Unit and measured using Accelerator Mass Spectrometry. Samples were prepared using the methods outlined in Hedges *et al* (1989, 102) and measured according to procedures outlined in Hedges *et al* (1992) and Bronk Ramsey and Hedges (1997). Unfortunately, this analysis coincided with a major technical breakdown at Oxford which led to the large variation in the error terms quoted. One sample (46038/46057; OxA-6387-8) was measured in replicate. The two measurements are not statistically significantly different ($T^2=2.7$; $T^2(5\%)=3.8$; $\nu=1$; Ward and Wilson 1978). Seventeen samples were processed by the Scottish Universities Research and Reactor Centre at East Kilbride. These were prepared using the methods outlined in Stenhouse and Baxter (1983) and measured using liquid scintillation spectrometry (Noakes *et al* 1965).

In 1998, when the second series of radiocarbon samples was submitted, stable isotope measurements for dietary studies were commissioned. Measurements on the samples from the Timberhill cemetery dated at Oxford were made at the Rafter Radiocarbon Laboratory, Lower Hutt, New Zealand, using methods outlined in Beavan-Athfield (2000). Measurements on the samples dated at East Kilbride were made in the same laboratory using methods outlined in Cook *et al* (forthcoming). Two $\delta^{13}\text{C}$ measurements are quoted; that measured by the radiocarbon laboratory during dating used for fractionation correction on the radiocarbon age, and that processed in a closed combustion system. Stable isotopes were not measured on the two samples of bone from beneath the castle barbican. Stable isotope measurements used δAIR as the nitrogen standard and PDB for carbon.

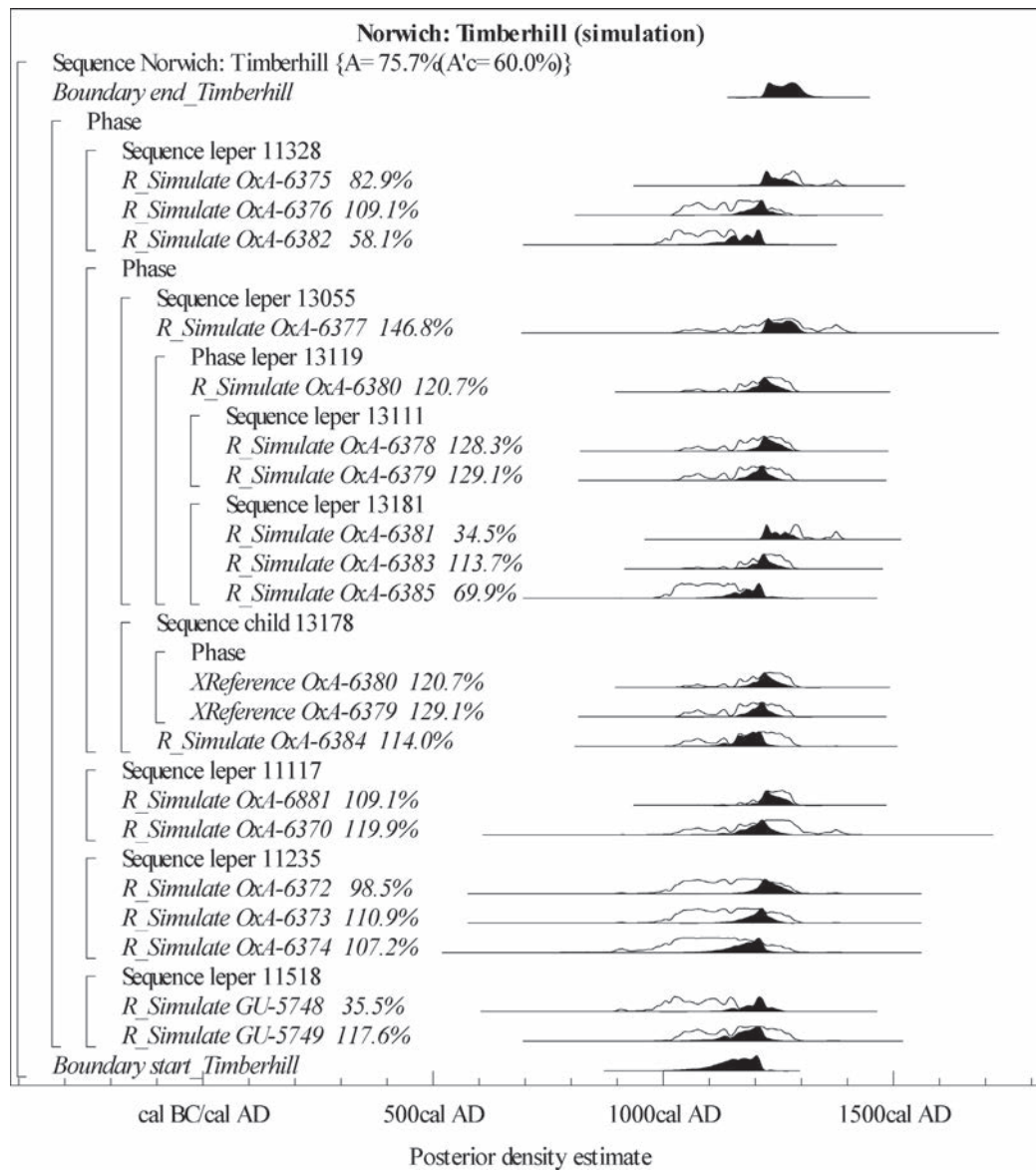
Both dating laboratories maintain continual programmes of quality assurance procedures, in addition to participation in international intercomparisons (Scott *et al* 1990; Rozanski *et al* 1992; Scott *et al* 1998). These tests indicate no laboratory offsets and demonstrate the validity of the precision quoted.

Results

The results are given in Table 4.61, and are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). They are conventional radiocarbon ages (Stuiver and Polach 1977). The results of the two sets of $\delta^{13}\text{C}$ measurements and the $\delta^{15}\text{N}$ measurements also given in Table 4.61.

The calibrations of these results, relating the radiocarbon measurements directly to calendar dates, are given

in Table 4.61, in black in Fig.4.126, and in outline in Figs 4.125, 4.127, 4.129–4.131, and 4.133–4.134. All have been calculated using the calibration curve of Stuiver *et al* (1998) and the computer program OxCal (v3.5) (Bronk Ramsey 1995; 1998; 2000). The calibrated date ranges cited in the text are those for 95% confidence. They are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years. The ranges quoted in italics are *posterior density estimates* derived from mathematical modelling of archaeological problems (see below). The ranges in Table 4.61 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986), all other ranges are derived from the probability method (Stuiver and Reimer 1993).



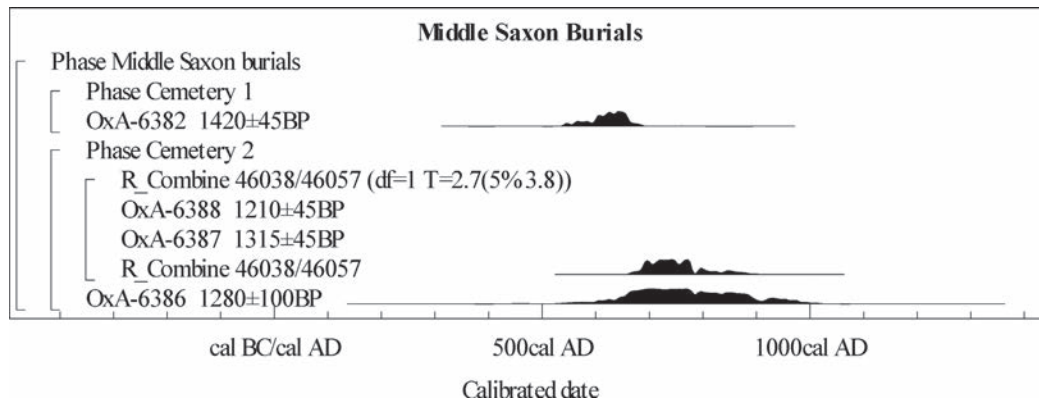
Each distribution represents the relative probability that an event occurs at a particular time. For each radiocarbon date, two distributions have been plotted: one in outline which is the result of simple radiocarbon calibration, and a solid one based on the chronological model; the 'event' associated with (for example) OxA-6735 is the growth of the bone which was dated. The other distributions correspond to aspects of the model. For example, the distribution 'start_Timberhill' is the posterior density estimate for the date when burial started on the site. The large square brackets down the left hand side and the OxCal keywords define the model exactly

Figure 4.125 Probability distributions of simulated dates from Cemetery 4, Timberhill (using the anticipated date range of the cemetery of AD 1130–1290)

Laboratory Number	Context	Radiocarbon Age (BP)	δC (‰) (fractionation correction)	δC (‰)	δN (‰)	Calibrated date range (95% confidence)	Posterior density estimate (95% probability)
Timberhill (Cemeteries 1 and 4)							
OxA-6370	11116, young female	950±90	-19.8	-18.8±0.3	9.8±0.3	cal AD 890–1280	cal AD 990–1040
OxA-6881	11117, ?male, 16–20? years, leper	930±40	-18.5	-18.2±0.3	11.4±0.3	cal AD 1020–1220	cal AD 990–1050
OxA-6374	11245, young or middle aged female	1120±100	-19.4	-17.8±0.3	11.5±0.3	cal AD 680–1160	cal AD 980–1030
OxA-6373	11235, young female, leper	1070±90	-19.3	-18.7±0.3	10.8±0.3	cal AD 720–1170	cal AD 990–1030
OxA-6372	11187, child, 10–12 years	970±90	-19.7	-19.0±0.3	10.5±0.3	cal AD 890–1260	cal AD 990–1040
OxA-6375	11290 (13008), middle aged? female	1060±90	-19.1	-19.9±0.3	10.9±0.3	cal AD 770–1190	cal AD 990–1040
OxA-6376	11328 (13009), unsexed, c 16 years, leper	1040±90	-18.6	-17.0±0.3	11.7±0.3	cal AD 770–1210	cal AD 980–1030
OxA-6382	13156, child, 10–16 years	1420±45	-20.3	-20.9±0.3	10.7±0.3	cal AD 540–690	–
OxA-6384	13178, child, c 18–24 months	1050±60	-18.6	-20.4±0.3	11.8±0.3	cal AD 880–1160	cal AD 980–1030
OxA-6379	13111, young or middle aged female, leper	1000±90	-19.5	-20.6±0.3	11.4±0.3	cal AD 780–1220	cal AD 990–1030
OxA-6378	13093, young? female?	1130±90	-19.3	-19.1±0.3	12.0±0.3	cal AD 680–1150	cal AD 990–1040
OxA-6377	13055, unsexed, c 16–19 years, ?leper	1130±90	-17.9	-18.8±0.3	13.5±0.3	cal AD 680–1150	cal AD 990–1040
OxA-6380	13119, female?, 25–30 years, ??leper	985±45	-19.7	-19.3±0.3	10.0±0.3	cal AD 980–1160	cal AD 990–1040
OxA-6381	13125, old female	1035±40	-19.9	-20.4±0.3	10.7±0.3	cal AD 890–1150	cal AD 990–1030
OxA-6383	13158, middle aged female	1060±40	-19.7	-20.0±0.3	11.0±0.3	cal AD 890–1030	cal AD 990–1030
OxA-6385	13181, middle aged or old male, ?leper	1035±55	-19.6	-20.0±0.3	10.2±0.3	cal AD 890–1160	cal AD 980–1030
GU-5748	11518, child, 12–15 years, leper	950±60	-19.9	-19.2±0.3	11.5±0.3	cal AD 600–990	cal AD 990–1040
GU-5749	11502, old male	910±70	-20.3	-19.4±0.3	10.8±0.3	cal AD 640–780	cal AD 990–1040
Displaced skeletons beneath Barbican (Cemetery 2)							
OxA-6386	45068	1280±100	-19.3	–	–	cal AD 590–990	–
OxA-6387	46038	1315±45	-19.3	–	–	cal AD 660–870 *	–
OxA-6388	46057	1210±45	-19.3	–	–	–	–
Farmer's Avenue (Cemetery 3)							
GU-5733	11595, child, 9–10 years	1100±60	-19.0	-19.0±0.3	13.4±0.3	cal AD 770–1030	cal AD 960–1030
GU-5734	11636, young/middle aged male	1070±50	-19.1	-18.7±0.3	10.5±0.3	cal AD 880–1030	cal AD 940–1030
GU-5735	11653, female, 21–25 years	1150±70	-19.2	-19.0±0.3	11.0±0.3	cal AD 690–1020	cal AD 920–1030
GU-5736	11669, young female	1070±60	-18.8	-18.4±0.3	13.9±0.3	cal AD 780–1150	cal AD 940–1020
GU-5737	11689, middle aged female	1070±70	-19.0	-19.2±0.3	10.4±0.3	cal AD 780–1160	cal AD 900–1020
GU-5738	11723, middle aged or old female	1030±50	-19.1	-19.3±0.3	10.1±0.3	cal AD 720–1020	cal AD 970–1040
GU-5739	11775, young or middle aged female	1140±60	-19.1	-19.7±0.3	9.9±0.3	cal AD 890–1150	cal AD 920–1030
GU-5740	11806, young ?male	1050±50	-18.7	-19.0±0.3	11.7±0.3	cal AD 880–1030	cal AD 940–1020
GU-5741	22031, old female	1070±50	-18.8	-18.9±0.3	11.3±0.3	cal AD 890–1190	cal AD 940–1030
GU-5742	22116, child, 10–11 years	1000±60	-19.4	-18.7±0.3	11.9±0.3	cal AD 620–1150	cal AD 960–1040
GU-5743	60381, middle aged or old female	1200±120	-19.9	-20.4±0.3	9.3±0.3	cal AD 900–1160	cal AD 920–1030
GU-5744	60458, middle aged or old female	1000±50	-19.3	-19.5±0.3	10.1±0.3	cal AD 900–1160	cal AD 960–1040
GU-5745	60466, middle aged or old female	1040±80	-19.6	-19.1±0.3	9.6±0.3	cal AD 780–1190	cal AD 940–1040
GU-5746	60502, female, 35–40 years	950±50	-19.4	-19.4±0.3	10.6±0.3	cal AD 990–1220	cal AD 970–1050
GU-5747	60541, middle aged or old male	1090±70	-19.8	-21.2±0.3	7.2±0.3	cal AD 770–1150	cal AD 930–1030

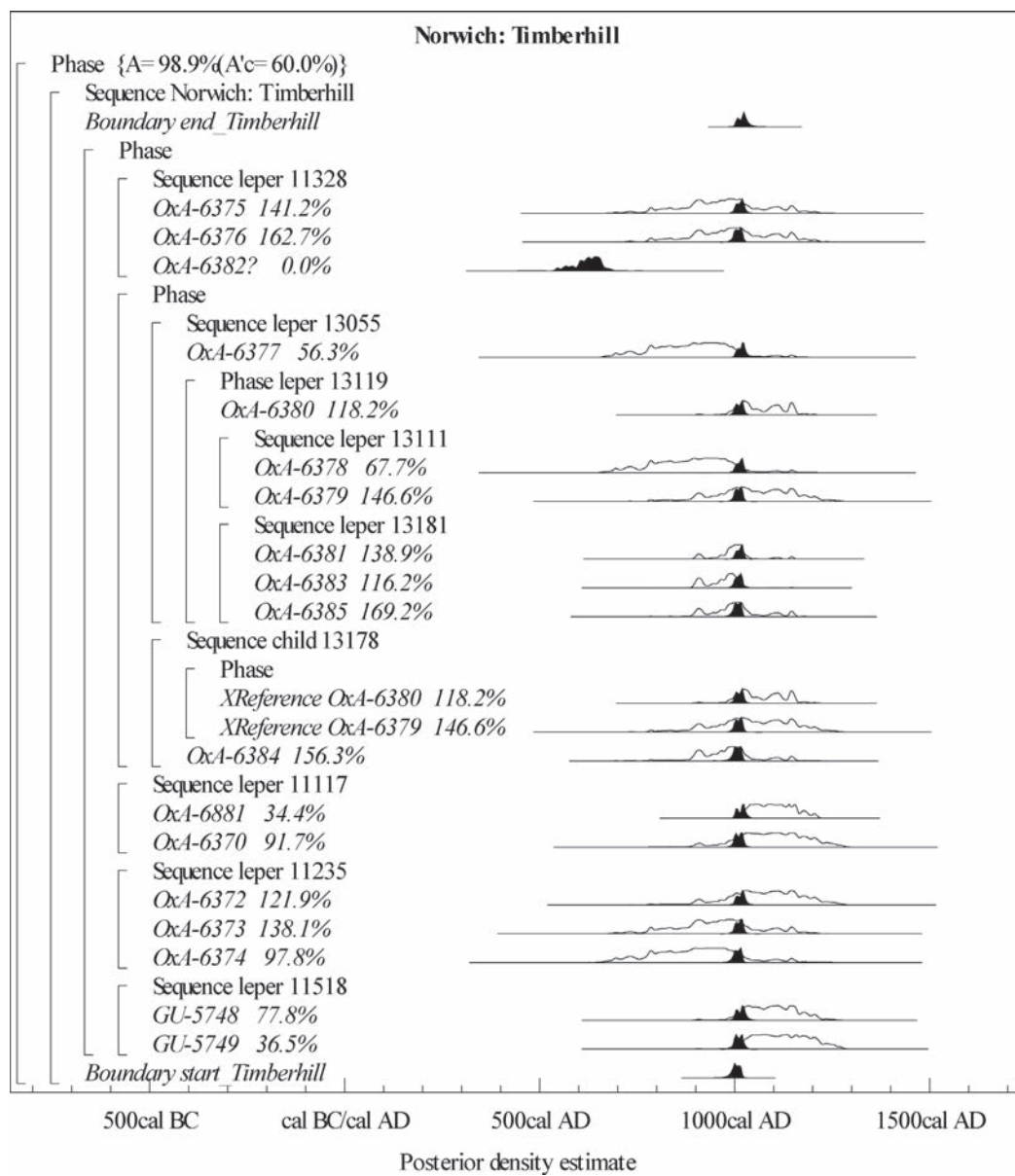
* Calibration of the weighted mean of OxA-6387–8, replicate measurements on the same individual (1263±32 BP; $T^*=2.7$; $T(5\%)=3.8$; $v=1$; Ward and Wilson 1978)

Table 4.61 Results of radiocarbon and stable isotope analyses



Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).

Figure 4.126 Probability distributions of radiocarbon dates from Middle Saxon burials (Cemeteries 1 and 2) at Castle Mall



The format is identical to that of Fig. 4.125. Measurements followed by a question mark have been excluded from the model for reasons explained in the text, and are simple calibrated dates (Stuiver and Reimer 1993). The large square brackets down the left hand side and the OxCal keywords define the model exactly.

Figure 4.127 Probability distributions of dates from Cemetery 4, Timberhill

Analysis and Interpretation

Although the simple calibrated dates are accurate estimates of the dates of the samples, this is usually not what archaeologists really wish to know. It is the dates of the archaeological events which are represented by those samples which are of interest. In the case of the St John's (Timberhill) and Farmer's Avenue cemeteries, it is the chronology of burials which is under investigation. The dates of this activity can be estimated not only using the absolute dating information from the radiocarbon measurements on the skeletons, but also by using the relative dating information provided by stratigraphy.

Fortunately methodology is now available which allows the combination of these different types of information explicitly, to produce realistic estimates of the dates of archaeological interest. It should be emphasised that the distributions and ranges produced by this modelling are not absolute, they are interpretative *estimates*, which can and will change as further data becomes available and as other researchers choose to model the existing data from different perspectives.

The technique used is a form of Markov Chain Monte Carlo sampling, and has been applied using the program OxCal v3.5 (<http://www.rlaha.ox.ac.uk/>), which uses a mixture of the Metropolis-Hastings algorithm and the more specific Gibbs sampler (Gilks *et al* 1996; Gelfand and Smith 1990). Details of the algorithms employed by this program are available from the on-line manual or in Bronk Ramsey (1995; 1998), and fully worked examples are given in the series of papers by Buck *et al* (1991; 1992), Buck, Litton *et al* (1994), and Buck, Christen *et al* (1994). The algorithms used in the models described below can be derived either from the structures shown in Figs 4.125, 4.127, 4.129–4.131 and 4.133–4.134, or from the chronological query language files which are contained in the project archive.

Replicate radiocarbon measurements on the same sample have been combined before calibration by taking a weighted mean, and the consistency of groups of results which are, or may be, of the same actual age has been tested using methods outlined by Ward and Wilson (1978).

This section concentrates on describing the archaeological evidence which has been incorporated into the chronological models, explaining the reasoning behind the interpretative choices made in producing the models presented. These archaeological decisions fundamentally underpin the choice of statistical model.

Archaeological interpretation

Cemeteries 1 and 2: Early to Middle Saxon

It is immediately apparent that there are early burials on the site. A single Early to Middle Saxon date (mid 6th to 7th century, Cemetery 1) was obtained on a child burial from the Timberhill cemetery (OxA-6382; skeleton 13156, grave 13157; Fig.4.126). Statistically, a 7th-century date appears probable.

The Timberhill burial (13156) is suggested as a possible member of a related grouping (Anderson, above and 'Family 8', Chapter 4.II, Period 1.4) on the basis of parietal notch bones, other non-metric traits, and congenital anomalies. However, the result from this skeleton is statistically significantly different from the other postulated member of this 'family' to have been radiocarbon

dated (11328; $T^*=13.9$; $T^*5\%=3.8$; $\nu=1$; Ward and Wilson 1978). In fact, a comparison of the probability distributions of the calibrated dates suggests that burial 13156 is over 150 years earlier than burial 11328: as noted by Anderson above, however, a family connection remains possible (see also Chapter 4.VI).

Prior to the Castle Mall excavation, the only other radiocarbon dated burial from central Norwich with a possible Early/Middle Saxon date came from the cemetery at St Martin-at-Palace Plain, where the earliest recorded burial was radiocarbon dated (OxA-2320) and yielded a range of 1460±90, AD 400–770 (95% confidence; Beazley 2001, 48). At Timberhill, the continuation in use of the cemetery appears unlikely (less than 1% probable; Fig.4.126) because there do not appear to be burials in this area spanning the 8th and 9th centuries. These bodies are perhaps best considered as isolated burials, or the remnant of a lost Anglo-Saxon cemetery with the position of the later cemetery above being coincidental.

The disturbed remains from beneath the later castle barbican (Cemetery 2) appear to be the remnants of an 8th- to 9th-century cemetery (Fig.4.126).

Cemetery 3: Farmer's Avenue

All the results from Farmer's Avenue are not statistically significantly different at 95% confidence ($T^*=13.2$; $T^*(5\%)=23.7$; $\nu=14$; Ward and Wilson 1978). This supports the suggestion that this cemetery was in use for a relatively short period of time.

There was little relative stratigraphy within this cemetery, few of the graves being intercutting. However, stratigraphy demonstrated that grave 11805 (GU-5740) is earlier than burial 11724 (GU-5738). A second burial sequence was provided by grave 11690 (GU-5737) which was stratigraphically earlier than grave 11670 (GU-5736). In turn, this burial was overlain by child burial 11595 (GU-5733). This limited stratigraphic sequence has been incorporated with the radiocarbon dates into the model for the cemetery's chronology shown in Fig.4.134. This suggests that the cemetery started in *cal AD 890–1020* (95% probability) and went out of use in *cal AD 980–1060* (95% probability) being in use for *between 1 and 70 years* (68% probability) or *between 1 and 155 years* (95% probability) (Fig.4.135).

This dating demonstrates that the associated ceramics provide a broadly reliable indication of the date of the cemetery's use (despite the conflicting results from Timberhill) and that the ansate brooch was an heirloom. Further consideration of the dating issues is given in Chapter 4.II and VI.

Cemetery 4: St John at the Castle Gate (de Berstrete/ Timberhill)

Stage 1 Analysis: all the other results from St John's cemetery are statistically indistinguishable ($T^*=16.2$; $T^*(5\%)=26.3$; $\nu=16$; Ward and Wilson 1978). However, evidence for relative chronology is provided by the stratigraphy.

In the south-eastern part of the excavated cemetery, burial 13156 (OxA-6382) was sealed by layer 13142, which was in turn cut by the grave for leper 11328 (OxA-6376). Above this was burial 11290 (OxA-6375).

At the southern limit of excavation, possible leper 13181 (OxA-6385) was cut by the grave which contained skeleton 13158 (OxA-6383). Burial 13125 (OxA-6381) was stratigraphically later than this. Burial 13125 was in turn earlier than leper 13055 (OxA-6377). Child burial 13178 (OxA-6384) was cut by a small ditch (13033), which was itself

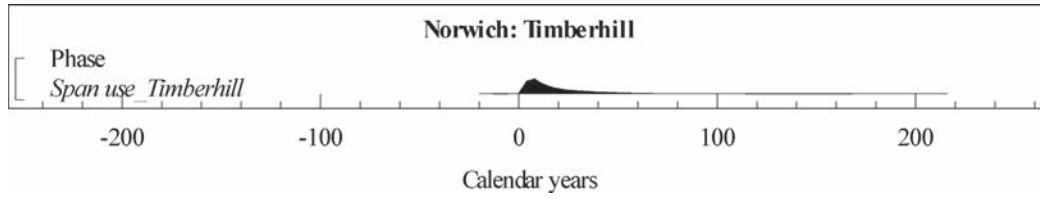
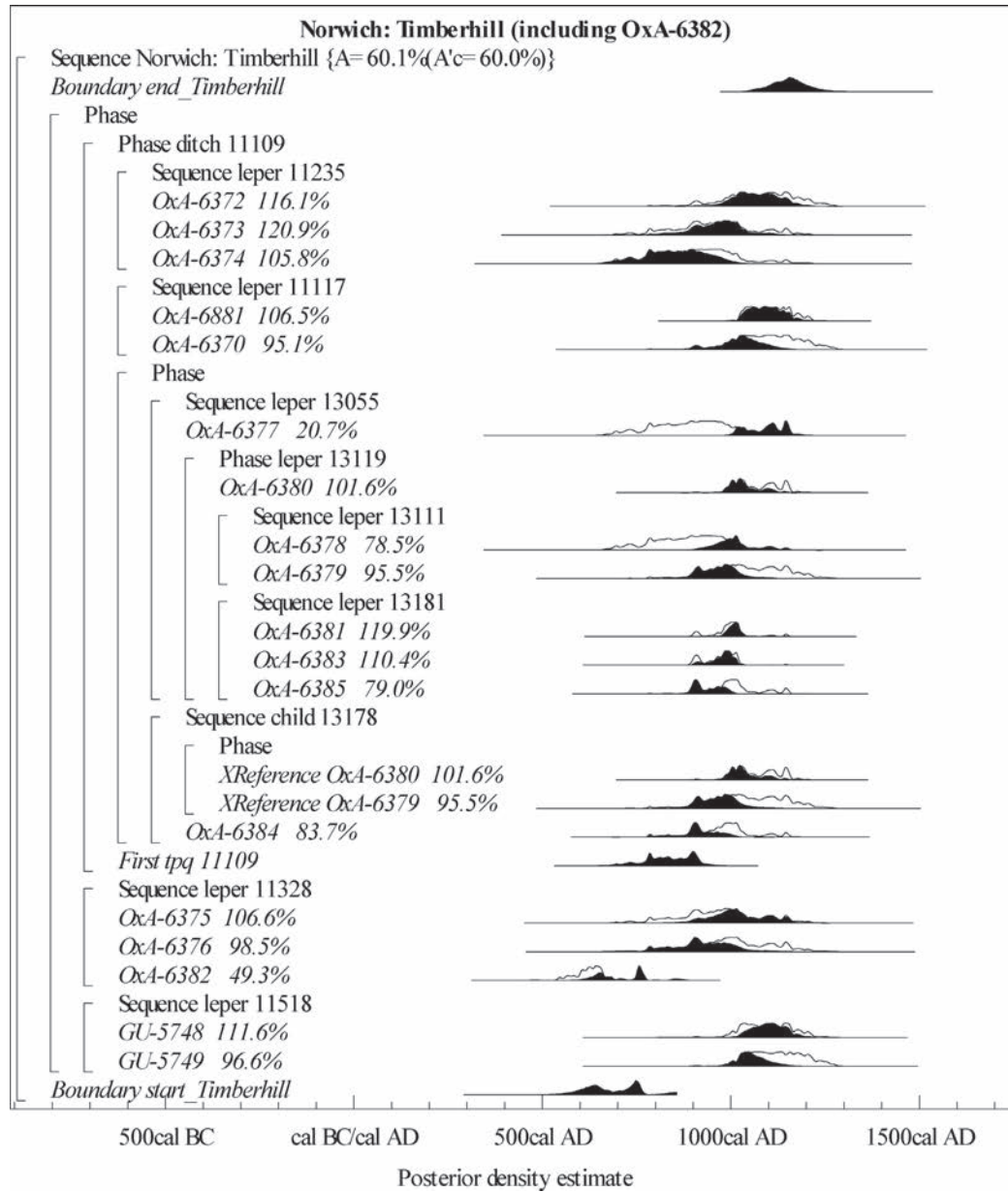


Figure 4.128 Probability distribution showing the number of years during which burial continued at Cemetery 4, Timberhill



The format is identical to that of Fig. 4.125. Measurements followed by a question mark have been excluded from the model for reasons explained in the text, and are simple calibrated dates (Stuiver and Reimer 1993). The large square brackets down the left hand side and the OxCal keywords define the model exactly.

Figure 4.129 Probability distributions of dates from Cemetery 4, Timberhill

cut by leper graves 13111 (OxA-6379) and 13119 (OxA-6380). Burial 13111 was in turn cut by burial 13093 (OxA-6378). Both this burial and 13119 were stratigraphically earlier than leper burial 13055 which lay in a flint-lined grave. This whole sequence cut into fills of ditch 11109 (Ditch 1, Period 1.3) which ran from north-west to south-east beneath the cemetery.

To the north-west, also cutting into fills of ditch 11109 was burial 11116 (OxA-6370) which pre-dated leper 11117 (OxA-6881). Burial 11245 (OxA-6374) was also later than the ditch, but was cut by leper burial 11235 (OxA-6373). This burial in turn was earlier than child 11187 (OxA-6372).

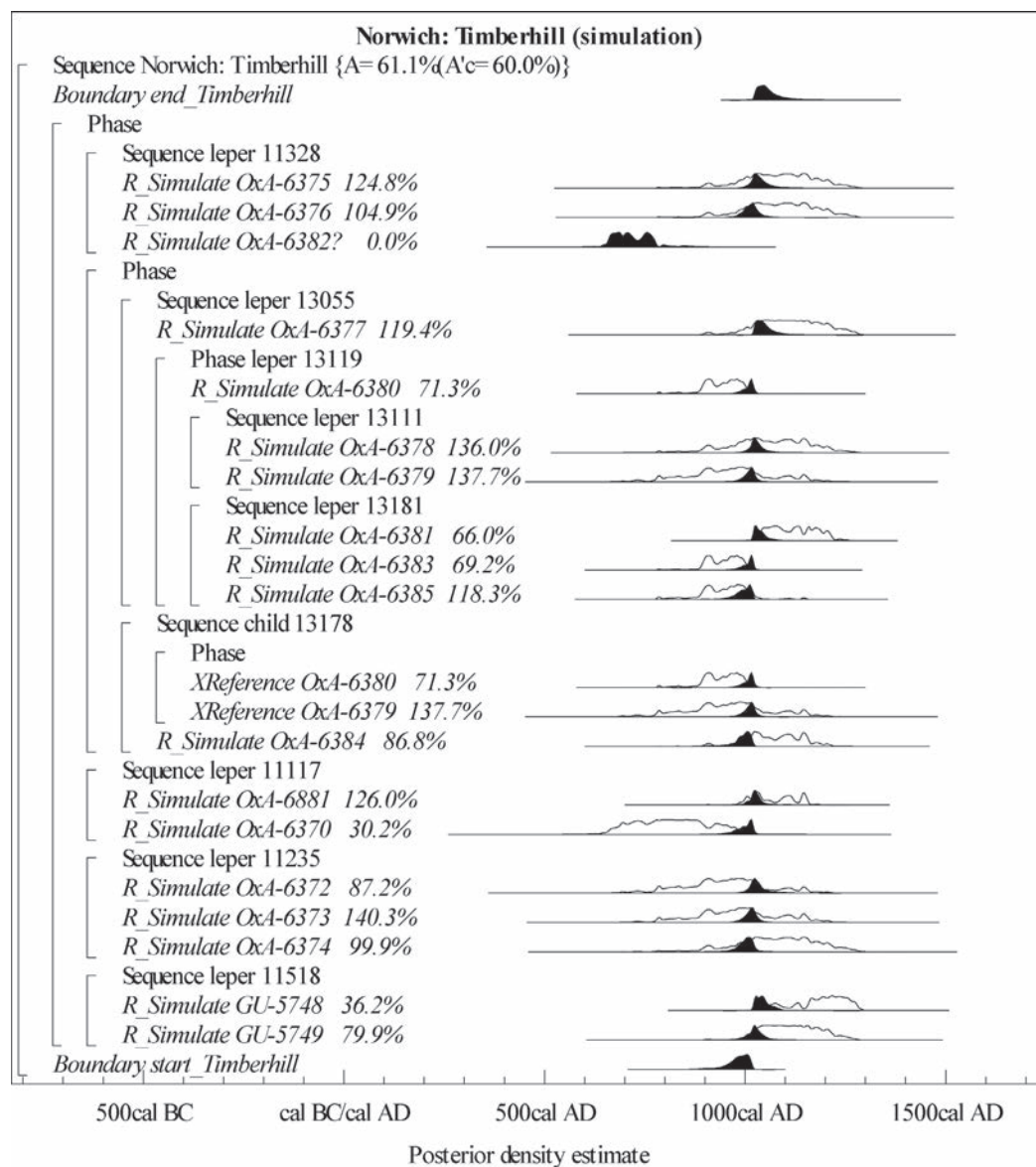
Finally, there are the sequence of burials which were recorded as cutting through fills of the Castle Fee ditch (although this interpretation was later revised — see Chapter 4.VI). Burial 11502 (GU-5749) is earlier than leper 11518 (GU-5748).

All this stratigraphic information has been incorporated into the model for the cemetery's chronology shown in Fig.4.127. In addition, a relatively constant rate of use for the cemetery during the period when it was active has been assumed. This mathematical assumption helps counteract the inevitable scatter on radiocarbon

measurements and the effect of plateaux on the calibration curve, which otherwise would tend to suggest that the cemetery started earlier, ended later, and remained in use for longer than was actually the case (Steier and Rom 2000; Bronk Ramsey 2000).

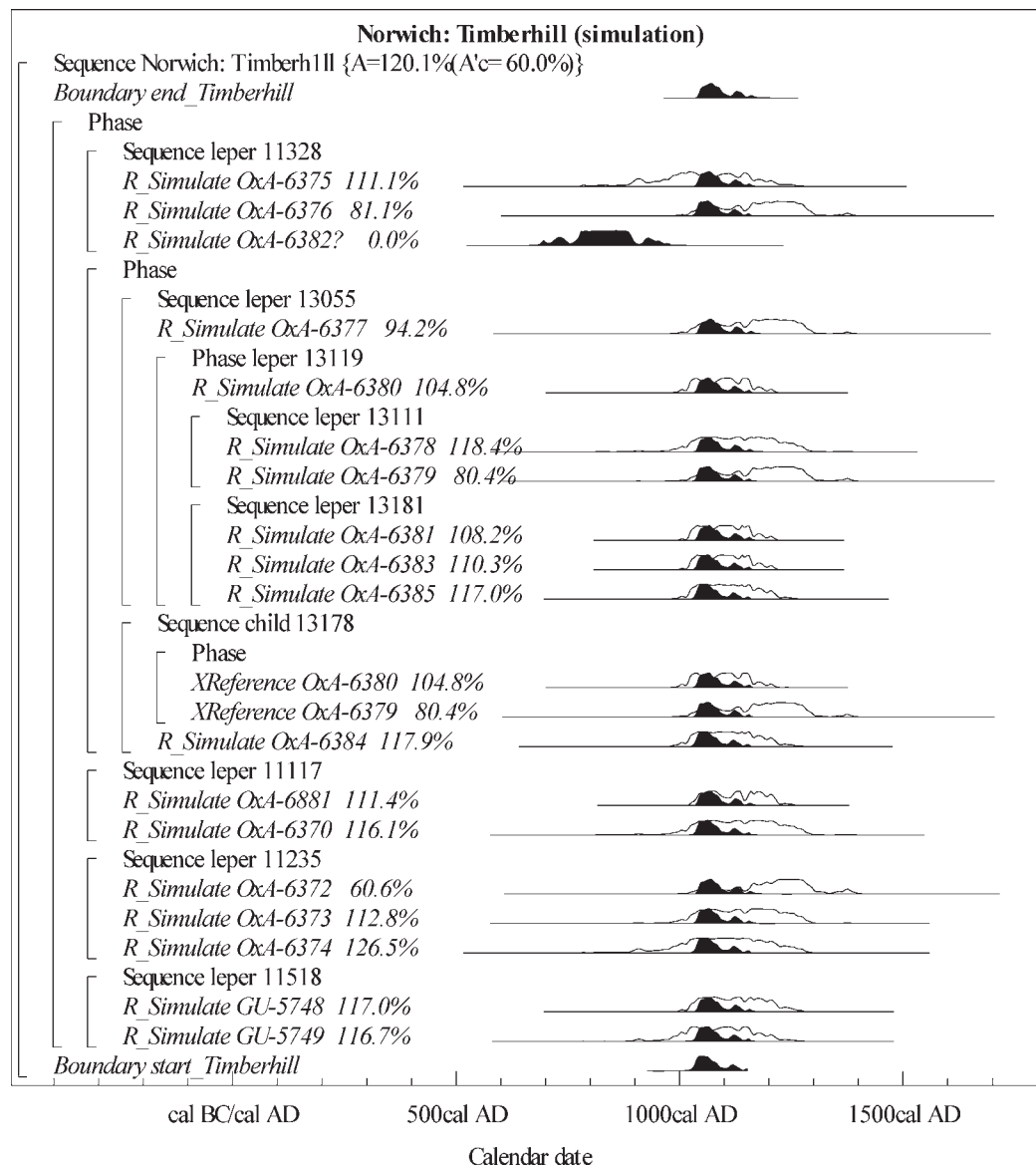
Stage 2 Analysis: from Fig.4.127 it can be seen that the cemetery was in use for an unexpectedly short period of time. The start of burial on the site began in *cal AD 980–1030 (95% probability)* and ended in *cal AD 990–1050 (95% probability)*. The dated burials probably include only one or two generations, the duration of the cemetery being *between 1 and 25 years (68% probability)* or *between 1 and 65 years (95% probability)* (Fig.4.128).

The model presented in Fig.4.127 has been chosen as the most believable representation of the cemetery's chronology from a large number of alternative models which have been created as part of the process of inter-



The format is identical to that of Fig. 4.125. The large square brackets down the left hand side and the OxCal keywords define the model exactly.

Figure 4.130 Probability distributions of simulated dates from Cemetery 4, Timberhill (using the date range AD 990–1040)



The format is identical to that of Fig. 4.125. Measurements followed by a question mark have been excluded from the model for reasons explained in the text, and are simple calibrated dates (Stuiver and Reimer 1993). The large square brackets down the left hand side and the OxCal keywords define the model exactly.

Figure 4.131 Probability distributions of simulated dates from Cemetery 4, Timberhill (using the date range AD 1070–1170)

pretation. This model has been selected for a range of statistical, archaeological, and scientific reasons.

Statistically this model shows good overall agreement ($A_{\text{overall}}=98.9\%$; Bronk Ramsey 1995). It is also consistent with the tight cluster of results from the cemetery (see above), OxA-6382 (the Middle Saxon burial) being a clear outlier. Based on the model shown in Fig.4.127 it appears unlikely that OxA-6382 forms part of the same continuously used cemetery as the other burials (less than 1% probable).

The results are, however, very dependent on the archaeological information which is included in the model, although as this is based on the physical relationships between articulated skeletons this appears to be secure. However it should be noted that, if OxA-6382 is included in the model (Fig.4.129), then the overall agreement is still acceptable although it does reduce considerably ($A_{\text{overall}}=60.1\%$). In this case, the model esti-

mates a considerably earlier start of use (*cal AD 540–780 (90% probability)*), and a considerably later end for the cemetery (*cal AD 1050–1260 (95% probability)*). This is unlikely on archaeological grounds (see below).

The later and shorter chronology suggested by the model described in Fig.4.127 is supported by simulating the model using random radiocarbon results derived from actual calendar dates. Fig.4.130 shows the results if the actual calendar dates of the cemetery are set as AD 990–1040. It can be seen that these results are practically identical to those produced by the model shown in Fig.4.127. Fig.4.131 shows the results if the actual calendar dates of the cemetery are set as AD 1070–1120. The results produced by this simulation are consistently later and less precise than those produced by the alternative models. This suggests that the tight chronology and pre-Conquest dating produced by the selected model is

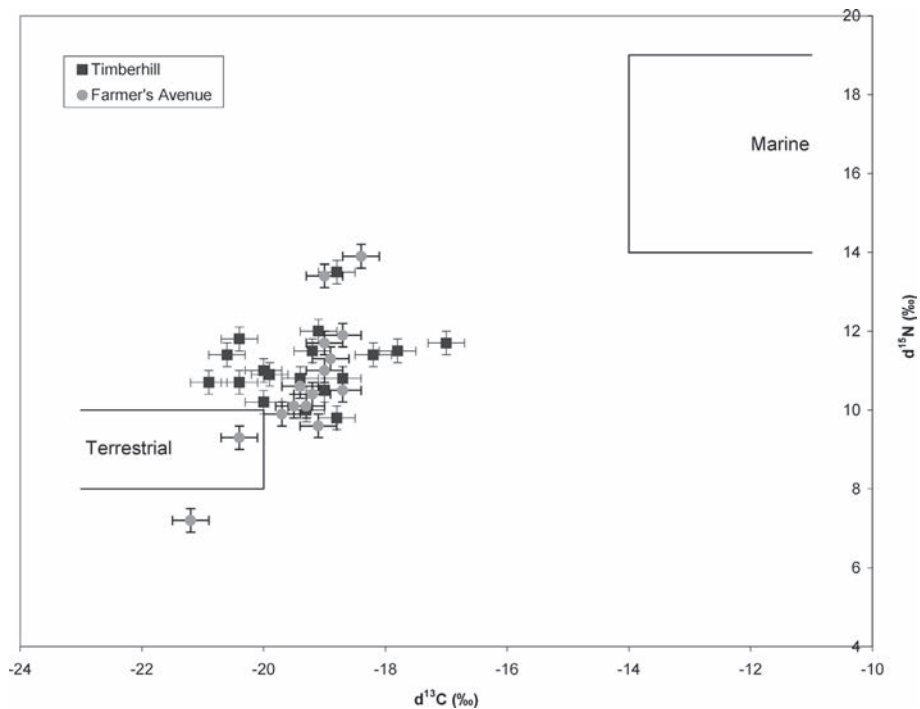


Figure 4.132 Graph of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values of bone collagen from skeletons from Cemetery 4 (Timberhill) and Cemetery 3 (Farmer's Avenue) related to the values expected for archaeological populations consuming pure C3 and marine diets (after Mays 1998)

real and not an artefact of the mathematical assumptions which underlie it.

This earlier dating and shorter chronology suggested by the radiocarbon evidence challenge the initial archaeological interpretation of this cemetery. It is, however, very likely that burial on the site began before the Conquest. A considerable number of burials of pre-Conquest date cut Ditch 1 (11109, Period 1.3–1.4), bringing into question the conventional dating of the ceramic assemblage contained within its fills. The short chronology means that the ceramic assemblage within Ditch 1 (which includes Yarmouth-type ware, a substantial proportion of EMW – including ginger-jars — and EMW/LMU, Lentowicz, Chapter 4.II and 4.III) needs to be placed around half a century earlier, crucially before the Norman Conquest. The model described in Fig.4.129 would demand that this pottery assemblage was earlier than *cal AD 690–1000* (OxA-9374; 95% probability). It is extremely unlikely that the ceramic chronology is incorrect by such a significant amount. An early date for the cemetery is also consistent with other indicators of a pre-Conquest origin (see Chapter 4.VI).

The estimated date for the start of the cemetery shown in Fig.4.127 (*cal AD 980–1030* (95% probability)) is consistent with the archaeological findings from the remainder of the site which implies extensive settlement at this time but not much before *c.*900. The model which includes OxA-6382 as part of the main cemetery would require settlement in the area before this date.

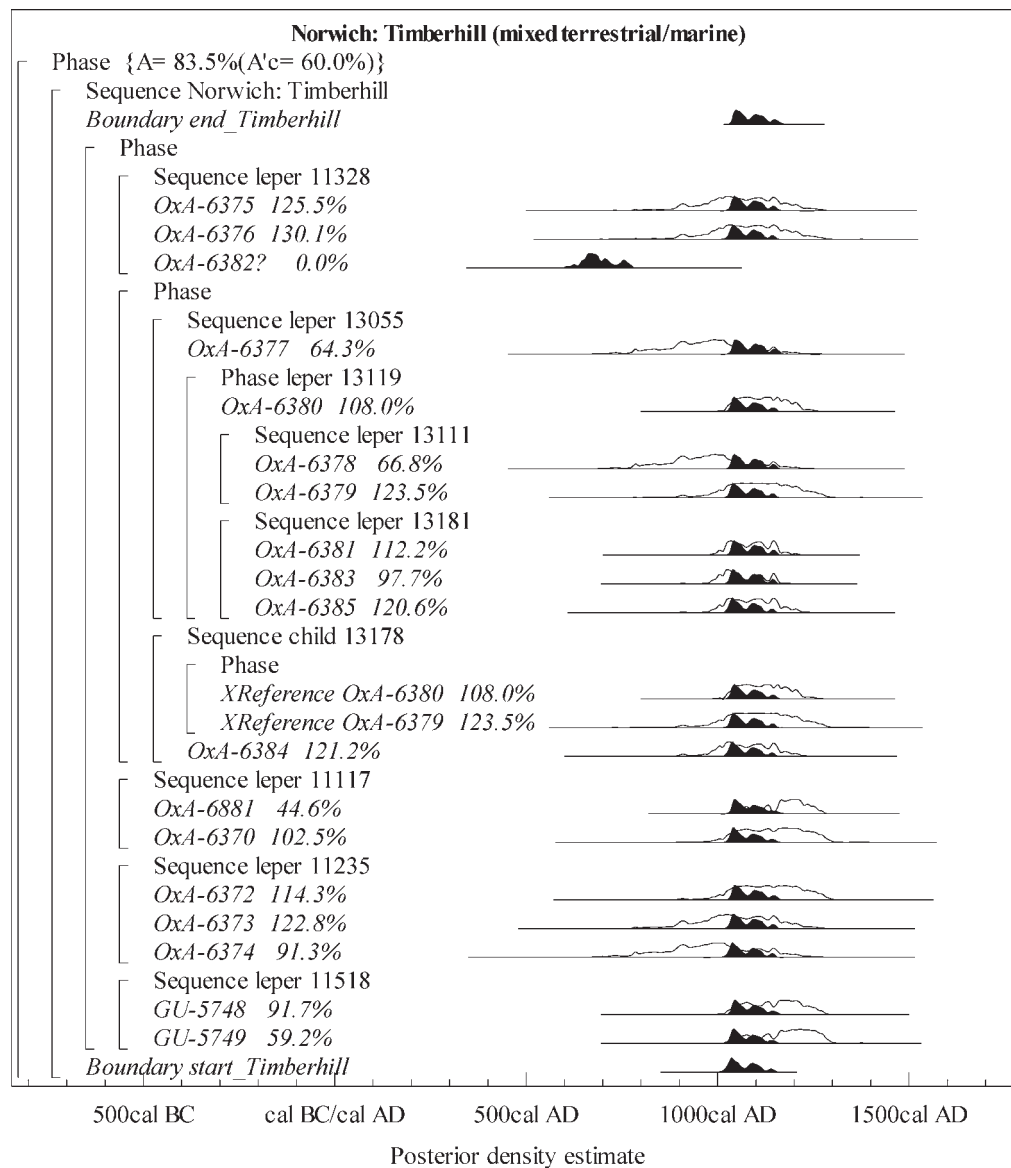
It is the consistency of the archaeological and statistical evidence in supporting the approach to modelling adopted in Fig.4.127 which convinces us of the validity of this model. The short-lived nature and early use of the Timberhill cemetery around the turn of the last millennium, has interesting archaeological implications. The

potential existence of a leper 'colony' during the pre-Conquest period is discussed further in Chapter 4.VI.

In addition to the statistical and archaeological arguments which can be incorporated into our interpretations of the chronology of the cemetery, there is another complication. This relates to the derivation of the collagen within the bones of the individuals who were dated.

Bone collagen is slowly turned over throughout life. The rate of this turnover is poorly understood, but complete replacement may take 10–30 years (Ambrose 1993). Consequently the collagen component of an individual's bones will relate to the total body carbon a decade or more before the individual died. Further complications are introduced by the fact that the proteinaceous component of bone collagen derives principally from the protein component of the diet (Ambrose and Norr 1993). It is the radiocarbon age of this dietary protein which is measured when dating a skeleton.

Some assessment of the sources of the protein component of the diet may be gained by measuring the carbon and nitrogen stable isotope ratios of the dated individuals (Fig.4.132). The Norwich skeletons cluster close to the values expected for individuals with completely terrestrial diets in regions where crops have C3 pathways (Mays 1998, fig 9.2). However, there may be some marine component as the nitrogen values are consistently slightly elevated and the carbon-13 values consistently slightly depleted. Unfortunately the relationship between stable isotopes and diet are complex and not yet fully understood (Schwarz *et al* 1985; White and Schwarz 1989). For example it is difficult to disentangle the marine and freshwater fish components (Schoeninger *et al* 1983). For this reason, estimating the proportion of marine protein in the diet from stable isotope measurements is hazardous. However, to illustrate the effect



The format is identical to that of Fig. 4.125. Measurements followed by a question mark have been excluded from the model for reasons explained in the text, and are simple calibrated dates (Stuiver and Reimer 1993). See the text for details of the atmospheric/marine calibration applied. The large square brackets down the left hand side and the OxCal keywords define the model exactly.

Figure 4.133 Probability distributions of dates from Cemetery 4, Timberhill

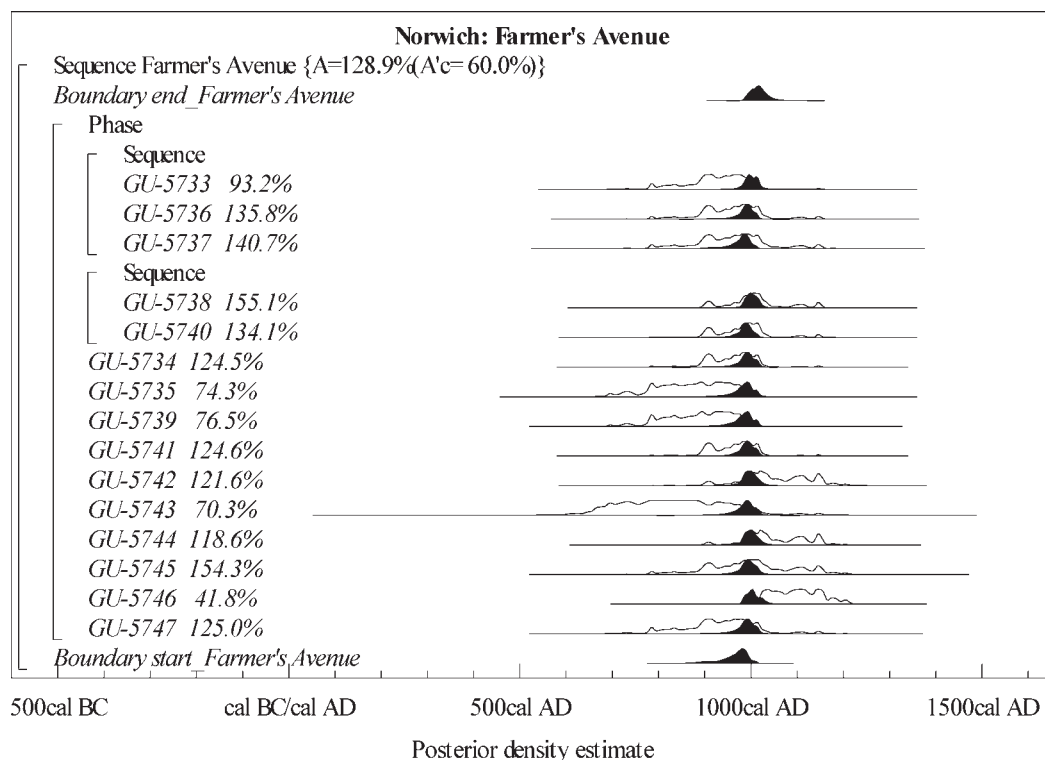
which diet may have on the radiocarbon results, a marine component of $20\pm 5\%$ has been assumed for the Norwich skeletons (Fig. 4.132).

Using this proportion, the atmospheric calibration curve has been mixed with the marine calibration curve (Stuiver *et al* 1998) using a vR value of 5 ± 40 for the coastal waters off England (Stuiver and Braziunas 1993). In this case the model produces the results shown in Fig. 4.133, estimating that the cemetery at St John's (Timberhill) started in *cal AD* 1010–1150 (95% probability) and ended in *cal AD* 1030–1170 (95% probability). The cemetery was in use for a period of between 1 and 20 years (at 68% probability) or 1 and 75 years (95% probability). Using this estimate it is possible that the cemetery began just after the Conquest (46.4% probable).

It must be emphasised that this model is illustrative of the reasons why the diet of the population and the stable isotope values are of critical interpretative signifi-

cance. This model is not to be preferred to that shown in Fig. 4.127, because we simply do not know enough at this stage to be able to correct radiocarbon measurements for dietary effects reliably. This problem is only now being of substantive archaeological significance as increasingly precise chronologies are produced by the integration of the relative dating provided by stratigraphy with the radiocarbon evidence in sophisticated mathematical models (see Bayliss *et al* 2004 for further discussion of these issues).

Whichever model is chosen, this part of the cemetery substantially went out of use before the church is first documented in 1157, and certainly well before the Black Death (1349). Nevertheless it contained 15th-century ceramics, which illustrates the pitfalls of dating medieval cemeteries from the finds recovered in grave deposits (Rodwell 2001, 542–5).



The format is identical to that of Fig. 4.125. The large square brackets down the left hand side and the OxCal keywords define the model exactly.

Figure 4.134 Probability distributions of dates from Cemetery 3, Farmer's Avenue

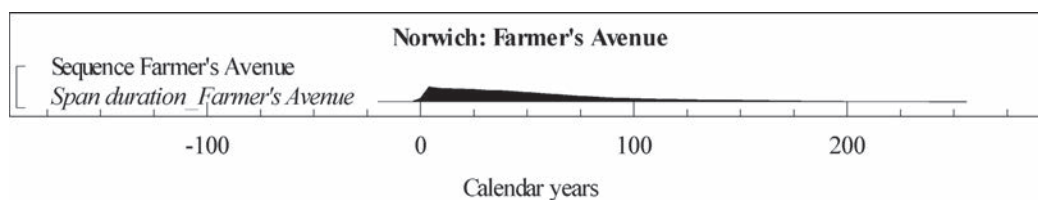


Figure 4.135 Probability distribution showing the number of years during which burial continued at Cemetery 3, Farmer's Avenue

Conclusions

The discovery of two groups of Early/Middle Saxon burials in this area of Norwich was unexpected, as was the early date for the lepers at St John's. These burials appear to be partially contemporary with those from Farmer's Avenue, although the cemetery was in use for less time.

Despite the complexities of the interpretation of the radiocarbon results, they have provided new and fundamental information about the chronology of the cemeteries which would not have been available from any other method. If radiocarbon dating had not been used on these medieval assemblages, then two groups of

early burials would not have been identified and St John's cemetery would have been incorrectly assigned to the high Middle Ages on the basis of artefactual evidence. The results demonstrate both the potential and difficulties of using radiocarbon dating during this period.

Review of Radiocarbon Dates from Site 416N

by Elizabeth Shepherd Popescu and Alex Bayliss
Four samples of charcoal from the north-east bailey excavations were submitted to A.J. Clark at the AML and analysed at AERE Harwell (Site 416N; Ayers 1985, 62). Two came from a pit dated on ceramic grounds to the late 10th century (Period I; although see note in Chapter

Reference	Context	Context type	Radiocarbon age	Weighted Mean	Calibrated date range (95% confidence)
HAR-3585	1465	fill of pit 1396	1170 ± 70 BP	1185 ± 49 BP	cal AD 680–980
HAR-3722	1465	fill of pit 1396	1200 ± 70 BP		
HAR-3656	1115	fill of post-hole 1404 (Building B)	1230 ± 70 BP		cal AD 650–970
HAR-3707	1409	fill of slot 1405 (Building B)	1300 ± 90 BP		cal AD 590–950

Table 4.62 Recalibrated radiocarbon dates from Site 416N north-east bailey

14 about the attribution of a 'late' date) and two others from a post-hole and trench related to the second phase of the church (building B, period III, dated ceramically to the 11th century). The results obtained were re-examined by Alex Bayliss (AML) in 1998 for comparison with the results from Castle Mall. The two measurements from the pit (context 1465) may be combined before calibration by taking a weighted mean ($T' = 0.1$; $T' (5\%) (=3.8)$; $\mu = 1$; Ward and Wilson 1978). The recalibrated results appear in Table 4.62.

The probability that all the charcoal pre-dates AD 1000 is 99.6%, although the species was not identified and if it proves to be from a heartwood timber of a significant age, the results would be invalid. Their probability distributions (held in a figure in the Castle Mall archive) make them more likely to be 8th- or 9th-century, although the wood-offset problem must be noted. This date does not necessarily contradict the ceramic evidence which indicates a 10th-century date: they certainly do not suggest anything more specific than a Middle to Late Saxon date.

DNA Analysis

by Ana Töpf
(Figs 4.136–4.138)

Introduction

DNA analysis of 59 dental samples from the Middle Saxon group (Cemetery 2) and the two Late Saxon groups at Farmer's Avenue (Cemetery 3) and St John's (Cemetery 4) was attempted, although the latter group was later excluded from analysis as none of these particular samples yielded authenticated DNA.

Several biomolecules, such as bone proteins, lipids and nucleic acids can be preserved in archaeological remains. Among these, analysis of the DNA molecule takes a special place due to its biological function, as it contains the genetic information. Thus, analysis of DNA allows a direct investigation to the genetic composition of ancient populations.

For a long time, long-term DNA-preservation was not expected in archaeological remains, as it was believed that total degradation occurred soon after death. When an organism dies, deprived of the *in vivo* repair systems, hydrolytic and oxidative processes damage its genetic material, leading to the degradation of the DNA molecule to small fragments (Lindahl 1993). However, the use of very sensitive protocols proved that these short DNA strands can still be recovered and are available for analysis. In particular, the field of molecular archaeology was boosted by the invention of the PCR (Polymerase Chain Reaction technique; Mullis and Faloona 1987). This molecular technique allows the quantitative amplification of specific DNA regions starting from just a few DNA molecules. Since then, it has been possible to detect and characterize minimal traces of DNA; theoretically, one single intact unit (molecule) has to be present for a positive result, which provides enough material to enable one to compare the nucleotide sequences of ancient human DNA with comparable sequences in living humans.

In a mammalian cell, most of the genetic material is located in the nucleus. In addition, a separate compartment, the mitochondria, also contains DNA; this DNA encodes for proteins involved in processes which occur

inside the mitochondria. Whereas there are two copies of DNA in the nucleus (each one inherited from each parent), there are >500 in the mitochondria (Robin and Wong 1988). This makes mitochondrial DNA (mtDNA) more likely to be isolated from archaeological material. In addition, mitochondrial DNA analysis is a useful tool in genetic population studies due to its high mutation rate (Brown 1979). This means that mitochondrial DNA evolves rapidly, giving rise to much variation between the mtDNA sequences from different individuals. Diversity in mitochondrial DNA sequences contains information on human population histories and evolutionary processes. Molecular analyses have shown that most of human mtDNA sequence variation has been accumulated sequentially from sets of mtDNA founders, during the process of human colonization of different geographical regions. Hence, mtDNA haplotypes are often found to be geographically or ethnically specific so that some mtDNA types may be used as 'markers' or labels for specific populations. In addition, mitochondrial DNA is inherited maternally (Giles *et al.* 1980), as opposed to nuclear DNA which is inherited from both parents and undergoes recombination. Thus, relationships between mtDNA haplotypes can be traced phylogenetically to reconstruct maternal genealogies. Of particular relevance for the analyses of Anglo-Saxon material, is a set of mtDNA types (haplogroup) which have been found to be Scandinavian-British Isles specific (Helgason *et al.* 2000; Töpf 2003).

Methods

Samples

Teeth were chosen as a tissue for the DNA extraction due to their unique histological and anatomical organization. Dental hard tissue physically encloses the pulp, offering a structure of great durability. Dentine and enamel provide a protective enclosure, which prevents degradation due to microbial attack (Smith *et al.* 1993). Contamination of inner tissues *in situ* or during excavation and curation is unlikely given the impermeability of the enamel. The soft tissue within the pulp cavity consists of odontoblasts, fibroblasts, endothelial cells, peripheral nerve cells and nucleated components of blood (Frick *et al.* 1991). The coronal pulp chamber is the main target for DNA sampling, as cell remnants of the pulp may remain attached to the chamber walls, allowing recovery by grinding (Drancourt *et al.* 1998). Hard dental tissue can also be used as additional source of DNA. Hydroxiapatite, a compound that binds and thus preserves DNA is present at higher concentrations in dentin than in bone, making it potentially a good source of ancient DNA (DeGusta *et al.* 1994). A total of 120 dental samples, accounting for 59 skeletal remains from the Farmer's Avenue cemetery (Cemetery 3) and one burial from Middle Saxon Cemetery 2, were used for the DNA analyses.

Preparation of the samples

To eliminate possible external contamination teeth were cleaned by soaking in 3% hydrogen peroxide for 30 minutes (Ginther *et al.* 1992), rinsed and air-dried, and exposed to Ultra Violet light for 20 min (Sarkar and Sommer. 1993). Dental samples were broken lengthwise using a manual vice. Fine-powdered pulp was

collected by grinding the walls of the pulp chamber with an electric drill. Several fractions were collected. The remaining parts of the tooth (excluding the enamel) were also ground down. A total of 310 fine-powdered dental material samples were subjected to the DNA extraction protocol.

DNA extraction

The method used was based on the protocol previously described by Schmerer *et al* (1999). It consists of a 48-hour enzymatic digestion followed by two organic (phenol/chloroform) extractions and a silica-based concentration. To overcome possible inhibitory effects due to substances that co-purify with the DNA, a cold-step procedure (*i.e.* cooling the samples at 4°C for at least 4 days before freezing) was carried out before the amplification reaction (Montiel *et al.* 1997). Extensive precautions to avoid contamination were taken (see below).

Polymerase and sequencing reaction

As DNA strands from archaeological material are likely to be degraded, only a small fragment of the most variable region of the mtDNA, namely the hypervariable segment I (HVS-I) was amplified by PCR. A specific set of primers designed for this study (L16098/H16329) and optimised PCR conditions, including a large number of cycles, were used for the amplification reaction. The resulting PCR product was a mtDNA fragment of 207 units (base pairs). These PCR products were subjected to a subsequent reaction to determine their DNA sequence. All sequences were compared to a reference sequence (the Cambridge Reference Sequence; CRS; Anderson *et al.* 1981) to determine the number and position of distinctive sites (variable nucleotides).

Precautions against contamination

DNA analyses of human archaeological material is highly susceptible to contamination, as traces of modern cells are likely to present larger amounts of DNA than the ancient tissue. To avoid the most common source of contamination, that is, the contamination with PCR products, pre- and post-PCR analyses were carried out in spatially separated rooms and where human DNA analysis was not previously undertaken. In addition, protective clothing (*i.e.* lab coat, gloves, face mask and hair net) were worn throughout all procedures. Disposable material and reagents were sterilised three times and tools and benches thoroughly cleaned with bleach and irradiated under UV light. Several controls to detect possible remaining contamination were carried out. Lastly, to identify the most likely source of contamination with modern DNA (*i.e.* through dead skin cells dispersed in the air) nucleotide sequences of lab workers were determined for comparisons.

Authentication of ancient DNA

To authenticate the DNA sequences from the archaeological material, each sample was analysed at least two times, including double DNA extraction, PCR amplification and DNA sequencing. Only replicate samples yielding identical sequences were used for the data analysis. In addition, to further corroborate the analyses, two samples were also sequenced in independent laboratories.

Data analysis

Phylogenetic analyses were performed using median networks (Bandelt *et al.* 1995). Lineage groups were defined as clusters of haplotypes deriving from a putative common ancestor and separated from other haplotypes by one or more mutations. A database comprising >6,500 mtDNA sequences from modern populations from

Grave	Sex	Age	Carbon date	mtDNA variant
11521	n/a	4–5		172 187 189 217 223
11535	male?	16–18		189 223 271 278
11574	female	young		224 293 311
11650	n/a	12m		183 189 239
11654	n/a	18m		221
11681	n/a	6–7		126 163 186 189 294
11764	n/a	4–5		CRS
11786	female	mid age?		222
11788	n/a	2–3		162
60381	female	mid age/old	930–1020	126 163 186 193d 239 294
60424	male	16–20		126
60437	female	old		126 192 260 294 304
60444	female	mid age		189 270
60466	female	mid age/old	940–1030	126 163 186 189 294
60545	female	young		126
60560	n/a	6–8		126 163 186 189 193d 294
45210	n/a	c.3–4	570–980	126 192 207 294 304

Details of the skeletons are indicated (skeleton 45210 belonged to the Middle Saxon cemetery)

DNA sequences comprised 207 base pairs of the HVS-I, from positions 16123 to 16330, following the numbering of the Cambridge reference sequence (CRS; Anderson *et al.*, 1981).

Mitochondrial DNA (mtDNA) variants are identified by the nucleotide positions that differ from the CRS (minus 16000 for simplicity) (193d) denotes a nucleotide deletion at position 193.

Table 4.63 Cemetery 3 (Farmer's Avenue) — authenticated mitochondrial DNA sequences for 17 skeletons

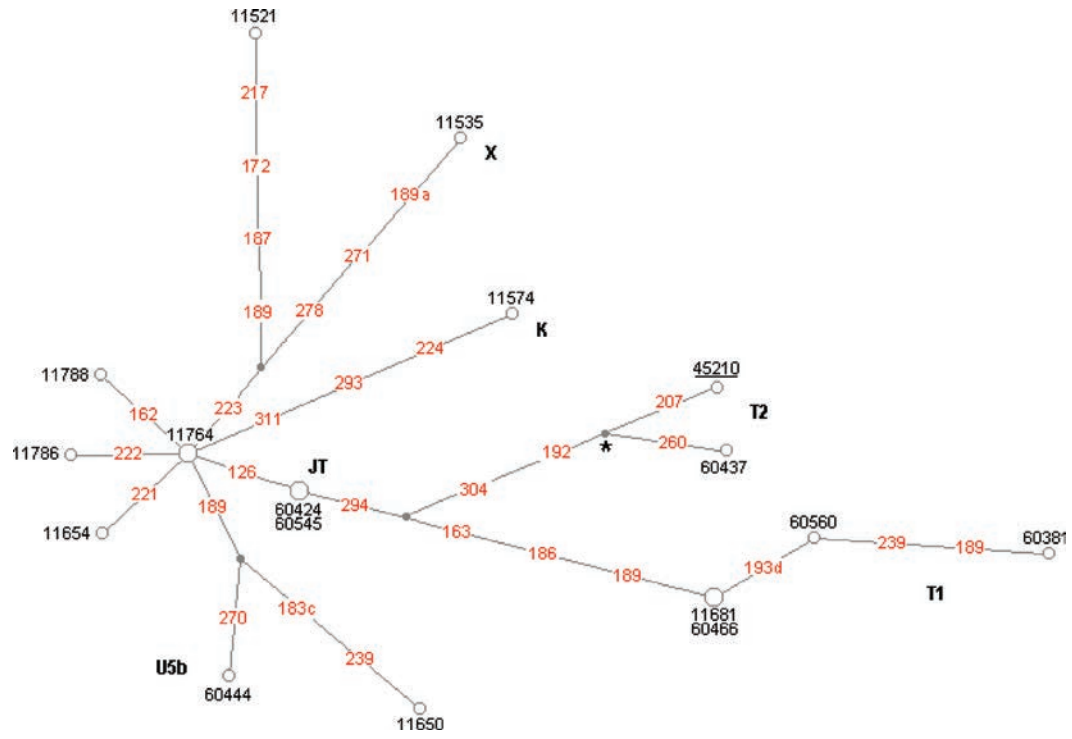


Figure 4.136 Reduced median network of 17 DNA sequences from the Castle Mall site

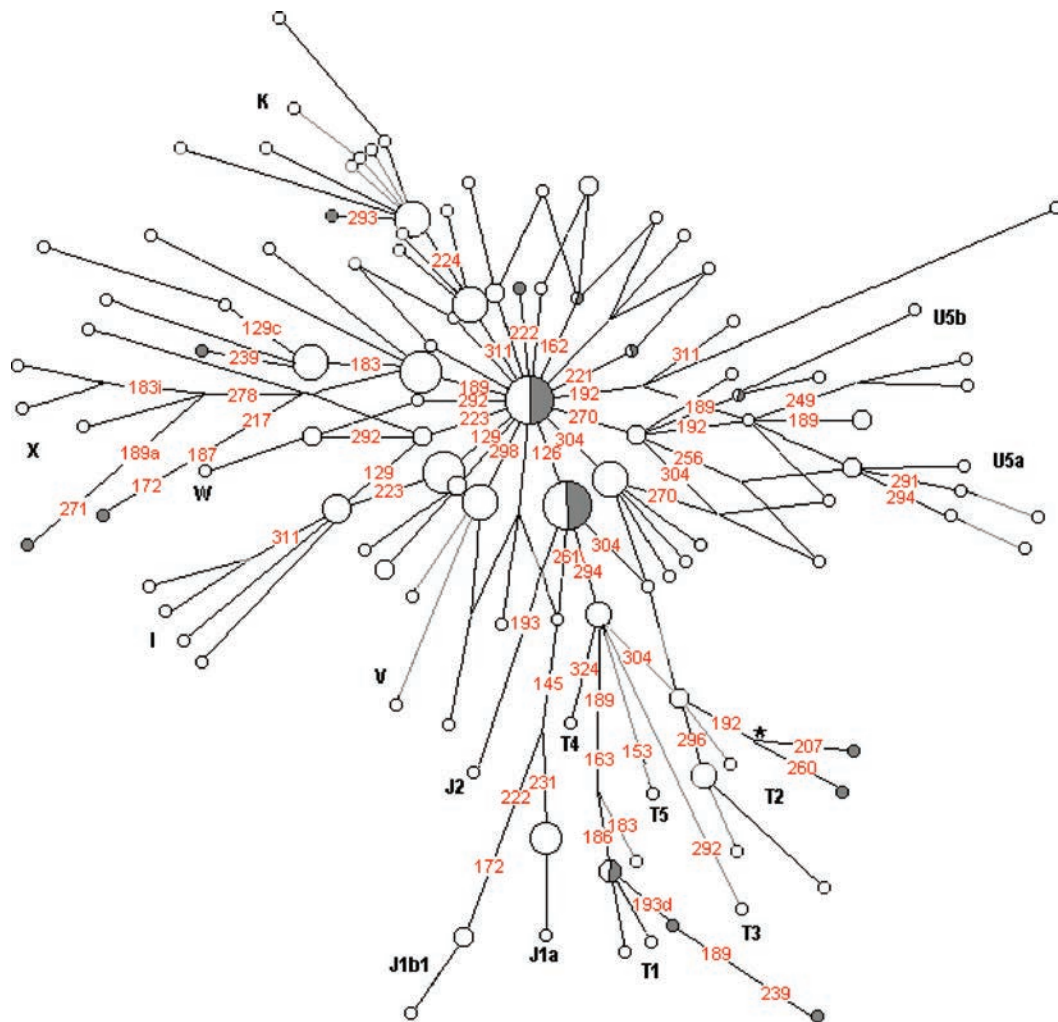


Figure 4.137 Reduced median network base on 15 and 80 mtDNA haplotypes from Cemetery 3 (Farmer's Avenue) at Castle Mall

Skeleton	haplotype	hg	po	cz	au	sz	bv	gs	gc	gn	dn	nv	fn	sw	ic	sa	ka	vf	es	be	nr	ur
11764	CRS	H'	7	11	25	10	8	55	32	3	13	145	39	5	70	1	21	4	29	1	2	3
60424/60545	126	J'	3	3	2	1	3	7	2	2	1	26	9	2	24	-	2	3	5	1	1	1
60466/11681	126 163 186 189 294	T1	1	3	2	-	2	2	2	3	-	4	3	2	2	-	3	-	1	1	1	-
11788	162	H'	1	-	-	-	-	3	2	-	-	6	5	1	2	3	5	-	7	-	1	1
60444	189 270	U5b	-	-	-	-	1	2	1	2	-	7	-	-	6	3	1	-	2	1	-	1
11654	221	H'	-	-	-	2	1	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-
11786	222	H'	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-
11574	224 293 311	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11521	172 187 189 217 223	B?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11650	183c 189 239	H'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11535	189a 223 271 278	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60437	126 192 260 294 304	T2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45210	126 192 207 294 304	T2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60560	126 163 186 189 193d 294	T1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60381	126 163 186 193d 239 294	T1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals			37	83	116	76	49	200	117	107	48	565	176	60	467	176	83	32	149	55	40	53

kr	ws	bl	rm	si	ni	sd	tc	sp	pt	fr	bq	gk	sy	tk	ar	ge	pl	ad	gv	ro	os	sc	ok	en	cw	ir	wa	ky	wi	f'av	S	pops	
3	4	28	4	33	7	19	9	44	16	14	31	18	6	5	21	21	12	10	14	13	10	171	14	56	27	26	23	9	26	1	1181	51	
1	-	7	-	1	-	1	3	5	1	2	-	11	-	3	1	1	4	1	1	1	1	-	66	2	17	6	9	7	4	7	2	263	44
-	1	9	-	-	3	-	-	2	2	-	-	1	2	2	4	1	2	1	1	1	4	2	11	2	3	1	2	1	-	-	2	91	37
-	2	-	-	-	-	-	-	1	-	-	-	-	-	1	3	-	1	-	-	-	-	5	2	2	2	-	1	-	3	1	60	23	
-	-	2	1	1	-	-	-	1	-	-	-	2	-	-	2	-	-	-	-	-	2	2	-	1	-	1	-	-	-	1	44	22	
-	-	-	1	-	2	-	-	1	1	-	-	1	-	-	-	-	-	-	-	-	1	1	-	1	1	1	3	-	-	1	20	16	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	7	5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	2	2	
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18	38	141	48	90	68	69	49	181	54	64	105	125	49	72	191	124	117	50	130	92	106	891	78	258	86	101	92	49	181	17	6454	51	

A total of 6454 mtDNA sequences were compiled for the analyses. Haplotypes are denoted according to Anderson et al., 1981 (minus 16000). Mutations are transitions unless stated (*e.g.* 189a and 193d indicate an adenine transversion and a deletion at positions 189 and 193, respectively). Haplogroup (hg) are indicated. (?) indicates the total number of individuals observed for that haplotype and (pops): the number of populations in which that haplotype was observed. Codes for populations are as follows: (po): Poland; (cz): Czech Republic; (au): Austria; (sz): Switzerland; (bv): Bavaria; (gs): south Germany; (gc): central Germany; (ng): north Germany; (dn): Denmark; (nw): Norway; (fn): Finland; (sw): Sweden; (tc): Iceland; (sa): Saami; (ka): Karelia; (vf): Volga-Finn; (es): Estonia; (be): Belarus; (nr): European Russia; (ur): Uralic region; (kr): Ukraine; (ws): west Siberia; (bl): Bulgaria; (rm): Rome; (si): Sicily; (ni): north Italy (Ladins); (sd): Sardinia; (tc): Tuscany; (sp): Spain; (pt): Portugal; (fr): France; (bg): Basque Country; (gk): Greece; (sy): Syria; (tk): Turkey; (ar): Armenia; (ge): Georgia; (pl): Palestine; (ad): Adygei; (gy): Roma-Gypsies; (ro): Romania; (os): Ossetia; (sc): Scotland; (ok): Orkney; (en): England; (cw): Cornwall; (ir): Ireland; (wa): Wales; (ky): Is. Skye; (wi): Western Is., and (f'av): Farmer's Avenue cemetery, Castle Mall site, Norwich. (Totals) indicates the sample size of each population.

Table 4.64 Cemetery 3 (Farmer's Avenue) — distribution of the 15 mtDNA haplotypes observed in Cemetery 3 among 51 European, Near eastern and West Asian modern populations

Europe, Asia and Near East was used for comparisons and interpretation of results.

Results

DNA extraction, amplification and authentication

Of the total 59 dental samples from the Castle Mall site, authenticated DNA could be obtained from 17 samples (DNA from other 5 samples was obtained but could not be authenticated, see below). The success rate was within the range expected for ancient DNA analyses (29%). All 17 skeletons which yielded authenticated DNA, except one, belonged to the Late Saxon cemetery (radiocarbon dated to 10th–11th-century). Skeleton 45210 however, belonged to the earlier Middle Saxon cemetery (radiocarbon dated to 8th–9th-century). For simplicity all skeletons were analysed together.

A fragment of 207 base pairs of the hypervariable segment I (HVS-I) of the mtDNA was obtained for all the samples. None of the DNA extracts yielded amplification for larger fragments, suggesting a high level of degradation, as expected for genetic material from archaeological samples. In addition, several DNA extracts showed DNA artefacts, a typical ancient DNA behaviour (Hofreiter *et al.* 2001). DNA sequences were considered to be authentic when different extracts from different dental samples from the same skeleton yielded identical DNA sequences. In addition, two DNA sequences (from skeletons 11381 and 45210) were also corroborated by two independent labs, which supports the reliability of the results obtained.

Mitochondrial DNA sequence data

DNA sequences extended from nucleotide position 16123 to 16330, following the numbering according to the Cambridge reference sequence (CRS; Anderson *et al.* 1981). Variable sites were also identified by comparisons with the CRS. Mitochondrial DNA variants (haplotypes) were defined by the number and position of variable sites (nucleotides). Among the 17 mtDNA sequences obtained, 15 different mtDNA variants or haplotypes were observed (see Table 4.63). Two pairs of skeletons, namely [11681 and 60466] and [60424 and 60545] shared the same mtDNA haplotype. The former pair are the skeletons of a child and a middle aged woman, respectively. Of the latter pair, skeleton 60545 is presumed to be a young woman and 60424 is a 16–20 year old male. Since mtDNA is inherited through the maternal line, identical mtDNA haplotypes suggests maternal relationship between these pairs of individuals. However, these two haplotypes are very common variants among European populations. It is also possible therefore that these individuals shared such variants by chance rather than actual biological bond.

Phylogenetic analyses

Relationships between the mtDNA sequences can be visualized in a reduced median network (RMN; Bandelt *et al.* 1995), which displays the principal phylogenetic relationships among the data (see Fig. 4.136). The network presents a star-like structure, typical of European populations (Richards *et al.* 1998). The mtDNA haplotypes from the Farmer's Avenue site could be classified into the major European haplogroups. Of special interest were the highly diverse haplotypes from haplogroups T1 and T2, which form a long branch and a small cluster,

respectively. It is interesting to note that these two closely related sequences belonged to a skeleton from the Late Saxon Farmer's Avenue cemetery and the only earlier Middle Saxon skeleton analysed (skeleton 45210). The sequences are linked by an ancestral type which is not found among the individuals from Castle Mall (shown as an intermediate node marked with a star in Figs 4.136 and 4.137).

To obtain more information, a similar RMN was constructed for the archaeological samples together with data from the modern population of England (see Fig. 4.137). A similar star-like phylogeny was obtained, which was better resolved due to the larger sample size. Of the 15 haplotypes observed in Farmer's Avenue cemetery, only 6 haplotypes are shared between the two populations. The other 9 haplotypes (60%) are not longer present in the modern population of England (or were not so far observed in the samples collected).

Shared haplotypes and founder analyses

Another way to assess relationship among populations is to analyse the pattern of shared haplotypes. For this, a large database comprising mtDNA sequences from 50 modern populations from Europe, Asia and Near East was compiled. The entire database including the mtDNA sequences observed in the Farmer's Avenue cemetery were analysed together so that shared haplotypes among populations could be identified. Results are shown in Table 4.64. Six mtDNA haplotypes (40%) from the Farmer's Avenue cemetery were very common and each one observed in more than 15 modern populations, including the modern population of England. One haplotype (from skeleton 11786) was observed in other 4 modern populations: south and central Germany, Denmark and surprisingly also Palestine; and two haplotypes (from skeletons 11574 and 11521) were shared exclusively with the modern population of Scotland. The remaining 6 haplotypes were not found in any of the 50 modern populations studied (comprising >6,500 sequences), that is were haplotypes *private* to the Castle Mall site. Their possible origin was investigated by searching the database for sequences differing by one — or the minimum possible — segregating sites. Thus, it was found that the haplotype observed in skeleton 11650, was one mutational step away from an haplotype observed only in the modern English population.

Interestingly, for the pair of private haplotypes from skeletons 60560 and 60381, namely [126-163-186-189-193d-294] and [126-163-186-193d-239-294] a one-step away haplotype, namely [126-163-186-193d-294], was observed only in Orkney. In addition to this, the pair of private haplotypes [126-192-260-294-304] and [126-192-207-294-304] from skeletons 60437 and 45210 (from the Late and Middle Saxon cemetery, respectively) both diverge from an intermediate haplotype [126-192-294-304] (shown with a star in Fig. 4.137). This linking haplotype (not found in the Castle Mall site) was exclusively observed in Norway and the Western Islands.

Discussion

Based on the calibration of the mutation rate of the mitochondrial DNA, it has been estimated that the variation observed in the mtDNA of modern populations describes a time-scale of about 60,000 years, encompassing the first settlement of Europe by anatomically modern humans

and subsequent dispersals and divergence. In the present context, however, its utility relies on whether mtDNA can be used to trace more recent population movements. In this regard, although on the whole European populations are rather homogenous in their mtDNA composition (with most mtDNA variants clustering within the major haplogroups) a detailed analysis of haplotype distribution allowed the identification of an association between the Castle Mall site and a few modern populations.

Firstly, 60% of the haplotypes observed at the Castle Mall site were not observed in the modern population of England, suggesting a relative lack of genetic continuity between these two populations. It should be noted however, that the finding of certain haplotypes in a population is directly related to the number of individuals sampled from that population: the more individuals sampled the more chance to sample all the haplotypes present in the population. Thus, some or all of the mtDNA variants observed in the Castle Mall site might be present -but not sampled- in the modern population of modern England. With respect to this, for example, two of the haplotypes not found in modern England (from skeletons 11574 and 11521) were observed in the Scottish modern population, which is the largest sample analysed (see Table 4.64). Interestingly, the haplotype observed in skeleton 11786 was observed in Denmark and Germany (populations whose sample sizes were smaller than the sample from England). This seems to indicate that this woman from Farmer's Avenue may have been of Saxon origin.

Secondly, the presence of haplotypes closely related (*i.e.* one mutational step away) to private haplotypes (*i.e.* haplotypes only found in the Castle Mall site) can also be used to identify phylogenetic relationships between populations. For example, haplotype from skeleton 11650 was closely related to an haplotype only found in modern England.

Four haplotypes private to the Castle Mall site were of particular interest. Two of these were closely related to an haplotype only observed in Orkney; whilst the other two haplotypes were derived from an haplotype observed in Norway and Western Islands. The strong impact of the Norse invasion in the North Atlantic islands (including the islands surrounding Scotland) is widely recognised and has also been supported by genetic analyses (Helgason *et al.* 2001). These four Castle Mall haplotypes appear to be closely related to haplotypes found exclusively in Norse populations and are therefore believed to reflect the genetic impact of the Viking invasion in mainland England. The date of the site would allow for such explanation. In addition, a few Norwegian artefacts found in and near Norwich would support this view (see Chapter 4.VI). It is worth noting that these four 'Viking' haplotypes belonged to three skeletons from the Late Saxon cemetery of Farmer's Avenue (10th–11th-century) and the only skeleton analysed from the Middle Saxon cemetery (8th–9th-century). This would suggest continuity between the populations of these two periods.

In summary, the mtDNA data from the population of the Castle Mall site — reflecting the female side of its genetic history — showed evidence of both Saxon and Viking impact, with the latter being possibly the strongest. In addition, a degree of genetic continuity through the 8th to the 11th century and to the modern population of Britain was observed.

Addenda

DNA: Romani Mitochondrial Haplotype

by Ana Töpf and Rus Hoelzel

Following completion of the report by Töpf presented above, supplementary analysis of an individual from the Farmer's Avenue cemetery identified a sub-adult male (sk. 11535) with a mitochondrial DNA haplotype that had previously only been identified in modern Romani populations. This study and related methodologies are fully detailed in a recent article (Töpf and Hoelzel 2005), with the related discussion presented below for ease of reference.

Having originated in India (according to linguistics and genetic data), Romani people are known to have reached the Byzantine Empire (modern day Turkey and Greece) by the 10th century (Fraser 1992). The first record of Romani in the United Kingdom is dated to the early 16th century, based on official records (Fraser 1992), although some suggest their arrival could have been somewhat earlier (Jarman and Jarman 1992). Genetic studies of the Romani have shown a unique mitochondrial DNA (mtDNA) lineage, based on a transversion T/A at position 16 189 of the first hypervariable segment (HVS-1) of the control region (Gresham *et al.* 2001). This lineage comprises 5.5% of the 275 published Romani haplotypes (all from Bulgaria; Gresham *et al.* 2001) and it has not been found in any other human population sampled so far (out of a total of more than 10 000 mtDNA haplotypes for this sequence held in the GenBank sequence repository), except the Castle Mall individual reported on here.

An independent T/A mutation at 16 189 in a British lineage is a possible explanation, but very unlikely given the apparent lack of this mutation in modern Britain, the low rate of transversion mutations in mtDNA, and the consistency of other sites in this sequence with the Romani lineage.

There are at least two other possible interpretations. The ancient 'Romani' haplotype may actually be present but undetected in modern European populations other than the Romani, however the probability is very low. Given 10 000 sequences, the frequency of the Romani haplotype would have to be less than 0.03% in non-Romani populations (at the 95% CI) in order for it to have not been detected so far (binomial test). Another possibility is that the haplotype was common in Saxon times, but since lost. However, this represents a period of only about 50 generations. It could have become extinct through genetic drift, but this process is slow in large populations, and N_e for European human populations is likely to have been in the thousands. It could have been lost through strong selection, but the loss of this haplotype by selection in all modern populations with the exception of the Romani seems a much less parsimonious explanation than the possibility that the Castle Mall individual shared ancestry with modern Romani.

If the rare TA haplotype found in ancient Britain instead suggests the presence of people of Romani ancestry in 10th-century England, this is in surprising contradiction to historical evidence indicating that the Romani first left India — as mercenary soldiers or camp followers — at around AD 1000 (Hancock 2002). Some suggest that emigration from India could have been as early as the 6th century (Fraser 1992; Hancock 2002), and others have proposed much earlier routes via Egypt

(see Kendrick 2000), but these theories are much less well supported. One possible explanation would be if Romani women were enslaved by Vikings during trade expeditions to the Byzantine Empire, or formed liaisons with them during common association in Varangian army camps (in Byzantium) in the 9th and 10th centuries (Graham-Campbell 1994; Hancock 2002). These associations could also have been with Anglo-Saxons, though known associations of Anglo-Saxons with Varangian camps began only in the late 11th century (Hancock 2002; Shepard 1973). Second generation Varangians are also known to have returned north (Hannestad 1970), and the mtDNA haplotype could have been introduced in this way. The cemetery at Norwich is typical of Late Saxon, Christian sites with no grave goods and an east to west orientation, but this does not necessarily exclude Norse burial (Hadley 2002), and Viking artefacts were found nearby. The absence of the TA haplotype in modern Scandinavian or British populations, however, suggests that if such associations happened, they were rare. Perhaps least likely is the independent arrival of Romani people in England, 500 years before the oldest known record. Given that census records are sparse from the Saxon and medieval periods, this must remain an open question.

Ancient DNA Analysis of Lepromatous Leprosy

by Claire Watson

Nineteen skeletons excavated from the cemetery of St John's Church (Cemetery 4) were selected for molecular analysis in 2005 as part of a wider programme of research into leprosy transmission (Table 4.65). The skeletons

<i>Skeleton</i>	<i>Sample site</i>	<i>RLEP</i>	<i>ML0058</i>	<i>ML2344</i>	<i>ML2172</i>
11784	Rhino max	+	2	12	8
11287	Rhino Max	+	3	13	9
11411	Tibia	Not tested			
11428	Rhino Max	Not tested			
11206	Rhino Max	+		Negative	
11103	Foot	+		Not tested	
11092	Rhino Max	Not tested			
11117	Foot Rhino Max	+		Not tested	
11510	Rhino Max Nasal Spine	Not tested			
13146	Tibia	Not tested			
11526	Hand Spine	Not tested			
11328	Tibia Rhino Max	Negative			
11509	Foot	+	2	10	9
11235	Rhino Max	+		Negative	
13055	Rhino Max	Negative			
13111	Hand	Not tested			
11500	Foot Tibia	+		Not tested	
11214	Rhino Max Nasal spine	Not tested			
13181	Rhino Max	Not tested			

Table 4.65 Skeletal samples, RLEP confirmatory results and genotyping copy number

showed a range of markings varying from severe lepromatous leprosy lesions, slight damage on the skeleton that was less clearly leprosy and no lesions visible at all. Bone scrapings of between 1 and 2 grams were carefully removed from the skeletons using a sterile scalpel into a collection tube and protected during transportation to the laboratory. DNA was extracted from the bone samples by grinding it to a fine powder using a pestle and mortar and then applying a silica based extraction method. A PCR assay confirming the presence of *Mycobacterium leprae* (*M. leprae*) DNA was applied to each extraction (RLEP) and positive samples were then analysed using a selection of genotyping PCR assays which detect variations in the *M. leprae* strain (ML0085, ML2344 and ML2172). Following this analysis, three of the DNA extractions were analysed for the presence of single nucleotide polymorphisms (SNPs), DNA sequence variations that occur when a single nucleotide in the genome sequence is altered.

Because of the fragility of ancient DNA, storage following extraction is extremely difficult; therefore, extraction was only carried out on ten of the eighteen skeletal samples (Table 4.65). The remaining samples have been stored in a database at the London School of Hygiene and Tropical Medicine for future analysis. Six of the samples showed a positive result for the confirmatory PCR assay RLEP, verifying the presence of *M. leprae*.

Three of these samples were successfully genotyped using ML0058, ML2344 and ML2172. The results showed a variation in copy number within one burial site (Table 4.65) and indicated that, although the results were capable of ruling out the presence of the most likely insertion and deletion events as well as laboratory contamination, they cannot inform about *M. leprae* genome topology and global organisation: it would therefore be difficult to conclude the study based solely on these findings as the variability was too great to allow patterns to be detected.

In addition to the identification of these polymorphic regions in the genome, the three DNA extractions were also analysed for the presence of SNPs using three SNP assays published in 2005 (Monot, Honore *et al.* 2005) initially — this was extended to a set of eight during collaboration with this group at the Institute Pasteur, Paris during 2006. The three DNA samples from St John's have produced promising data showing identical results within the cemetery and also indicating a European difference which has previously not been seen. The results will be published in the near future.

VI. DISCUSSION

Early Saxon (5th century to c.650)

(Fig.4.1)

Recent excavations in central Norwich have increased the corpus of evidence for Early Saxon activity, although some of the material may have been distributed through agricultural activities and similar processes of redeposition. A small group of transitional Roman/Early Saxon pottery sherds came from the south-eastern part of the Greyfriars site c.300m to the north-east of the castle (Lyons, in Emery 2007; Sites 373N and 845N), a further

eight sherds of Early to Middle Saxon date coming from excavations at Dragon Hall further south on King Street (Shelley 2005; Site 449N). To the west of the Great Cockey stream, in an area which was in use as fields and probably scattered farmsteads by the Late Saxon period, a larger group of twenty-two Early to Middle Saxon sherds came from excavations at the new library site (Percival and Hutcheson in prep.; Site 26437N). Additional pottery from the west of the city includes that found at St Benedict's Gate, Grapes Hill (Site 151N).

Excavations at Castle Mall add to this corpus with a cruciform brooch of late 5th- to early 6th-century attribution (SF6768, Fig.4.67; Penn, Chapter 4.III), which was recovered unstratified in Area 49, perhaps coincidentally the location of an 8th- to 9th-century displaced cemetery. Five sherds of possible Early Saxon pottery were also found, all but one coming from a single early to mid 11th-century pit in Area 9 (pit 90516, Open Area 8, Period 1.3). In addition, a burial may be attributable to the Early or Middle Saxon period: this grave lay in the southernmost of the Castle Mall cemeteries (Cemetery 1, sk. 13156) and unexpectedly yielded a probable 7th-century radiocarbon date (Bayliss, Chapter 4.V). Burial 13156 is suggested as a possible member of a family grouping, showing a close relationship to underlying sk. 13169 and adjacent but stratigraphically later 13035 on the basis of non-metric traits and congenital anomalies ('Family 8'; see Figs.4.51 and 4.53 and Anderson, Chapter 4.V). Despite the fact that the radiocarbon dating evidence indicates that the dated burial may have been approximately 150 years earlier than another dated member of the 'family' group (Bayliss *et al.*, Chapter 4.V), Anderson suggests that this is not an unacceptable period for such a plot in an urban burial context (Sue Anderson, pers. comm.). Whether or not the presence of these possible early burials indicate a foundation of the cemetery during the 7th century, or whether the presence of the later cemetery of St John's (Cemetery 4) was coincidental remains equivocal: Bayliss suggests that statistically this is less than 1% probable, while Anderson maintains that a family relationship is possible (Chapter 4.V and see further discussion in Chapter 14, 'Settlement Origins and Early History' and 'Developments in Interpretation'). Possible parallels for long-lived cemeteries beneath later castles are given below.

While there is still no definitive evidence for the presence of Early Saxon settlement beneath modern Norwich, the growing number of findspots and in particular the discovery of *in situ* burial(s) rather than scattered finds does start to hint at activity in the vicinity at this date.

Middle Saxon (c.650–c.850)

(Figs 4.1 and 4.10; Plate 4.5)

One of the stated research objectives of the Castle Mall project was to examine the Middle and Late Saxon nucleus of *Needham* which, it was believed, focussed around the area of the castle (see Chapters 1 and 4.I). Although the initial findings of the excavation did not appear to indicate direct activity in the area during the Middle Saxon period, subsequent scientific dating of the burial groups indicates the presence of two cemeteries attributable to the 7th to 9th centuries (Fig.4.1). Allied to these discoveries is the recovery, both from the site

in question and surrounding interventions, of pottery and metalwork dating from the 5th to 9th centuries. It has been suggested that pre-urban settlements did not begin in Norwich until the 8th century (Ayers 1994a 22) and the earliest date attributed to activity beneath the castle's north-east bailey was late 10th century (Ayers 1985; Site 416N). The new results demonstrate use of the area during the Middle Saxon period, with more intensive settlement perhaps becoming firmly established during the 10th century.

The lack of archaeological evidence for cemeteries to accompany Norwich's five postulated Middle Saxon 'villages' is notable, although a cemetery of late 7th-century date was excavated some distance to the south of the city at Harford Farm, Markshall (Penn 2000a). The Norwich situation contrasts with Ipswich, where an extensive cemetery lay to the north of the 7th-century settlement (Wade 1993, 145), burial apparently continuing into the 8th century.

At Castle Mall, a cemetery producing 8th- to 9th-century radiocarbon dates lay across the northern part of the excavated area (Cemetery 2, Period 1.1, Figs 4.3 and 4.10; see also Chapter 14, 'Settlement Origins and Early History' and 'Developments in Interpretation'; see also the comments on DNA below). A number of possible 'graves' were aligned north-west to south-east or north-south. This burial ground would have lain roughly equidistant between the cemetery beneath the later south bailey rampart (Cemetery 3) and that recorded beneath the north-east bailey (Ayers 1985). Redeposited human bone was recovered across the whole of the northern part of the site, with a notable focus to the east, surrounding the only surviving grave which was that of a child aged 2–3 years (Plate 4.5). This clothed or shroud-wrapped body had clearly been disturbed and had apparently been moved and reburied less than two years after its initial burial (Black, Chapter 4.V). A total of about forty-three individuals relating to this cemetery is suggested, of which twenty-one were children or sub-adults below the age of eighteen years at death (Anderson, Chapter 4.V). Pathologies included a possible case of Paget's disease. Had this cemetery survived the creation of the great barbican ditch and rampart in the 13th century, which its main focal point suggests it did, it was probably only finally destroyed by the dramatic Cattle Market landscaping of the 18th and 19th centuries. Additional bone recovered further to the west of the Castle Mall site may relate to the same, or perhaps even a different, early cemetery.

Previous observations add to the distribution plot of human bone in this general area, some of which at least may represent further individuals from the same cemetery or perhaps from other early cemeteries in the vicinity of the castle (Fig 4.140; SMR observations are located in Fig.2.2). A human skull was found to the west of the castle in the 1960s (Site 218N) and other skulls were recovered from the southern end of the castle bridge in 1807 and 1934 (Site 243N). Further burials were disturbed during the construction of the Cattle Market in 1738, although their location was not noted (see Chapter 2, fn.2). The widespread dispersal of human remains, taken alongside the evidence for *in situ* burial, could indicate that much of the area of this ridge of high ground in the south-western part of the Saxon town was already in used for burial during the Middle Saxon period. A similar

situation is apparent at Dover castle, where an early inhumation cemetery on a hilltop was superseded by the Late Saxon church of St Mary in Castro which remained in use within the confines of the later castle (Biddle 1970; Haslam 1984, 23). At Newcastle-upon-Tyne, a cemetery founded in c.700 remained in use until (and to a limited extent after) the construction of the 12th-century castle (Barbara Harbottle, pers. comm.).

The only burial of similar date recorded from central Norwich comes from St Martin-at-Palace (a church mentioned in Domesday; Site 584N; Fig. 4.1) where excavations in 1988 revealed evidence for an 11th-century stone church, pre-dated by two timber buildings at least one of which may also have served as a church. The earliest recorded burial here was radiocarbon dated (OxA-2320) and yielded a range of 1460±90, cal AD400–770 (95% confidence; Beazley 2001, 48). A Middle, rather than Early, Anglo-Saxon date was postulated (Beazley 2001, 54).

Norwich's Middle Saxon road pattern is hypothesised in Fig.4.1, building on earlier work by Carter, Atkin, Ayers and others. As has been discussed in Chapter 3, a Roman road (or, less likely, two) may have led north-to-south across the southern part of the Norwich area. By the Middle Saxon period, two such arterial roads may have existed, with the Castle Mall site lying between them. The recent work begins to suggest the possible early bifurcation of the westernmost route (later Ber Street) northwards just to the south of the Castle Mall site, effectively leading towards settlements on the north bank of the river (*cf.* Fig.3.6). 'Road' metalling was reported beneath the motte in the 18th century (see Chapter 2) and antiquarians postulated a Roman route along the top of the Ber Street ridge (*e.g.* Fig. 3.6) which would potentially have connected with this observation. There was, however, no clear evidence for the presence of this route at the Castle Mall site prior to the Late Saxon period, although its position may have been marked by a linear hollow (Hollow 3). The possibility that this was a routeway was not archaeologically tested (see Chapter 4.II, Period 1.1), although its position sits uneasily against the suggested extent of Cemetery 2 (Fig.4.3). This does not necessarily negate the hypothesis: at the Ipswich Buttermarket site, for example, a 9th-century road runs directly across the 7th- to 8th-century inhumation cemetery (Wade 1993, 148 and fig.9.3). The Castle Mall hollow, whatever its origin, appears to have been overlain by pitting and possible structures during the Late Saxon period, when the route (if such existed in this position) may have shifted slightly eastwards (Fig.4.11).

Numerous artefacts of Middle Saxon date have now been found in central Norwich, including brooches and other metal objects: those found at Castle Mall are fully detailed in Chapter 4.III. One item of note from the excavations is an ansate brooch of 8th- to 9th-century design (SF1027, Fig.4.67; Goodall, Chapter 4.III), worn by an elderly male buried in Cemetery 3 beneath the later castle's south bailey rampart. A similar example has recently been recovered from a medieval deposit during excavations at Norwich Castle Mound (Site 429N; Wallis in prep.). Artefacts from the north-east bailey (Site 416N) include two 9th-century strap-ends (Ayers 1985, 28, figs 3 and 4). An important group of Middle Saxon artefacts, possibly relating to the settlement of *Conesford* on the eastern side of King Street, came from excavations at

Greyfriars (Site 845N; Emery 2007) and an evaluation at St Faiths' Lane (Site 373N; Emery 1997).

In contrast to the metalwork, the absence of Middle Saxon pottery (specifically Ipswich-type ware) from Norwich is notable. Although to some extent this could be partially explained by the use of vessels of other material such as leather and wood, it is possible that production of Thetford-type ware began earlier than the late 9th century or c.900, as traditionally thought, accounting for the apparent scarcity of ceramics during the later Middle Saxon period. A re-dating of the Middle Saxon ceramic sequence has recently taken place in London where recent scientific dates indicate a possible revision of ceramic types currently considered to be of 11th-century date (such as Late Saxon Shelly ware) back into the 10th and possibly the 9th century (Dick Malt, pers. comm.): a bark cover from a burial found on the Thames foreshore (at Bull Wharf), for example, has a dendrochronological date of c.AD 870, with Late Saxon Shelly ware found in the surrounding backfill. During the Saxon period, London may have imported its pottery from the Danelaw and does not appear to have produced ceramics for itself until its economy stabilised well into the 10th century (Lyn Blackmore, pers. comm.).

The only known kilns for the production of Ipswich-type ware are in Ipswich, Suffolk (Smedley and Owles 1963; Jennings 1981, 12). Production appears to have begun in the second quarter of the 7th century, continuing into the mid 9th century (Blinkhorn, forthcoming b). As already noted, up to 1987 only fifteen sherds of Ipswich-type ware had been recovered from the *Needham* area (Atkin 1993, 11). A single sherd was recovered from the north-east bailey (Site 416N) while an unquantified number of Middle Saxon sherds came from adjacent Site 150N. The recent excavations at Castle Mall add only a further seventeen to this number. Excavations at Golden Ball Street (Site 26496N; this volume) and the Castle Mound (Wallis in prep.) produced no additional sherds. Further afield, eighteen sherds were recovered from Greyfriars to the north-east (Site 845N; Emery 2007), with ten more found along King Street, as well as two Early Saxon sherds (Andy Shelley, pers. comm.). Twenty-two more sherds (again including Early Saxon material) came from recent excavations at The Forum in what appear to have been largely pre-Conquest fields and farmsteads beneath the later French Borough to the west (Site 26437N; Percival and Hutcheson in prep.). One or two further sherds of Ipswich-type ware have been recovered from the new Chapelfield site (David Whitmore, pers. comm. 2004). A total of at least seventy-six sherds of Ipswich-type ware have been excavated from the southern part of Norwich at time of writing (see Goffin in prep.c, where a current overview is provided).

In conclusion, as a result of recent works at Norwich Castle and elsewhere to the south of the river, there remains no definitive evidence for the settlement of *Needham*, although it has long been recognised that the 'settlement' may have consisted of little more than a collection of farmsteads (Green and Young 1981, 10). The presence of cemeteries and distribution of finds, however, do suggest activity during the Middle Saxon period (and possibly even during the Early Saxon period). The new finds distribution and cemetery plan (Fig.4.1) goes some way to reinstating Alan Carter's broad plan of the *Needham* area (1978b, fig.8A). There are small

concentrations of material within the overall 'settlement' area, with most of the Castle Mall material coming from the northern half of the site and most of the Greyfriars material coming from the area immediately adjacent to the Church of St Vedast (probably relating to *Conesford*). Such a schematic plot, however, necessarily simplifies the situation and immediately runs the risk of being criticised for overstating the evidence. What is clear is that the castle earthworks and post-medieval landscaping activities may have swept away the *in situ* remains of part of a Middle Saxon settlement — or, at the very least, a number of its burial grounds — adjacent to the Great Cockey stream valley and its tributary(ies).

Viking and Late Saxon (c.850–c.1067–70)

Anglo-Scandinavian Norwich and Viking Influence (Figs 4.2 and 4.138–4.140)

As noted in the introductory section to this chapter, a significant research objective relating to the early growth of Norwich is the analysis of Scandinavian — and particularly Danish — influence. The lack of emphasis on Norwich as an Anglo-Scandinavian centre has long been noted: this aspect of the development of the town appears to have been neglected due to the short period during which it was under Danish control (Atkin and Evans 2002, 237). It has been suggested that the term 'Late Saxon' should be replaced by 'Anglo-Scandinavian' for many of the artefactual types recovered. Recent finds reflecting 'Viking' influence from both Norwich and Norfolk (summarised by Margeson 1997 and Penn 2000b) are significantly supplemented by the discoveries at the Castle Mall site and at Greyfriars to the east (Emery 2007). Contemporary accounts of attacks on Norwich in the early 11th century have been detailed in Chapter 4.I and it has been suggested that such an event may have been responsible for the burning of one of the phases of timber church under the north-east bailey (Penn 2000b, 6).

Very few demonstrably 'Viking' burials are known in East Anglia: Norfolk examples include a double grave at Santon Downham dating to the late 9th century and another at Middle Harling of late 9th- or early 10th-century date, while a single burial was found at Saffron Walden, Essex (Margeson 1997, 15–17). This lack of identifiable burials relates to the conversion of the Vikings to Christianity soon after they settled in the county, which led to the custom of marking graves with stone crosses. Part of one such cross, decorated with animals in an interlace design and of 10th-century date, was found on the site of the church of St Vedast on Rose Lane to the east of Castle Mall. Significantly, artefacts indicative of a Viking Age site were found nearby during excavations at Greyfriars between 1992 and 1995 (Emery 2007). This assemblage includes important new evidence relating to minting in Norwich during the probable period of Danish occupation, in the form of a half-*eyrir* lead weight, probably dating to the 880s and of Viking attribution (Archibald in Emery 2007). Other Viking finds from the city include a 9th-century sword recovered from the River Wensum (Margeson 1997, 11, fig.7).

It now appears that burials at the Castle Mall site may have been those of Vikings themselves, or of

people of Viking descent, presumably having converted to Christianity. DNA evidence from two of the burial groups (one radiocarbon dated to the 8th to 9th century (Cemetery 2) and the other to the late 9th to early 11th century (Cemetery 3)) indicates possible genetic origins in either Norway or the Western Isles, specifically Orkney in one instance (Töpf, Chapter 4.V). The earliest burial was the only surviving, albeit disturbed, grave of a child in a cemetery, the remainder of which had later been swept away (see above). The new results offer the possibilities either that the earliest burial was the offspring of one of the first groups to settle in Norwich during the period of the Danelaw, or was the result of a population already mixed during the Migration period of the 5th to 6th centuries. The similar results from the later cemetery, from two females (one old and the other middle-aged to old) and a 6–8 year old child, demonstrate the continuing Scandinavian presence within the town and the genetic input this was to have on the local population.

One other individual is worthy of note — sub-adult male (sk.11535) from Cemetery 3 (Farmer's Avenue) aged c.16–8 years has been identified as of possible Romani origin. This individual has a mitochondrial DNA haplotype previously identified only in modern Romani populations (Töpf and Hoelzel, Chapter 4.V). Pathologies included a benign tumour originating when he was c.10 years old, possibly the result of traumatic injury. The skeleton also showed slight bilateral coxa valga, a hip deformity that may occur with partial paralysis or disuse of the legs (there was no evidence for congenital dislocation, another cause; Anderson, Chapter 4.V). Although a mitochondrial DNA lineage has been identified amongst Roma people (all from Bulgaria), it has not been found in more than 10,000 other human mtDNA haplotypes sampled: except in the skeleton from Norwich. This is a highly significant discovery since it provides the earliest known example of a Romani in Britain, contradicting the accepted theory of Roma migration which suggests that the Romani originally left India at around AD1000, with the first documentary evidence for their arrival in Britain in the early 16th century. Rather than indicating the independent arrival of Roma in Britain during the Late Saxon period, which seems highly unlikely, the discovery may suggest that Vikings enslaved Romani women during expeditions to the Byzantine Empire, or formed liaisons with them through contact with Varangians, a Scandinavian people who also traded with the east (Töpf and Hoelzel, Chapter 4.V).

As was discussed in Chapter 4.I, the Danes left their mark in Norwich street names, such as those ending in 'gate', deriving from the Old Norse 'gata' or street. These streets are plotted against the background of findspots of Anglo-Scandinavian finds in Norwich in Penn 2000b, fig.1, although it should be noted that many of the routes themselves are later than the period of Danish occupation. Artefactual evidence from the Castle Mall sites adds to the growing number of known finds of Scandinavian or Anglo-Scandinavian type in the city, including fragments of soapstone bowls found at Greyfriars which may have originated in the Northern Isles, possibly Shetland or Norway (Mills in Emery 2007). At Castle Mall, the late 5th- to early 6th-century cruciform brooch (SF6768, Fig.4.67; Penn, Chapter 4.III) has parallels in Norway and Borgstedt, Germany. Borre-style brooches of the 10th century have been found at Castle Mall (SF6348,

Fig.4.67; Goodall and Huddle, Chapter 4.III) and the north-east bailey (Ayers 1985) and may have been manufactured in Norfolk, perhaps in or near Norwich. Two 9th-century strap-ends from the north-east bailey have been noted above. Other finds of Anglo-Scandinavian and/or Viking character from the Castle Mall site include bone and antler objects such as combs, a finely-crafted spoon, needlecases and wedges (Figs 4.69, 4.98, 4.101 and 4.102, Huddle, Chapter 4.III), as well as particular honestones (Fig.4.104, Mills and Moore, Chapter 4.III). A copper alloy stirrup mount is a of a type thought to have been introduced by Viking raiders in the 11th century (SF6730, Fig.4.106; Goodall, Chapter 4.III), while a group of 10th- to early 11th-century decorative casket or book fittings (Fig.4.99, Plate 4.38; Mould, Chapter 4.III) found in close proximity in the western part of the site are paralleled at Anglo-Scandinavian Thetford and York.

The Late Saxon Town

(Figs 4.2 and 4.142–4.145)

Archaeological excavation has demonstrated Late Saxon settlement across a large area south of the River Wensum, probably encompassing two markets and a busy river frontage (Fig.4.2). The two major archaeological excavations that have taken place here are those at Castle Mall and Greyfriars on Prince of Wales Road (Site 845N, Emery 2007). Recent excavations further south along King Street provide the first clear evidence for Late Saxon activity outside the main settlement area (e.g. Lloyd *et al* 2002). At Dragon Hall (Site 449N; Shelley 2005) this took the form of small ovens, fence lines, post-built structures and associated pitting. Such features and others recorded at 51–53 and 80 King Street were concentrated along the King Street frontage, indicating settlement along the road.

Domesday Book states that Norwich had a population of 1,320 burgesses in 1066 (Brown 1984, 116b (1.61)) and calculations of the full extent of the settled area and its density have been attempted. Carter, in a reworking of Stephenson's earlier work (Carter 1978b, 180; Stephenson 1933, 199) suggested that, taking into account the 15 acres he estimated were enclosed by the castle precinct (now estimated at 23 acres), 200 acres would have been available for settlement of the 1,320 burgesses (at a ratio of 6.5 properties to the acre). A further reworking of the information suggests a total area to the south of the river of about 39 hectares (96 acres), as well as a further 4 hectares along Pottergate (9 acres). To this must be added the 12.5 hectares (31 acres) to the north of the river and the settlement to the west along Oak Street (another 3.5 hectares, 8½ acres). These give a new total settlement of about 59 hectares (146 acres). Continuing Carter's calculations for the population of 1,320 burgesses, this suggests a density of between 10 and 11 properties to the acre. The excavated evidence over the 6 acre site at Castle Mall, however, suggests a much lower density. Up to a total of 7 'properties' may have been in use at one time (Period 1.2) and, even allowing for the presence of perhaps another 5 lost to truncation, this gives a ratio of about 2 properties to an acre. This low figure could be accounted for by the sparser nature of settlement in this area or could suggest that evidence for many other properties has been lost.

Domesday Book indicates that in 1066 the agricultural land within the hundred of Norwich amounted to

at least six hundred and twenty-nine and a half 'acres' and one and a half ploughlands of arable, pasture, and meadow' (Campbell 1975, 6). The largest holdings were those of the king and the earl. Campbell suggests that these farmlands were concentrated in two areas. The first may have lain to the south-west, bounded by the Wensum to the east and Heigham to the north and including the later locations of the French Borough and Carrow Abbey. The second area probably lay to the north of the river. Other agricultural land may have existed within the settled area.

That the area to the west of the castle (which was subsequently chosen as the site for the Norman French Borough, see Chapter 5.1) had been used as fields in the Late Saxon period is suggested both by place name evidence and recent excavation. The name 'Mancroft', subsequently applied to the area, has two possible origins. It may derive from the Old English or Old Norse personal name with 'croft', or perhaps from **(ge)maene croft** ('common or communal enclosure/land'). Such place names are often found on the outskirts of parishes (Campbell 1975, 7). Mancroft has been recorded as a field-name in several other places (Sandred and Lindström 1989, 71). It has been noted that the street pattern in this area of Norwich 'has a distinctive reverse 'S'-pattern typical of communities which have developed from earlier agricultural land' (Ayers 1994a, 45). The Domesday reference indicates that this area was part of the demesne of Earl Ralph prior to the Conquest (see Chapters 5 and 12). Excavations in the area include a series of sites within the former Bethel Street car park, later the Norman French Borough (Site 26437N; Percival 1995; Percival and Hutcheson in prep.; Shelley and Tremlett, in prep.), which revealed a number of Late Saxon features, including two parallel ditches which appear to have formed a 'green lane', presumably running between fields or providing access to unenclosed land. The ditches were aligned roughly parallel to the course of a possible Roman road (Fig.4.2).

Settlement Boundary

(Figs 4.2 and 4.138–4.140)

It has long been suggested that the limit of Late Saxon settlement may be reflected in the curving line of Mountergate (Fig.4.2; Inferior Conesford), running northwards into part of St Faith's Lane, across the cathedral precinct to run along the north-to-south element of Bishopgate, meeting the river just to the east of Whitefriars bridge (*cf.* Atkin and Carter 1985; Atkin 1993). The curve of Mountergate¹¹ also marks 'the boundary between terrace gravel and river marsh' (Carter 1978b, 191). An extension of this line to the west of King Street runs along the former course of Stepping Lane and Rising Sun Lane (*cf.* 1883 OS map; Plate 11.6), where it adjoined Golden Ball Street. West of this point, the insertion of the castle defences had effectively obliterated any continuation of this boundary within the street pattern and the position of the western part of Rising Sun Lane itself is more likely to reflect a post-Conquest route towards the castle's south gate rather than a relic of the pre-Conquest route system (*cf.* Cleer's 1696 map; Plate 10.1). The western limit of settlement was probably effectively defined by the contours of the Great Cockey stream valley, its suggested line mirroring the position of the known defensive ditch on the north bank of the River Wensum (Fig.4.2).



Figure 4.138 Reconstruction of the Late Saxon (11th century) settlement in the vicinity of the later castle, viewed from the south-west with the Great Cockey stream in the foreground. The limit of settlement across the Castle Mall site is indicated as a palisaded boundary, in the absence of any definitive evidence for a bank and ditch

Evaluation and excavation to the south of Stepping Lane has recently confirmed the presence of a substantial ditch with stepped sides (c.12m wide by up to 7.5m deep), aligned north-east to south-west (Site 26577N; Penn 1999c; Lloyd *et al* 2002, 8 and section 1). This lies in the anticipated position of the Late Saxon defences and may have had a lane running inside it. Dating was inconclusive, primary fills having a broad 10th- to 11th-century date on the basis of a single pottery sherd, although rapid infilling occurred in the 12th century. The northern side of the infilled ditch was subsequently cut into by a smaller ditch (c.6m wide by c.2.5m deep) which was taken to indicate a boundary marker rather than a defensive feature (Lloyd *et al* 2002, 9). No evidence for an associated bank or palisade was found. Any continuation of this ditch to the east and west has not yet been located.

Observations of at least one ditch and associated bank have been made in the area immediately to the west of the castle (see Chapter 2 and Fig.5.57). This earthwork has previously been interpreted as either demarcating the Castle Fee boundary and/or forming the defences of the burh. These observations are considered fully in Chapters 5.V and 12 in relation to the Fee boundary and the phenomenon of Norman re-use of Late Saxon boundaries.

On the basis of the evidence presented above, the Late Saxon ditch would be expected to run directly across the Castle Mall site. As delimited by the excavated ?Castle

Fee boundary marker (Ditch 3, see below), the suggested southern extent of the Norman liberty reflects the position of two pre-existing features (*cf.* Figs 4.31 and 5.2); a possible boundary ditch (Ditch 1) and the westernmost of three 'hollows' of indeterminate origin (Hollow 1). It remains possible, although unlikely given their scale and general character, that either of these features may have at one time delimited the extent of pre-Conquest settlement. Hollow 1 was recorded over an extensive distance (65m) and was up to 12m wide, surviving to just over 2m deep with an irregular profile (Period 1.1). A series of posts were set along its north-eastern side although there was no evidence for an adjacent bank. The hollow was used during the 10th to 11th centuries for the disposal of refuse including sewage and soon became overgrown with vegetation (Periods 1.2 and 1.3). Numerous Late Saxon pits had been dug into it. It is possible that that this feature formed an early hollow-way or livestock path, leading down into the Cockey stream valley although the presence of the postulated road just to the west makes this improbable. At West Stow, a number of shallow linear hollows were interpreted as animal pens (West 1985, 53 and fig.7), although this interpretation does not appear appropriate for the Castle Mall example. It is also possible that the Castle Mall feature may have been of natural origin, perhaps caused by undulations in the subsurface chalk. Whatever its origin, little pre-Conquest activity — other than St John's cemetery (Cemetery 4) — was recorded outside its line: here, the shape of

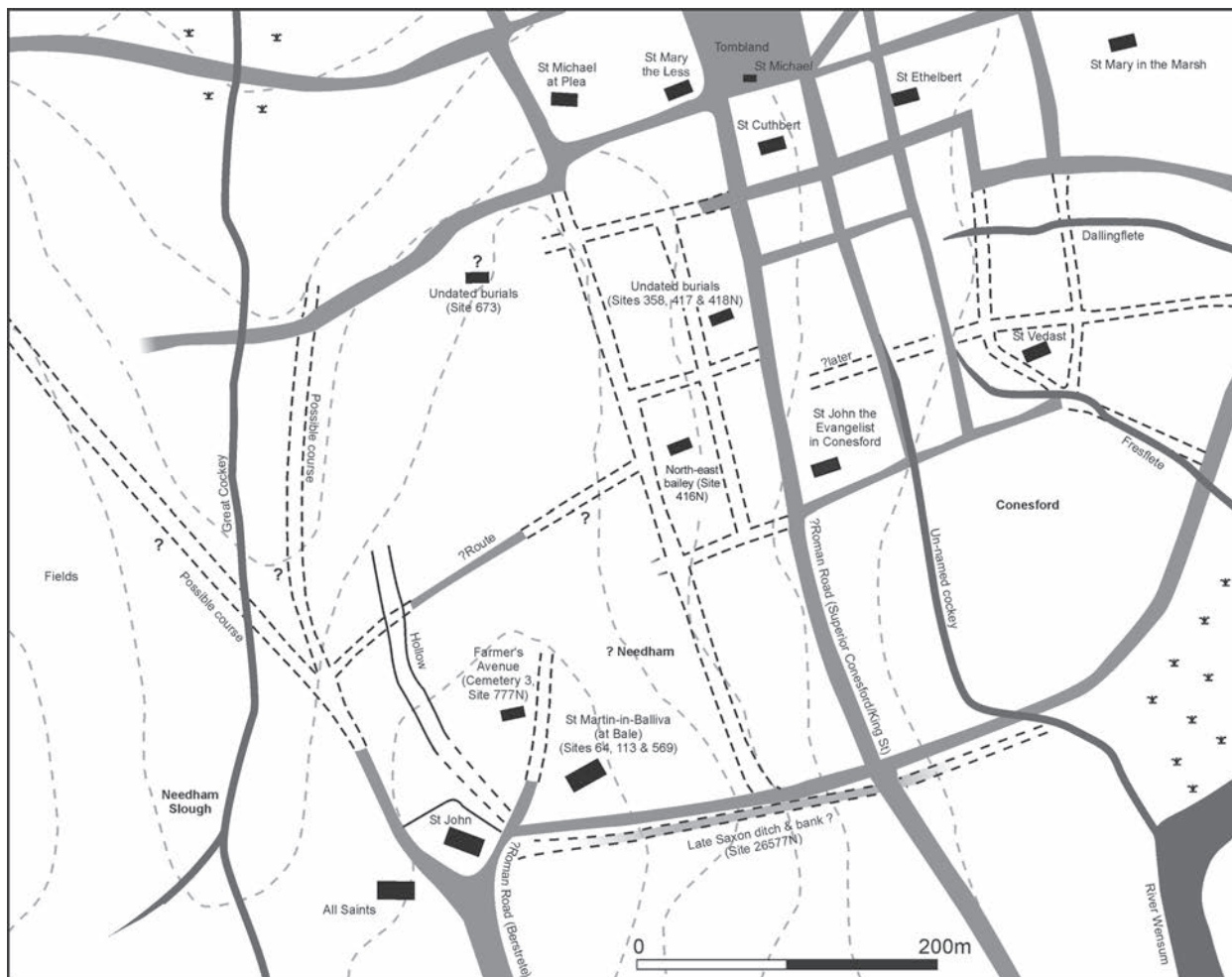


Figure 4.139 Late Saxon settlement and street pattern in the Norwich Castle area. Scale 1:5000

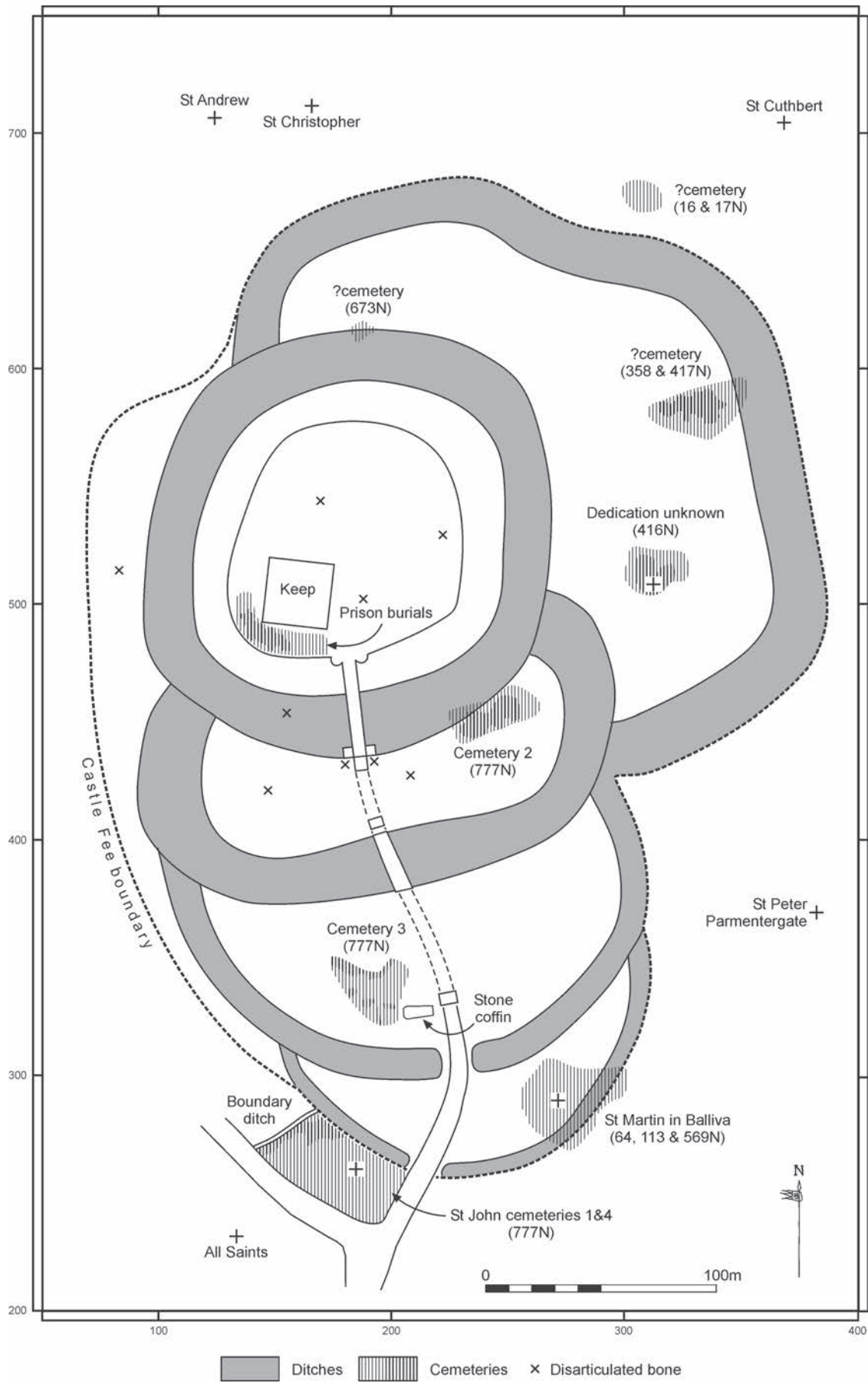


Figure 4.140 Location of churches and cemeteries (all periods) in relation to Norwich Castle's earthworks. Scale 1:2500

cemetery boundary marker seems to discount the hollow as an active boundary by the date at which the cemetery boundary ditch was dug (Fig.4.49). The earliest archaeological evidence for activity further west along the road frontage (later Timberhill) was in the mid 11th century (an isolated pit in Open Area 11; Period 1.3; Fig.4.31) and two post-in-trench buildings of the pre-or post-Conquest period (Buildings 17 and 18; Period 1.4; Fig.4.49).

Running several metres to the south-west of Hollow 1, roughly equidistant between it and the road (later Timberhill), was a ditch (Ditch 1), c.4m wide by 1.4m deep, running on a curious alignment southwards towards the church of St John beneath the later cemetery (Period 1.3; Fig.4.31). Basal fills indicating erosion were followed by deliberate infilling, culminating in the deposition of fire debris and organic waste (Period 1.4). Despite its isolation, it appears that this ditch was the repository for domestic waste, with plant macrofossils indicating crop-processing in the vicinity. This ditch was less than half the width of the defensive earthwork around the northern Norwich burh (e.g. Atkin *et al* 1985, fig.27) and that recorded at Thetford (Rogerson and Dallas 1984, fig.94) which were both in the region of 9m wide. The ditch recorded near Stepping Lane (see above) was considerably larger. The Castle Mall ditch may have served as a property boundary, with a possible path running parallel to it just to the east. Pottery from its fills indicates infilling in the late 11th to 12th century, a date that conflicts with radiocarbon evidence from overlying burials (see below).

An attractive proposition might be that the line of the outermost castle ditch actually reflected the position of a pre-existing burh ditch, recutting it exactly and removing all physical trace of its presence: this hypothesis was deliberately tested during excavations at Golden Ball Street, which produced no supporting evidence. Also arguing against this suggestion is the fact that the late 11th-century Fee ditch cut across the boundary of the cemetery of St John in two places (at both Castle Mall and Golden Ball Street), severing its eastern half (cf. Figs 4.49 and 5.2). These facts, combined with the curving line of the cemetery boundary and the comparative scale of the two ditches (8m wide by 3.5m deep for the Castle Fee ditch at Castle Mall; the Stepping Lane ditch was more than twice as deep and considerably wider) seem to discount the burh ditch theory.

Other suggestions to explain the absence of substantial ditchwork at Castle Mall are that the feature was for some reason smaller here (possibly the result of the local contours), or that the ditch recorded at Stepping Lane in fact ran further south (to run south of All Saints church; Fig.4.139): the local topography indicated in Fig.4.138, however, makes this latter hypothesis unlikely. Despite the extensive Castle Mall excavations and the plethora of excavated ditches, the proximity of these observations to the castle leads inevitably to problems of interpretation. What is clear, however, is the significance of the line defined across the western and southern part of the site, which was to be repeated in the castle earthwork's footprint.

Street Pattern

(Figs 4.2 and 4.138–4.139)

As has been noted (Chapter 3.III), the Castle Mall site lay between two thoroughfares, one or other of which

may have originated as a Roman road (Ber Street and King Street): both were certainly in existence by the Late Saxon period. Two courses for the westernmost route (Ber Street) have been suggested, the first showing it crossing the Cockey stream in the vicinity of modern White Lion Street (Ayers 1994a, maps 2 and 18) and the second (Atkin and Carter 1985, fig.02; Atkin 1993, fig.6,6) suggesting that the road continued along the eastern side of the Cockey valley, to cross the north-eastern corner of the Market Place, perhaps continuing northwards to join present day St Andrew's Street. This latter interpretation envisages a neat, gridded street plan for the Late Saxon town and reflects the interpretation that 'the settlement was confined to the east by the line of the Cockey' (Atkin 1993, 132). The local topography, with the slope of the stream valley and the possible presence of a defensive ditch (?and bank) running along the eastern side of the watercourse, would have constricted the available land. It does appear logical, however, that a route — even if only a rough path or track — would have existed around the settlement, linking the postulated routes leading westwards towards the fields and/or *Westwic* and ultimately to the river crossing at *Coslany* (Fig.4.2). Depending on the crossing point of the Cockey, the width of the stream valley and the probable marshiness of its lower reaches (see Chapter 3) could suggest the need for at least a bridge and perhaps a causeway rather than a ford to take it across the watercourse onto drier ground.

It has recently been suggested that Ber Street may in fact have been a planned development constructed at the same time as the Norman castle and French Borough (Penn 1999b, 3 and pers. comm.), although this suggestion is unsubstantiated and evidence from excavations at Castle Mall do indicate that the route was established before the Conquest. The street's wide form is notable, however, and may indicate that it served as a market at an as yet unknown date (see Chapter 14).

Excavations at Greyfriars on Prince of Wales road (Site 845N; Emery 2007) provide new evidence for the early street pattern on the eastern side of King Street (Figs 4.2, 4.138 and 4.139). Here a revised early Norman street plan has been reconstructed on the basis of both archaeological and documentary evidence, with a number of routes apparently originating in the Late Saxon period. This evidence has been used to inform the pre-Conquest street pattern illustrated here. Additional evidence comes from recent excavations beneath the cathedral refectory (Site 226N; Wallis 2006), which indicate the presence of another Late Saxon road running diagonally from the south-east corner of Tombland, in a position which indicates a route leading to a junction with Bishopgate and thence to the ford over the River Wensum (now Bishop Bridge).

Despite the absence of definitive archaeological evidence for the location of roads or tracks across the area excavated at Castle Mall, the position of churches, cemeteries and other features has permitted a hypothetical reconstruction of the local street pattern. The fact that churches had to be accessible can give clues as to their surrounding urban geography, even when no evidence for streets or paths survives: 'One of the most characteristic positions for an urban church was in the angle of a junction between a major and minor street' (Morris 1989, 209), while cross-roads were also popular positions. Comparable examples include St Martin in Mickelgate,

York, St George in Stamford (*ibid.*) and the many in London (Hobley 1988, fig.31). The natural topography in the vicinity of the Castle Mall site would clearly have been a factor in determining the road layout in this part of the town and may have led to the establishment of a less regular grid in the area of the Ber Street ridge. Small tracks or paths undoubtedly ran between the excavated buildings and early streets or alleys may not have been substantial; all trace of their presence could easily have been removed through later truncation. At *Hamwic*, for example, the street metalling was 0.10–0.15m thick, the surfaces of many alleys often consisting of mere scatters of gravel (Morton 1992, 32). A single ?fenced path was excavated at Castle Mall, running along eastern edge of Ditch 1 (Fig.4.31), although its dating is uncertain.

A possible continuation of the line of Rose Lane westwards beneath the castle precinct has long been suggested (for example Carter 1978b, fig.7; Atkin and Carter 1985, fig.02). The resultant interpretation of the street pattern in the area of the castle was most recently reiterated in 1993 (Atkin 1993, 6, fig.6). The theory suggests a gridded appearance to this area, with a cross-roads anticipated beneath the south bailey and another at the very northern edge of the castle precinct. The Castle Mall excavations have produced no evidence to indicate that any such route extended as far as the excavated area, although severe truncation had taken place during excavation of both the north-east bailey defences and the barbican ditch. Despite this truncation a series of metalled surfaces was found along the line of the westwards projection of Rose Lane westwards: it appears likely, however, that these represented a path along the side of the barbican ditch during the post-medieval period (see G9/40, Period 6.3, Chapter 10). An alternative hypothesis is that a road leading from the cross-road with King Street ran westwards from Rose Lane until it met another north-to-south route on the western side of the cemetery recorded in the north-east bailey (Site 416N). This would effectively have formed a continuation of a road postulated to exist further north (Ayers 1996, fig.10; where this is illustrated running to the east of the north-east bailey church).

In terms of the results of the Castle Mall excavations, an extensive linear feature (Hollow 1) has already been discussed in relation to boundary demarcation, although it is possible that this formed an early routeway around the settled area. In the north-western part of the site was a narrower hollow (Hollow 2, Period 1.1), which may have formed a hollow-way (Fig.4.3). It ran from north-east to south-west over a recorded distance of about 30m, being over 6m wide and just less than a metre deep. Although its alignment is at odds with the previously suggested road pattern to the east of King Street, it is possible that this formed a small, rough trackway leading from the north-to-south road postulated to the west of the Anglian Television cemetery south-westwards to join, ultimately, the westerly road on its route towards the Cockey stream (Fig.4.139). Layers within the feature included possible surfaces, as well as metalling within both it and Hollow 1 which may indicate a consolidated crossing point over the latter. Final infilling, possibly at the time of the Conquest (Period 2.1), consisted of dumps of redeposited natural perhaps laid to level the ground, with some indication of vegetation growth. The presence of an intermediate pit (Period 1.4), however, indicates that the ?route was already out of use prior to final infilling. The curious align-

ment may in part have been a result of the position of the Middle Saxon cemetery (Cemetery 2, Period 1.1). Many such irregularities have now been noted in Norwich's Late Saxon and early Norman street pattern, often as a result of local topographic factors such as streams (see Chapter 14 for overview).

Another route across the Castle Mall site was to become the southern approach route to the castle. Its existence in the pre-Conquest period is indicated by a number of pieces of circumstantial evidence. It would have provided an access route from the ?Roman or Anglo-Saxon road (Ber Street) into this part of the settled area, leading between the possibly pre-Conquest church of St Martin-in-Balliva to the east and the cemetery found at Castle Mall beneath Farmer's Avenue (Cemetery 3) to the west (Fig.4.139). The spatial position of features on the excavated site, including Cemetery 3, indicates the probable course of the 10th- to 11th-century road by, effectively, a process of elimination. Its position is more clearly defined in the 11th century (possibly even after the Conquest) by the northern boundary of the Timberhill cemetery (Cemetery 4), which ran between roads to the west and east (Fig.4.139). The course of this possible route across the northern part of the site remains unclear. A north-to-south running linear hollow (Hollow 3, mentioned above) may simply have been a natural dip in the ground surface, although it lay in the anticipated position of this postulated road, which broadly equates with that hypothesised by Atkin and Carter (Atkin and Carter 1985, fig.02). This may link with an observation of metalling beneath the motte (see Chapter 3.III).

All three of the hollows described above had undergone a degree of infilling (either through natural erosion or refuse deposition) and cutting of pits within them, prior to the Conquest. Their precise date of origin is uncertain, although it is possible that one or more may have originated in the Middle Saxon period to be contemporary with the early cemetery(s). Ceramic assemblages from Hollow 1 and pits found within it generally indicate a 10th- to 11th-century date, although they include a notable quantity of early (10th-century) forms (Lentowicz, Chapter 4.II and Goffin, Chapter 4.III). A number of significant finds include a small group of decorative iron casket or book cover fittings which have close parallels at Anglo-Scandinavian York (Mould, Chapter 4.III). A mid 10th-century coin of Eadred (Davies, Chapter 4.III) came from a pit, probably cut into the fills of Hollow 1.

In summary, the results from Castle Mall, when combined with observations from surrounding interventions and considered in the light of broader urban topographical studies, indicate a revised Late Saxon street pattern for the southern part of the town. It appears that the area to the north of what is now Rose Lane contained an irregularly gridded street pattern, much of which was dictated by the position of local topographic features such as contours and streams. The Castle Mall site would have lain between this loosely gridded area and the outer limit of settlement (delimited by Mountergate to the east and the Great Cockey to the west). Although the local topography may have led to an irregular, organic development, cemeteries and their churches were apparently relatively regularly placed across the area, with a density which reflects the scale of occupation within the Late Saxon town.

Churches and Cemeteries

(Figs 4.2, 4.10, 4.37, 4.51 and 4.140; Plates 4.5, 4.13–4.14, 4.23–4.30, 4.47–4.54 and 4.56)

One of the major academic contributions of the Castle Mall project is to cemetery studies, with concomitant evidence for the urban population, its genetic composition (see above and Töpf, Chapter 4.V) and the local street pattern. A regional survey indicates that a total of about 7,000 Anglo-Saxon burials have been recovered from East Anglia (Mays 1994, 8), of which about half are cremations. The groups considered in these volumes represent just under 8% of this total, or nearly 16% of the total number of inhumations of the period from the region.

Norwich had at least 46 churches and chapels (81% of its subsequent total of parish churches) by 1086 (Morris 1989, 169), although Campbell suggested a figure drawn from Domesday evidence of between 49 and 54 (Campbell 1975, 3). It now appears that as many as six cemeteries may have lain across the area of the later castle defences, with another just to the south of the outermost defensive ditch (Fig. 4.140). A minimum of 557 individuals is represented within these cemeteries. Four of the graveyards were investigated during the recent excavations, only one of which was known about at the project's outset. Two date to the Middle Saxon period and are described above. The other excavated examples are St John at the Castle Gate (de Berstrete/the Baptist, Timberhill) and another found beneath the castle's south bailey rampart (later overlain by Farmer's Avenue).

As noted above, a wide distribution of human remains, either interred or disturbed, has been recorded elsewhere across the castle area (Fig. 4.140). A timber church and cemetery beneath the castle's north-east bailey was excavated in the 1970s (Site 416N; Ayers 1985). As well as the burials recorded beneath Agricultural Hall (Sites 358 and 417N), seven disturbed burials to the north of the castle mound (Site 673N) may indicate the position of yet another lost cemetery beneath the north-east bailey. Further remains have recently been recovered from makeup dumps within the Castle Mound (Wallis in prep.), representing one adult from the first phase of the mound and ten other individuals (5 adults, 2 adolescents and 3 children) from the enlarged second phase. These presumably came from one of the three cemeteries disturbed during construction of the castle's north-east bailey. Disturbed remains recovered across the south bailey have already been discussed in relation to Middle Saxon burials (see above). The widespread distribution of human burials has been noted in many other urban centres such as Thetford, where two possibilities have been suggested for their presence: 'either late Saxon Thetford was blessed with more churches than we now have record of ... or ... parts of the deserted late Saxon town south of the river were used for burials by the inhabitants of the medieval town' (Rogerson and Dallas 1984, 198).

A key issue relates to the date of Norwich's pre-castle cemeteries, of which it appears that at least two (Cemetery 4 and that beneath the north-east bailey), probably three (if Cemetery 3 is included) and potentially as many as six may have been in active use at the time of the Conquest (Table 4.66). Many other castle excavations provide evidence for pre-Conquest churches and cemeteries either destroyed or abandoned as a result of castle construction or enclosed by castle defences. Some of the latter exam-

ples apparently remained in use: these include Hereford, Newark, Oxford, Dover, Hastings, Pevensey, Leicester, Warwick, ?Old Sarum and ?the Tower of London (see Chapters 5.V and 14). At Norwich, the cemetery of St John at the Castle Gate survived in restricted form after the castle ditchwork was laid out while, if pre-Conquest in origin, that of St Martin-in-Balliva may have remained functional actually within the Castle Fee (Fig. 4.140).

In addition to the known pre-Conquest churches within the Late Saxon town (Fig. 4.2; Ayers 1994, fig. 18), other churches lay outside the postulated limit of the southern burh. Along Ber Street, these may have included All Saints (Westlegate, quite close to St John at the Castle Gate) and St John de Sepulchre. Along King Street, St Clement and St Olaf (both in *Conesford*), St Etheldreda and St Clement may also date to the 11th century. Their presence implies the establishment of Late Saxon settlement, possibly scattered along the town's approach roads (cf. Shelley in prep. a).

The results from the Castle Mall excavations, when combined with evidence drawn from adjacent observations, have important implications for the development of Late Saxon 'parishes' and population density in the vicinity. Possible 'parish' boundaries may be reflected in the suggested road layout indicated in Fig. 4.139. The development of settlement in the castle area was, however, so dramatically altered by the imposition of the Norman defences that there is little opportunity to trace back the origins of subsequent parochial boundaries. Seven parishes later met at the castle: St John (at the Castle Gate/de Berstrete/Timberhill) to the south, St Peter Mancroft to the west, St Andrew and St Michael at Plea to the north, St Cuthbert, St Peter Parmentergate and St Martin-in-Balliva to the east (see Fig. 7.2), although these were subject to alteration at later periods. As noted above at least of these two churches (St John at the Castle Gate and St Martin-in-Balliva) may have been Late Saxon foundations which survived the Conquest in altered form. The extent of the area served by the church beneath the north-east bailey (at Site 416N) is unknown and little can be gleaned from later parochial boundaries in this area (Beecheno MS 1908, map 1, see Plate 7.1; Campbell 1975, map 7).

Summary information relating to each of the pre-castle cemeteries is presented in Table 4.66, followed by a discussion of each graveyard and/or church in the context of the developing Late Saxon town. The discussion then progresses to general comments on burial practices, comparing and contrasting the excavated groups. More detailed information on each cemetery group is given in Chapter 4.V, while the wider context is considered in Chapter 12, 'Castle and Ecclesiastical Landscape' and Chapter 14, 'The Urban Church'. Discussion on dietary implications appears in Chapter 13.

Cemetery 3: beneath South Bailey Rampart (Farmer's Avenue) (Fig. 4.37)

This cemetery consisting of 89 graves lay partially beneath the castle's south bailey rampart (Period 1.3, Chapter 4.II). The human bone represented 65 adults (23 males, 41 females and 1 unsexed) and 26 children. Additional bone recovered from grave fills and other features brings the total number of individuals to 106. The bodies were all supine and may have been buried in shrouds. Many graves

<i>Position in relation to castle</i>	<i>Modern location</i>	<i>Site no.</i>	<i>No. adults</i>	<i>No. sub-adults/ children</i>	<i>Total no. individs</i>	<i>Probable date of origin</i>	<i>Radiocarbon date range</i>	<i>Associated church</i>
barbican	Castle Mall (Cemetery 2)	777N	22	21	43	Middle Saxon (8–9th century)	burial 45068: OxA-6386; cal AD 590–990 burial 46038/46057: OxA-6387 and 6388: weighted mean cal AD 660–870	unknown
south bailey	Castle Mall (Cemetery 3)	777N	65	26	106 *	Late Saxon (late 9th to early/mid 11th century)	start: <i>cal AD 890–1020 (95% probability)</i> end: <i>cal AD 980–1060 (95% probability)</i>	unknown
outer bailey	ECN Building	64N, 113N, 569N	?	?	?	?Late Saxon		St Martin-in-Balliva
	Rouen Triangle	none	1	0	1	10–12th (?13th)		?St Martin-in-Balliva
south-west of outer bailey	Castle Mall (Cemeteries 1 and 4)	777N	149	35	265 * (?2 = ?Early to Middle Saxon)	Early/Middle Saxon (7th century) Late Saxon+ (late 10th to 11th century)	Cemetery 1, burial 13156: OxA-6382; cal AD 540–690 Cemetery 4 start: <i>cal AD 980–1030 (95% probability)</i> Cemetery 4 end: <i>cal AD 990–1050 (95% probability)</i>	St John at the castle gate (St John de Berstrete/now St John the Baptist, Timberhill)
north-east bailey	Anglia Television	416N	60	70	130	Late Saxon (late 10th to 11th century)	see Table 4.62 for recalibrated dates from charcoal	excavated church, dedication unknown
	Agricultural Hall/ Crown Rd	358N, 417N, 418N	5 +	0	5 +	?Late Saxon		unknown
	Opie Street	673N	7		7	?Late Saxon		unknown
Total			309	152	557 +			

* includes disarticulated remains

Table 4.66 Cemeteries beneath, within or adjacent to the defences of Norwich Castle

provided evidence for wooden coffins or possible plank burial, although there were no examples with flint/chalk 'ear muffs' or pillows (see further comments below). All of the large, rectangular graves were aligned east-to-west, with a few slightly nearer south-west to north-east. The large, rectangular graves were generally widely spaced and were arranged in 14–15 rows. They had been placed slightly closer together towards the south, where some were intercutting.

Possible 'family' groupings were tentatively identified although there was no evidence for the presence of grave markers. A slight concentration of infants and juveniles was noted to run along the eastern side of the cemetery and another cluster lay to the north-east. In general, however, the cemetery produced fewer infants than other contemporary graveyards and more such burials may have lain closer to the church. One child burial lay isolated to the east of the main burial group. Although there was a higher proportion of females to males within the cemetery, there were no clear spatial concentrations relating to sex.

The nature of any cemetery boundary markers is uncertain, although the graveyard was effectively confined between a hollow (Hollow 1) to the west and a postulated road to the east (Fig.4.31). The hollow ran about 10m to the west of the most westerly grave. To the north-west, no graves were found west of a series of gullies (Period 1.4) although the different alignment of these gullies (north-to-south) may suggest a coincidental positioning; the original demarcation of the cemetery may have been, for example, a fence or hedge no physical evidence for which survives. Clearly, the graves did not extend as far as the lines of pits and structure(s) to the west with which they are likely to have been contemporary. No northern boundary was apparent but again, it may have been demarcated by a fence. To the east, four graves cutting into earlier pits may have been outliers to the main part of the cemetery or the same concentration of graves may have continued across the whole area from west to east. To the south, it is possible that some graves were removed during the original excavation of the south bailey ditch (Period 3.1), although the close packing of graves in this area of the cemetery suggest that the boundary lay nearby.

Ceramics from grave fills suggest that this cemetery may have been established in the late 10th century, with burial continuing into the early to mid 11th century, although radiocarbon dates (from 15 skeletons; Bayliss *et al* Chapter 5.V) indicate that the burial ground could have originated as early as the late 9th century (Table 4.66). A duration of *1–155 years (95% confidence)* is suggested. Some graves contained mid 11th-century pottery, although the area may already have seen a change of land use prior to the Conquest.

Analysis of the human bone (Anderson, Chapter 4.V) indicates that, demographically, the group was unusual in having a greater number of women than men, although this may simply be due to the fact that the entire cemetery was not excavated. A higher proportion of females to males in comparison with the cemetery beneath the north-east bailey was noted. This may reflect factors such as areas of preferred burial within a cemetery, with women to the west (?) and males to the north. It could also relate to the dedications of the churches — one saint appealing to females and another to males — although uncertainty over the catchment areas of urban early churchyards makes such a suggestion tenuous. Using comparative

skeletal groups, Anderson suggests that most East Anglian Saxons reached at least middle age and many were probably older. Although the attribution of skeletal changes to particular occupations may be unwise, two individuals appeared to have changes suggestive of a similar activity in life; similar changes have elsewhere been attributed to weaving and/or shoemaking (although application of this interpretation to the Farmer's Avenue examples should be treated with caution). Differences in degenerative diseases between the sexes may indicate different daily tasks. There was a high level of lesions associated with iron deficiency anaemia and a possible case of scurvy was identified (dietary deficiencies were also notable in the cemetery beneath the north-east bailey; see below and Chapter 13.II). Physical traumas were frequent, including a hip fracture which may indicate a high fall or 'traffic' accident. There was also a fairly high proportion of stress-related diseases of the spine and ankles/feet, associated with a greater than average presence of trauma. This may relate to environment (*e.g.* uneven ground), poor footwear and perhaps the occupation of the individuals concerned.

DNA analysis suggests genetic associations with Scandinavia and/or the Western Isles, with one individual possibly having a Romani origin (see 'Anglo-Scandinavian Norwich ...' above).

No church associated with this cemetery was recorded, although it is possible that one of the excavated buildings in the area may have performed such a function. Building 23 is perhaps the most likely candidate as a church, with a possible square chamber at its eastern end (Fig.4.60, Plate 4.15). It was of similar dimensions (10m long) to the church recorded beneath the north-east bailey, although its groundplan is not particularly convincing. There was a notable gap in burials to the east of the main concentration, within which a single child burial was recorded. This may imply the presence of a church here, in an area where the fragmentary remains of several buildings (including Building 23) were evident. Alternatively, the church may have lain just outside the excavated area, or there may not have been a church accompanying the cemetery at all. At Southampton, it has been suggested that some of the smaller cemeteries may simply have been accompanied by a free-standing cross (Morton 1992, 51). Beneath the north-east bailey a post-hole set within a pit was tentatively interpreted as supporting such a timber cross (Site 416N; Ayers 1985, 24).

A burial within a lidless stone-lined coffin was discovered in 1911 (Plate 4.56), opposite the Plough Inn (later Le Rouen public house), to the north-east of the cemetery recorded at Castle Mall beneath the south bailey rampart (Farmer's Avenue, Cemetery 3). The discovery was reported in *Fisher's Almanac and Annual* where it was suggested that the burial might relate to the cemetery of St Martin-in-Balliva. The approximate location of this burial is shown on Fig.4.140 (taken from Rye's 1921 map). It was found on the western side of Golden Ball street, some distance to the north of the cemetery of St Martin and it is probable that it actually related to the Farmer's Avenue cemetery. Its spatial position in relation to the castle defences, lying to the north of the south bailey ditch in either case, indicates that it must have pre-dated the construction of the castle earthworks (unless, of course, it had later been moved). A study of the coffin, which still resides in Norwich Castle Museum stores, published for the first time in this volume suggests a constructional date

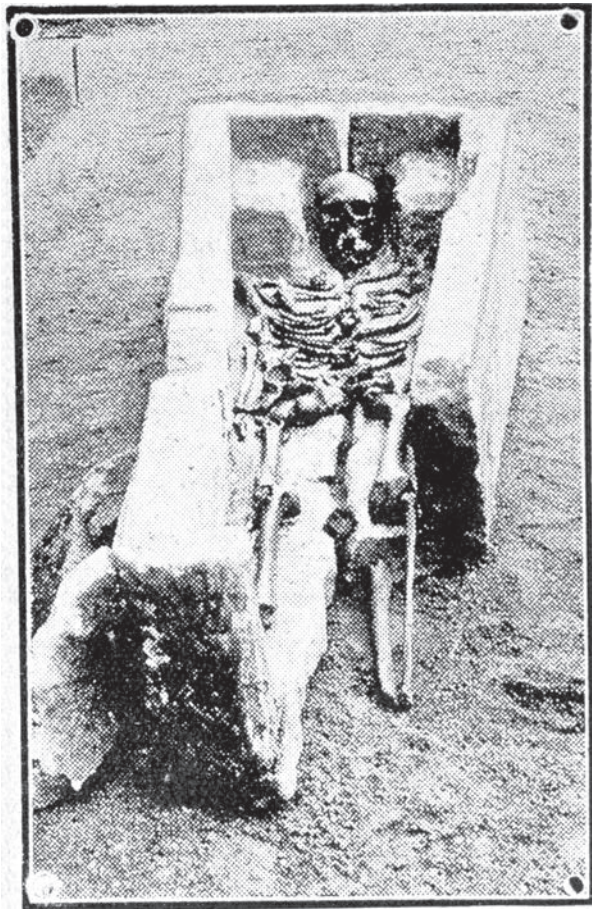


Plate 4.56 Stone coffin found adjacent to Le Rouen public house
(from *Fishers Almanac and Annual* 1911, 10)

of 10–12th (?13th) century (Ashley, Chapter 4.III). There appear to be no Norwich parallels for this coffin, although flint and mortared graves made in imitation of stone coffins were found at Castle Mall (St John's), the north-east bailey (Ayers 1985) and St Margaret-in-Combusto (Bown and Stirland, forthcoming). A gravecover fragment was found at St Martin-at-Palace in Norwich and a similar, virtually complete, 10th- to 11th-century example has recently been identified in Thetford (Brian Ayers pers. comm.). The source of the shelley limestone used in all of these examples is probably Lincolnshire or Northamptonshire. The transportation of such a stone coffin to Norwich implies high status. The St Martin-at-Palace example is decorated in Lindsey style, while the Thetford cover was produced at or near Barnack. These facts indicate the preparation of such objects at source, perhaps receiving final finishing (or repair of any in transit damage) by Norwich stonemasons.

Cemetery 4: the Church and Cemetery of St John at the Castle Gate (later St John de Berstrete; now St John the Baptist, Timberhill)
(Fig.4.51)

The earliest documentary reference to this church was made in the mid 12th century, although the extant building may have replaced an earlier church. It is said to have been built by Wodowin the priest and was given to Norwich priory (Blomefield 1806, II, 126), its appropriation to the

infirmarer of the priory being confirmed in 1313 by an obedientary roll of Norwich Cathedral Priory (Cattermole 1985, 26). Several other Norwich churches had similar affiliations. This church was one of five in Norwich to have been stylistically dated to the Saxo-Norman period (Taylor and Taylor 1965, 471–5; Plates 4.23–4.24), with a foundation date of 1066–1087 suggested (Carter 1978b, 194, fn4). The excavated part of the cemetery lay to the north of the extant church, covering an area of about 40m east-to-west by 11m north-to-south, graves becoming sparser towards the west and east (Period 1.4, Chapter 4.II). Skeletal analysis indicates a high proportion of leper burials (see below). The cemetery itself was subject to a number of reductions in size and its surviving northern limit (now delimited by Grout's Thoroughfare) lies some metres to the south of its original extent. The modern-day Thoroughfare effectively mirrors the line of the early cemetery boundary. Later developments of this cemetery are detailed in subsequent chapters.

The northern boundary of the graveyard consisted of a small ditch (Ditch 2; c.2m wide by 1m deep) which was recorded over a length of 33m at Castle Mall, an additional observation at the Golden Ball Street site (Site 26496N) extending the total recorded length to just over 70m. The ditch arced round northwards, cutting off a triangle of land between roads to the west and east (Figs 4.57, 4.138 and 4.139). It was V-shaped in profile, with a pronounced square basal slot. Posts and slots recorded at its base of the ditch appear to indicate the presence of integral timberwork, although they imply a somewhat curious arrangement; a palisade, for example, would be expected to run along the upper side of the ditch or the top of an associated bank. No parallels for such an arrangement have yet been found, although a ha-ha type feature is perhaps implied. Primary fills of the western stretch of the ditch indicate weathering (Period 3.2) and were eventually followed by refuse deposits dating to the early 14th century (Period 4.2). This chronological gap in construction/infilling suggests that the ditch was regularly cleaned out. A later butt-ended ditch to the north may imply that the cemetery boundary was later moved northwards, or this may have been a drainage feature (Ditch 12, Period 3.2). No burials were found in the triangular gap between the two ditches. Other boundaries of the cemetery lay outside the excavated area. The northern boundary eventually moved southwards and the western corner was sold off in 1297 (see Chapter 7.I). In urban areas, where land was in demand, high prices could be obtained for cemetery land (Daniell 1997, 112).

Many early churches were similarly placed 'in the triangular space formed between two converging roads. Such sites tended to occur on the edges of towns, typically before a gate ... Churches which take this position inside towns ... may give clues as to the approximate positions of earlier defensive lines' (Morris 1989, 209–210). Examples of churches placed at the gates of Anglo-Saxon burhs occur at Oxford, Wallingford and Wareham (*op.cit.*, 214). By 1157 (Henry II) the Norwich church was referred to as (*Ecclesia Sancti Johannis ante portam Castelli* or 'St John at the Castle Gate' (*Liber Cartarum et Placitorum*; Harrod 1857, 139; Sandred and Lindström 1989, 42). It would appear to have lain outside the limit of Late Saxon settlement and perhaps an associated defensive circuit, on the western side of the route into the settlement proper (Fig.4.139). If a burh boundary

marker did exist, the question arises as to the need for the eastern stretch of the cemetery boundary marker, which could perhaps have been expected to utilise any existing earthwork. The situation is masked by the insertion of the Castle Fee boundary ditch in the anticipated position of the burh boundary (see above and Chapter 5.V).

The intercutting nature of graves within the cemetery clearly indicates a pressure for space and is strikingly different to the adjacent Late Saxon cemetery (Farmer's Avenue, Cemetery 3) to the north. Of the total graveyard area, much of which survives to the south and west of the extant church, about 14% was archaeologically investigated, the total area available for burial being very approximately 1,825m², assuming an original church of similar dimensions to the example excavated in the north-east bailey (Ayers 1985, fig.12). A total of 265 individuals is suggested (including disarticulated remains), representing 149 adults and 35 children. The overall layout of the cemetery was 'fan'-shaped, with graves generally aligned south-west to north-east to the west, east-to-west at the centre and north-east to south-west to the east (Fig.4.51). These alignments reflect the shape of the available block of land. The influence of local topographical features on burial alignment is paralleled at many other cemeteries (e.g. Raunds; Boddington 1996, 31–32). Most graves at St John's were aligned north-west to south-east, with those towards the centre of the excavated area being most likely to be aligned east-to-west. The latter are those furthest from the cemetery boundaries which clearly influenced alignment closer to them. Graves to the east were usually aligned south-west to north-east. The alignment of several burials was completely at odds with those around them, including some examples aligned almost north-to-south. No areas specially dedicated to child burial were apparent and there were no other concentrations relating to age or sex.

Some at least of the burials at St John's were probably made within shrouds, two pins having been found (note, however, the knife worn at the belt discussed below). Such shrouds would normally have been a piece of coarse cloth, within which the body may have been placed naked (Daniell 1997, 156). They would either have been sewn, tied or pinned together (either with a metal or wooden pin). Many bodies within the Timberhill cemetery had flints supporting the skull, usually placed either side of the head. Others lay above beds of pebbles or had been buried in wooden coffins indicated by dark organic staining. One grave was lined with flint and chalk (perhaps in imitation of a stone coffin) and several others had 'shelves' dug into the base of the grave to support either the skull or feet. Further comments on burial type are made below.

Radiocarbon dates (Bayliss *et al.*, Chapter 4.V) indicate that the cemetery (represented by the 18 skeletons sampled) came into use in *cal AD 980–1030 (95% probability)* and went out of use in *cal AD 990–1050 (95% probability)*.¹² The dated burials indicate the presence of only one or two generations, the duration of the cemetery being *between 1 and 65 years (95% probability)*. These dates suggest an overall start date later than that of the Farmer's Avenue cemetery (Cemetery 3), the presence of a Middle Saxon burial (OxA-6382, sk.13156, Cemetery 1) perhaps being coincidental or *possibly* indicating continued use (see above). Diagnostic artefacts from graves are generally of Late Saxon/Norman type, although a few later objects were present, some of which

were undoubtedly intrusive. A small group of burials were clearly late (graves 10516, 10865, 11462, and 11465; Period 4.2, see Chapter 7), having been cut into early 14th-century fills of the cemetery boundary ditch and it is possible that other graves across the cemetery date to a similar period, or were buried after the Conquest. This part of the cemetery was, however, already suffering from encroachment during the late 13th and 14th centuries, implying the gradual contraction of the cemetery at this time.

Non-metric traits suggest a link between this group and Cemetery 3 (Anderson, Chapter 4.V). This *may* indicate the displacement of the Farmer's Avenue church and cemetery by the castle and movement of some of its population to St John's parish, although radiocarbon dating could suggest that that this was in fact a pre-Conquest change: the situation remains equivocal. A relatively high mean age at death suggests the absence of some children from the cemetery population, perhaps due to the distance of the excavated area from the church. Young children may have been interred close to the building (see Anderson). The spatial distribution of non-metric traits and congenital anomalies tentatively suggests 'family' groupings and may indicate that continued reburial in certain areas was not simply a matter of pressure for space, but also a desire to be buried in proximity to relatives. Anderson's suggestion that this implies that the cemetery was in use for a relatively short period appears to be upheld by the radiocarbon dates. In adults, there was a high rate of young deaths (particularly male) in comparison with the Farmer's Avenue and other medieval groups. This could be related to one of several factors; status, a period of high mortality for this age/sex group (such as war or riot) or infection (possibly leprosy; see below).

Alongside leprosy, a number of other interesting pathologies were observed in the Timberhill cemetery, including a good example of Perthes disease, a fractured elbow with pseudarthrosis and a possible case of poliomyelitis. Analysis of cranial indices may indicate a change from the Saxon to medieval period in Norwich (see Anderson, Chapter 4.VI and dating discussions elsewhere in these volumes).

There was an unusually high prevalence of osteoarthritis in the shoulder joints of both men and women, which may relate to tasks habitually involving the shoulders. These could include threshing, scything, using a sickle, beating cloth or leather hangings and perhaps hammering (although note the caveats in Anderson, Chapter 4.V). Miscellaneous lesions in a number of individuals may provide evidence for horse-riding and archery. In four individuals, three of which may have been lepers, habitual use of crutches may be suggested. Overall, the evidence indicates a mixed cemetery population of the able-bodied and infirm.

Leper Burials¹³

The most unusual aspect of this cemetery was the presence of a high level of leprosy (Hansen's disease), possibly affecting 35 out of the total excavated group and indicating a much higher incidence than would normally be expected from an urban parish cemetery. The suggested minimum prevalence amongst the accessible group is 19.4% and can be compared to the 24% occurrence at the Hospital of St James and St Mary Magdalen, Chichester (Lee and Magilton 1989, 258; Anderson

1998). Continental examples indicate rates of over 75% (Ell 1984, 155; e.g. Næstved, Denmark, founded in the late 12th century; Richards 1977, 115 ff). Of the 35 identifiable examples at St John's, only four appeared to have suffered from the tuberculoid strain, with sixteen thought to be lepromatous. Bones affected by leprosy were also found during excavations at the post-Conquest churchyard of St Margaret in Combusto, the church nearest to the leper house outside Magdalen gates (Bown and Stirland, in prep.).

Leper burials at St John's were distributed across the whole of the excavated area and throughout the stratigraphic sequence (Fig.4.54). They may either have been zoned within the cemetery (to the north of the church), as well as within Norwich at this particular cemetery, or were perhaps spread more widely throughout the whole burial ground. The northern location of the leper graves may indicate preferential burial (*i.e.* non-lepers being buried to the south of the church), tallying with the frequent assertion that the southern side of churches was more popular for burial than the dark, northern side. The case for such preferences may, however, have been overstated in the past (Daniell 1997, 99). As noted above, around 14% of the total cemetery area was excavated. If the leper burials were indeed spread across the whole cemetery in similar quantity and density to the excavated examples, a total of 250 leper or probable leper burials could be anticipated. This would clearly imply a substantial — perhaps improbably large — leper cemetery.

Selected individuals were analysed in part of an ongoing research project into leprosy transmission and six samples confirmed the presence of *Mycobacterium leprae* DNA (Watson, Chapter 4.V). Future research linking osteoarchaeological examination, archaeological evidence and DNA analysis is planned.

The leper burials at St John's were treated in similar fashion to other inhabitants of the cemetery, as was the case at the Chichester leper cemetery (Magilton and Lee 1989, 256). The most notable example at St John's was made in a chalk- and clay-lined grave (sk.13055, Plate 4.27), presumably in imitation of a stone coffin and implying a degree of status (*cf.* the monolithic stone coffin recovered from the site in 1911; see above). Another leper was accompanied by a single surviving 'ear muff' and another had two flints placed to one side of the skull. Three large pits had apparently been dug during the burial sequence, one of which contained a number of burials including a leper (sk.13173). One leper was buried with slightly flexed legs (sk.11117). A burial in the leper hospital cemetery of St Margaret, High Wycombe, Bucks was similarly positioned (Farley and Manchester 1989, 84), although a particular association of this position with leper burials is not suggested.

As would be anticipated at this date, few artefacts were recovered from Timberhill graves. Only two of the leper graves contained artefacts. These were a type 2A horse-shoe (from grave/pit 13207), an angled blade or strap and an iron ?handle (both from grave 13098, sk.13097). Such objects may have been incidentally introduced into the grave fills, rather than deliberately placed. Other objects had, however, been deliberately interred with non-leper burials (including a knife probably worn at the belt; SF5678; Mould, Chapter 4.III, Fig.4.97).

The similarity in the treatment at death of the lepers with their non-leprous counterparts (*e.g.* the use of grave

furnishings such as 'ear muffs' which are replicated in many 10th- to 12th-century cemeteries across the country) may imply a transitional period between acceptance in the community by using familiar burial practices, but 'otherness' in terms of location (Chris Daniell, pers. comm.). The main reason that this cemetery in particular became a focus for these burials may have been topographical, rather than for example its dedication or association with a particular patron (although there is a documented link with the cathedral infirmary, many other Norwich churches were similarly affiliated). Hospitals dedicated to St John the Baptist are known (*e.g.* at Sherbourne (Dorset), Winchester and High Wycome, Bucks).

The possibility that a timber structure set within the boundary ditch have related to some kind of screening of the cemetery (similar to the later enclosure walls around some of the later large leper hospitals) is tantalising, although perhaps rather fanciful (see above). The leper cemetery of St James and St Mary Magdalene at Chichester was bounded on at least one side by a sequence of two ditches, with graves cutting into the earliest (Magilton and Lee 1989, 253 and fig 3).

The presence of the leper burials raises key issues of date. A relatively comfortable explanation for their presence might be that the church was a pre-Conquest foundation, which became a focus for leper burials following 1066. This argument, however, is difficult to reconcile with present understanding of the radiocarbon dates, although even a small correction for dietary offsets would have considerable implications (explored by Bayliss *et al* 2004). Eight of the leper or possible leper burials were radiocarbon dated, the dating programme being specifically targeted towards Bayesian modelling using leper or possible leper burials in stratigraphic sequences across the whole of the excavated cemetery (Bayliss *et al*, Chapter 4.V). The eastern part of the burial ground was clearly cut off at the time of the insertion of the Castle Fee boundary, implying its existence prior to the Conquest. Even if post-Conquest in origin, the burials are still of considerable interest at this early date.

In a Late Saxon context, the Norwich cemetery would have lain immediately outside an entrance point to the town, confined between the junction of two roads (Figs 4.2 and 4.139) and with a ready supply of fresh water provided by the Great Cockey. After the establishment of the castle, this position would have placed it immediately adjacent to the castle gate on the main approach route along the Ber Street ridge (Figs 5.1 and 6.1). The Norman French Borough lay to the north-west, with the Jewish quarter (another segregated group) nearby on the west bank of the Great Cockey stream valley (Fig.5.1; *cf.* Lipman 1967, fig.13). Such a position outside the town but adjacent to one of the main thoroughfares was the classic position for *leprosaria* (*cf.* Chichester; Magilton and Lee 1989 map 1). In Norwich, ribbon development may already have begun to spread southwards along Ber Street during the late 11th and 12th centuries. During the 12th century and later it is evident that lepers were not necessarily enclosed, but might live together in villages or on the outskirts of towns where they could conveniently beg for alms. Such communities are known in Devon and Cornwall (Orme and Webster 1995) as well as in 12th-century France (Patricia Cullum pers. comm.). Leper houses were placed around the western and northern sides of Norwich (Fig.6.1), probably in association with

the direction of the prevailing winds (Rawcliffe 1995, 48). Leper houses may have been deliberately positioned downwind from towns in an attempt to reduce the risk of infection.

Leprosy had reached England by the end of the 4th century AD and at least eleven Anglo-Saxon cemetery sites have been reported which contained leprous skeletons (Roberts 2002). Anglo-Saxon documents mention skin diseases including leprosy ('*hreoþfl*'; Bonser 1963, 371), the presence of lepers specifically in East Anglia being noted by the Irish missionary Fursey, writing in the 7th century (Krusch 1902, 441¹⁴). Although this source is clearly drawn from a biblical model (Luke VII, v.22), it appears to indicate that leprosy was endemic in England prior to the Conquest. Leper burials are known in small numbers in otherwise 'normal' cemeteries dating to the Romano-British and Anglo-Saxon periods, including three examples in Norfolk and Suffolk (summarised by Roberts 2002). Post-Conquest leper cemeteries excavated in Norfolk include one at South Acre (Wells 1967c).

Leprosy reached its peak in Britain between the 11th and 13th centuries. Thousands of the population must have lived in poor, overcrowded accommodation and would have been undernourished, especially in years of poor harvest. Locally, dietary deficiencies are attested at both the Farmer's Avenue and north-east bailey cemeteries. Leprosy was a contagious disease and such groups were very vulnerable: it is not, however, highly contagious and transfer between individuals requires close contact. Many leper hospitals (*leprosaria* or Lazar houses) date to the 12th century, although a few late 11th-century examples are known. Apart from the surviving hospital of St Mary Magdalen at Sprowston reputedly founded by Bishop Herbert de Losinga before 1119, Norwich had five other leper houses (dedicated to St Stephen, St Giles, St Benedict, SS Mary and Clement and St Leonard; see Rawcliffe 1995, 7, map 1 and Fig.6.1). These were founded at unknown dates, probably after the Lateran Council of 1179 had ordered the segregation of those suffering from the disease. According to Blomefield, it was the parish's responsibility to identify lepers and have them removed from the city. Diagnosis of leprosy during the medieval period appears to have been fairly good, although would necessarily have identified only the most extreme cases (Ell 1984, 155). Norwich's leper houses were beyond the city boundaries (Figs 6.1 and 7.1), just outside Magadalen and St Augustine's gates to the north, outside St Benedict's and St Giles' gates to the south and outside St Stephen's gates to the south-west. St Stephen's was the nearest leper hospital to the Timberhill cemetery, with other nearby hospitals being the short-lived hospital established for the sick poor at St Mary in the Fields (in existence before 1248; Rawcliffe 1995, 165) and Danyels almshouses (documented in 1418; Rawcliffe 1995, 166).

Norwich had another hospital (Brichtiu's¹⁵), mentioned by Thomas of Monmouth in his 12th-century account of the miracles of William of Norwich (Jessop and James 1896; Rawcliffe 1995, 138–139). The reference indicates that this institution may have accommodated lepers, although its whereabouts are unknown. There is a possibility that this hospital was on or near Timberhill, lying on the margins of the developing town, although it is more likely that this institution was subsumed within one of the civic *leprosaria* elsewhere (Carole Rawcliffe, pers. comm.).

In accordance with the synod of Westminster (1200), leper hospitals were obliged to bury their dead separately, although this does not always appear to have been the case at Norwich, where some hospitals could not afford a separate burial ground and simply made use of the nearest churchyard (Rawcliffe 1995, 50). Lepers may in fact have been brought back to their former parishes for burial. Those with sufficient means to be cared for in their own homes would probably have been buried in their own parish as a matter of course.

Evidence for the continuity of hospital institutions across the 1066 boundary is limited and little is known about such pre-Conquest hospitals as did exist (Pat Cullum, pers. comm.). The Conquest date is in this context a rather artificial divide as — although crucial in England — it is of little significance in relation to the institutional relief of lepers in continental Europe (Carole Rawcliffe, pers. comm.). What is significant is the implication for the date at which attitudes to and segregation of lepers occurred.

It is possible that the Timberhill cemetery indicates the burial ground of a leper 'community', perhaps even a village. Popular social attitudes may have required the segregated burial of lepers even before this became a requirement of the church: St John's cemetery may have been a designated burial place whether or not the individuals concerned came from the particular parish. Hostility to lepers was perhaps inherent in the Anglo-Saxon population and some families at least would have wanted to remain with their leprous offspring, leading to the natural development of informal groupings of people in similar circumstances. This resonates with Anderson's comments on possible family groupings within the cemetery (see Chapter 4.V). Lanfranc's early foundation of St Nicholas' at Harbledown, Canterbury (c.1084, which was well in advance of ecclesiastical legislation) may have been representative of public opinion which was already resulting in the shunning or marginalisation of lepers within the general population. Informal communities of lepers (and of other sick and destitute people) would undoubtedly have developed in Late Saxon towns of any size (*cf.* the suggestion, outlined further below, that the cemetery beneath the castle's north-east bailey may also have provided a focal point for burial of the sick and injured). This suggestion is supported by the very fact that the Normans made institutional provision for them as part of a wider movement of ecclesiastical reform and regeneration. As well as Canterbury and Norwich, other early foundations include those at Lincoln, Rochester and York.

By the 14th century, leprosy was in decline (Richards 1977, 83ff) and the colder winters after 1300 may have discouraged the lice, fleas and parasites which lowered people's resistance. It has been suggested that the climatic conditions may also have affected the length of time the leprosy bacillus could survive outside the human body (Rawcliffe 1995, 41), although contradicting this suggestion, cases of leprosy continued in cold climates long after they had died out in Britain (for example, the last indigenous cases in Scandinavia occurred as late as the 1950s; Richards 1977, 89). After the Black Death, when the populations of Norwich may have been reduced by half, more food and more space would have been available for the survivors. The leper hospitals remained, caring for sufferers from other diseases as well as leprosy,

and continued to be remembered in wills. Over a third of Norwich testators between 1370 and 1532 made them bequests, among them Margaret Webster of St Martin-at-Bale (in-Balliva), who left money to very many charities including to ‘the five houses of sikmen’.

It appears that by the end of the 14th century not all lepers were being expelled from Norwich. Thomas Tytel, weaver, was ordered out of the city during the reign of Edward II in 1374–5 (Hudson 1892, 68), a reference to him and another leper being made in a verdict of the Leet of the ‘new Fee’ of the castle. In contrast, two sufferers living in Berstrete Leet were allowed to remain as far as the record shows. One of them, Isabella, widow of Luke of Iklingham, was presented at St Stephen’s Leet for allowing a foul drain to overflow repeatedly into the street, as well as for selling ale without a licence (Hudson 1892, 59, 71–72; NRO DCN 79/3). Members of the Wellys family who died in 1448 and 1468 both left wills in which they stated that they suffered from leprosy (Rawcliffe 1995, 51). They had been living in St Leonard’s Hospital outside Magdalen gates and both requested burial in the churchyard of All Saints Fybriggate (the parish with which St Margaret in Combusto had recently been joined).

Medieval lepers continue to be the subject of extensive academic interest (e.g. Rawcliffe 2001; Roberts 2002; Fay in prep.), concomitant with the wider aspects of hospital institutions (e.g. Rawcliffe 1995; Satchell 1998). The presence of the leper burials in St John’s cemetery has raised some intriguing lines of enquiry, full exploration of which falls beyond the remit of the current publication. These include, crucially, the possibility of a pre-Conquest date for the burials which has already engendered a considerable amount of interest at both a local and national level. The issue of segregation is another major factor and, in particular, the date at which changes in attitudes to leprosy occurred. Allied to these are the possible affiliations and other social factors (including status) which led to the zoning of the burials in this particular cemetery. In a local context, the position of the cemetery raises key issues relating to urban topography, whether in a pre- or post-Conquest setting.

St Martin-in-Balliva (Figs 4.139–140)

Although the first documentary reference to this church, known throughout the medieval period as St Martin-in-Balliva (or St Martin-in-the-Bailey, St Martin at Bale; Blomefield 1806, II, 120), was made in the mid 13th century (see Chapter 7.I), it may have originated in the pre-Conquest period. This assertion is made largely on the basis of the church’s topographical position in relation to the oddities of the local contours and its presence may account in part for the apparent asymmetry of the castle earthworks at this point (see Chapter 5.V). The site of the former church (beneath the modern Eastern Counties Newspaper building; Site 113/569N; Figs 2.2 and 4.140) was developed in 1967, although only minimal recording was possible (Bill Milligan, pers. comm.). Human burials were found in the south-western and northern parts of the site. Other inhumations had been recorded further to the east (Site 64N) during the construction of Rouen Road from King Street to Cattle Market Street in 1962.

A footnote by Beecheno states that ‘some remains, consisting of an arched doorway and part of a west wall with squared flints, in a yard south of Rising Sun Lane,

and now forming part of a printer’s workshop, have recently been pointed out to me as being possibly part of this church, but they are not in the position indicated by Blomefield’ (Beecheno MS 1908, 13).

The dedication may indicate St Martin of Tours (c.317–397) which was a popular early dedication with over 173 ancient examples in Britain (Sandred and Lindström 1989, 45). Blomefield suggested that the church originally belonged to the castle and it certainly appears to have served as the castle’s parish church (see Chapter 12). The church would have lain at the outermost extent of the Late Saxon town (Figs 4.2 and 4.138–4.139), possibly immediately inside the burh defences if such existed. The church of St Martin at Wareham, Dorset is similarly positioned a short distance away from the bank of the Anglo-Saxon burh, adjacent to a road entrance (Haslam 1984, 239 and figs 61 and 78). With the Norman Conquest, the church would appear to have been enclosed within the defensive circuit, with the size of its cemetery reduced (see Chapter 5). Further discussion of this church and its relationship to the castle appears in Chapter 12.II, ‘Castle and Ecclesiastical Landscape’.

Late Saxon Church and Cemetery beneath North-east Bailey (Site 416N)

(Figs 4.139–140)

Comparison of the timber church excavated at this site in 1979 (Ayers 1985) with examples from Norway has suggested that it was an early form of stave church with a belfry (the ‘Norwich type’; Ahrens 1994). The church appears on the basis of ceramics and other artefacts to have been established in the 11th century, although is undocumented and its dedication remains unknown. It was pre-dated by two earlier ?11th-century structures, overlying a group of pits attributed to the late 10th century. In its final, twin-celled ‘urban’ form, the church may have held full parochial status (Ayers 1985, 64) and

<i>Burial Type</i>	<i>Cemetery 3 (Farmer’s Avenue)</i>	<i>Cemeteries 1 and 4 (St John)</i>	<i>North-east bailey (Site 416N)</i>	<i>Total</i>
Flint ‘ear muffs’	0	10	4	14
Flint ‘pillows’	0	0	6	6
Chalk ‘pillows’	0	0	2	2
?Charcoal burial/carbonised coffin	2	1	1	4
Stone lined graves	0	1	2	3
Plank	3	0	3	6
Wooden coffin/plank	10	3	0	13
Chalk capping	0	0	1	1
Burials with organic/plant matter	4	4	0	8
Beds of flint/pebbles	0	4	0	4
Skull niches/ anthropomorphic graves	0	1	0	1
‘Shelves’ to support skull or feet	0	5	0	5
Total	21	28	19	65

Table 4.67 Late Saxon burial types (excluding shroud/indeterminate burials)

clearly served the functions of baptism and burial with evidence for a font and well being excavated.

Only part of the cemetery to the north of the church was excavated, its boundaries remaining uncertain. Burials continued to the south and west (Ayers 1985, 19), although no human bone was recovered from Site 150N to the south-west, suggesting that the cemetery did not extend this far (Atkin 2002a, 75). Sixty-nine articulated skeletons were recovered, although 130 individuals may be represented. Two graves had flints lining each side, while many had flint or chalk 'ear muffs' or 'pillows'. There was no indication of coffins, although three burials appeared to have been lined with planks. The burials were all aligned east-to-west and most may have been interred in shrouds. The skeletal remains showed some striking features. Dietary deficiencies gave rise to various conditions and both these and the recorded pathologies indicate that individuals, particularly males, had undertaken hard physical work whilst excluded from sunlight (Stirland 1985, 56). This could indicate mining activities (several medieval chalk mines are known in Norwich; see Chapter 8). The high mortality rate amongst infants and children is also notable. One tentative interpretation is that this cemetery may have related to a very early 'hospital' — a place for the sick and injured (Stirland 1985, 56).

?Late Saxon Cemetery (Agricultural Hall/Crown Rd, Sites 358N, 417N and 418N)
(Figs 4.139–140)

A number of burials were discovered beneath the Agricultural Hall in October 1958 during construction of the Anglia Television offices (Site 358N). The remains of at least three human skeletons were found (two young females and one young male), although no related dateable finds. Two further burials (one male, one female) aligned east-to-west were discovered in 1977 during the excavation of a pile hole on the same site. Two sherds of 'medieval' ware were recovered from one grave. These graves were augmented in 1979 by the discovery of burials beneath the northern end of Crown Road (Site 417N). Here a large amount (unquantified) of human bone was recovered, along with post-medieval and medieval finds including antler.

Both groups are undated and neither of these small sites has been published in detail. The finds remain to be studied. The graves appear to lie too far to the north to have been associated with the cemetery and church excavated in 1979 (Site 416N). No medieval church is known from this area and there were no monastic or friary establishments nearby (Ayers 1985, 64). This may indicate another cemetery and perhaps an associated church of pre-Conquest date enclosed within the defences of the north-east bailey.

?Disturbed Burials to the North of the Castle (Opie Street, Site 673N and Bank Plain, Sites 16 and 17N)
(Figs 4.140)

The remains of seven skeletons were recorded beneath the pavement at the southern end of Opie Street in 1958 (Site 673N). The fact that they were mixed with animal bones may suggest that they had been redeposited, perhaps into a castle ditch (although the exact position of the defences to the north of the motte remains to be proved archaeologically). Their presence here remains a mystery, the nearest church being that of St Christopher some distance to the

north. This church (first mentioned in 1190–1200) lay on the eastern side of St Andrew's Hill. It was burnt down during the reign of Henry III (1216–72) and the parish had disappeared by 1286 (Sandred and Lindström 1989, 36). It is possible that these bodies indicate the presence of yet another cemetery, their presence within the castle precinct apparently suggesting a pre-Conquest date.

Just outside the castle's defensive circuit, an isolated burial, aligned east-to-west, was recorded beneath buildings at 11–17 (odd) Bank Plain (Sites 16 and 17N; Figs 2.2 and 4.140) in 1968 and 1970. The nearest church is St Cuthbert (documented in 1157; Sandred and Lindström 1989, 38), although this lies at too great a distance to suggest a direct relationship.

Burial Practices

Late Saxon burial types apparent at the Castle Mall and north-east bailey sites are outlined in the following table.

The placement of stones in graves, primarily around the head, appears in Early Saxon graves and is apparent in many cemeteries across Britain by the 10th century (Boddington 1996, 70). 'Pillow-graves' are often found with a date range of 10th- to 12th-century and the use of stones to support the head may have been a symbol of penitence or status (Daniell 1997, 160). The placement of stone or chalk 'ear muffs' may have been intended to keep the head upright in preparation for Judgement Day (*op.cit.*, 180). It has been noted elsewhere that the presence of ear muffs 'tends to be associated with uncoffined burials' (Rodwell 1981, 213) although a few examples in Norwich (both at the north-east bailey and Castle Mall) came from graves with planks or coffins.

Flint 'ear muffs' were present in ten burials at St John's cemetery and four from the cemetery excavated in the north-east bailey. At the latter site, there were also several examples of either chalk blocks or flint having been used as pillows. At Raunds, there was a clear bias towards male burial with head pillows (Boddington 1996, 41). In St John's cemetery, ear muffs accompanied female burials in five examples, with two child burials, two males and one indeterminate similarly interred. Four of the graves lay above either beds of pebbles or large, isolated flints. At Raunds, there were cases of coffins apparently having been placed above stones to raise them from the grave floor.

The single stone-lined grave from St John's (which contained a probable leper burial) could be interpreted as a less prestigious form of stone coffin, although it appears to have been of superior construction to the two roughly stone-lined graves found at the north-east bailey site (Ayers 1985, fig.15). Imitation stone coffins have been recorded in the post-Conquest cemetery at St Margaret-in-Combusto, Magdalen Street (Bown and Stirland, in prep.), with an 11th-century example found at the cathedral (Bown 1997, plate 1). Similar grave linings have been excavated at a Late Saxon cemetery at St Nicholas Shambles, London (Rivière 1988, 22–25) St Andrew's Priory, Fishergate, York (Daniell 1997, plate 10) and elsewhere. The lining recorded at Castle Mall was anthropomorphic, as was one other unlined grave from the same cemetery. The provision of such graves with head niches reflects the increasing significance of head position between the 9th and 12th centuries, when niches within stone coffins became more common (Daniell 1997, 180). A solid stone coffin, such as the example found in

1911 (see Cemetery 3 above), would have been 'well beyond the financial means of most families, but some could afford to build a stone-lined cist as a receptacle for a wooden coffin' (Rodwell 1981, 153 and fig.72).

A total of six graves from the north-east bailey and Farmer's Avenue cemeteries were apparently planked, with a further thirteen from the Farmer's Avenue and St John's cemeteries providing evidence for wooden coffins (some of which may simply have been planks). At the cemetery beneath the north-east bailey it was suggested that the 'timbers could have been set in position within the grave, which was carefully cut so that the base of each timber was revetted by the lower, indented grave edge' (Ayers 1985, 19 and plate xii). Such graves may indicate the presence of part-coffins, with the sides of the graves lined with timber and a board placed above them (examples of such graves with sides lined with timber or stone have been found at York and Colchester; Daniell 1997, 163). One grave in St John's cemetery contained small rectangular iron staples with clenched arms which probably came from a coffin and indicate a board thickness of c.1 inch (25mm; SF1046, Fig.4.107; Mould, Chapter 4.III). Graves in the Farmer's Avenue cemetery contained a total of eight iron nails, again probably from coffin construction. The low numbers of nails are not necessarily significant as coffins could equally well have been held together with dovetail joints and wooden pegs (Rodwell 1981, 152; Daniell 1997, 162).

Several graves in St John's cemetery contained evidence for burial with patches of charcoal and/or organic matter or dark staining. One burial contained burnt wood beneath the pelvis, possibly the remains of a coffin carbonised for preservation and another indicated possible carbonised posts. Since at least the Roman period, the life of coffin boards was prolonged by carbonisation prior to use, although 'this practice should not be confused with that of 'charcoal burial', where the body is covered with a layer of true charcoal' (Rodwell 1981, 150) Two graves at St John's contained patches of organic

matter by the legs and feet. In the Farmer's Avenue cemetery four graves contained similar evidence. One burial had a patch of organic material around the skull, while another grave fill proved to contain charred grain and seeds. Although these may have been incidentally introduced into the grave during backfilling, it is evident from documentary evidence that the practice of burning grain within the house of the deceased (perhaps as part of a purification ritual) and its eventual inclusion within grave fills may have continued into the second half of the 10th century (O'Brien 1999, 55). The use of plant material within graves is an ancient practice which has been recorded on sites from the prehistoric to modern periods. Such material may include leaves or straw, for example, either with a functional or religious significance (Daniell 1997, 157). It is possible that the organic staining at the heads and feet of some burials at St John's may indicate the presence of organic 'pillows' (a similar occurrence was noted at Raunds; Boddington 1996, 37-38).

When present in graves at Castle Mall, charcoal was generally in patches. Charcoal burials were common between the 9th and the 12th centuries (Daniell 1997, 158) and several interpretations for the phenomenon have been proposed: that the charcoal soaked up bodily fluids; that some burials were placed on charred planks; that the charcoal had a deeper symbolic meaning. The latter may have included a ritual representation of memories of pagan cremation, representation of penitential ashes, or an indication of status (*op. cit.* 159).

Changes in the significance over time of body position at burial clearly occurred although the reasons for this are not fully understood. Medieval burials may have been made with the hands and arms in the attitude of prayer (Daniell 1997, 118), although none of the Castle Mall examples were in this position. Only one burial had the arms crossed above the chest.

The body positions shown above are familiar from other Late Saxon and medieval cemeteries. It was noted at the north-east bailey site (Ayers 1985, 19) that children were usually buried with their arms by their sides. A similar situation with regard to juvenile burials was noted at Chester (Daniell 1997, 118). Although this posture was also used for adults in the north-east bailey cemetery it 'was not as common as arms crossed above the pelvis; occasionally one hand clasped the opposite wrist' (Ayers 1985, 19). This is most closely paralleled by burials in the Farmer's Avenue cemetery (42% in this position), although the most frequent position in the Timberhill cemetery was with the arms by the sides (over 60%). Four of the burials had flexed legs. A few similarly positioned burials were found in the 8th- to 12th-century cemetery at Castle Garth, Newcastle (Barbara Harbottle, pers. comm.).

'Grave-goods'

During the 10th and 11th centuries (and into the early 12th) burials might still be accompanied by a knife, bead or other object. The inclusion of such items within graves of this date 'is not a relic of pagan custom but an example of a practice fairly common at this period for the dead to be accompanied by a knife or finger-ring' (Margeson and Williams 1985, 27). Some items may have been included simply by virtue of the fact that bodies might be buried clothed (O'Brien 1999, 52). Graves in both of the Late Saxon cemeteries excavated at Castle Mall contained

Body position	Cemetery 3 (Farmer's Avenue)		Cemeteries 1 and 4 (St John)	
arms over pelvis (crossed or uncrossed)	18	42%	14	16%
arms by sides (hands occasionally beneath pelvis)	7	16%	54	61.5%
one arm by side, other across pelvis	8	19%	13	15%
one arm across waist, other across chest	4	9%	0	0%
one arm by side, other across chest	0	0%	1	1%
arms across waist	4	9%	1	1%
arms crossed above chest	1	2.5%	0	0%
one arm across waist, other across pelvis	0	0%	2	2%
flexed legs	1	2.5%	3	3.5%
Total where body position known	43		88	

Table 4.68 Body position — comparison between Cemeteries 3 and 4

items that were worn on the body (a brooch, shroud pins and at least one knife from a total group of 4 (or 5) knives found within graves). Other objects may also have been deliberately placed, while some items were undoubtedly intrusive. Few burials from the north-east bailey cemetery contained finds other than pottery. A silver ring was found on one skeleton and a number of other graves contained objects including a jet finger ring, tweezers and a comb fragment (Margeson and Williams 1985, 27).

Reinterment of Bone

Due to the fact that few of the graves in the Farmer's Avenue cemetery were intercutting, there was only a single example of the reburial of disturbed bone. Here, a neatly arranged collection of bones from two individuals had been laid between two skulls. In contrast, many of the graves at St John's contained reinterred bone (usually skulls) disturbed from earlier burials. A total of 19 graves contained additional bones, of which 15 contained additional skulls. The latter were usually placed by the lower legs and/or feet, often with the base of the skull facing downwards. In one example, skulls were placed either side of the pelvis, with a third skull by one leg. In another, two skulls had been placed above the right arm and, in another, two skulls lay beneath the legs. Other examples included disarticulated bone placed by the lower legs and feet and in one case a grave had apparently been widened to take long bones. Similarly, at Raunds disturbed earlier burials were often neatly rearranged in the later grave, including an example with bones buried around the feet (Boddington 1996, 28). The placement of bones by the legs and feet may simply relate to the fact that this area would provide the most space within the grave.

Grave Cuts

The contrast in grave size, shape and placement between the Farmer's Avenue and St John's cemeteries is marked. In the former, graves were usually rectangular and were of average dimensions of 2m east-to-west by 0.75m north-to-south by 0.30m deep. The deepest grave recorded was 0.67m deep, although accounting for the truncation which some graves had suffered the average original depth would have been about 0.50m. The shallowness of graves is not uncommon in medieval cemeteries. At Barnstable Castle, for example, a series of graves subsequently sealed by the bailey rampart were 0.60m deep (Miles 1986). At Raunds, graves in most areas survived to a depth of only c.0.35m on average (Boddington 1996, 27). The depth of graves in the north-east bailey cemetery is uncertain due to the effects of truncation (Ayers 1985, 19). In several cases, the Farmer's Avenue graves appeared over-large for their occupant, even had it been originally placed in a coffin. Few of the graves in this cemetery were intercutting and, even where they were, the intercutting was usually a matter of clipping the side of the adjacent grave(s).

The graves at St John's were notably more closely packed and of smaller dimensions. They were generally loosely anthropomorphic in plan (*i.e.* with rounded corners, often widening to take the shape of the shoulders and tapering towards the feet) and had average dimensions of 1.5m east-to-west by 0.50m north-to-south. This shape is usually attributed a medieval date (Rodwell 1981, 152), although the radiocarbon dating of burials within this group indicates that this may be a misleading assumption. The average estimated grave depth was again

shallow at 0.50m, with the deepest surviving grave at a depth of 0.83m. Many of the graves in this cemetery were intercutting and there were marked contrasts in grave alignment. This may have been the result of pressure for space, or may indicate that graves were not marked (or not marked with long-lived markers: no archaeological evidence for grave markers was found in either cemetery on the Castle Mall site). At the leper hospital cemetery at Chichester, no grave markers were found (Magilton and Lee 1989, 256).

Date and Duration of Cemeteries

Contrary to popular assumption, 'churches were not always built on empty ground. Plots of land were sometimes cleared to receive them, or existing buildings adapted to serve as places of worship' (Morris 1989, 206). At both the Castle Mall and north-east bailey sites, land already in use was apparently given over to burial.

Radiocarbon dates obtained from the Castle Mall cemeteries suggests a relative chronology for the burial grounds (summarised in Table 4.66). Dates from graves at St John's indicate that burial here may have begun around a century later than at the Farmer's Avenue cemetery. Both groups of dated burials, however, have similar cut off dates of mid 11th century. The Farmer's Avenue cemetery was sealed by the castle's south bailey rampart, while the Timberhill cemetery continued to function. The latter cemetery certainly continued in use (in constricted form) after the Conquest, its eastern boundary now being formed by the outermost castle ditch. A few late burials were present in the northern part of the St John's cemetery (Period 4.2), although the boundary shifted southwards during the 14th century when this area was subjected to pitting and metalworking. This southwards contraction is reflected in the present northern limit of the surviving cemetery.

Further comments on the foundation date of the cemetery of St John's (Cemeteries 1 and 4) can be found throughout this report, including earlier comments in this section and in Chapter 4.II, Periods 1.1 and 1.4 (which includes discussion of the fact that several graves cut through fills of Ditch 1, its fills apparently dating ceramically to the late 11th to early 12th century). Additional comments appear in Chapter 4.V in relation to ceramic dating, radiocarbon dating and stable isotopes (see also Bayliss et al 2004 on this issue) and in Chapter 14, 'Developments in Interpretation'.

There is some evidence, in the form of a few structural elements and pits, to indicate activity prior to the use of the Farmer's Avenue cemetery. The presence of the remnants of buildings/structures beneath some of the graves suggests a change in land use. The clearest evidence for pre-cemetery activity was provided by three refuse pits which were cut by four outlying graves (in Area 22). Just under a kilogram of pottery came from one pit, most being Thetford-type ware and including an early cooking pot rim form (type AB7) which could suggest a 10th-century date for the pit. Pottery recovered from a layer sealing all three pits (into which the graves were cut) was dated to the 11th century on the basis of the presence of a large non-handled jar (type AF9). Other forms included jars and cooking pots, as well as large fragments of storage jars (of the seventeen bases recorded, four were complete). Two of the graves cutting into these pits and their sealing layer were radiocarbon dated (Bayliss

et al, Chapter 4.V), providing dates of cal AD 940–1030 (GU-5741, skeleton 22031) and cal AD 960–1040 (GU-5742, skeleton 22116). The pottery from the underlying deposits would seem to suggest a burial date for these particular individuals towards the end of these ranges (i.e. in the first half of the 11th century). It would appear that the grave containing the ansate brooch is more likely to date to the 10th century, than the 11th (a date that tallies well with the radiocarbon evidence). Ceramic dates currently suggest a late 10th- to mid 11th-century date for the cemetery. Even this date would suggest that the 8–9th-century brooch was an heirloom.

At the north-east bailey site, eleven pits attributed to the late 10th century pre-dated the cemetery (Ayers 1985, 7), of which only three were substantial. A shallower pit may have served as a kiln, its sides having been burnt. No radiocarbon dates were obtained from human bone, although radiocarbon dates from charcoal relating to the church pre-dated AD1000 (Clark in Ayers 1985, 62). A recalibration of the radiocarbon dates for comparison with those from Castle Mall (Chapter 4.V) proved equivocal, indicating a broad Middle to Late Saxon date. Three phases of timber building were identified, the last being the known church (Ayers 1985, 23). It has been suggested that the forerunners may also have served as churches and dated to the 11th century. It is possible, however, that the earliest structure may date to the 10th century. Assuming that the initial building dates to c.1000 and that the latest church was destroyed c.1067–1075, this would indicate an average duration of c.23 years for each building, tallying with the anticipated duration of earthfast posts. The first two buildings were small and insubstantial and may have gone out of use relatively quickly (perhaps being constructed in the latter years of the 10th century and going out of use by c.1025), while the third structure, in its twin-celled form, is much more indicative of an 11th-century 'urban' church.

Buildings

(Figs 4.18, 4.24, 4.59, 4.60, 4.62, 4.138 and 4.141; Plates 4.8, 4.9, 4.31, 4.33 and 4.35)

Domesday Book indicates the presence of 98 houses and/or properties in the area at the time of the construction of the castle. A total of 27 pre-Conquest buildings or structures were identified at Castle Mall site with varying degrees of certainty. Of these three were of sunken-featured construction, two of possible sunken-featured construction, three of post and upright plank, two of post-in-trench, two of beamslot, eleven of post-in-slot and post and five of post. The alignment of buildings and associated pit lines provide an outline of the layout of the pre-Conquest settlement, although as the buildings may have been workshops or stores, the general appearance of the area may have been haphazard. Contemporary buildings relatively close to each other may have lain at quite different angles. Details of the buildings, including their dimensions, are summarised in Table 4.69.

At Ipswich, the late 9th or early 10th century saw the introduction of the cellared building, no other type of building having been recorded here throughout the 10th and 11th centuries (Wade 1993, 148). At Thetford, both cellared and post-hole buildings of this period have been excavated (Rogerson and Dallas 1984; Dallas 1993; Andrews 1995; Wallis 2004). Similar examples found beneath castle defences include those at Oxford (Hassall

1976, 251, fig.9; Poore 2004, figs 20, 28 and 29) and Northampton (Wilson and Hurst 1962–3, 322) (see additional examples in Table 14.1).

Many of the pits, ditches, buildings and post-holes of pre-Conquest date excavated at Castle Mall provide evidence for burnt matter. Some of this (specifically the concentrations of ash and charcoal) probably simply derived from fire or processing waste, although the burnt clay and daub could be taken to indicate structural damage or, in part, the remnants of hearth linings. Several of the excavated buildings provide evidence for damage or destruction by fire, although some may simply have been abandoned. Although much of this material dates to the early 11th century, there is insufficient evidence to suggest a direct relationship with the documented fires of that time (Chapter 4.I). At Ipswich (both the Butter Market and Foundation Street sites), the Late Saxon cellared buildings were abandoned in the late 11th century and it appears that 'many of the buildings had been burnt, either to clear them after abandonment, or as a direct result of military action' (Wade 1993, 150). Further consideration of the Castle Mall evidence is made in Chapter 5.V, where possible evidence for the destruction of buildings in association with the construction of the castle is discussed.

Sunken-featured Buildings

Few examples of sunken-featured buildings have yet been excavated in Norwich and their apparent absence in contrast to many other Late Saxon towns in England has been noted (Wade 1993, 150). This 'absence', however, is probably due in part to the relatively limited amount of excavation that has taken place within Norwich's historic core. The excavated examples include three at Greyfriars (part of the Greyfriars precinct; these small workshop-type buildings date to the 11th century; Emery 2007).

The examples of sunken-featured buildings at the Castle Mall site fall into two distinct plan forms: the first rectangular and the second square. Of these, there are two clear examples of the rectangular form, although the fragmentary remains of other buildings may have had the same groundplan. One example (Building 11, Fig.4.18) consisted of a construction cut lined with posts and reveted with timbers. (Further constructional details are given in Chapter 4.II, Period 1.2.) It may have been constructed in the late 10th century. Evidence from destruction deposits (Period 1.3) indicates the use of daub walling, the roofing material perhaps having been thatch. Little evidence for flooring was apparent. A second phase of use is possible and the date of demise of the building could be as late as the Conquest. Alternatively, it could have been replaced by an adjacent building (Building 25 below). Finds recovered from disuse/destruction deposits included two fragments of lava quern, while a pattern-welded knife was recovered from a possible floor layer. This knife had a saw-edged weld line between the back and edge, which can be paralleled by scramasaxes from Thetford, Chester, London and elsewhere (SF1111, Fig.4.97; Mould, Chapter 4.III). Pottery included storage jars and a lamp, the fabrics and forms present indicating an 11th-century date for the demise of the building. One sample provided an interpretable assemblage of charred plant material, derived from a batch of semi-cleaned rye stored within the building and burnt when it was destroyed by fire.

The second rectangular building (Building 12, Fig. 4.24) demonstrated a more complex development, having

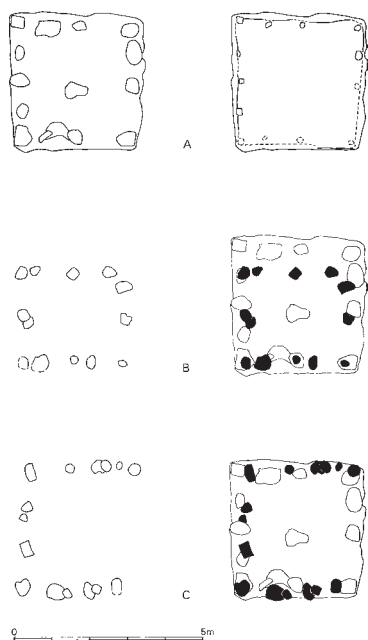


Figure 4.141 Comparison of Late Saxon building groundplans: A – Building 25; B – Building 13; C – Building 26. Scale 1:100

had three or four phases (for further details, see Period 1.2, Chapter 4.II). The inner sides were lined with a double row of posts set in a construction trench, a technique which ‘allows a more accurate alignment of the upright posts than is possible using individual postholes or driven stakes’ (Horsman *et al* 1988, 71). It is uncertain whether the two rows of posts present in Building 12 were in use at the same time, or whether one replaced the other. Two hearths lay directly above the floor (formed by the natural subsoil), separated by a line of post- and stake-holes dividing the building in two. Similar partitions are known many similar buildings elsewhere. The hearths were indicated simply by patches of burnt subsoil, which could suggest simple open fires or portable heat sources such as braziers. Following the removal of the partition, further deposits included a probable gravel surface overlain by a cess layer. An ash deposit may indicate the destruction of the building by fire, although environmental evidence suggests a more gradual accumulation, perhaps from hearths. Samples contained charred crop-processing residues and fuel residues, with activities including malt drying, together with the drying or toasting of other grain. Mixed dumps of fire debris eventually filled the sunken area. Finds from the ash layer and destruction deposits included a bone spindle whorl, iron nails, lava quern, sawn antler and leadworking waste. Food waste included mammal bone, fish bone and mussel shell. Pottery fabrics and forms indicate a 10th to early 11th-century date for the building’s destruction.

A single square sunken floored building was excavated (Building 25, Fig.4.62–4.63; Period 1.3), although again some of the post-built structures may indicate the truncated remains of others (see below). The building was constructed just to the south of an earlier building in this area (Building 11 above). The construction cut survived to a depth of 0.16–1.34m. The superstructure was supported on twelve earthfast posts placed around the edges of the cut, with one central post acting as a roof

support. An integral plank lining appeared to have been woven around the posts on the western wall, the use of such plank cladding being well known from elsewhere (e.g. London; Horsman *et al* 1988, 78). The entrance may have lain to the east (indicated by a gap in the post settings) and two shallow post-holes may indicate the presence of an internal feature. Finds from the burnt floor included a glass bead while items from post-holes (Period 2, Chapter 5) included an antler strip with ring and dot decoration (perhaps part of a comb) which had been distorted by fire. The building may have survived into (or been constructed during) the Conquest period and had been destroyed by fire. It was apparently abandoned before being deliberately backfilled. Finds from these fills included iron nails and lead spillage. A date in the late 11th to early 12th century for the building’s final demise is suggested by the ceramics present. It is possible that this was a pre-Conquest building, re-used in the post-Conquest period; Kirkpatrick’s interpretation of the Domesday reference is that some of the ninety-eight houses may have been occupied by the later garrison (see Chapter 5.I). This building was, however, probably too small to have served as a dwelling and it may instead have been used as a store or workshop.

A comparison of the plan of the post settings from Building 25 with some of the areas of numerous posts in the northern part of the site may suggest that other similar buildings were present, later truncation meaning that only the bases of the posts survived. Two such possible examples are given in Fig.4.141.

It has been suggested that such small buildings may have served as outhouses, often situated in the back yard of a property, away from the street frontage (Horsman *et al* 1988, 70). Two of the Castle Mall buildings (Buildings 12 and 25) may have lain close to a road/track running to their east (Figs 4.11, 4.31 and 4.49).

Other Building Types

Many of the other buildings/structural remnants excavated at the Castle Mall site were too fragmented to provide evidence for the ground plan or nature of the buildings that they represent. In three cases, there was evidence that planks had been set on edge into the ground, one example supported by posts on its internal side. Similar plank baseplates are known in London (Goodburn 1995, 49, fig.5 g) and i)), where they were either used to support wattle-framed walls or to support a sunken post and plank revetment wall.

Some of the small, square post-built structures may be the remnants of sunken featured buildings (see above), truncation leading to the survival of only the very base of the structural elements. Other examples may suggest larger surface-laid rectangular buildings (although again there is a possibility that some of these were examples of rectangular sunken featured buildings). Two of the building types identified at *Hamwic* (Southampton) include rectangular structures identified as house-type buildings and, less commonly, small rectangular buildings thought to be outbuildings or sheds (Morton 1992, 41). The latter type often had one or more sides left open to the elements and one example of similar type may have been recorded at the Castle Mall site (Building 16, Fig. 4.45).

In two examples (Buildings 17 and 18, Fig.4.59; Period 1.4), fairly large trenches had been excavated,

<i>Constructional type</i>	<i>Building number</i>	<i>Shape</i>	<i>Building size</i>	<i>Const. Period</i>	<i>Use/Disuse Date (ceramic)</i>	<i>Function</i>
sunken-featured	Building 10	?square/rect	unknown	1.2	L10–11th	includes grain storage (bread-wheat type). Finds include two fragments of lava quern
	Building 11	rectangular	5.2 x 3.6m	1.2	11th	
	Building 12	rectangular	c.6.2 x 5.2m	1.2	10th–E11th	includes crop-processing (oat or barley malt drying or roasting) and fuel residues. Finds include a spindle-whorl, quern, lead-working waste and sawn antler.
	Building 15	square/rect	unknown	1.3	11th	finds indicate possible bone and antler comb manufacture. Lead-working waste also present.
	Building 25	square	3.5 x 3.5	1.4 (use, 2.1; disuse 2.2)	L11–12th	
post-in-slot and post/post and slot	Building 1	?rect.	c. 4 x 6m approx	1.2	EM11th	includes crop processing waste and grain storage (bread-wheat type). Finds include a spindle-whorl.
	Building 2	unknown	unknown	1.2	11th	
	Building 3	unknown	unknown	1.2	11th	
	Building 4	unknown	unknown	1.2	11th	
	Building 5	unknown	unknown	1.2	11th	
	Building 7	unknown	unknown	1.2	L10–11th	
	Building 9	unknown	unknown	1.2	10th	
	Building 19	unknown	unknown	1.4	10–11th (E12th)	
	Building 20	unknown	unknown	1.4	11th	
	Building 21	unknown	unknown	1.4	L10–11th	
	Building 27	unknown	unknown	1.4	11 (E12th)	
post-in-slot and plank	Building 6	unknown	unknown	1.2	L10–11th	
	Building 8	unknown	unknown	1.2	10th	
post and plank	Building 24	unknown	unknown	1.4	11th	
post-in-trench	Building 17	unknown	unknown	1.4	11th	? grain storage (barley)
	Building 18	unknown	unknown	1.4	11th	? grain storage (barley)
beamslot	Building 22	unknown	11 m x ?	1.4	EM11th	
	Building 23	unknown	8 m x ?	1.4	10–11th	
post	Building 13 (phase 1)	square/rect	3 x ?	1.2	-	
	Building 14	rectangular	5.5 x 3.3 +	1.2	10–11th	
	Building 13 (phase 2)	rectangular	2.65 x 2.95	1.3	(E12th)	
	Building 16	rectangular	3.7 x 5.65 m	1.3	11th	
	Building 26	square	3.15 x c.3 m	1.4	11th	

This table excludes other areas of post concentrations which may have represented the remnants of buildings/structures

Table 4.69 Period 1 buildings

within which substantial post-settings were apparent. These trenches were both 0.70m wide, substantially wider than the internal slots recorded elsewhere on the site. In one case, posts had been set into the base of the slot and, in the other had been set towards the southern edge of the trench, spaced 0.60m apart. In constructional terms, these buildings are not dissimilar to the church recorded at the north-east bailey site (Site 416N; Ayers 1985, 14 and fig.12). Here, trenches of similar width held numerous post-settings. This was a fairly advanced constructional technique; the placement of posts set along one side would have maximised the stability of the natural deposits. Samples from both of the Castle Mall features, which lay next to each other on the street frontage (now Timberhill), contained plant macrofossils which indicate a possible interpretation as the residue from granary fires (see below and Murphy, Chapter 4.IV). Environmental analysis indicates that, as the samples are so similar, these two buildings were probably contemporary.

A possible difference in building alignment and constructional technique, with the presence of beamslot buildings, in the pre-/post-Conquest period (Buildings 21–24, Fig.4.60; Period 1.4) is perhaps misleading due to uncertainties over dating. One of these structures may have been a timber church associated with Cemetery 3 (see above).

General Comments

Apart from timber, building materials included evidence for the use of wattle and daub, with roofing probably consisting of thatch or shingles. Many of the daub fragments recovered have an outer flat, hand-smoothed surface with signs of wattle and/or reed impressions on the reverse (Lentowicz and Kemp, Chapter 4.III). One fragment retained an impression of a timber lath and another a piece of woven cloth. Several fragments have smooth, limewashed surfaces with signs of adhering plaster, probably indicating internal wall finishes. Structural ironwork (other than nails) included wallhooks and a hooked stay which was probably used in a window shutter (Mould, Chapter 4, III). A small group of locks and keys was also recovered.

There are three main interpretations for the use of the buildings recorded on the Castle Mall site: workshops, storerooms and/or domestic occupation. One building produced evidence for the deposition of sewage waste, and other debris present suggests either a low level of hygiene during use, or that such deposits date to secondary use/abandonment. Materials present within the buildings included food and craft waste (see 'Craft ...' below). The presence of lava quern fragments in two buildings provides additional evidence for cereal processing. The use of such structures for crop drying or roasting would have produced an unbreathable atmosphere which may have necessitated an open superstructure to allow ventilation (Murphy, Chapter 4.IV). Smoky conditions are reflected in the prevalence of sinusitis in burials in the Farmer's Avenue cemetery (Cemetery 3; Anderson, Chapter 4, V). Only two of the excavated buildings actually produced evidence for hearths or portable heat sources.

The size of many of the buildings, particularly the small, square examples, suggests a function for storage rather than occupation. Another suggestion for these very small buildings is that they were too small to have been used for anything other than sleeping and shelter in bad weather (Rahtz 1976, 81).

There are distinct variations in the alignment of buildings across the site (Fig.4.11, 4.31 and 4.49). This irregularity is paralleled at Greyfriars, where a range of alignments were closely linked to the local topography (Emery 2007). Early buildings in the western part of the Castle Mall site (Buildings 1 and 6; Fig.4.11) appear to have been aligned to reflect the north-west to south-east alignment of a hollow (Hollow 1), although later buildings in the same general area exhibit a change to an east-to-west alignment (Fig.4.49). To the east, two buildings were aligned east-to-west possibly on the western side of a road or track, while a third on the eastern side of the same routeway was aligned north-west to south-east. Again, there is a slight indication of a change in building alignment in this area at a later date (Fig.4.31). To the north, the tentatively identified buildings appear to have been fairly consistently aligned south-west to north-east, perhaps reflecting the line of a hollow way running to their north (Hollow 2). In some areas, the positioning of pits in lines and/or the presence of gullies may suggest the location of boundaries between plots/properties.

Minor Gullies

(Figs 4.11, 4.31 and 4.49)

Surprisingly few small boundary ditches of Late Saxon date were recorded on the site (contrasting with the numerous examples of pre-Conquest and Norman date found at Greyfriars; Emery 2007). A ditch running across the southern part of the Castle Mall site has already been discussed in association with the possible Late Saxon settlement boundary. Three parallel gullies to the west of the site (Figs 4.49 and 4.60) cut across earlier pit lines and may have fed into Hollow 1 at their southern ends. A number of similar gullies recorded at Site 416N were interpreted as relating to drainage within the north-east bailey (see Chapter 5.V). The Castle Mall examples were between 0.5 and 1.00m wide and ranged in depth, the deepest surviving to 0.30m. Another series of gullies, this time intercutting, lay further to the west (Fig.4.11), while a slightly larger example ran on a different alignment to the north-east (Fig.4.31).

Pitting and Refuse Disposal

(Figs 4.11, 4.31 and 4.49)

Most of the waste disposal recorded on the site came from the fills of pits and ditches. Horizontal dumps or middens had no doubt been removed by subsequent truncation, although an extensive area survived to the west of the site and in smaller patches elsewhere. In the Anglo-Saxon period, such deposits are sometimes interpreted as being connected with the stock-piling of waste for manuring and association with agricultural activity at Castle Mall is possible. Similar deposits apparently continued to accumulate during the post-Conquest period (where they are described; see Chapter 5), at which time their deposition may have been incidental rather than deliberate. By far the majority of the excavated pits had been used for the disposal of domestic or craft waste, although the fact that only the upper parts of many were recorded means that the original function (and date) can never be determined in many cases. A few gave indications of burning *in situ*. The cutting of pits into earlier ones was common on the Castle Mall site as elsewhere, although it was usually slight and did not indicate the clearance of features (either for reuse or for the use of fills as manure/compost; a similar situation was recorded at *Hamwic*, Morton 1992,

42). Ceramic assemblages from pit fills indicate that a few may have gone out of use before the end of the 10th century (in Areas 2/4 and 22), although most may have spanned the 10th to 11th centuries or were dated to the 11th century. The limited excavation of primary deposits from many pits at the Castle Mall site restricts consideration of their original date and function (see Chapter 14, 'Reflections').

Analysis of the mammal and avian bone has suggested variations in the nature of refuse disposal across the site during the Late Saxon period (Albarella *et al*, Chapter 4.IV, Chapter 13 and Part III). Although there was no obvious division between domestic and industrial areas, lateral variation occurred in the distribution of animal bones. Not only did the frequency of different species vary in different areas, but also the type of handicraft (in particular horn- and boneworking; see below). Although the significance of this variation is not completely understood, it may relate to the disposal of food waste and the spatial distribution of different workshops.

Nearly three hundred pits of probable Late Saxon date were recorded (see Table 4.70). Most were circular or sub-circular in plan, with lesser numbers of rectangular, square or irregular plan, often with vertical sides. Recorded bases were flat, concave or v-shaped. This can be contrasted with 6th- to 7th-century pits recorded at West Stow, where the majority (43%) were oval in plan, 25% were circular, 14% were rectangular, with lesser numbers of other shapes (square accounting for 6%; West 1985, 55, table 1). At Brandon Road, Thetford study of over 500 pits of varying date, most of which were Saxo-Norman, suggested little chronological significance in terms of shape, size or depositional processes (Dallas 1993, 41). The same general comments apply to the Castle Mall pits, although a number of very large examples may date to the immediately post-Conquest period (see Chapter 5).

A total of twenty-five 'deep' pits were recorded, representing 8% of the total number of Late Saxon pits — although more probably existed (some pits were not augered; others had been subjected to extensive horizontal truncation). These ranged in depth from 2 to 5m, although none were as deep as the pits recorded beneath the motte in 1906 which were purported to be over 8m deep (Tench 1910, 44). Pits of similar depth to the Castle

Mall examples were recorded at Greyfriars (Emery 2007) and are also known at Thetford (Rogerson and Dallas 1984, 19).

The deep pits at Castle Mall were often lined in some way (see Table 4.72). It is notable that sixteen of the pits were apparently unlined; this lack of shoring is surprising given that they were often excavated through unstable sand and, as was suggested at Brandon Road, Thetford (Dallas 1993, 43) it is probable that they were originally timber-lined. The distribution of deep pits indicates that they were clustered in certain areas (evident in Table 4.72).

Many of the deep pits contained sewage waste as well as domestic refuse and the prevalence of partial animal skeletons within some of them is commented on elsewhere in this volume. One of the 10th- to early 11th-century pits contained objects which may have been deliberately placed (pit 90504, Period 1.2), including a cow skull, although 'ritual' deposition is not suggested in this Late Saxon domestic setting. Similar deposition of animal skulls is well-known from Late Iron Age contexts (*e.g.* at Thetford; Andrews 1995, fig.8), although examples have been found in Middle Saxon features at Downham Market, Norfolk (Percival 2000, 14) and at Yeavinger (Hope-Taylor 1977, 100, 158, 244–245 and 245).

A total of only thirty of the total number of pits (10%) were lined (see Table 4.73). These linings were timber (16), wattle (5), cobble (2), clay and chalk or clay (6) with one possible example of leather lining. The timber linings were of varying type, usually with planks arranged horizontally, supported by upright timbers. Some of the timber linings showed evidence of having been burnt, although it is uncertain whether the planks were charred prior to use as a preservative measure, or whether the pits were burnt out for sanitation purposes. The best-preserved example came from the west of the site (pit 80509, Fig.4.34; Area 8), cutting into fills of Hollow 1. This pit was roughly a metre square in plan, with supporting posts or stakes at its corners and a wooden base at a depth of *c.*0.70m (Period 1.3). It probably served a storage function, although it seems rather oddly placed at the base of the hollow. The wattle-, clay- and possible leather-lined examples may also have been used for storage. Other wicker or wattwork recovered from fills of the pits may suggest the presence

<i>Period</i>	<i>Indeterminate</i>	<i>Latrine</i>	<i>Craft/ Industrial</i>	<i>Quarry</i>	<i>Fire</i>	<i>Storage</i>	<i>Refuse</i>	<i>Total</i>
1.2	87	0	3	1	1	0	22	113
1.3	95	2	11	5	0	2	21	136
1.4	38	0	2	0	0	0	1	41
Total	220	2	16	6	1	2	44	291

Table 4.70 Period 1 pit types

<i>Period</i>	<i>Total no. pits</i>	<i>Total no. measured</i>	<i>Depth < 1m</i>	<i>Depth 1–2m</i>	<i>Depth 2–5m</i>
1.2	113	44	26 (23%)	13 (11.5%)	5 (4.5%)
1.3	136	63	26 (19%)	19 (14%)	18 (13%)
1.4	41	16	9 (22%)	5 (12%)	2 (5%)
Total	291	123 (42%)	61 (21%)	37 (13%)	25 (8%)

* some pits were not bottomed and some had been heavily truncated; others were not excavated

Table 4.71 Period 1 — surviving pit depths *

of lids (wicker lids have been recorded, for instance, at Seasalter, near Whitstable; Dunning 1958, 207). Many of the large, deep rectangular pits excavated at *Hamwic* were interpreted as for storage rather than as cess pits, which may have been a secondary function (Morton 1992, 45). Here, as at Castle Mall, direct evidence for lining is rare. If either interpretation is correct, the pits would presumably have required either lids/covers or, in the case of cess pits, some kind of screen or small building.

No early wells were recorded. The nearest available source of water would have been the Great Cockey stream a short distance to the west of the settlement (Fig.4.2). On-site water storage may have been in vessels (ceramic/leather/wood) or in lined pits. A possibly leather-lined pit, for example, survived to over 2.5m deep (pit 40164=46287, Fig.4.27, Period 1.2). A possible recut of this feature was lined with dark brown peat, perhaps the remains of rotted timber forming a box or basket. Later fills contained burnt timber and leather, possibly indicating the collapse of a lid, an interpretation supported by the presence of post-holes replaced at

intervals within the pit. The feature may be compared to a late 11th-century cistern in the form of a hollow perhaps lined with leather, recorded at Hen Domen. This feature lay at the lowest point in the castle bailey and may have collected clean water from gutters/downpipes (Barker and Higham 1982). Although no leather was recovered in this instance, a hide lining to offset water seepage was postulated (Bob Higham, pers. comm.).

Only two Late Saxon cobble-lined pits were found at Castle Mall, one with a layer of flints on its flat base, followed by burnt fills which may indicate use as a fire pit. Another pit had a ring of clay and flints at its base and two other examples appeared to be the bases of possible furnaces or ovens. One example (pit 40925, Period 1.3) had a wicker and timber lining overlain by clay, the base of the pit having been filled with burnt and compacted straw.

Several pits at Castle Mall had posts set at their bases. One example (pit 47662, Fig.4.65, Period 1.4) consisted of a large sub-rectangular pit with numerous posts and stakes set within it. Five of these formed a rough square

<i>Period</i>	<i>Location</i>	<i>Ceramic date</i>	<i>Pit number</i>	<i>Section Fig. no.</i>	<i>Depth</i>	<i>Lining</i>	<i>Comments</i>
1.2	OA7	10–E11th	90174	4.21	4.80m	clay	burnt fills; well-preserved assemblage of rye grains
	OA8	10–E11th	90389	4.23	4.55m	plank	burnt plank lining survived on three sides, horizontally on two and vertically on the third. Finds include a partial pig skeleton and a fine antler spoon.
	OA8	10–E11th	90504 etc.		3.30m	?wicker	alternating bands of cess and clean sand. Finds include two pots placed inside each other, above which was a cow skull. Also includes partial skeletons of a cat and domestic fowl.
	OA9	10th	47872		3.30m	unlined	cess staining
	OA10	10–E11th	40007		3.90m +	wattle	
1.3	Hollow 1	EM11th	50037		4.20m	unlined	
	Hollow 1	11th	50069		3.90m	clay	
	OA2	EM11th	60038		2.50m	unlined	
	OA6	M11th	22287		3.30m	unlined	
	OA6	11th	20138		2.54m	unlined	
	OA7	11th	90672		3.00m +	wood	
	OA7	11th	90717		3.88m	wood	burnt wood lining, cereal grains
	OA13	M11th	90608		2.80m	unlined	
	OA13	M11th	90545		2.46m	unlined	
	OA13	11th	90647		3.00m +	unlined	
	OA8	EM11th	90516	4.44	5.00m	planks	lining consisted of charred planks near the top, with thicker beams lower down. Sewage waste and refuse. Partial skeletons of two horses, two cats, a dog and a goshawk. Finds include purple phyllite whetstone.
	OA10	10–E11th	40034		4.00m +	unlined	
	OA10	-	40003	4.46	3.70m +	wood	
	OA10	11th	46415		2.00m +	unlined	
	OA10	-	46591		2.35m	unlined	fill included coprolite
OA10	11th	46635	4.48	2.46m	unlined	cess fills more than a metre deep at base	
OA10	M11th	46418		3.04m	unlined		
OA16	11th	21069		3.75m	?unlined		
1.4	OA6	11th	90223		2.20m	unlined	burnt fills; nearly 17kg of pottery recovered
	OA10	11th	46247		2.20m	unlined	

OA = Open Area number

Table 4.72 Period 1 deep pits (those over 2m deep)

Lining type	Period 1.2	Period 1.3	Period 1.4	Total
timber	7	8	1	16
cobble	1	1	0	2
wattle	2	3	0	5
clay	3	2	1	6
leather ?	1	0	0	1
Total	14	14	2	30

Table 4.73 Period 1 pit linings

and suggest a small structure within the pit. Fills were not suggestive of use as a cess pit. One of the pits at the north-east bailey site also had integral posts within it (Ayers 1985, 7). At *Hamwic*, such posts were interpreted as floor supports or supports for superstructures, or perhaps the marking the position of ladders (Morton 1992, 46). Rare examples of wooden ladders survive in pits, as in a Norman pit at Pevensey Castle (Dunning 1958, 211–212; see Chapter 5.V). The posts and stakes may also suggest the presence of lid supports.

Another category of pit occasionally recorded on the Castle Mall site at this period was the quarry pit (six examples). Sand would have been required for potting and gravel for road surfacing, as well as possibly for the extraction of iron ore. Possible Late Saxon quarry pits were also recorded beneath the north-east bailey (Carter *et al* 1974, 69; Atkin 2002a, 69) and examples are known at Thetford (Rogerson and Dallas 1984, 200).

The depositional processes evident within the pits varied. In some cases, multiple thin deposits had been tipped into the pits often forming steep tip lines apparently indicating deposition of varying types of waste over considerable periods (e.g. Fig.4.28). In others, large-scale deposits had been dumped into the pits over apparently short periods. This type includes the pits filled with ceramic waste where the fills lay in thick horizontal bands (e.g. Fig.4.42). There were many examples of pits with alternating deposits of cess/refuse and clay or sand layers. The latter may have acted to seal in unpleasant odours. In the northern part of the site particularly, there was evidence that the upper parts of some pre-Conquest pits had been filled with thick dumps of sand, an action which may have been connected with the establishment of the castle's defences in an attempt to level the area (see Chapter 5.V).

Craft, Economy and Daily Life

(Figs 4.11, 4.31, 4.49, 4.103, 13.2–13.7 and 13.10)

A range of craft activities demonstrate the daily occupations of the inhabitants of the area prior to the Conquest, with additional evidence for waste distribution and provisioning coming from the faunal remains: the evidence is considered more fully in Chapter 13 and Part III. At Northampton, archaeological evidence suggests that buildings were randomly arranged, perhaps in small social and economic groups (Williams 1984, 31) and a similar situation is demonstrated at Castle Mall (Figs 4.11, 4.31 and 4.49), where the irregular placement of buildings, some of which may have been workshops or storerooms, allied with the distribution of craft waste (e.g. antler- and hornworking and metalworking), environmental remains

(grain storage and processing) and the evidence from the cemeteries indicates a similar phenomenon.

New evidence from Castle Mall and adjacent sites indicates the possible siting of an earlier pottery industry beneath the castle (Fig.13.10). Most of the previous evidence for pottery manufacture comes from an area to the west of the Late Saxon town, the nucleus of known kiln sites being in the Pottergate/Bedford Street/London Street area (Ayers and Murphy 1983). These appear to relate to a later Thetford-type ware production centre, sited in a 'suburban' development to the west of the main area of settlement (Carter 1978b, 200). It is possible that the features found at Castle Mall represent an earlier industry, although a necessary revision of ceramic dating is implied (see Goffin, Chapter 4.III and Chapter 13 'Pottery Production and Associated Waste'). Pottery manufacture at Castle Mall was centred around a possible wood-fueled kiln, ceramic waste being disposed both within it and surrounding pits (Open Area 5, Period 1.2, Figs 4.15–4.16). The kiln-shaped feature, aligned east-to-west with the flue to the east, contained over 25kg of pottery attributable to the late 10th to 11th century. Its burnt clay lining was the subject of unsuccessful archaeomagnetic dating (Linford, Chapter 4.III). The feature was provisionally interpreted as a failed kiln or drying oven. Comparison of its plan with one of the kilns from Thetford (Rogerson and Dallas 1984, fig.62) indicates a similar construction, although the Norwich example is considerably smaller (measuring 2.12m long by 1.06m wide; the Thetford example was 3.5m long by 2.5m wide). An extremely large quantity of 11th-century pottery (nearly 60kg, Fig.4.85) was recovered from a pit in the eastern part of the site (pit 90989, Fig.4.41, Open Area 7, Period 1.3). Burning evident in the pit fills suggests kiln clearance waste. Although the homogeneous ceramic assemblage did not indicate that this was necessarily primary kiln refuse, the presence of such a large quantity of pottery in such a context indicates a connection with production/selling in the immediate vicinity. Possible wasters were also recovered from adjacent pits and scattered within other features across the site. Similar material has come from beneath the castle mound (Tench 1910; Goffin in prep.c), where the relevant vessels appear to represent a transitional stage prior to the development of fully developed early medieval wares (see Goffin, Chapter 4.III). A possible kiln of indeterminate type was recorded beneath the north-east bailey (Ayers 1985, 7). Further discussion of the implications for the Norwich Thetford-type ware industry is given in Chapter 4.III and Chapter 13, 'Pottery Production and Associated Waste'.

Although the pre-Conquest numismatic assemblage from the site is small, it includes two coins struck at Norwich. Of note is the unusual occurrence of a German *sachsenpfening* of c.1000 from the royal Magdeburg mint, which apparently reached the site directly from Germany rather than via the Vikings (Davies and Archibald, Chapter 4.III).

Metalworking at the Castle Mall site during the Late Saxon period was dominated by ironworking. Non-ferrous material indicates copper alloy melting, object manufacture and repair, alongside small-scale lead-working. Much of this activity was concentrated within and adjacent to Hollow 1 to the west of the site, placing it on the very fringes of the Late Saxon town. Both primary and secondary processes were evident, with a possible

hearth base and a small number of fire pits possibly being related to metalworking or other craft processes. Although the evidence for early metalworking is not as spectacular as that recently discovered at other sites in Norwich (Greyfriars, Emery 2007; The Forum, Percival and Hutcheson, in prep.) the evidence from Castle Mall does indicate that this craft was being undertaken on a small-scale within the settled area, rather than necessarily outside the town (Shepherd Popescu, Chapter 4.III).

A number of items indicate the distinctive repertoire of local metalworkers, including an important disk brooch with pseudo-coin motif of possible 10th-century date recovered from 12th-century fills of the ?Castle Fee ditch (SF5454, Fig.4.67; Blackburn, Chapter 4.III). A link between the workmanship observed on the group of hooked tags (typical of Middle and Late Saxon sites) from Castle Mall and those recovered from an evaluation at St Faith's Lane to the east of the castle has recently been noted (Huddle in Emery 2007). These items may have been made by the same person. As noted above, Borre style brooches came from both the Castle Mall and north-east bailey sites and it has recently been suggested that the type may have been manufactured in Norfolk, perhaps in or near Norwich (Margeson 1997, 23).

Environmental samples suggest the presence of cleaned crops, stored within the excavated buildings (Murphy, Chapter 4.IV). There was some variation in the nature of crops stored in different buildings. In Buildings 17 and 18, barley was dominant, bread-wheat type grains were present in samples from Building 1 and in Building 11, rye predominated. Building 12 provides evidence for the drying or roasting of oat or barley malt, fuelled with wood. Further discussion appears in Chapter 13.I. As well as crop storage and processing, other activities within the excavated buildings may have included the manufacture of bone and horn combs, small scale metalworking (lead and ferrous slag being recovered) and weaving. For all of these, the evidence is somewhat tentative, although these crafts are all known to have been carried out within such buildings at other sites including those at Greyfriars, Norwich (Emery 2007), Thetford (*passim* in Rogerson and Dallas 1984; Dallas 1993; Andrews 1995) and further afield at, for example, the 5th- to 8th-century settlement at Mucking (Hamerow 1993, 15–19).

Evidence relating to small-scale textile production and preparation at Castle Mall includes the presence of shears, fibre processing spikes, spindle whorls, a pin beater, pins used in netting or coarse needlework, needles (both iron and copper alloy) and needlecases. The presence of spindle whorls within the excavated buildings is more likely to suggest a craft pursued in the home than a particular specialism (Huddle, Chapter 4.III).

The limited evidence for antlerworking indicates a concentration in the eastern part of the site, while horn- and boneworking were concentrated to the north, west and centre of the settlement (Fig.4.103). Evidence for similar pre-Conquest crafts is known from beneath the north-east bailey (Ayers 1985, 45–47) and to the east of the castle at a number of sites including Greyfriars (Emery 2007) and along King Street (Shelley and Brennand, forthcoming; Shelley 2005). This evidence is discussed further in Chapter 13 and the distribution of antlerworking waste is plotted in Fig.13.2. At Greyfriars, such activity was clearly focussed in particular plots and similar variations were noted at Castle Mall (Huddle and Albarella *et al*,

Chapter 4.III, Albarella *et al*, Chapter 4.IV and Chapter 13, *passim*).

In addition to the summary comments in Chapter 4.IV, the faunal and avifaunal assemblage from Late Saxon deposits is fully detailed in Part III with general discussion in Chapter 13. Of note amongst the assemblage is the presence of fallow deer, suggesting its early occurrence in Norwich. A roe deer trophy (Plate 4.42) and the presence of a goshawk (Plate 4.41) indicate hunting activity, the latter being a bird of the lower nobility and rich commoners at this time. Hunting is also represented by a single arrowhead, while horse equipment includes harness and horseshoes. As noted above, both archery and horse-riding may be reflected in the human bone record.

Conclusions

Despite the absence of a nucleated settlement that could conclusively be described as Middle Saxon *Needham*, the Castle Mall excavations have confirmed the presence of burial grounds at the end of the Ber Street ridge during 7th to 9th centuries. It was during the 10th century that settlement here appears to have become firmly established. There are still arguments to be had, however, about delimitation of the settlement and when it may have taken on a truly urban form. Further discussion on these and other linked issues is given in Chapter 14.

One of the greatest difficulties faced during the analytical process, as at so many sites of this period, has been in distinguishing Late Saxon from Norman deposits. The project has permitted consideration of the received ceramic chronology against scientific dating. Undoubtedly, there are many inherent errors in the interpretation presented in this chapter: it is only one of several hypotheses that could have been offered and there are any number of nuances and alternative scenarios that could have been explored had space and time allowed. For example, at least one scholar maintains that in its earliest form, the castle may have been placed elsewhere in Norwich, implying a completely different interpretation of the early development of the site (see Chapter 12.VI).

The character of pre-Conquest settlement at the Norwich Castle site has now been clarified and the status of the settlement elucidated, ranging from the poor to the wealthy and reflecting on its position at the fringes of the town. At Winchester, it was suggested that large blocks within the gridded street system of the Late Saxon burh perhaps initially housed a principal dwelling and a private church (Biddle 1976b, 454), the blocks later being subdivided. The reconstruction of the Castle Mall site prior to the construction of the earthworks (Fig.4.138) demonstrates that, even with the presence of the 98 'houses' mentioned in Domesday and the known churches and their cemeteries, the character of the area remained essentially suburban, perhaps consisting as at Winchester of small landholdings and their 'proprietary' churches. The more regular settlement pattern now observed towards King Street indicates its proximity to the economic centre of the town. Further discussion of this issues, allied with possible land ownership in the castle area on the eve of the Conquest and the development of the settlement in more general terms, appears in Chapter 14.

Taken overall, the Castle Mall and Golden Ball Street excavations have offered new insights into the develop-

ment of the topography of this part of early Norwich and have raised a number of unexpected lines of enquiry, not least in relation to the important group of leper burials. The density of churches and cemeteries now known to have existed across the site bears testimony to the regional focus that Norwich had become by 1066. The end of this chapter effectively leaves one of the greatest towns in England poised on the brink of the Norman Conquest.

Endnotes

1. In the 1970s, Campbell had proposed that there may have been a centre of royal power at Norwich during the 8th and 9th centuries, possibly at Thorpe (Campbell 1975, 2). This idea was taken up by Carter, who suggested a possible contender in Hellesdon (Carter 1978b, 195).
2. Previously published radiocarbon dates mentioned throughout this report have been recalibrated by Alex Bayliss at the Ancient Monuments Laboratory (see Chapter 4.V).
3. Another pit was described as a fairly modern was tentatively equated on site with pit 11367 which contained early 17th-century pottery. This was probably a much later feature.
4. Thanks are extended to Anna Gannon for permission to reproduce the Thompson brooch in Plate 4.36.
5. The structural terminology used here is that suggested by Galloway (1976) with the exception that, following MacGregor's more recent study (1985), 'tooth plate' replaces 'tooth segment'.
6. Although in some cases it was possible to revise the finds data in light of the rephasing of St John's (Cemetery 4) and those other features affected by the rephasing in the latter part of the post-excavation process (specifically the fills of Ditch 1 beneath the cemetery and early fills of the cemetery boundary ditch, Ditch 2), this did not prove possible with the pottery and the figures presented by Lentowicz above relate to the original phasing. A table indicating the revisions, which are not substantial, is held in the project archive. The material is, however, discussed at its appropriate point in the assemblage discussions in Chapter 4.II and Appendix 6
7. Four perforated ceramic vessel fragments and one perforated piece of roof tile may also have been used as spindle whorls.
8. Thanks are extended to Niall Donald for the translation from German to English of excerpts from Ulbricht, I., 1978, *Die Geweihverarbeitung in Haithabu*
9. Thanks are extended to Dr Vera Hatz, Hamburg for assistance in identifying this coin.
10. Note that radiocarbon dating has given this burial a Middle Saxon date (Bayliss et al, below).
11. Mountergate (deriving from Parmentergate) was not so named until the 1880s, having previously been known as St Faith's Lane (Sandred and Lindström 1989, 119).
12. Further comments on the necessary rephasing of St John's cemetery in the light of radiocarbon dating appears in Chapter 14, 'Developments in Interpretation'.
13. Elizabeth Shepherd Popescu is grateful to Dr Carole Rawcliffe (Centre of East Anglian Studies, University of East Anglia), Dr Patricia Cullum (University of Huddersfield), Christopher Daniell, Dr Charlotte Roberts (University of Durham), Dr Victoria Thompson and Sasha Pfau for engaging in debate and exchange of information over the leper burials. Margot Tillyard provided details of the documentary evidence for later medieval lepers in Norwich.
14. The author is grateful to Dr Andrew Rogerson for translating the relevant passage from the Latin.
15. Brichtiu was a man miraculously healed of leprosy by the relics of early Christian martyrs, which argues for an early foundation date (Carole Rawcliffe, pers. comm.).

5. Norman Conquest (c.1067–70 to c.1094/early 12th century)

‘on that land of which Harold had the jurisdiction, there are 15 burgesses and 17 empty dwellings which are in the occupation of the castle. Also in the Borough there are 190 dwellings empty in this [area] which was in the King’s and the Earl’s jurisdiction and 81 in the occupation of the castle’

Domesday Book: Norfolk, P. Brown 1984, 116b (1.61)

‘They pursued Ralph the Breton to his castle ... concentrating their forces they besieged and attacked Norwich ... harrying their besieged foes by continual assaults with every kind of engine of war. For three months they continued their relentless pressure’

The Ecclesiastical History of Orderic Vitalis, M. Chibnall 1969, ii, 317

‘Norwich Castle is surrendered and the Britons [Bretons] who were in it and had lands in the English land, life being granted to them with limbs have sworn that within forty days they will go out from your Kingdom and moreover they will not enter it without your license.’

Lanfranc, letter to William the Conqueror, 1075; Glover and Gibson 1979, 118–127

I. ARCHAEOLOGICAL, HISTORICAL AND DOCUMENTARY BACKGROUND

Early Norman Norwich

(Fig.5.1)

By 1066, the borough of Norwich was large and thriving; the mercantile centre of a rich agricultural area, with numerous churches. It had become the fourth largest town in England, its population probably numbering between 5,000 and 10,000 (Campbell 1975, 3). Trade links with Scandinavia had been maintained after the departure of the Vikings and Danish help could have been quickly summoned in a conflict. By the end of 1067 William I had completed the defences of Sussex and was free to move further north (Chibnall 1993, 13). The exact construction date of Norwich Castle is undocumented, although it may have been established during the construction of ‘castles widely throughout this nation’ in 1067 (ASC (D), *sub anno* 1066; Swanton 2000, 200). William’s military expedition to East Anglia in the autumn of 1068 saw the construction of castles at Lincoln, Cambridge and Huntingdon (OV ii.185; Chibnall 1969, 219; see Chapter

2.I for discussion over early references to *Guenta* (Winchester) and Chapter 12 for further discussion of the wider political context).

Norwich Castle was established in the Late Saxon town on a natural eminence overlooking the river valley.¹ Recent excavation appears to have confirmed that the southern part of the town was defended by ditchwork at the time of the Conquest (see Chapter 4.VI), the ditch being infilled during the 12th century. The possible 10th-century ditch around the northern burh (Fig.4.2) appears to have been infilled during the late 11th to 12th centuries (Atkin 1993, 132).

The impact of the Norman Conquest on Norwich’s topography was dramatic, entailing the creation of two major precincts — the castle and the cathedral — as well as a new French Borough (Figs 5.1 and 6.1). The cathedral precinct, established in 1094, ‘straddled the east side of the town, possibly partly built on land devastated during the revolt of 1075, but partly on cattle meadow’ (Atkin 1993, 132), disrupting the local street system (Ayers 1996, 64–68 and fig.10; Emery 2007). The reduction in size of the settled area caused by these two impositions was offset by ‘the creation of a completely new zone for commerce and trade which was laid out to the west of the ... castle’ (Rogerson 1994, 74). This new borough (referred to in *Domesday Book* as for the *Franci de Norwic*; Brown 1984, 1.66, 118a) was founded on largely agricultural land to the west of the castle. A Jewry was established to the south of the new Borough before 1144 (Lipman 1967) and is discussed further in Chapter 6.

Construction of the castle gave increased status to Norwich, forming the centre of royal power and administration for Norfolk and Suffolk (Fig.12.1). ‘Norwich castle ... enclosed as much ground as a small Roman town’ (Campbell 1975, 8). Seeking to explain this, Campbell suggests that ‘in the first generation after the Conquest

Date	Event
1066	Entry in <i>Domesday Book</i> (1086) suggests Norwich had at least 25 churches as well as 1,320 burgesses
c.1067–75	Establishment of the castle and the French Borough
1075	Three month siege of Norwich castle. Three hundred men-at-arms quartered at castle after the collapse of the siege.
1088	Roger Bigod’s forces occupy the castle
c.1094	Establishment of the cathedral

Table 5.1 Key events: Early Norman

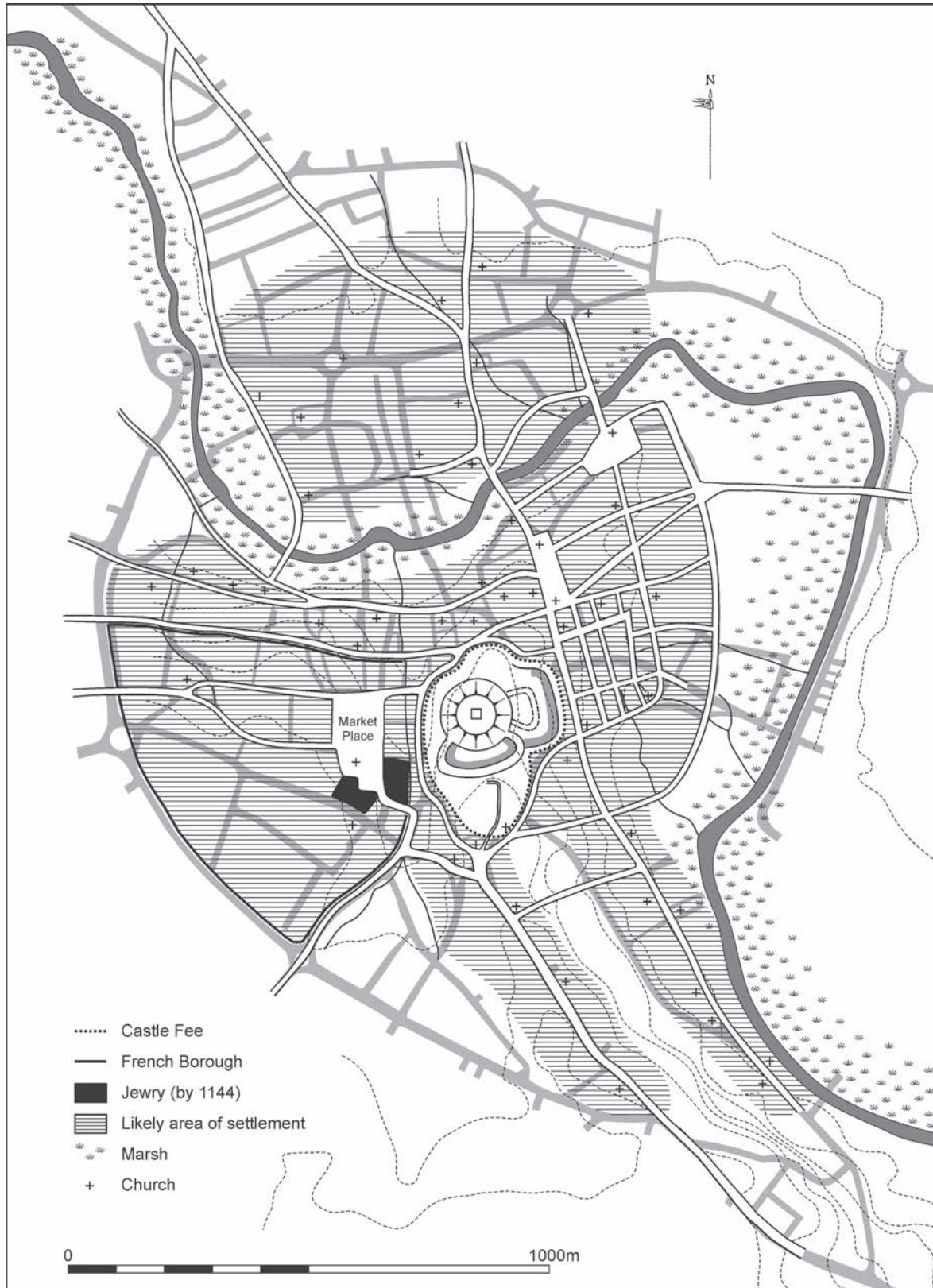


Figure 5.1 Map of Early Norman Norwich showing a reconstructed street pattern, Norman churches and the impact of the creation of the first castle (c.1067–8 to c.1094) and French Borough. Scale 1:12500

the permanent garrison was probably of some size. It is possible that urban castles such as this were a substitute for a town wall and intended to accommodate burgesses and their goods in time of trouble'. In addition, space for livestock would have been required.

It has previously been suggested that ribbon settlement along many Norwich streets (such as Superior Conesford, now King Street) may not have commenced until the late 11th or early 12th century, with settlement only extending outside the *Coslany* settlement to the

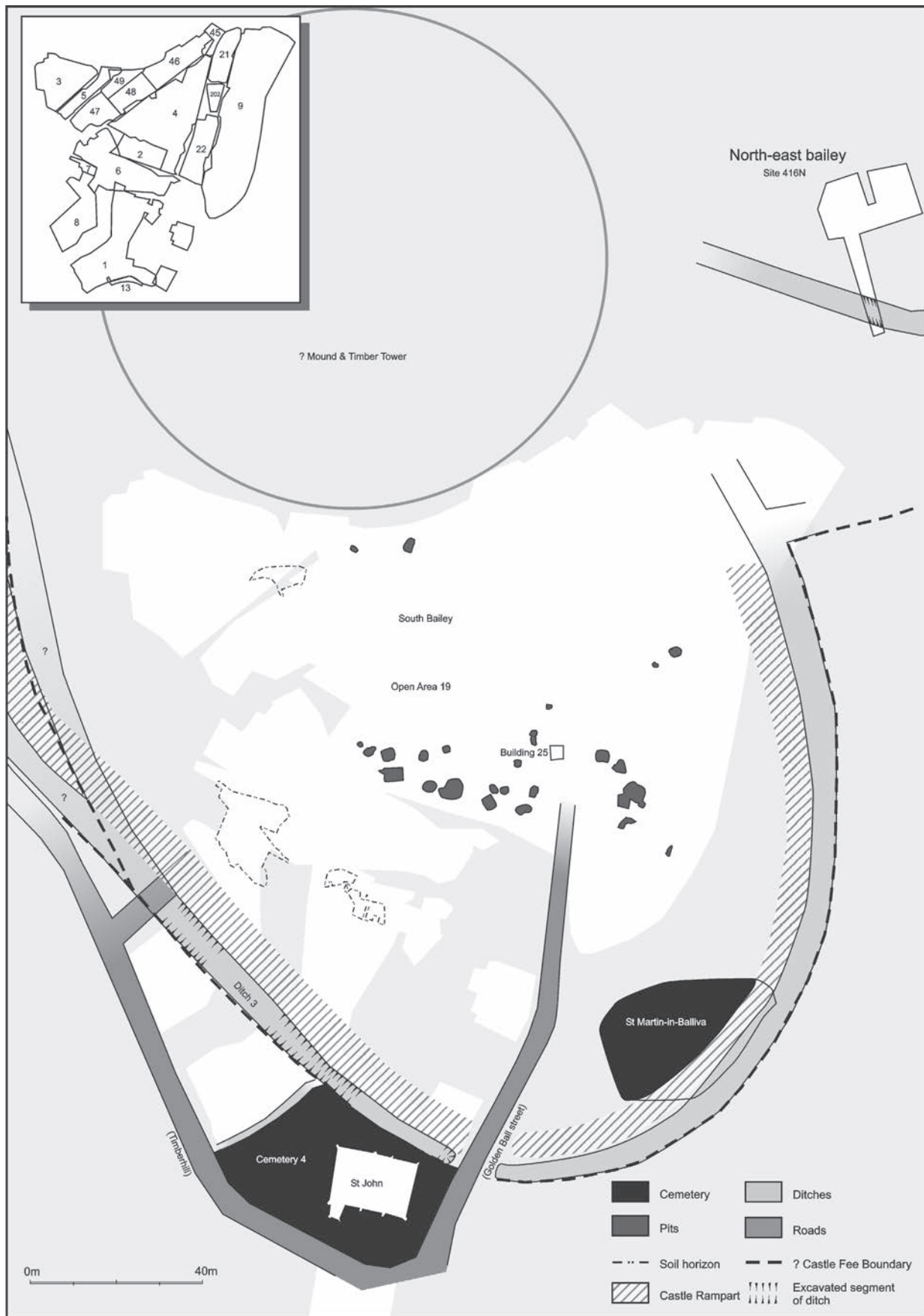


Figure 5.2 Period 2.1: Phase plan — Early Norman (late 11th to early 12th century). Scale 1:250.

north in the mid 12th century (Atkin 1993, 133). Recent excavations along King Street, however, begin to suggest the presence of earlier settlement, commencing in the late 10th century. The early churches to the south (such as St Julian) may be Norman in origin, but there are some (such as St Clement and St Etheldreda) for which a pre-Conquest date is possible (see Chapter 4.VI, 'Churches and Cemeteries'). Twelfth-century developments are detailed further in Chapter 6.V.

Of note amongst the previous discoveries in the castle area is the presence of a small coin hoard found to the north-west of the castle at Site 215N (Fig.13.2). This group of William I type 1 pennies dated 1066-8 came from an ash deposit containing Thetford-type ware waster pottery. It has been suggested that their burial was a response to the siege of the Norwich Castle in 1075 (Ayers 1994a, 43), although the size and condition of the group indicates that casual loss is more probable and a deposition date of 1069 is suggested (Clough 1973).

Documented Impact of Castle Construction

The Domesday entry relating to the destruction of property associated with the construction of Norwich Castle reads: 'on that land of which Harold had the jurisdiction, there are 15 burgesses and 17 empty dwellings which are in the occupation of the castle. Also in the Borough there are 190 dwellings empty in this [area] which was in the King's and the Earl's jurisdiction and 81 in the occupation of the castle' (Brown 1984, 116b (1.61)). Amongst the dwellings affected by the imposition of the castle then, 17 were under the control of Harold prior to the Conquest, with the status of the further 81 being obscured by the Domesday phrasing (see comments on possible land ownership in Chapter 12). The reference implies that 98 *mansurae* (houses or properties²) were either demolished to make way for Norwich castle, or enclosed by the defensive circuit.³ The local street pattern would also have been disrupted and the implications for both this and the displacement of pre-Conquest churches and cemeteries are considered further in Chapter 5.V and Chapter 12.

Antiquarians initially proposed that the Domesday entry referred to an existing fortification and/or to houses in the town that belonged to the castle: 'that the castle of Norwich was ... of an ample extent before the coming of the Normans, appears from hence, that in Domesday we read, *there were eighty-one mansions empty in the occupation of the castle*' (Kirkpatrick 1845, 247). Various suggestions were offered to interpret the reference: 'these "houses" having been depopulated by the siege [a reference to the events of 1075], had been utilized for such of the King's garrison as could not be contained within the castle itself, and were afterwards retained for its service' (Beecheno 1888, 9). Kirkpatrick suggested that the houses 'were either pulled down to enlarge the outworks, or were occupied by the garrison, or were assigned to be under the jurisdiction of the cons of the castle' (Kirkpatrick 1845, 252). It was only with recognition that the castle and its earthworks dated to the Norman Conquest (see Chapter 2.I) that it was realised that the Domesday reference related to a pre-existing settlement

that was swamped by the fortifications (Beecheno MS 1908, 2; Armitage 1912, 173).

Alongside the properties devastated to make way for the castle, many more would have been destroyed by the establishment of the Cathedral Close (see Chapter 6.I). The latter encompasses an area of 42 acres (17 hectares; Ayers 1996, 60), although the major parts of the Prior's Fee were not acquired until 1101 and 1106 (*op.cit.* 72). Of this, about 24¾ acres (10 hectares) lay within the previously settled area. The castle precinct, including the Fee, encompassed about 23 acres (9.3 hectares).⁴ As noted above, the extensive new French Borough and Jewry lay outside the area of pre-Conquest settlement, causing only limited displacement. Combining the castle and cathedral areas, nearly half of the total area of Late Saxon settlement south of the river appears to have been lost to Norman redevelopment.⁵

The effect of the Conquest on the local population was considerable. Over 1,320 burgesses were listed for 1066, this figure falling to 655 by 1086 (Brown 1984, 1.61, 116b). It appears that some inhabitants had been reduced in status, as in 1086 there were 480 unfree inhabitants of the smallholder class, not indicated at an earlier date. Nearly thirty burgesses had fled Norwich, twenty-two of whom moved to Beccles. Domesday Book also notes that 'those fleeing and the others remaining have been utterly devastated partly because of Earl R(alph)'s forfeitures, partly because of fires, partly because of the King's tax, partly by Waleran' (Brown 1984, 1.63, 117b). Evidently, nearly a hundred properties were destroyed or abandoned to make way for the castle, the construction of which obliterated much of the south-western part of the Late Saxon town (Fig.5.1). The impact of the imposition of the castle on the pre-existing town can be compared with similar occurrences in towns such as Lincoln and Chester (see Chapters 12 and 14 for further discussion).

It has been suggested, in a comparison between landgable/population figures given in Domesday and a survey carried out in 1397, that differences apparent between the English and French boroughs may indicate differences between the two areas: 'The contrast is between the flourishing, and still rapidly expanding, French Borough and the recently devastated, and in 1086 still stagnant, English Borough' (Carter 1978b, 186-7). The results of excavations, however, based upon Carter's hypothesis, suggest that the evidence from the landgable tax is more likely to reflect the situation c.1125 (Atkin 1993, 133).

The First Motte and Donjon

by Margot Tillyard and Elizabeth Shepherd Popescu (Plate 6.4)

During the Late Saxon period, labour on fortification was an obligation to kings which may have been inherited and exploited by the Normans (Higham and Barker 1992, 129). Norwich's large population would have provided a ready-made workforce. Little wonder that the Anglo-Saxon Chronicle speaks of a populace 'greatly oppressed ... with castle-work' (ASC (E), *sub. anno.* 1137; Swanton 2000, 264). Domesday Book gives the names of several people, all living in the new borough at Norwich and paying almost no custom to the king (Brown 1984, 1.61, 117a). These may have been in the king's service and amongst them were:

- Rabel (see below);
- the watchmen Meinard, Gerard and Gislebert;
- the arbalisters Ralph, Gislebert and Robert;
- the ditcher, Herbert;
- the lorimers, Rodbert and Hildebrand;
- Wala, priest of the Bigods, who was priest of a ‘certain church’, presumed to refer to the newly founded church of St Peter Mancroft.

Rabel may have been the engineer or architect of the castle, probably the same Radbel *artifex* who held several properties in the county (Harvey 1975, 148; Blomefield 1806, II, 18, n.2), and possibly Rabel *Carpentarius* (Rye 1921, 23).

Norwich’s first castle probably consisted of a timber tower or ‘donjon’ on a small motte, protected by a palisade, with a ditch isolating it from the slope of the hill. Such a ditch and bank around the outer bailey must have been an early insertion; large numbers of knights and their horses, with all their supplies and attendants would have needed protection. The ditch(es) must have been completed and the stronghold itself sufficiently strengthened to withstand a three-month siege in 1075 (see below). At an early stage, outside the southern bailey ditch to the east, a large piece of land was enclosed which was known and used as the Castle Meadow (the first documentary reference using this name being made in the mid 14th century).

The timber donjon would have been surrounded by a wooden palisade at the top of the motte and a similar palisade may eventually have run down the sides of the motte to link with the outer defences (*i.e.* running along ramparts; Green 1966) and perhaps around its base. No archaeological evidence for Norwich’s first timber tower of the late 11th century has been recovered (Ayers, unpublished; Wallis in prep.). The presence of an early motte, beneath the existing mound constructed in association with the great masonry donjon (*c.*1094–*c.*1121–22), had long been postulated (see Chapter 5.V). Previous reports of ditchwork on top of the motte itself were based on a series of photographs taken during redevelopment of the Museum rotunda in the late 1960s (Plate 6.4): ‘it seems likely that the wooden keep was defended by a further ditch to its north and east on the top of the present motte’ (Reeve 1992, 22). Recent excavation, however, indicates that this effect was in fact caused by the later enlargement of the earlier mound (see Chapter 6).

An early timber bridge to the motte may have been of the ‘flying’ type depicted in the Bayeux tapestry, which would have risen from the counterscarp of a ditch (see further comments on timber bridges in Chapter 5.V). In most English castles, however, ‘the flying bridge was replaced by steps cut into the motte’ (Pounds 1990, 17). Further consideration of the likely scale of the motte, possible appearance of the associated timber tower and the workforce required to construct it are given in Chapter 12.

The Castle Fee and its Boundary

(Figs 5.1, 5.2, 5.57, 12.5 and 12.9; Plates 7.1 and 12.1)

A large area of crown land — *Feodum Castellii*: the Fee or Liberty of the Castle — was defined around Norwich Castle containing an area of about 23 acres (Figs 5.1 and

5.2). The concept of the Castle Fee was probably defensive in origin, forming a military enclave within an urban area (Pounds 1990, 211–12). It has long been recognised that Norwich Castle’s Fee enclosed an extensive area around the motte and its two baileys (Beecheno 1888, 15–17; Beecheno MS 1908 fig.1; Plate 7.1). Beecheno’s map shows the line of the Fee running across the Timberhill block in a position which reflects, broadly, the position of the south bailey ditch and its rampart, although it now appears that the original boundary lay some distance to the south (see Chapter 5.V). To the west of the castle, observations of a ditch interpreted as the Fee boundary have been made at various times and the hypothesis of a complex of earthworks set within it was reiterated in the 1970s (Carter *et al* 1974, fig.7; Fig.12.5.F). In the 1980s it was noted that ‘little is understood of the nature of this land save that it lay in the jurisdiction of the castle rather than the town It is unclear whether it was an open space between the castle and the town or contained the houses of castle officials’ (Ayers 1985, 5). It seems unlikely that vernacular buildings would have been permitted to encroach upon the defences at an early date and ‘whatever its physical nature, the area must have provided a *cordon sanitaire* between the Castle and the town which only gradually became anomalous as the Castle developed from an eleventh-century demonstration of Norman power to a late medieval administrative headquarters’ (*ibid.*). Crown jurisdiction was maintained over the Fee until the mid 14th century (see Chapter 8). Prior to this date the jurisdiction of the city ended at a way or road around the edge of the Castle Fee, with the exception of the area to the north of St John at the Castle Gate.

In 1964, four large Ae repoussé roundels, found together, were recovered by workmen from the western side of Norwich’s Castle Street at Site 29N (Fig.5.57), each decorated with the Arms of England (Green 1965, 163–164; Shepherd Popescu *et al* 2004; Plate 12.1 and Fig.12.9). These may have an association with the Fee boundary although they are probably 13th-century in origin and are therefore detailed further in Chapter 7.

Most of the previous research into the Fee has been based on documentary evidence, dealing with the 13th century onwards when documentary evidence is plentiful. Of particular note amongst the antiquarian work is the invaluable manuscript and tenement maps produced by Beecheno, which remain unpublished (Plate 7.1; Beecheno MS 1908 maps). Other research into the Norwich fee was carried out by Kirkpatrick (1845, 298–311) and Woodward (1847, 28–41). Major work on Norwich’s records, including those relating to the Fee, was undertaken by Hudson and Tingey in the late 19th and early 20th centuries. Sale or lease of the fringes of the Fee is documented from the 13th century. Evidence for the residents of the Fee, using Beecheno’s work as a basis, has been analysed by Margot Tillyard and is detailed throughout this report and in Part IV.

Ditch observations made to the west of the castle in 1961 and by the Norwich Survey in 1973 were interpreted as marking the line of the Norman Castle Fee (Carter *et al* 1974; Sites 291 and 218N; Figs 2.2 and 5.57). At 18 Davey Place, during excavations in 1961 (Site 218N), ditch fills were recorded — the ditch being at least 9m (30ft) wide and over 4m (14ft) below modern road level. This ditch was interpreted as possibly forming part of the

burgh defences on the basis of the fact that it was not in existence in the mid 14th century (based on Beecheno's work on abutments) and was therefore unlikely to have been castle-related (Green 1963, 3) (see further discussion in later chapters). At 11–17 Castle Street (Site 28N), excavations for foundations in 1963 revealed made ground which may have been fills of a castle ditch, although no sections were cut deep enough to be certain. What may have been an associated bank was also observed.

Other sites across which this western stretch of the ditch would be expected to run (Fig.2.2) include 1–3 Castle Street (Site 264N), Castle House/Davey Place (Site 543N), 9, Back of the Inns (Site 26008N), the Castle Hotel (Site 27N; west side — a different ditch was recorded at the eastern side of this site) and 20 White Lion Street (Site 26474N). No evidence for the ditch was found at Site 264N in 1974, although excavation was largely restricted to modern makeup dumps. At Site 543N, several Roman coins were found in 1847. Work by the NAU in 1996 revealed evidence for medieval occupation, overlying fills of either the ditch or infilling of the eastern side of the Cockey stream (Moss *et al* 1999). Work at Site 26008N was restricted to observations of the standing building. Further south, at Site 26474N, demolition layers were sealed by undated infills of what may have been the eastern side of the stream valley on its diverted course or ditchwork (Percival 1998). The ditch's projected line might have continued southwards across the southern end of the Bell Hotel (Site 314N). Fills of what was probably the medieval barbican ditch (Period 4.2) were recorded to the north, with 1–3m of made ground recorded across the southern part of the site.

The Castle Earthworks

(Fig.12.5)

Understanding of the castle's defences at the outset of the Castle Mall excavations was primarily based on Campbell's map, the information for which was collated by Col. Johns which in turn drew evidence from antiquarian observations and limited excavation (Campbell 1975, 8, fn.89 and maps 2–3; see Fig.12.5.G). This and other modern maps of the defences (*e.g.* Carter *et al* 1974, fig.7; Carter 1978b, fig.7; Green 1990, fig.2) were necessarily summary in form, with none of the subtleties of sequential development that have now been established through archaeological excavation. As was outlined in Chapter 2 and is detailed further in Chapter 12, the existence of baileys to the south and north-east of the mound had long been postulated but nothing was known of the defences of the timber phase.

Prior to the recent excavations, it was suggested that Norwich's 'north-east bailey was probably the last to be created and remained militarily weak until in 1345 it passed formally into the possession of the City' (Pounds 1990, 126). Several archaeological observations have now been made within the area of the north-east bailey (those included here lie to the east of Opie Street; Fig.2.2), although many relate simply to architectural details and/or provide no archaeological information (26135N, 26011N, 26002N, 26003N, 26141N, 26232N and 26315N). Several sites provide evidence for human burials and are described further in Chapter 4 (358N, 418N, 417N and 416N). At Site 416N, part of what

was interpreted as the north-east bailey ditch, although undated and recorded only over a short length in a narrow machine trench, was excavated in 1979 in advance of redevelopment for Anglia Television. The ditch survived to 6m wide and 2m deep (Ayers 1985, figs 2 and 19). It now seems possible that this formed a smaller, inner boundary with a second, larger feature running outside it (this and other alternatives are detailed in Chapter 5.V and Chapter 12, 'The Castle Earthworks').

Beecheno's manuscript contains considerable information relating to the line of the north-east bailey ditch. He noted the depth of foundations for the Royal Hotel which could be taken to indicate the presence of a ditch (MS 1908, 50, fn.). Kirkpatrick described the Castle Meadow as 'a large square ground, encompassed on the north-east and south sides with houses, and lies with a descent eastward' (Kirkpatrick 1845, 239). Harrod quoted many deeds with reference to the name 'Castle Meadow', the line of the rampart apparently being reflected in the position of contemporary housing. Tenement abutments studied by Beecheno attest to the presence of a ditch along Cutler Row (now London Street), across Bank Plain, Blue Boar Lane (now Bank Street), Conesford/King Street and Pump Street. Tenement ownerships for this (and other parts of) the circuit are given. This and other documentary evidence relating to later use of and encroachment into the Castle Meadow is presented in subsequent chapters. A number of possible routes and sequences of development for the earthworks of the north-east bailey are considered in Chapter 12.

The Events of 1075 and 1088

by Margot Tillyard and Elizabeth Shepherd Popescu

In 1075 the Earl of East Anglia, Ralph de Guader/de Gael, married Emma, the daughter of William Fitz-Osbern and sister of Roger of Breteuil, Earl of Hereford. With another of William's barons (Earl Waltheof), Ralph and Roger, who were perhaps resentful of interference from royal sheriffs, conspired at the wedding feast to rebel against the King when he returned abroad (ASC (D) and (E) *sub anno* 1075, Swanton 2000, 210–212; HA Greenway 1996, 399). Lanfranc, the archbishop-regent, was warned of the rebellion and excommunicated Roger whose army was contained west of the Severn. The other two intended to join forces at Cambridge but Ralph was defeated on his way there and withdrew to Norwich. Lanfranc assured the king in a letter that he could deal with the remaining rebels and set siege to Norwich castle for a period of three months:

'They pursued Ralph the Breton to his castle, but could not capture him. Then concentrating their forces they besieged and attacked Norwich, encouraging their friends by their bravery and military skill, and harrying their besieged foes by continual assaults with every kind of engine of war. For three months they continued their relentless pressure, wearing out the enemy. The avenging army was daily strengthened by reinforcements, and an abundant supply of food and other necessities was provided for all their needs so that they could continue the siege indefinitely. When Ralph of Gael realised that he was shut in without hope of receiving any help from his accomplices, he entrusted the defence to a loyal garrison and himself

took to the sea and boarded a ship to seek help in Denmark.’ (OV ii.263; Chibnall 1969, 317).

Ralph escaped down-river to secure his lands in Brittany, leaving his bride in charge of a large force of his Breton followers. After the siege, Lanfranc was obliged to allow the Bretons to depart honourably when famine threatened (see further discussion of the siege in Chapter 12). He was then able to garrison the castle with three hundred of his own men-at-arms. He wrote to William again:

‘Norwich Castle is surrendered and the Britons [Bretons] who were in it and had lands in the English land, life being granted to them with limbs have sworn that within forty days they will go out from your Kingdom and moreover they will not enter it without your license. And those who without land served Ralph the Traitor and his associates for money have obtained by many prayers the space of one month to do this. In the same Castle have remained Bishop Geoffrey, W. de Warena, Robert Malet and 300 men in armour with armour with them, with Crossbowmen and many artificers of machines. All noise of wars (God pitying) is quiet in the English land.’ (MS Cotton, Nero A., VII, fo.26b, British Museum; Glover and Gibson 1979, 118–127)

Lanfranc’s assertion that peace was restored was rather premature as the expected Danish support then finally landed. They were, however, too late to do more than pillage the coast on their way up to raid York before sailing home for the winter (ASC (D), *sub anno* 1075; Swanton 2000, 211–212).

The *artifices machinarum* [missile engineers/artificers of machines] quartered at Norwich Castle after the siege may have repaired crossbows as well as operating catapults (MacDonald 1926, 213). Crossbows were an accurate, spring-wound weapon firing ‘quarrels’, short feathered arrows with square iron tips. These travelled up to 300m, twice as far as the missiles cast by siege engines (Pounds 1990, 69). The bows were made and stored at the Tower of London and the quarrels made in the Forest of Dean (Pounds 1990, 108, 110). One thousand quarrels and other arbalisters’ apparatus cost 9s 8d in 1159/60 (Rye 1921, 13).

Such large numbers of troops in the Norwich area caused food problems, which were exacerbated by the laying waste of coastal districts to frustrate Danish landings. The appalling weather and the heavy taxes of 1083 and 1086 caused further devastation and hardship. In 1088 Roger Bigod, the new Norman Earl of East Anglia, joined a confederacy opposed to the succession of William Rufus and occupied Norwich Castle, quartering his forces there for a while (ASC (E) *sub anno* 1087 for 1088; Swanton 2000, 223).

These crises over, Norwich gradually recovered. The settlement of French burgesses west of the castle and its new market prospered. The old market of Tombland, however, retained its market status after the Conquest as it does today. Employment was provided by the building of the new cathedral and its priory from c.1094–c.1096, while a newly-established Jewish community (founded during the 12th century) could provide loans and the bishop licensed a mint (see Chapter 6.1).

The French Borough and New Market

(Figs 5.1 and 12.2)

The French Borough (which became known as ‘Newport’) was established to the west of the castle, on land that was at least partially owned by Earl Ralph: ‘and he granted it to the King in common for the founding of the Borough between himself and the King’ (Brown 1984, 1.66, 118a). The reference suggests a date prior to 1075, *i.e.* before the Earl’s rebellion when his lands were forfeit. Ralph de Guader/de Gael succeeded his father, Ralph the Staller, as Earl of Norfolk and Suffolk in 1069–70 (Liddiard 2000a, 27; Rutledge in prep). Earl Ralph’s Anglo-Breton family had been major Norfolk landowner’s before the Conquest. While Ralph was not a Norman, granting land to the king for the new borough would both have ensured royal support and increased the status of the relevant areas of Norwich (see further comments in Chapter 12). By the time of Domesday, the new borough housed a hundred and twenty-five French burgesses, of whom forty-one were ‘on the demesne of the king and the earl’, the remainder held by nine Normans led by Roger Bigod (Brown 1984, 1.66, 118a).

The new borough included a market place which was in existence by 1096, as well as three churches (St Peter Mancroft, St Giles and St Stephen). Campbell considered that ‘the site was an obvious one for expansion; it filled the gap between two areas already built up and included the point at which the main road to London left the city’ [later through the principal gate of St Stephen’s] (Campbell 1975, 9). The new Norman population presumably required housing adjacent to the castle and many of them may have been merchants. Property was also owned there by many Norfolk barons and their tenants.

It has been suggested that the new borough became ‘a sort of outer garrison to the castle’ (Hudson and Tingey 1906, vii) and that the inhabitants of the area may have had their own reeve, market and meeting place (*op.cit.*, vii and ix). The only known parallel for such a French Borough established before the 12th century is at Nottingham. Wider discussion of the new borough and market and their relationship to the castle is given in Chapter 12, ‘Castle and City’.

fold out

fold out

II. ARCHAEOLOGICAL SEQUENCE

Period 2.1: Conquest (c.1067/70–c.1094/1100)

Summary

(Fig.5.2)

The construction of the castle may have seen the laying out of the Castle Fee and an early bailey to the south (possibly with another to the north-east), with the earlier, refuse-filled hollows being levelled and consolidated. Numerous refuse and cess pits (54 in total), often very large, lay within the new south bailey and provide evidence for craft and other activities during the years immediately following the Conquest. It is possible that burial activity from at least one of the displaced Late Saxon churches and cemeteries moved to the south at this point, to the location of the church and cemetery of St John at the Castle Gate (de Berstrete, later St John the Baptist, Timberhill), which was reduced in size by the insertion of the earliest castle ditch. Assuming that the church of St Martin-in-Balliva (to the east of the castle approach) was pre-Conquest in origin, it would have been enclosed by the outermost castle ditch.

Reduction of Cemetery 4 (St John at the Castle Gate/de Berstrete)

The digging of the Castle Fee boundary ditch and the raising of its associated earthen rampart had the effect of cutting off the eastern part of the cemetery of St John (Cemetery 4). The posts set within the cemetery boundary ditch (see Chapter 4.II, Period 1.4) were apparently removed at the same time its eastern stretch was infilled. The western part of the boundary, however, survived as a functional earthwork, with only its base becoming infilled during the 12th century. It remained substantially open until it became choked with refuse in the early 14th century (Chapter 8.II, Period 4.2).

Ditch 2, Phase 2: infilling (Figs 4.60A and .5.4–5.5)

Castle Mall Site

Deposits at the base of the cemetery boundary ditch (G1/47, Fig.4.60A) indicate erosion, filling the post-holes and slot at the ditch base. Their presence indicates that, during the 12th century, the western part of the ditch was no longer maintained in its original form. Towards the west these sandy/silt deposits were recorded in section (10680, 10677, 10684 and 10671, S.112, Fig.4.60A). A similar deposit was recorded further east (10151), its depth suggesting that the ditch had been left open for some time.

Golden Ball Street

by Elizabeth Shepherd Popescu and David Whitmore

The eastern stretch of the boundary ditch (GBS Group 25 part) was filled at the base with similar clean deposits, again indicating erosional/weathering processes (Fig.4.60B). These were overlain by layers of mid brown sandy silty clay interspersed with bands of darker greyish brown sandy clay (439–447, 460). The surviving eastern stretch of the ditch had been completely infilled

by the time that the castle-related ditch was dug through it (Ditch 3, below).

Small Finds

Fills of the ditch recorded at Golden Ball Street contained an iron nail (SF167), bone point (SF246) and sawn antler (primary waste; SF248).

Pottery

A total of 0.286kg of TTW, Stamford ware (Fabric A), EMW and LMU were recovered from the fills recorded at the Castle Mall site, indicating a late 11th- to early 12th-century date. A larger quantity of pottery (0.978kg) was recovered from five of the ditch fills at Golden Ball Street. The recovery of TTW and EMW indicates a general 11th-century date. See Appendix 6.

The Motte and its Ditch

The Castle Mall excavations touched only minimally upon the foundation and make-up of the castle mound and all recorded elements were comparatively modern. Given that the recorded observations of both the motte and its ditch are more likely to relate to the construction of the second, larger motte, these are described in Chapter 6.II (Period 3.1). The motte is known to have reached its extensive final form by the time of the construction of the stone donjon upon its south-western corner in c.1094 to c.1121–22 (see Chapter 6.I and 6.V). It has long been postulated that it had a smaller forerunner upon which the timber tower was constructed, and recent excavations have now confirmed this (Wallis in prep. a). The new work indicates that the top of the initial mound lay at around 26.50m OD, beneath which natural deposits were recorded at c.23m OD indicating made-ground of approximately 3.5m at this point. Further north, the top of the original mound would have risen approximately 6.5m above modern street level.

The ?Castle Fee Ditch

Ditch 3, Phase 1: cut (Figs 5.3–5.7, Plates 5.1–5.2)

The initial Fee boundary may have been formed by an early ditch to the south, combined with a ditch around the north-east bailey (Ditch 9, Period 2.2). Further discussion of this and alternative possibilities (including implications for the possible burh boundary) is given in Chapters 4.VI, Chapter 5.V and Chapter 12. At Golden Ball Street, the butt end to the ditch indicates the presence of a causeway to accommodate the southern castle approach road (which appears to have followed the line of a pre-Conquest forerunner).

The earliest apparently castle-related ditch in the southern part of the site was a ditch observed in two areas (Areas 1 and 8). To the north it had a roughly v-shaped although slightly stepped profile, this part of the ditch having suffered heavy truncation. To the south (in Area 1; see Period 3.1, Chapter 6) the ditch had suffered less truncation and was wider and deeper. This southern, wider element may have been recut, perhaps to form a hornwork around the southern castle gate in c.1094 to c.1121–22 (clearer evidence for recutting comes from observations of the same ditch at the Golden Ball Street Site). Certainly, the recorded northern part at Castle Mall had been infilled at the time the south bailey ditch was dug. Small amounts of pottery recovered from bulk samples in the northern part of the ditch (see Period 2.2) give a ceramic range of 10–12th-century. To the south the ceramic date range was 11–14th -century, with a fairly

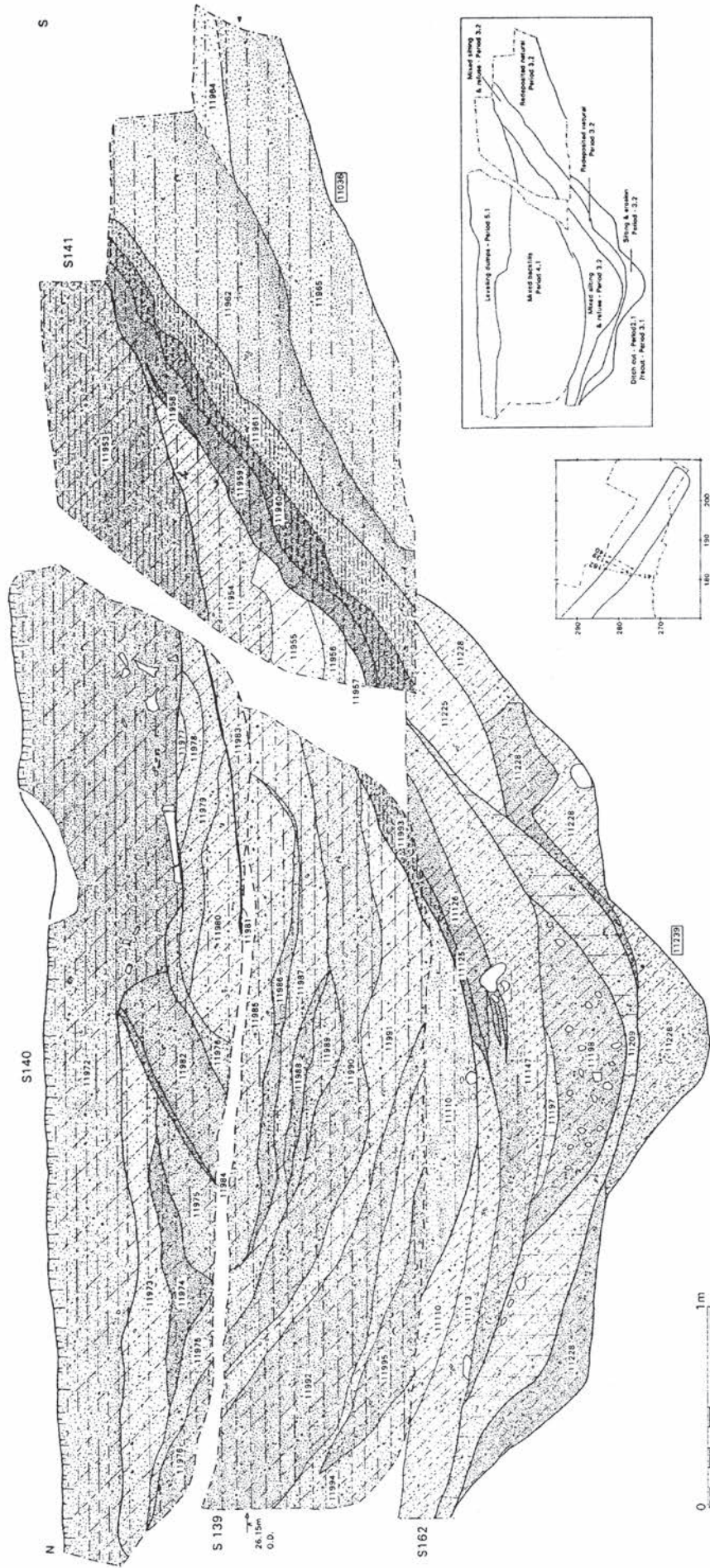


Figure 5.6 Period 2.1: West-facing section across Ditch 3 (?Castle Fee ditch) (Area 1). Scale 1:33

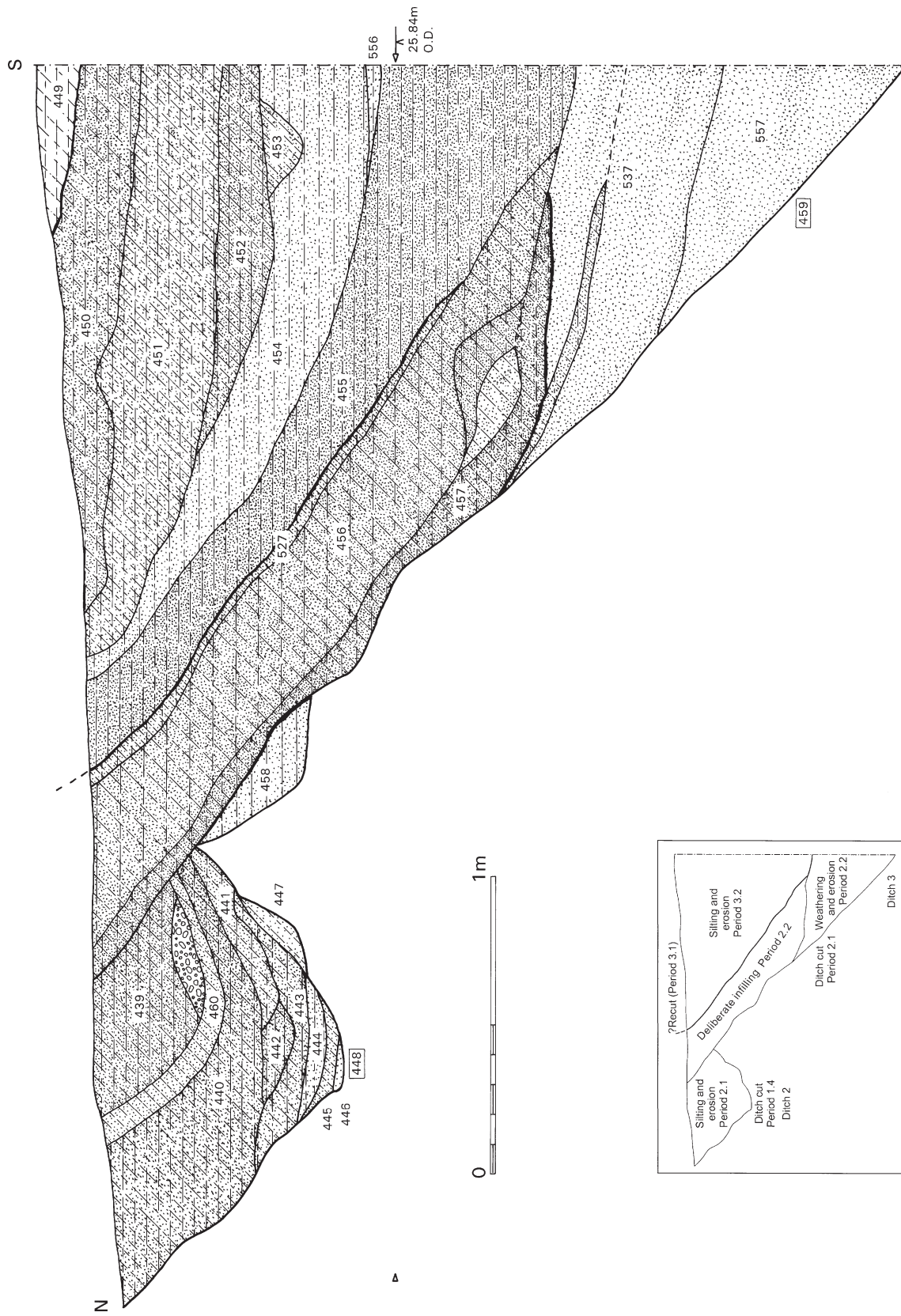


Figure 5.7 Period 2.1: West-facing section across Ditch 3 (?Castle Fee ditch) at Golden Ball Street (Area 2), showing the earlier cemetery boundary marker (Ditch 2) to the north. See Fig. 5.5 for section location. Scale 1:20

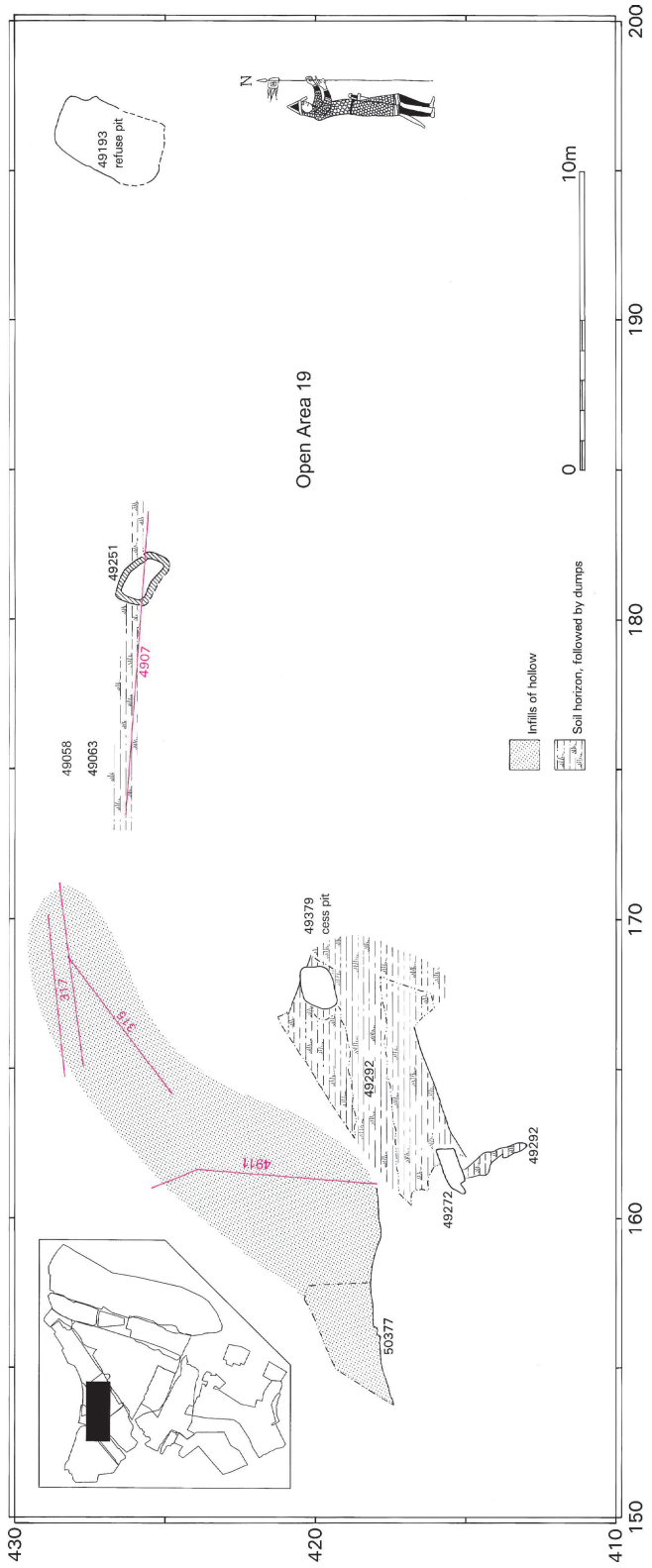


Figure 5.8 Period 2.1: Plan of pits and deposits within the early Castle Fee/south bailey, Open Area 19 (Areas 5 & 49). Scale 1:250

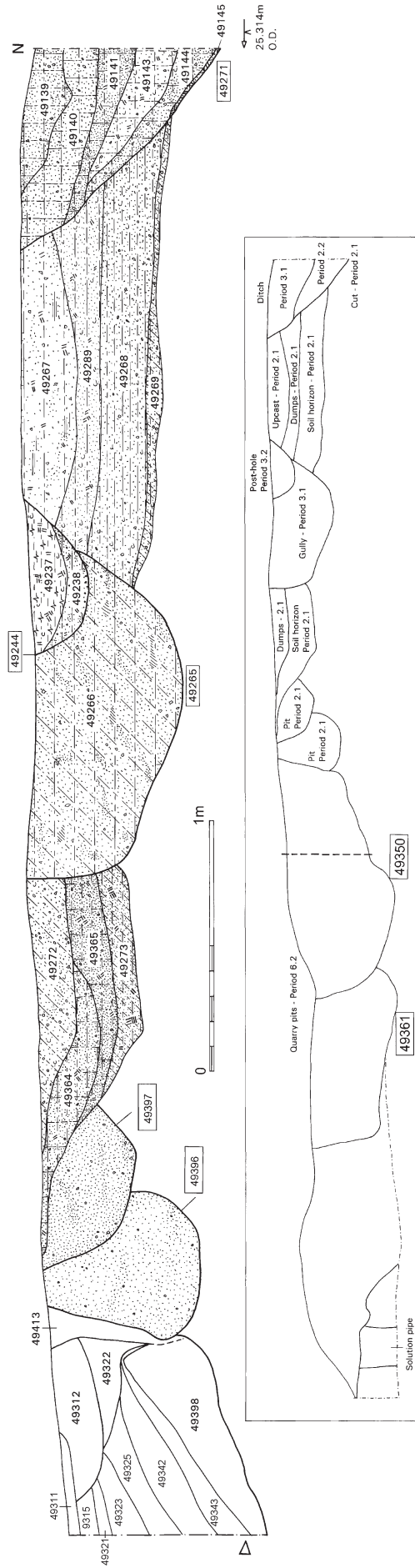
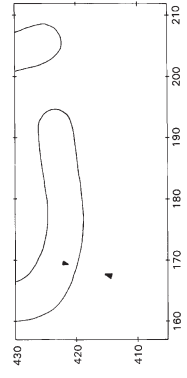


Figure 5.9 Period 2.1: East-facing section across deposits and features in the early Fee/south bailey, Open Area 19 (Area 49, S.4911). Scale 1:25



large 12–13th-century assemblage (see Periods 3.2 and 4.1, Chapters 6 and 7). Other observations of what may have been the same ditch were made to the west and east and are described below.

The postulated ‘recut’ (G1/53) cut into fills of the boundary ditch (Ditch 2) for the Timberhill cemetery (Cemetery 4) dating to the 13th to early 14th century, although as noted in earlier text this stratigraphic anomaly may result from the effects of cleaning and/or the slumping of fills and a more accurate date of the original cut is suggested by the observations in Area 8 and at Golden Ball Street. A *terminus ante quem* for the eventual infilling of the southern part of the ditch is provided by activity of late medieval/transitional date, including a number of metalworking pits dated to the 14th–15th century (Period 5, Chapter 8.II) which cut into its upper fills.

Western arm, Castle Mall Site

A ditch cross-section was recorded in a watching brief to the north-west of the site, beneath present day Castle Meadow (T58/19; S.182; Fig.5.57). This was originally assumed to be the northwards return of the south bailey ditch to the west of the motte, although it is possible that it lay in the same or a similar position to the ?Fee ditch. Further discussion of this possibility is given in Chapter 12. This ditch and its fills are described as part of the south bailey ditch in Period 3.1, Chapter 7.II.

A machine trench to the north-west (Area 8, G8/10; Fig.5.3) was dug to examine the relationship between the ?Fee ditch (80240) and the later south bailey ditch (Ditch 10, see Period 3.1) which intercut at this point (Fig.5.4). Sections reveal a roughly V-shaped ditch with stepped sides, the latter perhaps the result of weathering. It had a surviving width of c. 5.50m, with the base lying at c.22.83m OD, the ditch having a surviving depth of just under 2m. The ditch may have been contemporary with widespread refuse/soil horizon deposits recorded to the north-east (see below) and/or with later deposits infilling the former hollow in the same area (see Hollow 1, Chapter 4). The southern edge of the deposits recorded in Area 8 (where not slumping into the hollow) lay at c.25.90m OD, about 1.15m higher than the recorded top of this ditch, suggesting the maximum extent of truncation. Extrapolation of the ditch sides upwards to this level would make the original width of the ditch here about 7m by about 3m deep. This section of the ditch had been infilled by the date at which it was cut by the south bailey ditch. Ceramics indicate a mid to late 11th-century depositional date (Period 2.2).

To the south (Area 1, G1/52; Figs 5.5 and 5.6) lay a postulated early continuation of the same ditch, which may subsequently have been recut removing all trace of the earlier ditch in the same position, its base at 23.40m OD). The original east-to-west dimension in Area 1 is uncertain, although may have been about 8m wide by 3.5m deep. Further details of this section of the ditch are given in Chapter 6.II (G1/53, Period 3.1).

Western arm terminus, Golden Ball Street Site

by Elizabeth Shepherd Popescu and David Whitmore

The northern side of the butt end of the western arm of the ?Fee ditch (459) was partially exposed close to the southern limit of the Golden Ball Street excavation (GBS Area 2, Group 27, Figs 5.5 and 5.7, Plate 4.30). A total of 3.45m of the width of this ditch lay within the excavation and was recorded to a depth of 2.90m (24.14m OD). A comparison with the more complete sections across the ditch excavated during the Castle Mall suggests that the centre and base of the ditch were not reached (and must lie at a point some 0.50m to 1.00m to the south, under Grout’s Thoroughfare). The ditch had a regular appearance (with a probably V-shaped profile), very different to the stepped and disturbed cross-section seen elsewhere. The terminus had an angular, almost square corner, although this shape was probably masked by the presence of a later post-hole at this precise point.

Eastern arm

by Elizabeth Shepherd Popescu and Niall Donald

On the eastern side of the castle approach, a ?ditch tentatively identified in Area 9 (G9/46, Fig.5.30) may indicate the northwards return of either the south bailey ditch (Period 3.1) or the ?Fee ditch. A large rectangular or linear feature, only the eastern edge of which survived, (91556) was recorded in an area heavily disturbed by later quarrying. This may

suggest that it was in fact a quarry, an interpretation supported by its apparent flat base recorded in section. It is also possible, largely on the basis of location, that this was actually the return of the ?Fee ditch. Its base lay at 13.23m OD, considerably lower than the recorded base of the ?Fee ditch to the south where it lay at 23.40m OD (this difference is largely accounted for by the local topography). The recorded width of this ditch was c. 1.75m, compared with 7–8.50m wide to the south and east, although the truncation was severe across the eastern part of the site. In conclusion, this is a tentative piece of evidence for the location of the ditch return. If this is the correct location for the ?Fee ditch, it would indicate that the north-east bailey ditch (Ditch 9, Period 2.2) may have butted up against it from the east (*i.e.* forming a later defensive addition).

?Castle Fee Rampart

by Elizabeth Shepherd Popescu and David Whitmore

Evidence for a rampart on the inner, north edge of the ?Fee ditch is largely conjectural, although a portion of it survived at the Golden Ball Street site. A small block (30cm²) of pale yellowish orange sandy clay lying directly above the natural was the only observed physical evidence. Other thin patches were noted elsewhere, although proved so similar to the underlying natural that true differentiation was not possible. Secondary evidence for the existence of a rampart comes from a series of medieval pits, the relatively shallow nature of which indicates that they had been cut from a higher level, implying the contemporary presence of a rampart. At least one of the pits had been dug for the extraction of natural sand and gravel.

Inner ‘South Bailey’ Ditch

It is possible that the large south bailey, initially delimited by the ?Castle Fee ditch, was subdivided to form two smaller baileys of unequal size at an early stage. There is, however, little archaeological evidence to support such an hypothesis: the evidence is largely circumstantial, the ditch itself probably having been obliterated by the insertion of the great barbican ditch in the 13th century (see Period 4.2, Chapter 7). The evidence for the presence of such a ditch is considered in Period 2.2, when it would appear to have been in position. It may, however, have existed from the castle’s outset.

Deposits and Pits within the Castle Fee/South Bailey

A series of surfaces and other layers recorded within the northern part of the early south bailey (Fig.5.8) indicate that the area may have been landscaped, with the movement of natural sands and gravels to consolidate the ground surface (similar consolidation dumps are described in Period 2.2).

Open Area 19: deposits and features to the north

by Elizabeth Shepherd Popescu and Andy Shelley (Figs 5.8 and 5.9, Plate 5.3)

Hollow 2, phase 4: deliberate infilling

Dumps into an earlier ‘hollow’ (Hollow 2, Period 1.1) overlay previous deposits of redeposited natural and refuse (Period 1.2). These infill layers comprised dirty redeposited natural sands and gravels recorded largely in section (G5/60, 50367, S.316; 50335 and 50334, S.317 and 315 Fig.6.14). At its deepest point, the dumping was approximately 0.85m thick. No finds were recovered from these fills and they have been dated by stratigraphic position.

The thick bands of redeposited natural were followed by a sequence of thin, possibly washed-in lenses of

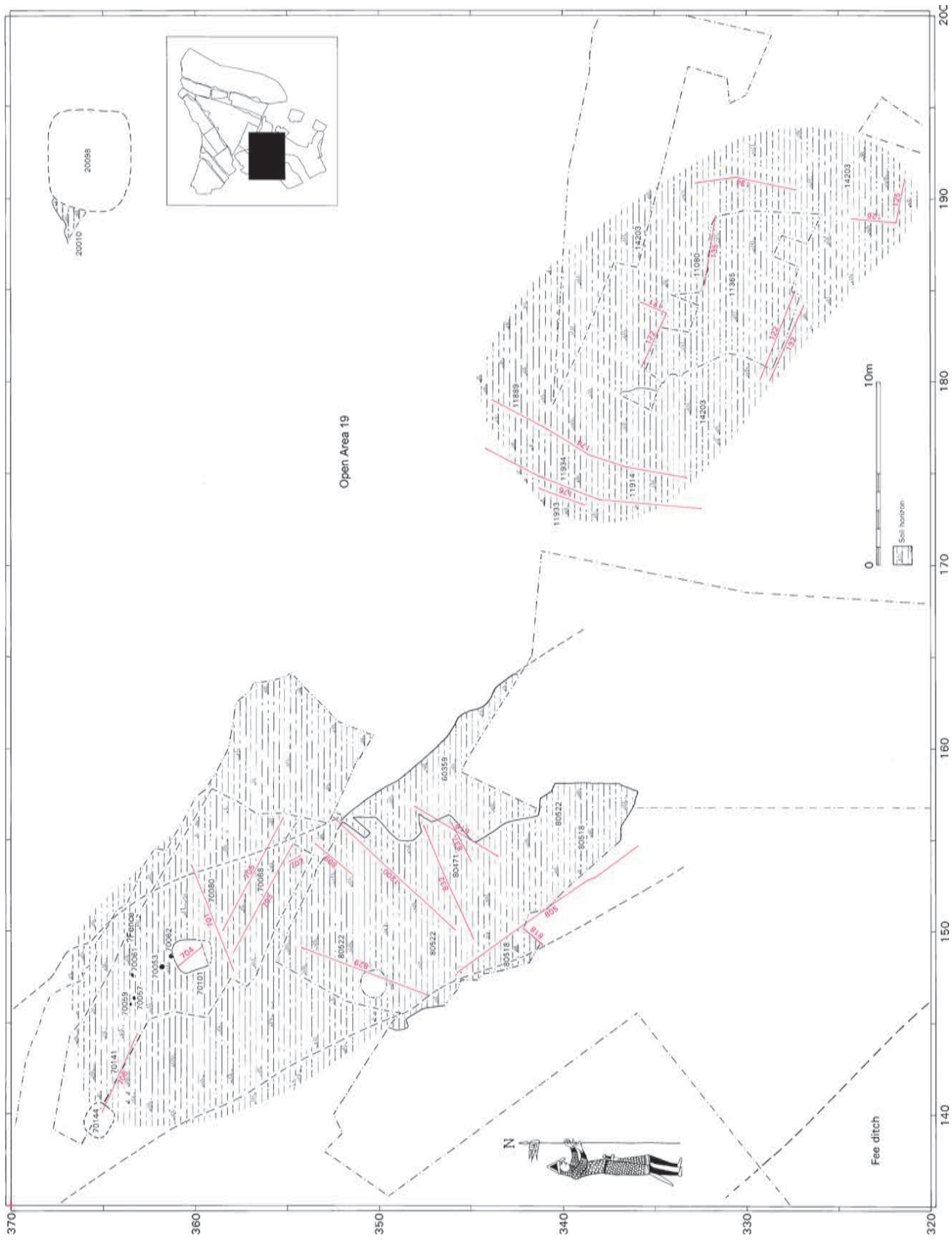


Figure 5.10 Period 2.1: Plan of extensive organic deposits within early Castle Fee/south bailey, Open Area 19 (Areas 1, 2 & 6-8), showing overlying pits and posts. Scale 1:300

sand and clay (G5/61, S.316, 50377, 50365, 50364 and 50362) which may have formed naturally. These may imply a pause in the infilling of the hollow, perhaps long enough to allow the growth of vegetation. Sealing earlier fills were dumps of silty sand, some with frequent fine to medium-sized pebbles (G5/62, S.316, 50198, 50209, 50199 and 50361).

It is possible that the deposition of this material into the hollow was intended to level the ground within the newly defended area, in a similar way to similar activity noted in Hollow 1 to the west of the site (see Period 2.2) where consolidation dumps were placed prior to the construction of the south bailey rampart (Period 3.1). It is possible, however, that this action was undertaken in relation to the construction of the well shaft described in Period 3.1 (G5/22) which cut through these deposits.

Some of the earlier pits in this part of the site (e.g. 50037, G5/10, Period 1.3) contained substantial amounts of clean, redeposited natural sand at the top, perhaps indicating their deliberate infilling which may have been a result of the same Norman landscaping activity.

?Soil horizon

A series of features and deposits were recorded just to the south of Hollow 2 (Figs 5.8 and S.4911, Fig.5.9, Plate 5.3). The earliest were two intercutting post-holes (G5/50, 49396 and 49397, both 0.60m wide). Overlying these possible post-holes and possibly contemporary with them was what may have been the remnants of the original ground surface (G5/27, S.4911, Fig.5.9). This directly overlay natural sand and gravel (cf. similar deposits recorded to the south described below in other areas). To the south an initial layer of loam (49269) with occasional chalk fragments was overlain by a layer of sandy silt (49268/49292), notable for its light green 'cess' bands and black areas. Traces of root activity were also noted. This surface lay at 26.00m OD at its highest point. Further to the north-east, similar deposits were recorded in section (S.4907, 49058 and 49063), again overlying natural sands and gravels and containing charcoal flecks and oyster shell fragments. The uppermost level of this deposit (25.28m OD) indicates the natural local ground slope, falling slightly from west-to-east and south-to-north.

The lower deposits recorded here may represent sub-soil, with the upper ones being a mixture of refuse (?including cess) and natural ground surface (with traces of vegetation), suggesting a similar process to that indicated in deposits to the south-west (see below). Although they may have been Late Saxon in origin, the discovery of a type 2A horseshoe in layer 49268/49292 and presence of late 11th- to early 12th-century pottery indicates that they remained exposed at the time of the castle's construction.

?Ground consolidation and pitting

Overlying the possible ground surfaces described above were layers of clean silty sand and gravel or clay (49289 and 49272, G5/28, not illustrated). These deposits may represent the mixture of underlying layers with cleaner material, perhaps in relation to the construction of the castle (see consolidation dumps described in Period 2.2). They were overlain by an ashy deposit (49185, G5/35, not illustrated) containing frequent charcoal and oyster shell, perhaps an 'occupation' layer.

A possible cess pit (49379, G5/29) cut into underlying dumps (G5/27). It was 1.15m deep with the imprint of a post at its base. A long sequence of alternating layers of cess and clean sand and clay was interspersed with post-holes and post-pipes, indicating structural elements within the pit.

Another pit lay to the north-east (49251=49064, G5/41, S.4914 and 4907) and had later been cut into by a castle ditch (Period 2.2). This medium-sized rectangular pit was nearly a metre deep (0.93m) and was lined with compact clean clay. Its primary fill was a peaty deposit, followed by an apparent collapse of the pit's sides before further refuse-type fills. The clay lining could indicate that this pit was originally intended for storage. To the north-east was a large, sub-rectangular pit (49193, G5/47) with a depth of 2.65m.

Earlier deposits to the west (above Hollow 2) were sealed by a layer of sandy silt containing moderate quantities of medium-sized flints (49267, G5/30, S.4911). This compacted deposit sealed the fills of an earlier cess pit (49379 above). No finds were recovered from this layer, although it was subsequently cut by a castle ditch (see Period 2.2) to the north. Similar layers to the north-east (S.315, 50348–50350, G5/19) may have been part of the original ground surface, or in part upcast from surrounding earth-movement.

Small Finds

Deposit 49268/49292 contained an iron horseshoe (SF1116) of type 2A with three round nail holes with oval countersunk holes. Cess pit 49379 contained a similar but incomplete type 2A horseshoe (SF1119). Pit 49251=49064 contained a bone spindle whorl (SF6800), while pit 49193 yielded two iron nails.

Pottery

A total of 0.544kg of pottery was recovered, comprising TTW, YTW, EMW, EMW/LMU, while a residual sherd of Middle Saxon Ipswich Pimply ware was also found. The fabrics and forms present suggest an infill date of late 11th- to 12th-century. See Appendix 6.

Botanical and Zooarchaeological Remains

by Peter Murphy, Umberto Albarella *et al*

A sample from the possible soil horizon (G5/27) included charcoal, a few cereal grains including *Hordeum* (barley), a large *Fabaceae* (bean family) cotyledon, bone fragments, small mammal bones and fish bones, modern woody roots and probably modern insects. The assemblage is sparse and uninterpretable. Animal bone from pit 49193 included a cat skeleton (Chapter 5.IV and Plate 5.19).

Open Area 19: deposits and features to the south-west (Figs 4.5, 4.39 and 5.10, Plates 5.4 and 5.5)

Apparently 'sealing' earlier activity in the western part of the site (Areas 1, 6, 7 and 8) was an extensive sequence of deposits of complex origins, including a naturally-formed soil horizon with associated root activity and refuse-disposal (including cess) into a former hollow (Hollow 1). These deposits were recorded as sealing Late Saxon pitting although were probably at least partially contemporary with it. Other deposits include destruction debris in the form of burnt clay/daub, sometimes in layers or lenses, suggestive of destruction by fire, perhaps in part of clay and timber buildings as well as the accumulation of mud/soil/vegetation, possibly partly contemporary with the establishment of the castle and including the churning up of underlying deposits. These are summarised below under the categories suggested above and then described in more detail by area.

The possible soil horizon was particularly evident in the north-eastern part of Area 1, where a flat-topped



Plate 5.5 Soil horizon within early ?Castle Fee/south bailey (Period 2.1), Open Area 19 (Areas 6 & 8), showing the underlying dark organic layers above Hollow 1 and the remnants (above) of the south bailey rampart. Looking north-west

deposit lay at around 26.90–27.30m OD, often associated with root activity. Relevant sections suggest that this deposit was not as dark in colour/organic as those observed to the west. These deposits were interpreted on site as turf laid to form the base of the south bailey rampart, although this now seems unlikely (further discussion of turf-based ramparts is made in Chapter 12). Some parts of this deposit(s) contained human bone and this layer may partly have been cemetery build-up, accumulating during the use of the pre-existing Late Saxon cemetery (Cemetery 3). It was, however, recorded as sealing graves. A similar deposit in Area 6 (G6/18 part) ‘sealed’ earlier structures and lines of pitting. Environmental samples from the layers in Area 1 contained charcoal as well as burnt and unburnt grain in poor condition and abraded scraps of bone: this is presumed to represent the long-term accumulation of refuse of diverse origin (see Murphy below).

Refuse deposits were concentrated to the west, especially within and immediately adjacent to Hollow 1. The effects of this deposition are shown in a composite section (Fig.4.5). The deposits were thickest in Area 7 (G7/5), the sequence being up to a metre thick and presumably derived in part from pre-Conquest settlement. The layers were organic with some cess staining (*cf.* earlier fills of hollow). To the south (G8/8), deposits have been subdivided into two phases (destruction deposits and refuse), although this division is not clear-cut. It is noteworthy that the deposits containing burnt daub, *etc.* appear here at the bottom of the sequence, the reverse of the situation observed in Area 1 (see below). Undulations appeared in the surface of this layer where it had slumped into underlying pits. Environmental evidence again suggests the disposal of miscellaneous plant waste.

Lenses of burnt clay/daub and charcoal which can be interpreted as destruction debris occurred in several places. Most was probably redeposited although some may have been *in situ*. The clearest evidence comes from a series of sections in Area 1 (S.174–175, Plate 5.4) which show burnt daub lying towards the top of the sequence of dark layers. The differing stratigraphic position of such deposits suggests that these burnt layers were not the

result of a single conflagration, but could simply be the remains of hearths, debris from industrial activity (*e.g.* pit lining) or the remnants of isolated structural fires.

Thick deposits of very dark material, particularly notable in Areas 6–8 in the immediate vicinity of Hollow 1, may indicate the effects of churning of earlier deposits. They may also indicate other processes, including cultivation.

Detailed description

As a result of the method of recording largely in section and extensive excavation by machine the complex sequence of deposition of the layers described here cannot be fully reconstructed. They were clearly of mixed origin and probably span the pre-Conquest/Conquest periods, continuing to accumulate until the construction of the overlying rampart (in *c.*1094 to *c.*1121–22). It should be noted that similar deposits relating to this rampart appeared to run down its slope and lens into these layers (see Chapter 6.II). Deposits beneath the rampart were cut by a number of features (see below and Period 2.2) prior to ground consolidation and rampart construction. Clearly, these layers originally extended over a wide area (Plates 5.4 and 5.5).

Area 2 (G2/44)

To the north-east was an isolated patch of dark grey silty clay (20010; Fig.5.10 and 5.11) which was subsequently cut by an early castle-related ditch (Ditch 8, Period 2.2) as well as a large pit (20098 below). This deposit lay at *c.*26.25m OD. No finds were recovered from it.

Area 1 (G1/13)

A possible buried soil horizon was recorded across the northern part of Area 1 and in places was associated with burning (either patches of charcoal or burnt clay). This widespread deposit(s) was recorded in plan in the central area, in sections through a machine trench (S.174, Fig.4.39) and in numerous other sections across the northern part of Area 1 (Plate 5.4).

Phase 1: soil horizon and refuse disposal

The possible soil horizon recorded here generally lay at around 27.00m OD. Furthest to the north was a layer of dark grey brown sandy silt (11889) which contained frequent charcoal with flecks of daub and chalk. It was noted to contain frequent bone and pottery. The deposit was similar to others to the north and west (Areas 6 and 8 below) and is interpreted as a mixture of refuse and cess, churned up together and

possibly including some destruction debris. It was about 0.40m thick. To the south were a number of deposits which may broadly equate (including 11934 and 11914, S.174 and 175, Plate 5.4).

In the central area, an extensive deposit (11365) sealed earlier activity (including structures and Cemetery 3) and consisted of dark grey sandy clay loam with frequent charcoal. In a section to the north (S.135) was a brown sandy loam containing frequent flint (11080). A micromorphological sample taken from this deposit by Dr Richard McPhail was not found to be worthy of analysis. This may have been a buried soil, lying at the same level as other deposits included here. Again, no finds were retrieved.

Observations of the possible buried soil/grey layers were made in several other sections (14203). In summary, they were of dark grey sand/silt loam with frequent flecks of charcoal. Some observations contained human bone and in some cases the deposits sealed graves in Cemetery 3 and other features, suggesting that the graves were extremely shallow (see further discussion in Period 1.3, Chapter 4). Sections (S.171, 172, 122, 132, 134, 125 and 126) show the deposits lying at around 26.90–27.30m OD, with a generally flat surface and often overlying root activity. Photographs of these sections suggest that they were unlike the refuse deposits at the same level to the west, although they may be broadly contemporary, perhaps forming part of the same process (e.g. the disuse of structures/cemetery and the accumulation of soil/mud/vegetation prior to the construction of the south bailey rampart).

Phase 2: ?Destruction deposits

Traces of burning were apparent, either included within or lying above the deposits described above. To the north-west (S.175) was a patch of red/orange burnt daub (11933) indicating debris which may have come from the destruction of a building. Above was a thin layer of grey sandy silt, possibly naturally formed. To the south of this (also S.175) was another small patch of burnt daub at the surface. To the east (S.172) were patches of charcoal, burnt clay and sand incorporated towards the top of the possible soil horizon.

Area 6 (G6/18)

Extensive deposits of dark, organic material (60264, 60359 and 60071) were again recorded in Area 6, both filling Hollow 1 and spreading northwards, sealing earlier structural activity. The deposits were machined off and their original extent to the north and east is uncertain (Plate 5.5). Within the hollow, a dark, charcoal-rich layer was recorded in section (S.616) and plan lay at 26.23m OD to the north and 26.35m OD to the south, levels which equate well with sections recorded in Area 8. A similar deposit, which was recorded in plan to the north (60359), covered an area of 14m north-to-south by 10m east-to-west and lay at a level of 26.82–26.50m OD. Wood staining was noted to run down the slope at the edge of the hollow.

Area 8 (G8/8)

A series of possible soil horizon/refuse deposits were recorded in section and plan across the northern part of Area 8 and lying above and largely confined by Hollow 1. Differences in these deposits were noted on site and they are described below in two broad 'phases'. The first includes possible destruction deposits containing burnt clay and charcoal, some of which may have been reworked or redeposited. Deposits assigned to the second phase were apparently more homogeneous, perhaps indicative of occupation, cultivation, dumping or some other process.

Phase 1: possible destruction deposits

Deposits allocated to phase 1 were generally organic sandy silt with frequent charcoal inclusions and some clean clay. Some upper infills of underlying Late Saxon pits have been included here (e.g. pits 80670, 80671 and 80783) due to their similar nature, possibly including slumpage into these earlier features. Sections 828 and 829 show deposits (80078, 80119, 80518, 80560, 80561, 80660, 80670, 80671 and 80785) containing lenses of ?burnt clay and charcoal, which may derive from the destruction of clay and timber buildings. A sample taken from one of these (80561) has been interpreted as cess (see Murphy below) suggesting the continued use of the hollow area for sewage disposal. Destruction deposits in this area were clearly overlain by homogenous material (Phase 2).

Phase 2: organic deposits

A widespread area of deposits, very dark in colour, was generally referred to as context 80471 (also 80072, 80104, 80522, 80559 and 80625). This was apparently composed of a series of different layers, perhaps part of a single process or depositional event (Fig.4.5 and 5.10). Deposits assigned to this second phase are generally of very dark in colour and comprise organic sandy silt with frequent charcoal

and some chalk and pebbles. This second 'phase' may indicate a hiatus between the destruction/disuse of timber buildings and the construction of the south bailey rampart (Period 3). The deposits were machined off, a process which left isolated patches which were separately recorded. Surface irregularities were again caused by slumping into both the underlying hollow and earlier pits. Stratigraphically, all features included in earlier phases pre-dated these deposits, although the process of deposition (gradual deposition and possible reworking) and their dark colour means that some features may have been cut through the top of the deposits, or have been active during the accumulation process (Figs 4.5 and 5.10). A large quantity of finds were recovered from the composite context, although there was a high risk of contamination due to the disturbance of fills from underlying features, with a lesser risk of contamination from later features and machining.

Area 7 (G7/5)

Another sequence of dark organic/silty deposits, lay above earlier fills of the hollow in Area 7. Here, they were recorded in section only (S.701, 703, 705 and 706, Fig.5.10). To the north (S.706, 70141) was a deposit of dark grey/black silty clay with frequent charcoal flecks. A slot (S.701) dug through these deposits indicates that they were over a metre thick. Along the side of the hollow were two patches (70083) of what may have been redeposited natural resulting from weathering. These were sealed by dark grey clay/silt/sand deposits, the lowest of which contained frequent charcoal. Above this was a mottled deposit with cess staining, especially towards the west (70080). This indicates similar disposal of sewage into the hollow as had been noted elsewhere at an earlier date. It contained a large amount of domestic waste including food debris (mammal bone and oystershell) and discarded or lost items. Above was a similar deposit containing frequent pebbles (70079), the finds from which were mixed with those from the layer beneath. To the south, in opposing sections (S.703 and 705, 70088) was a similar black organic layer, containing frequent charcoal and some shell inclusions. This was presumably also partly the result of refuse dumping, thinner here than to the north (although continuing below the level at which excavation ceased).

Small Finds

An assemblage of 35 objects in a range of materials was recovered from these deposits, many of these being illustrated (see Table 5.2 on CD).

Pottery

by Irena Lentowicz

(Figs 5.37–5.38)

Over a quarter of the period assemblage came from the extensive sequence of organic deposits (16.979kg; 26% of the period assemblage; Figs 5.37 and 5.38).

Pottery from destruction debris in Area 8 (G8/8 part; 2.302kg) included; TTW jars (types AA10, AA12, AB7, AB8, AB10, AB11, AB14 and AB15) and cooking pots (types AA4, AA10, AB7 – two examples, AB8 and AB14), as well as a large multi-handled jar (type AG6). NEOT was represented by two jar rims. Early medieval wares included an EMW ginger jar, and EMSW were represented by rims from medium (type AB6) and large (type AC1) jars. A small quantity of LMU was also present; however, a GTGW body sherd was also recorded and both these sherds may be intrusive.

A larger assemblage was recovered from dark deposits/organic layers recorded in Areas 1, 6 and 8 (G1/13, 6/18 and 8/8 part, 10.590kg, Figs 5.37–5.38). TTW was the most common fabric recovered and forms were dominated by jar and cooking pot rims in a wide range of rim types (jars – types AA3, AB1, AB4, AB6, AB11 – four examples, AB13 – six examples, AB14 – five examples, AB15, AB16, AC4 – two examples, AC5 – two examples, AC6 – two examples, AC7 – two examples, AC10, AC11 – three examples, AC15 – two examples (Fig.5.37, nos 1, 2 and 6; Fig.5.38, nos 1, 2, 3, 13 and 14; cooking pots – types AA10, AB5, AB6 – three examples, AB7 – two examples, AB14, AB15, AB16; Fig.5.37, nos 3, 4 and 5; Fig.5.38, no. 12). Some jars and cooking pot rims were distorted, though apparently still used (Fig.5.38, nos 13, 14 and 15). Two other vessels were represented by rims from a storage jar (type AF9; Fig.5.37, no. 7) and a bowl (type BB7; Fig.5.38, no.11). Other Late Saxon fabrics recovered included Pingsdorf-type ware and NEOT, including two jar rims (Fig.5.38, nos 4 and 5). Early medieval wares provided a proportion of the assemblage. Most of this was made up of EMW represented by small jars (types J1a, J1b – two rims, J1c – two rims and J2c) and cooking pots (type J1j). The only other EMW form recorded was a ginger jar rim (Fig.5.38, no.10). Other early medieval wares were limited to EMSW and YTW, both represented by rims from jars; EMSW by medium-sized jars (types AB8, AB12, AB14, AB15 and AB16; Fig.5.38; nos 6–9); YTW by a jar with distinct body/neck join and rim everted to a point (type Ya) and a

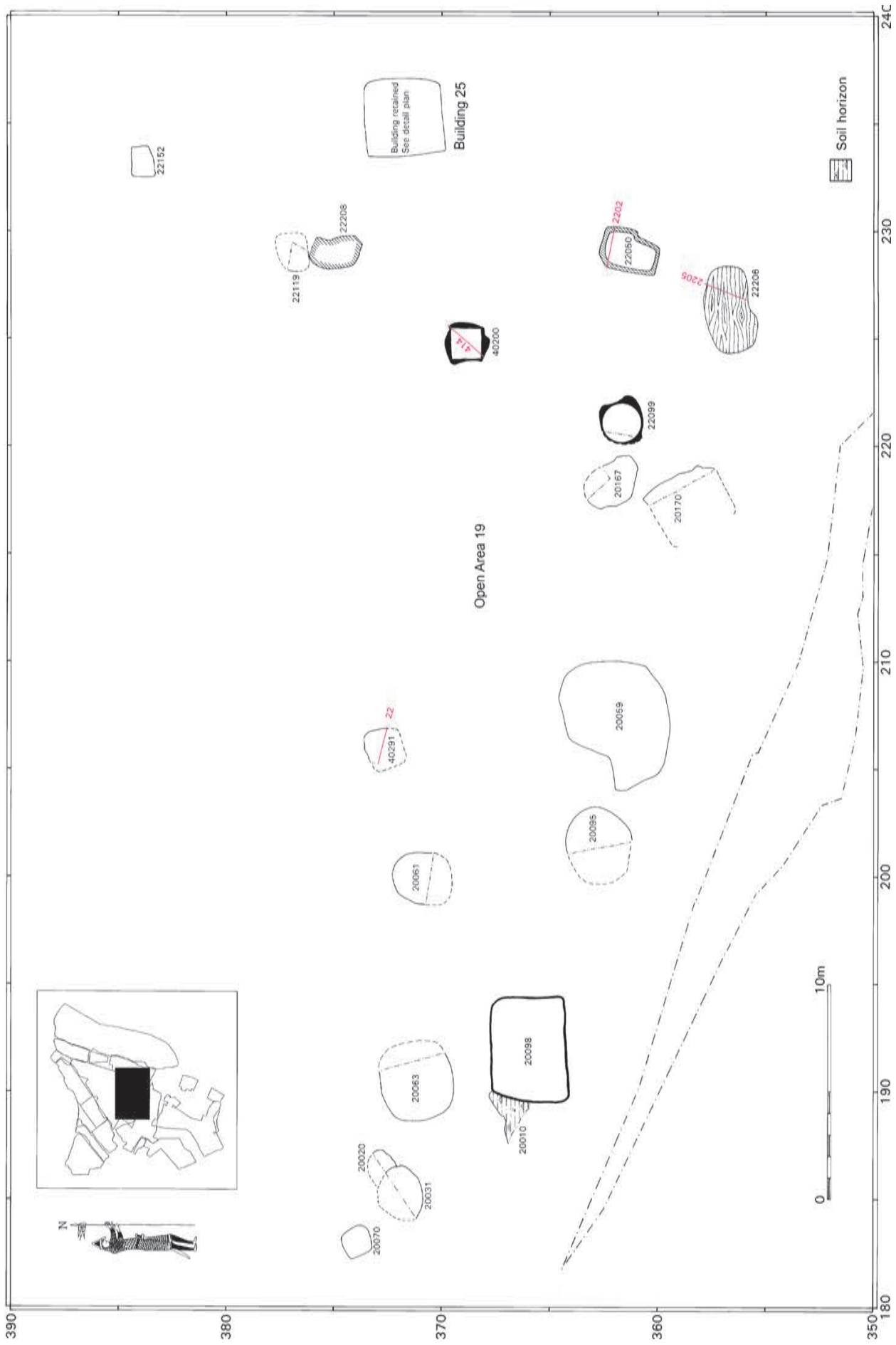


Figure 5.11 Period 2.1: Plan of pitting to the west of the castle approach route within early Castle Fee/south bailey, Open Area 19 (Areas 2 & 22). Scale 1:250

large base. Fine wares were represented by small quantity of Stamford ware (Fabric B), only 0.127kg coming from layer 80672 (G8/8, part).

A large proportion of the assemblage came from Area 7 (G7/5; 4.087kg). The assemblage was similar with TTW dominating and a comparable range of forms and rim types, though less prolific. TTW included rims from cooking pots and jars (types AB6 – two examples, AB7, AB11 – four examples, AB13 – five examples, AB16, AC11 and AC12) as well as a storage jar rim (type AF9). Early medieval wares included EMSW, as well as fine wares represented by Stamford ware (Fabric B) and Andenne-type ware. EMW was the most common early medieval fabric and included a ginger jar rim as well as three flat bases. These were unusual as EMW bases tended to be sagging rather than flat.

Further details of the assemblage by area are given in Appendix 6.

Botanical Remains

by Peter Murphy

Samples were taken from many of the deposits (11365, 11581, 11851, 60359, 70071, 70079, 70080, 70081, 70088, 80560, 80561, 80671 and 80672). They included charcoal, occasional charred cereal grains often in poor condition (*Avena* (oat), *Hordeum* (barley), *Triticum* (wheat), *Secale* (rye), rare charred *Corylus* (hazel) nutshell, uncharred seeds including *Sambucus nigra* (elder), *Solanum nigrum* (black nightshade), *Chenopodiaceae* (fat hen family) and *Conium maculatum* (hemlock), abraded bone scraps, rare fish and small mammal bones, scraps of marine mollusc shell and some mineral concretions. They presumably represent a long-term accumulation of miscellaneous refuse of unknown and probably diverse origin. It is not possible to distinguish deposition of refuse deposits relating to any specific activity. In view of the archaeological significance of these deposits, one (80561, BS958) which included slightly more material, was fully analysed as a sample (see Table 5.18 and Chapter 5.IV).

Open Area 19: pitting and craft activities (Figs 5.10–5.16)

Pits have been assigned to this sub-period on the basis of their ceramic date (mid/late 11th- to early 12th-century) and/or by virtue of their often large size in relation to earlier (?domestic) features. Many of the related ceramic assemblages included a significantly high proportion of EMW/LMU with a number of horseshoes of late 11th- to 12th-century type. Fills containing such finds are often low down in the infill sequence, suggesting that the pits were open and in use during the Conquest/early castle period (although some may have originated in the Late Saxon period). Many of the pits pre-dated the insertion of two crescentic ditches (Period 2.2) which formed a defence around the southern bridge crossing over the proposed inner bailey ditch. This gives the pits a broad life-span of between c.1068 and the end of the 11th century.

The question arises as to the position of the early southern approach route to the first castle, for which indi-

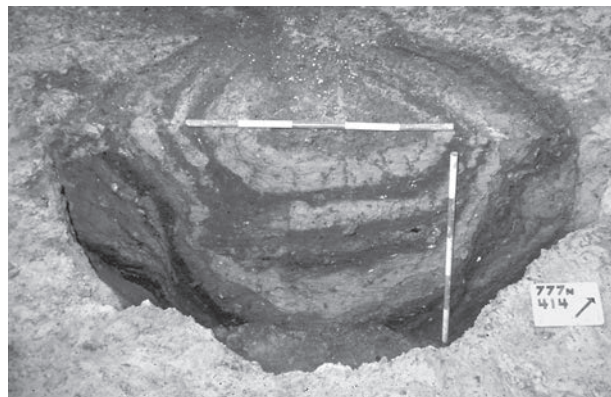


Plate 5.6 Cess pit 40200, Open Area 19 (Area 4, S.414, Period 2.1)t

rect archaeological evidence has been found (the position of the ditch terminus at Golden Ball Street indicating its position by implication). The scatter of pits described below lay directly in the path of any direct southern entrance to the castle (Fig.2.1) and it appears that the curving Late Saxon route continued to be reflected in the Norman period, running immediately to the east of Building 25, in an area c.8m wide in which no pits or other features of this date were found (cf. Figs 5.2 and 5.18).

Pitting to the west of the ?castle approach (western area) Above the deposits described above were a number of features which pre-dated subsequent consolidation dumps associated with the construction of the south bailey rampart. To the north were five small post-holes or stakes (G7/6, Fig.5.10; 70061, 70059, 70057, 70053 and 70055=70062), with a maximum depth of 0.18m. Pebble packing had been used in one. The fill contained human bone, presumably derived from the pre-Conquest cemetery to the east (Cemetery 3, Period 1.3). These posts may have formed part of the same structure (perhaps a fence) or perhaps related to the construction of the overlying rampart. They had, however, been heavily horizontally truncated and at least some may be of much later date and completely unrelated to each other.

Just to the south of the posts was a medium-sized, sub-square pit (70101), cutting into organic fills of the underlying hollow. It was shallow (0.40m deep) and flat-based. Its primary fill contained fire waste (ash and charcoal) as well as degraded chalk. An upper fill contained ash and oystershell. A series of flints grouped were together within its fill as if to retain a post or act as a post-base, although no post was located. It was apparently overlain by a consolidation dump (Period 3).

Another pit to the north (70144) was recorded in section only (S.706) and may have been roughly rectangular in plan. Its lowest recorded fill included ash and charcoal, above which were mixed deposits, sealed by an overlying layer which had slumped into the pit.

To the south was very fragmentary evidence of other features in the same stratigraphic position (G8/9). These comprised stake and post-holes which may suggest the presence of a fence or vegetation.

Small Finds

Finds from pit 70144 included an iron bar (SF6143) and a type 2A horseshoe (SF5870, type 2A). Pit 70101 contained an iron knife blade (SF6165).

Pottery

A total of 0.378kg of pottery was recovered from these features and consisted of TTW, EMW, EMSW and YTW. Overall, these fabrics and the forms represented are supportive of a late 11th-century date. See Appendix 6.

Pitting to the west of the ?castle approach (central area) by Elizabeth Shepherd Popescu, Andy Shelley and Niall Donald

(Fig.5.17, Plate 5.6)

Pits to the immediate west of the postulated castle approach are illustrated in Fig.5.11. Furthest to the west was a fairly small, square pit (20070, G2/5) which had clearly been cut by the western butt end of the southern-most of two later crescentic ditches (Ditch 8, Period 2.2). This pit was not bottomed and upper fills suggest a use for cess/refuse disposal including a large quantity of finds

(such as 22 bone strips). This may suggest that the pit was contemporary with another (20059) containing large numbers of bone strips just to the east (see below). The lowest recorded fill of pit 20070 contained 20% prime rye grain, perhaps held in a sack (see Murphy below), above which was mixed fill including 40% charcoal and occasional fragments of chalk and daub. This was in turn overlaid by a deposit containing 70% charcoal, followed by an upper fills containing a fine ceramic assemblage (see Lentowicz below).

Just to the south-west were two intercutting pits. The earliest (20020, G2/9) was nearly 4m deep and lay between the two western butt ends of the subsequent crescentic ditches (Ditches 7 and 8). Only its upper fills were investigated and included burnt debris including wickerwork, apparently dumped into the pit rather than burnt *in situ*. Short lengths of burnt timber survived, 5cm

wide by 20cm long. Cutting into this pit was another (20031, G2/9) with refuse/?cess fills. This was 1.80m deep. Both of these pits were both infilled with a major dump (20011, G2/41), apparently levelling the area. The environmental sample from this layer is very similar to that from the underlying pits, suggesting that there was no real change in activity. To the east were two large pits (20063 and 20061, G2/5), while just to the south of pit 20063 was a huge rectangular pit (20098, G2/42), measuring c.5m east-to-west by over 3m north-to-south (it was not bottomed). It had a timber lining with one supporting post being recorded (the structural timber was identified as mature oak; see Murphy below).

To the north-east was a smaller vertical-sided pit (40291, G2/9), (S.422, Fig.5.12). This was not bottomed but its lowest recorded fills (40273) were charcoal-rich and contained late 11th-century pottery. Above was a

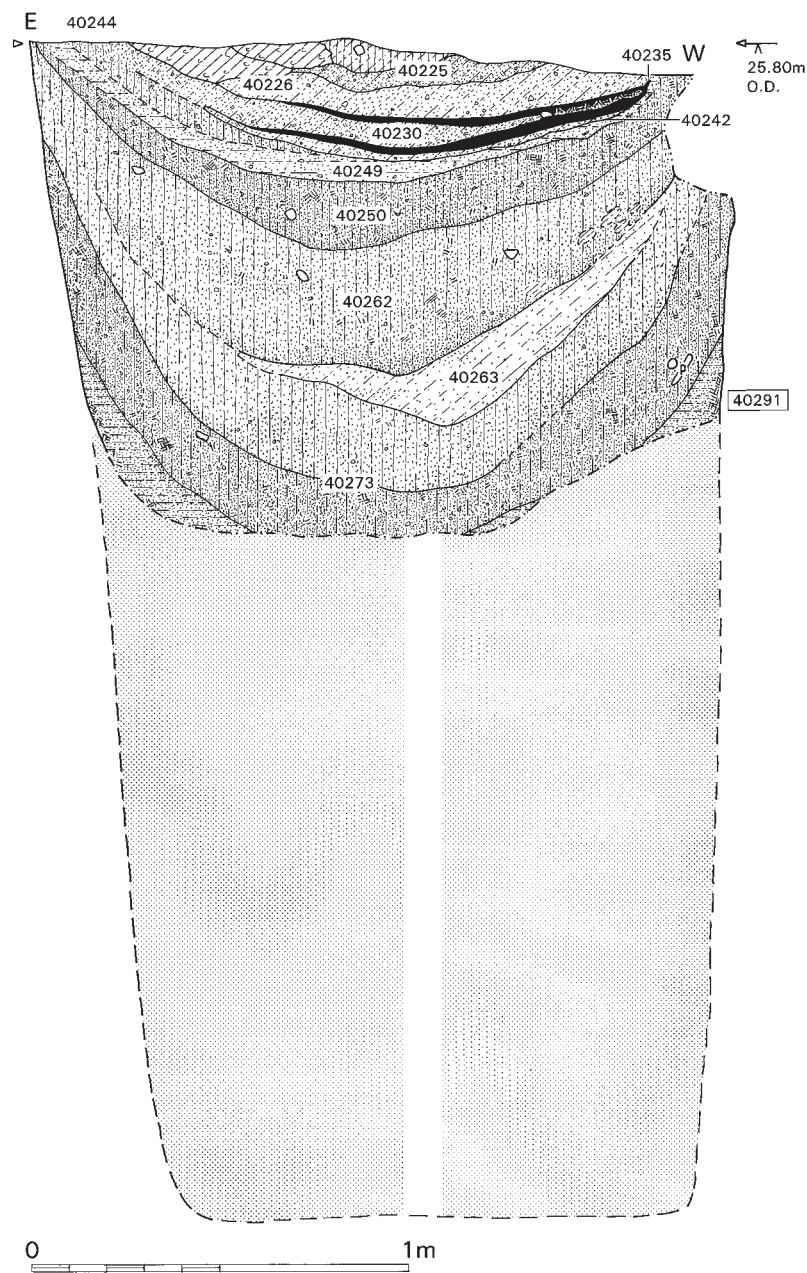


Figure 5.12 Period 2.1: North-facing section across pit 40291, Open Area 19 (Area 4, S.422). Scale 1:20

layer of natural silting or slumpage (40263). Above were two refuse fills containing pottery (40262 and 40250). Subsequent fills were thinner. Above another fill of natural silting (40249) was a thin refuse fill. More silting was overlain by a refuse deposit containing large amounts of charcoal and lenses of red, burnt clay (40230). Another sand deposit (40226) was followed by reddish, ?burnt compacted clay sand (40225).

Further to the south were two adjacent pits. The westernmost was large (20095, G2/5), measuring c.2.70

x c.2.90m, although only the upper fills were excavated. The latest fill (G2/41) was a combination of refuse and fairly clean sand. Immediately to the east was another massive pit (20059, G2/5), some 4.73 by 3.75m, which was more than 3m deep. This was again eventually cut by one of the crescentic ditches. Many of its fills were charcoal-rich, with some ash and burnt flint. Its upper fills, of cleaner sand, were probably deliberate infills, perhaps relating to the excavation of the adjacent crescentic ditches (see Period 2.2). This pit contained important

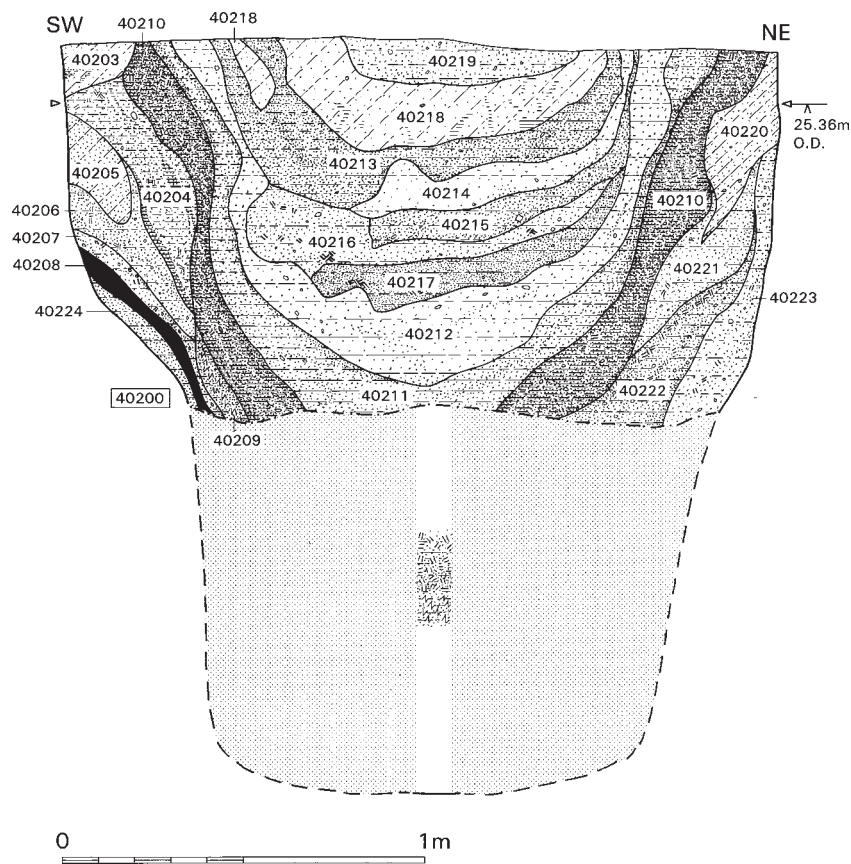


Figure 5.13 Period 2.1: South-east facing section across pit 40200, Open Area 19 (Area 4, S.400). Scale 1:20

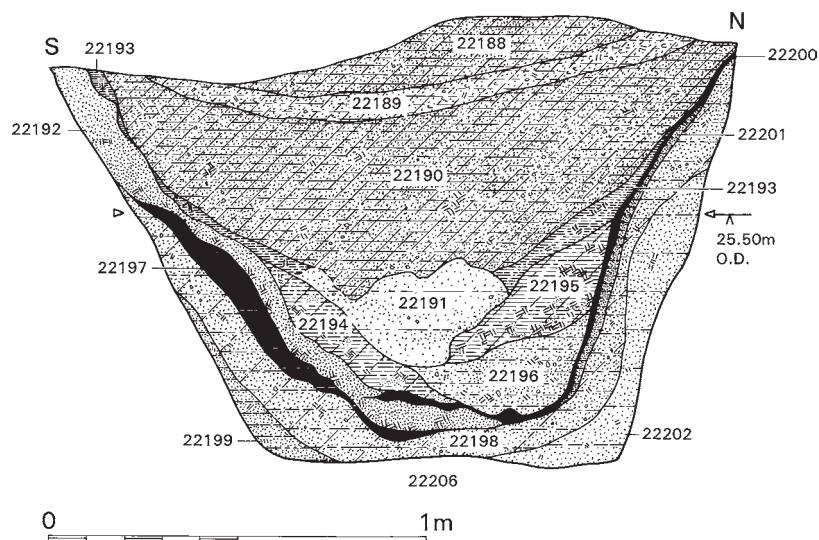


Figure 5.14 Period 2.1: East-facing section across pit 22206, Open Area 19 (Area 22, S.2205). Scale 1:20

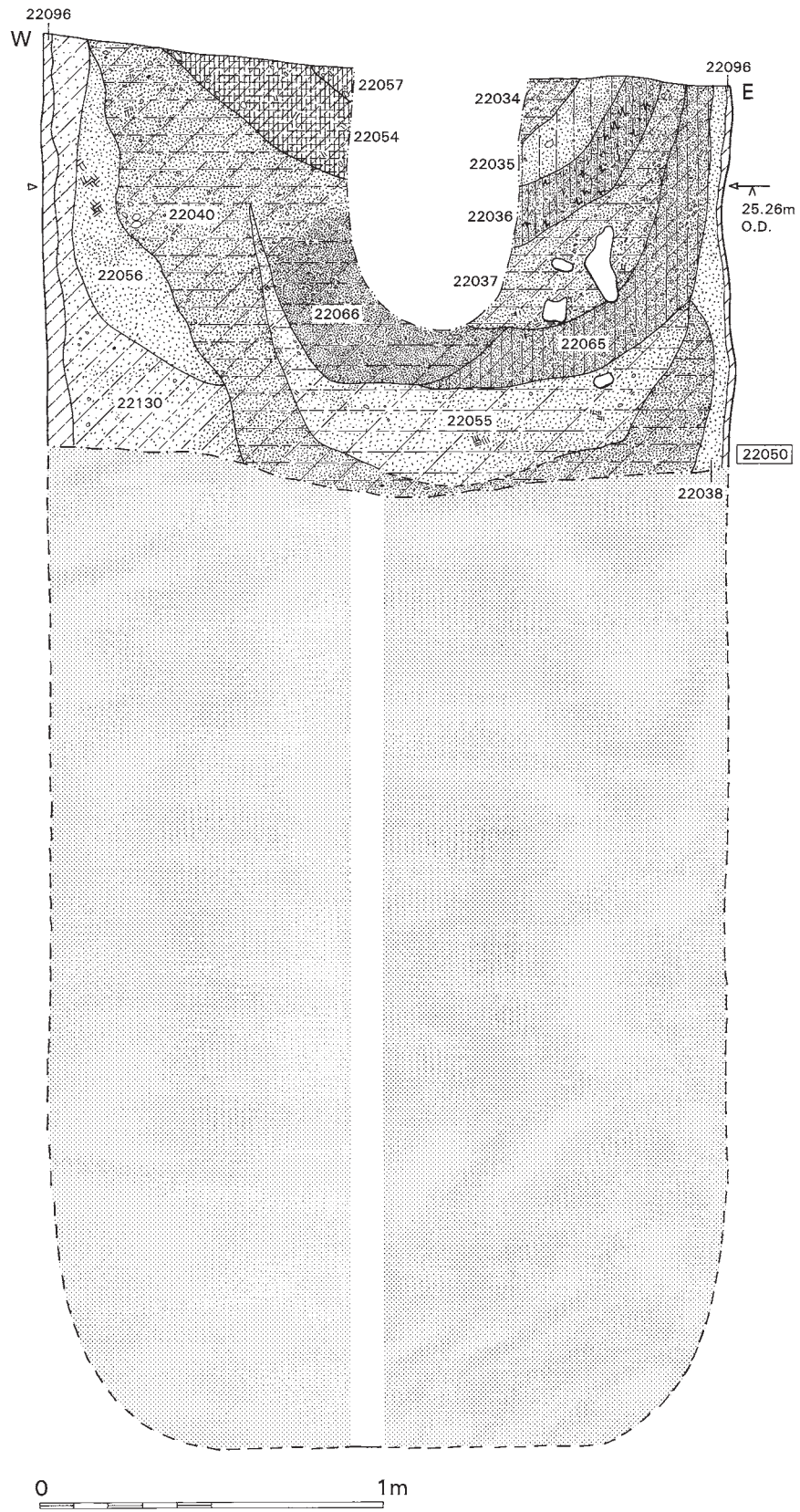


Figure 5.15 Period 2.1: South-facing section across pit 22050, Open Area 19 (Area 22, S.2202). Scale 1:20

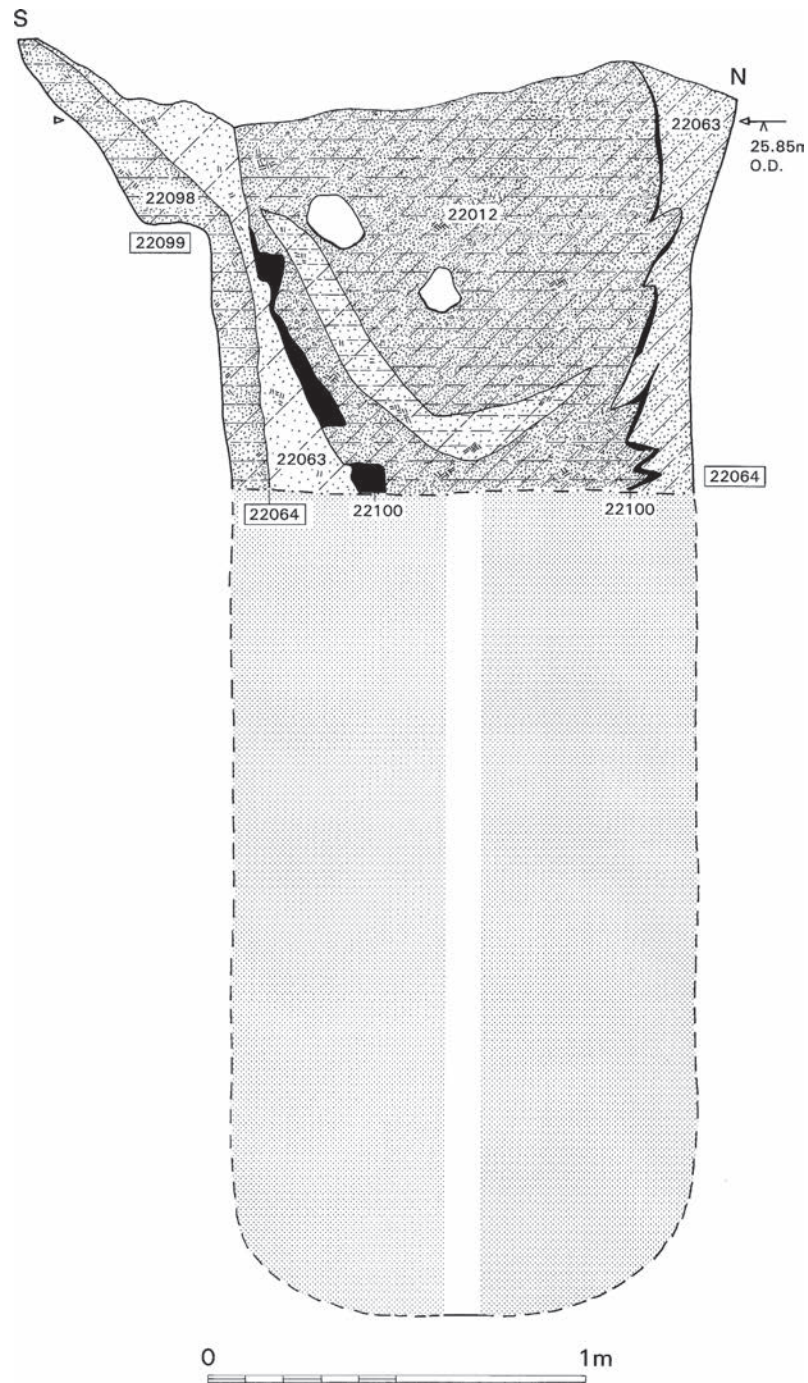


Figure 5.16 Period 2.1: West-facing section across pit 22064=22099, Open Area 19 (Area 22, S.2201). Scale 1:20

evidence for bone- and hornworking.

To the south-east were the partial remains of another pit (20170, G2/5), again apparently large but with a suggested depth of only 0.42m. It was filled with dark yellow sand containing frequent charcoal and occasional human bone. Next to it was a roughly oval pit (20167), while immediately to the east was a deep, sub-square pit (22099=22064, G22/141, Fig.5.16) with vertical sides. It was lined with a circular plank shaft. Augering indicated a total depth of 3.40m. The timber shaft had a diameter of 1.15m and may have been burnt *in situ* or charred prior to insertion. It did not appear to have collapsed, both its shape in plan and section being preserved. The space between the lining (22100) and the construction cut was

backfilled with vertical fills of redeposited natural sand and clay with some silt (22063 and 22098). Only the upper backfills within the shaft were excavated, apparently disuse fills only with the original use/function of the pit remaining unknown. The only recorded usage fill consisted of clayey silt with occasional large flints and oystershell, with some charcoal and fire debris (22012).

To the north-east was the last of the pits included here to have had a stratigraphic relationship with the crescentic ditches. This was square and augered to 2.10m (40200, G2/9). A complex infill sequence was recorded (S.414, Plate 5.6, Fig.5.13). Pottery of late 11th- to early 12th-century date came from a fairly early fill, suggesting that this pit was substantially open and

in use for refuse disposal during the immediately post-Conquest period. One half of the pit was excavated as a single context (40182) to a depth of 1.20m and the other was recorded as a series of fills (40204-40224) within which all finds were three-dimensionally plotted. A layer of charcoal (40208) lay along the south-western edge of the pit; perhaps the remnants of a lining. Along this same edge were a sequence of fills (40207, 40206, 40205, 40209 and 40204) of alternating bands of dark and light brown silty sand, interleaved with clean sand and gravel layers; fill 40206 contained four sheep/goat skulls (see below). On the north-eastern edge, early fills (40223, 40222, 40221 and 40220) were similar in character, some with large proportions of charcoal. The first fill to be recorded across both sides of the pit was a fill of dark brown sandy silt (40210), containing a possible coprolite (SF41) and ?decayed wood as well as flecks of mortar and burnt clay. This was sealed in turn by fills of clean yellow/orange/grey/brown silty sand (40211 and 40212), the latter exhibiting green ?cess staining. Further silty fills followed (40217, 40216, 40215) — again with green staining, then more light yellow orange sand (40214), dark brown refuse (40213), light yellow clay sand (40218) and cobbles in silty sand (40219) — the latter perhaps a modern surface (?Cattle Market) which had slumped into the top of the pit.

To the south east of the main area of pitting were two other pits. The southernmost (22206, G22/139; Plate 5.7) was either a single, kidney-shaped pit, or two smaller pits (S.2205, Fig.5.14), measuring 4.15 by 2.45m and 1.15m deep. Infills recorded in the eastern part of the pit were of redeposited natural sandy silts (22198, 22199, 22202) and charred, fibrous peaty material (22192, 22197, 22200, 22201). These appear to represent the heavily decomposed remnants of a mixture of predominantly organic plant remains, followed by burnt sand deposits (22194, 22195, 22196, 22191, 22193). Some fills contained burnt clay. The pit was finally backfilled with very dark grey clay/sand/silt with burnt sand flecks (22188, 22189, 22190). Burnt wood may represent the remains of a cover, collapsed into the pit, and perhaps associated with 40 clenched bolts coming from the burnt sand fills (see below).

An adjacent pit just to the north-east (22050, G22/142, S.2202, Fig.5.15) was large and well-constructed with a clay lining (22096). It was not bottomed and only backfills were recorded, although it was augered to a depth of



Plate 5.7 Plan view of early Norman pit 22206 (Period 2.1), which contained a large number of clenched bolts

3.96m. Fills were of redeposited natural (22038, 22056 and 22130), incidental refuse, fire debris and deliberate infills (22040, 22055, 22065, 22066, 22037, 22036, 22035, 22034, 22054 and 22057). There was some indication of slumping, possibly indicating shrinkage of earlier unexcavated ?organic fills. The clay lining may suggest a storage function or use as a cess pit.

To the north, adjacent to Building 25, lay a kidney-shaped pit (22208, G22/147), c.1.20m deep. It was flat-based with near vertical sides, the eastern side having eroded. The pit was lined with white clay and numerous fills had been tipped into it, from which complete and near complete pots were recovered, the pottery having apparently rolled down to the bottom. A succession of mixed charcoal, clay and burnt clay layers followed, notable for the inclusion of large flint cobbles. The pit was eventually capped with clay.

Immediately to the west of Late Saxon Building 11 and just cutting into the northern end of the earlier pit (22208 above) was another sub-square pit (22119, G22/148) which was not bottomed or augered. It was filled with alternating bands of refuse and sand.

Further to the north was a fairly small rectangular pit (22152, G22/151, Fig.5.17) cutting into an earlier pit. Its fills were augered to a depth of 2.26m and suggest alternating bands of refuse and side collapse and/or bands of deliberately redeposited natural.

A linear feature (40320, G2/7) may in fact have been a series of intercutting pits. It was at least 1.36m deep and was filled with sand interspersed with organic, peaty refuse. A slot cut through fills indicated that they sloped down steeply to the north.

Further south, three large pits were observed but not excavated at the eastern end of Area 6 (60593, 60647 and 60648, G6/42). One may equate with a similar large pit recorded in a watching brief (12971, T849/5).

Small Finds

Pit 20070 contained a whetstone (SF5592; Fig.5.53), two buzz-bones (SF5507; Fig.5.54 and SF5517), 22 incomplete bone strips (SF5510), a worked bone strip (SF5513) and a Roman coin (SF1025). Pit 40291 contained a rectangular iron staple (SF5885) and fragments of copper alloy plate (SF5986). Fills of pit 20059 include an antler comb (SF5508) and boneworking waste (a total of 158 bone strips, SF5511, 5512, 5563 and 5570), a type 2A horseshoe (SF5549), nails (SF5562 and 5567) and a joiner's dog (SF5559). Pit 20167 contained worked antler (SF229; Fig.5.52), a fragment of lava quern (SF482) and a type 2A horseshoe (SF481). Pit 22099=22064 also contained a type 2B horseshoe (SF6561).

Fills of pit 40200 contained an iron buckle pin (SF6163), cloth-working tool (fibre processing spike, SF6649), nails and a lock bolt (SF5990; Fig.5.51), as well as a type 2 horseshoe (SF6379) and a fragment of knife blade (SF6651).

Pit 22206 contained 40 clenched bolts (SF6577, 6578 and 6677; an indication of their size and shape is given in the examples illustrated in Fig.5.54), generally used for plank-built doors or shutters or coming from re-used ship's timbers. The high number of complete examples recovered suggests that they derive from timbers which had rotted *in situ*; measurable examples suggest an original timber thickness of 1½ inches (see Mould, Chapter 5.III).

Finds from pit 22050 included nails, iron debris and a type 2A horseshoe (SF6570). Finds from pit 22208 included an iron buckle (SF6579) and a decorative antler comb fragment (SF6587; Fig.5.34). Pit 22119 contained an intrusive copper alloy coin or token of post-1672 date (SF6555), copper alloy sheet (SF6563), worked flint (SF6726), iron nail (SF6653) and two iron objects (a nail adhering to a nailed binding SF6564 and formless industrial debris SF6575).

Finds from pit 22152 include a lead sheet (SF6603) and incomplete bone strip (SF6593). Finds from pit 20320 included intrusive clay pipe, a ceramic vessel with iron encrustation (SF6008) and a lava quern (SF5907). Intrusive finds could have been introduced during the construction of an adjacent air raid shelter.

Pottery

by Irena Lentowicz
(Figs 5.39–5.44, Plate 5.15)

A total of 21.310kg of pottery was recovered from these pits and is fully detailed in Appendix 6. The range of fabrics and forms indicates late 11th- to early 12th-century infill dates. Illustrated groups are detailed below:

Pit 20070

The fills of pit 20070 produced an extremely good ceramic assemblage (4.697kg; Fig.5.39). EMW was the dominant fabric and included a number of fine vessels, with many cross-context joins (3.659kg). This included an almost complete deep bowl, with straight sides and everted, flattened rim (Fig.5.39, no.2, Plate 5.16). The inner rim and outer wall of the bowl were extensively decorated with faint, circular stamped impressions; these could be interpreted as imitating stamped decoration on TTW vessels. However, TTW stamped decoration tends to be smaller, deeper stamps with defined edges usually in a cross-pattern. The EMW stamp has similarities in that the central roundel has a cross-pattern, but this is much fainter and not so deep, and it is bordered by two broken/dashed concentric circles. Along with this fine bowl, a large number of ginger jar rims were recovered — rims from at least twenty individual vessels were recorded. Whether such a large quantity of ginger jar rims in a single pit is significant remains equivocal. In addition to the more usual plain rims (type G1; Fig.5.39, no.3) and vessels decorated with applied thumbled strips and vessels decorated with applied thumbled strips, a larger ginger jar with internal bead (type G3) and two rows of applied thumbled decoration was also noted (Fig.5.39, no.4). Other decorative motifs noted on ginger jars included incised, hatched lines on at least two vessels with very fine, fragile walls. In addition a jar was also noted, with an almost lid-seated rim (Fig.5.39, no.1), along with a sagging base.

TTW was present in much smaller quantity (0.507kg) and represented by rims from a jar (type AB9) and a large cooking pot (type AC14), as well as two bases. EMSW was represented by a single base (0.489kg), while only two YTW body sherds were present (0.013kg). NEOT was a small but consistent presence (0.017kg) in all contexts in this pit group, which appears to indicate that it is residual. An unidentified, but possibly Middle Saxon sherd was also recorded. The large number of cross-context joins within the assemblage could indicate redeposition, but most were fresh. The dominance of EMW would seem to indicate a late 11th-century date (although see further discussion by Goffin in Chapter 4.III).

Pits 20020 and 20031

Pit 20020 (G2/9, part; 0.207kg) was the earliest of two intercutting features. Only TTW was represented by rim forms and included rims from a jar (type AC15) and a ginger jar. Other wares, EMW, EMSW and YTW were recorded as body sherds only. An intrusive GRE body sherd was also noted. This pit was cut by pit 20031 (G2/9, part; Fig.5.40) which produced only 0.066kg of pottery. This included rims from two large TTW jars (types AC4 and AC7; Fig.5.40, no.1) and EMW body sherds. GRE body sherds were noted as intrusive in this pit also. Both these pits were infilled with a major dump levelling the area, 20011 (G2/41, part; 0.625kg). The assemblage included a TTW base and body sherds, and EMSW ginger jar rim, four large EMSSW body sherds from the same vessel, some YTW body sherds and two very small NEOT chips. The majority of the assemblage, however, was EMW represented by a number of sherds from two vessels — a cooking pot (type J1b) and a jar with an everted rim elongated to a sharp point (type J2c).

Pit 40291

Pit 40291 produced 0.774kg of pottery (G2/9, part; Fig.5.40); only fill 40273 produced any quantity of material and was noted as not particularly abraded. The remainder of the pit assemblage came from samples and was three-dimensionally recorded. This was fragmented or represented single sherds per context. TTW was most dominant and included rims from jars (types AB5, AB8, AB11, AB16 and AC6) and cooking pots (type AB13) as well as a storage jar (type AF3) and two bases. EMW was represented by a ginger jar rim with a plain rim (type G1) applied thumbled strip (Fig.5.40, no.1), but the remaining fabrics, EMSW and YTW, were represented by body sherds alone.

Pit 20059

The earlier fills of pit 20059 have mid to late 11th- or 11th-century dates, the main refuse fill containing 7 sherds of YTW and a proportion of EMW. A total of 2.492kg of ceramics were recovered from this pit (Fig.5.39) and the fills were of similar character. EMW dominated (1.671kg) and again a large number of ginger jar rims were recorded — at least seventeen vessels were represented by all three rim types

(type G3; Fig.5.39, nos 7 and 8). A jar rim was also noted (type J1a; Fig.5.39, no.5) and a most unusual socketed bowl (Fig.5.39, no.6). TTW was represented by rims from jars (type AB1) and cooking pots (types AB6 — two examples, AB11), as well as decorated body sherds from a storage jar and three bases (0.734kg). NEOT was again present in small quantity. YTW was represented by a base and rims from a ginger jar (Fig.5.39, no.10) and a jar with a sharply pointed, everted rim (Fig.5.39, no.9). In addition, body sherds from three imported fabrics were recorded: Flemish Grey ware, Pingsdorf-type ware and Andenne ware were represented by body sherds. Though not uncommon on Norwich sites, they were conspicuous in this assemblage. The suggested date for this infilling activity is late 11th-century.

Pit 40200

Pit 40200 (G2/9, part; Fig.5.40) contained a large number of fills and again the finds were recorded using 3-D co-ordinates. In addition, 4.763kg of pottery was recovered; TTW was dominant with a wide range of jar rims (types AB4, AB5, AB6, AB7, AB8, AB9 — two examples, AB11, AB13 — three examples, AB14 and AB15; Fig.5.40, nos 3–7) and cooking pots (types AB6, AB8 and AB13 — three rims). A possible crucible fragment was also noted. Among the twenty one bases recorded, one was sagging and another appeared to come from a colander as the base was pierced by a number of holes. Other fabrics included NEOT represented by body sherds decorated with applied thumbled strips; EMW, including a base; and a rim from a YTW jar with a distinct neck/body join and rim everted to a point (type Ya; Fig.5.40, no.8). Fine wares were represented by a sherd of Stamford ware (Fabric B), which appears to have been burnt, and two Pingsdorf-type ware body sherds. An intrusive element was present, sherds from an LMT handled jar.

Pits 22206, 22050 and 22208

A group of pits from Area 22 was of particular interest because a small quantity of LMU was included in their assemblages. The southernmost pit 22206 (G22/139; 0.618kg; Fig.5.41) produced over half a kilogram of pottery. TTW was again the most common fabric and represented by rims from cooking pots (types AB12 and AB14, Fig.5.41) and jars (types AB6 and AB14), as well as by a number of bases. Some of the material was noted as abraded and may be residual. EMW was represented by a small jar rim (type J1c) and body sherds, while YTW was represented by two sherds from a very flat base.

Pit 22208 (G22/147; 1.074kg; Fig.5.41, Plate 5.15) contained a greater range of pottery than usual, which appeared to have a different character. Along with locally produced TTW and EMW, and more common imported products of NEOT, two vessels from Stamford were recorded — a cooking pot and a glazed jug. TTW was the most prolific fabric and was represented by rims from jars (types AB6 and AB13; Fig.5.41, nos 1 and 2) and cooking pots (type AB14; Fig.5.41, no.3), and a storage jar (type AG2; Fig.5.41, no.4), as well as from an unusual sherd which appears to have been burnt. A number of bases were also recorded (including ten sherds from the same base) and a body sherd decorated with diamond rouletting. NEOT was represented by body sherds, and Stamford ware (Fabric A) by the base and sherds from a cooking pot. Glazed Stamford ware (Fabric B) was represented by a sherd from the neck of a jug. EMW was represented by a cooking pot rim (type J2b; Fig.5.41, no.5) and four sherds of a smooth LMU fabric date this pit group to the late 11th–early 12th century.

Pit 40320

Early medieval wares were also recorded from pit 40320 (G2/7; 0.510kg; Fig.5.42). The majority was TTW, including rims from jars (type AB5; Fig.5.42, no.3) and small cooking pots (types AA1 and AA10; Fig.5.42, nos 1 and 2), as well as two bases. EMW was represented by the sagging base of a small vessel. In addition, also recovered was a large sherd from an LMU cooking pot with a rounded rim (type J21; Fig.5.42, no.4) was also present, dating this pit to the early 12th century.

Botanical and Zoological Remains

by Peter Murphy, Umberto Albarella *et al* and Alison Locker
(Plate 5.17)

Pit 20070 (BS215, 223, 232 and 245) contained a large and well-preserved assemblage of rye grains with grains of other cereals, some oat floret bases, large weed seeds (mostly *Agrostemma githago*, corn cockle) associated with some charred dung and coarse textile fragments. This was a deposit of prime grain (originally in a sack ?), conceivably granary debris. Two samples were fully analysed (BS232 and 245) and are described further in Chapter 5.IV and Table 5.18.

Samples from pit 20020 (BS184, 185, 193, 194) contained charred material, including cereal grains (predominantly oats and rye), some cereal chaff, a few pulse seeds and seeds of grassland plants, ericaeous

stems, hazel nut shells, a few charred elder seeds and a cherry fruit-stone. This deposit was obviously mixed but contained a component of crop-cleaning waste and perhaps hay. This could be described as burnt midden material. Three samples were fully analysed and are detailed in Table 5.18 and Chapter 5.IV.

Two samples from pit 20031 (BS182 and 201) consisted largely of charcoal with occasional charred cereal grains, uncharred *Sambucus nigra*, bone scraps and fused ?siliceous globules. Plant remains from overlying layer 20011 (BS175) are detailed in Chapter 5.IV, Table 5.18.

The sample from pit 20098 produced a large flot composed mainly of charcoal, including large fragments (up to c.50mm) of *Quercus* (mature oak). The only other macrofossils noted were a few poorly preserved cereal grains. There were also small fragments of bone, small mammal bones and uncharred fruitstones of bramble (*Rubus fruticosus* — probably intrusive). The sample consisted mainly of structural timber, charred presumably during accidental firing or as a preservative measure.

Samples from the grain-rich deposits in pit 40291 (BS688, 680 and 686) had oat as the predominant component, with small amounts of other cereals (mostly barley), some cereal chaff (mostly oat floret bases), a few seeds of pulses and one of flax, occasional scraps of hazel nut shell and small numbers of weed seeds. The grains of oats and barley were very well-preserved and had mostly sprouted before charring. They are interpreted as charred malt and are detailed further in Table 5.18 and Chapter 5.IV.

Samples from the main fill of pit 20059 (BS241) included abundant grains of *Secale cereale* (rye) with weed seeds (*Agrostemma githago* — corn-cockle), but few rachis fragments. These were mixed with chaff, peas, hazel nut shell, weed seeds and ericaceous stems (see Table 5.18 and Chapter 5.IV).

A sample from an 'early' fill of pit 40200 (BS725) contained mostly oat remains, but with a high proportion of floret bases and abundant oat awn. Weed seeds were also common and the sample apparently includes a component of oat-cleaning waste. See Table 5.18 and Chapter 5.IV.

Samples from pit 22206 (BS1546, 1595) contained small quantities of charcoal and occasional cereal, uncharred *Sambucus nigra* seeds and fused globules of off-white material. This deposit is not interpretable from the environmental evidence.

Samples from pit 22119 contained a high proportion of mineral concretions with occasional charred *Avena* (oat). Other constituents were mineral-replaced fruitstones of *Rubus fruticosus* and fly puparia, with frequent small fish bones, abraded bone scraps and avian eggshell. These all suggest that this was a cess pit, possibly serving Building 25 just to the east.

Samples from fills of pit 22152 were largely composed of small charcoal fragments with occasional charred cereal grains (*Avena* — oat), uncharred *S. nigra* seeds (elder), burnt shell of *Clausilia bidentata* and bones of fish, bird, etc.. The mollusc probably reached the site attached to firewood. No specific interpretation of this deposit is possible.

Samples from pit 12971 (BS1416, 1417 and 1434) were fully analysed (Table 5.18 and Chapter 5.IV). BS1416 included a sparse assemblage of open-country land molluscs.

Pit 40200 contained an important group of four sheep/goat skulls from which the horns had been removed (Plate 5.17). A partial dog skeleton was recovered from pit 40320, while pit 20167 contained a partial cat skeleton (Albarella *et al*, Chapter 5.IV and Part III 1). Fish bone from G2/9 pits is detailed in Part III, Table 93. Several of the pits contained human bone, disturbed from underlying Cemetery 3.

Pitting to the east of the ?castle approach by Elizabeth Shepherd Popescu and Niall Donald (Fig.5.17)

In the eastern part of the early bailey (Area 9) were a number of pits which could be suggested as being of immediately pre-Conquest or late 11–12th-century date. Several were large in comparison to earlier pits (Fig.5.17).

A series of four flat-based intercutting pits (G9/54) had been filled with redeposited natural. This might suggest small-scale quarrying (*cf.* later Period 5 quarries) although the finds are consistently early with a ceramic date of 11th-century. It is notable that the bases of all of the pits corresponded with a change in the natural strata from sand to clayier layers. The earliest example

(91077) was heavily truncated and probably originally sub-circular in shape. It had vertical sides and a flat base. Cutting into it was another pit (91043), either sub-square or sub-rectangular; cut in turn by another ?sub-oval pit (91052). The final pit was of a similar shape (91048). The later three pits were all backfilled with the same gravelly layer.

Just to the north was intercutting pit sequence (G9/70). Two of the earliest pits were large. The first (90328) was an irregular square (heavily truncated) and was filled with redeposited natural sand with lenses of gravel and silt. The second pit (90284) was rectangular with a depth of 0.37m. Medium to large flints were present in its fills, along with daub. Another heavily truncated pit was recorded above (90268, G9/71) at least 0.80m deep. Above this was another large pit (G9/72) or perhaps two pits (90441=?=90262, S.921) recorded either side of a baulk. Its maximum dimensions were 4.40m by at least 2.50m and up to 2.30m deep. It was infilled with a complex sequence of refuse-type fills. The southern part of the pit was noted to contain a large quantity of ceramics. Cutting into the southern edge of this pit was a small circular pit (90374, G9/78), 0.93m deep with a vertical sides and a flat base. The fills were alternating layers of refuse and clean sand.

Just to the north were two other large pits (G9/88 part) of irregular shape (90286 and 90170), the former being augered to a total depth of 1.85m.

To the north, adjacent to former buildings (Period 1.2 and 1.3) were three pits (G9/111, 91968, 91954 and 90403). Two of these were deep and only the upper fills, dating to the late 11th to early 12th century, were recorded. The pits had been used for cess and refuse disposal and it is possible to suggest that they were pre-Conquest in origin. One contained a horse hind limb (see below).

Small Finds

Finds from pit 91048 included a narrow bladed knife (SF6609.1) and a fibre processing spike (SF6297). Pit 90284 contained leadworking spillage (SF6247) and an iron nail (SF6583). Pit 90441=90262 contained an iron nail (SF6260). Pit 90286 contained a nail and a type 2 horseshoe (SF6076).

Pottery

by Irena Lentowicz
(Figs 5.43 on CD and Fig. 5.44)

A total of 23.617kg of pottery was recovered from these pits, most coming from pit 90441=90262. A selected pit group is detailed further below, with the remaining assemblages detailed in Appendix 6. Infill dates of late 11th- to early 12th-century are suggested.

Pit 90441=90262

A total of 17.289kg of pottery was recovered from pits 90441=90262 (G9/72). Virtually all of this assemblage came from the southern part of the pit(s) 90441 (16.891kg; Fig.5.44), with only 0.398kg recovered from 90262. The latter included a residual Roman sherd and two intrusive LMT sherds. The resulting assemblage was dominated by TTW, including rims and bases from jars (types AB6, AB11, AB13, AB17 and AC6). A single NEOT body sherd was also recorded and an abraded EMSW body sherd. Pit 90441 was dominated by TTW; the majority of the fills were noted as not particularly fresh but little of the material was recorded as abraded. A large number of rims were recorded, the majority from jars with only three cooking pot rims noted (types AB11, AB14 and AB16); in addition two bowls were noted (types BB2 and BB4; Fig.5.44, no.23 and 24) and a ginger jar rim. Storage jars were represented by large body sherds decorated with applied thumbed strip. A range of jar rims were present, the most common was type AB11 (forty four rims; Fig.5.44, nos 9–16), although types AB6, AB13 and 14 were almost as prolific (thirty, thirty one and thirty four rims respectively; Fig.5.44, nos 6, 17–20). Other rims from medium sized jars included types AB1, AB5 (five rims), AB7, AB9 (three rims), AB10 (seven rims), AB15 and AB16 (five rims) (Fig.5.44, nos 1–5, 7, 8, 19

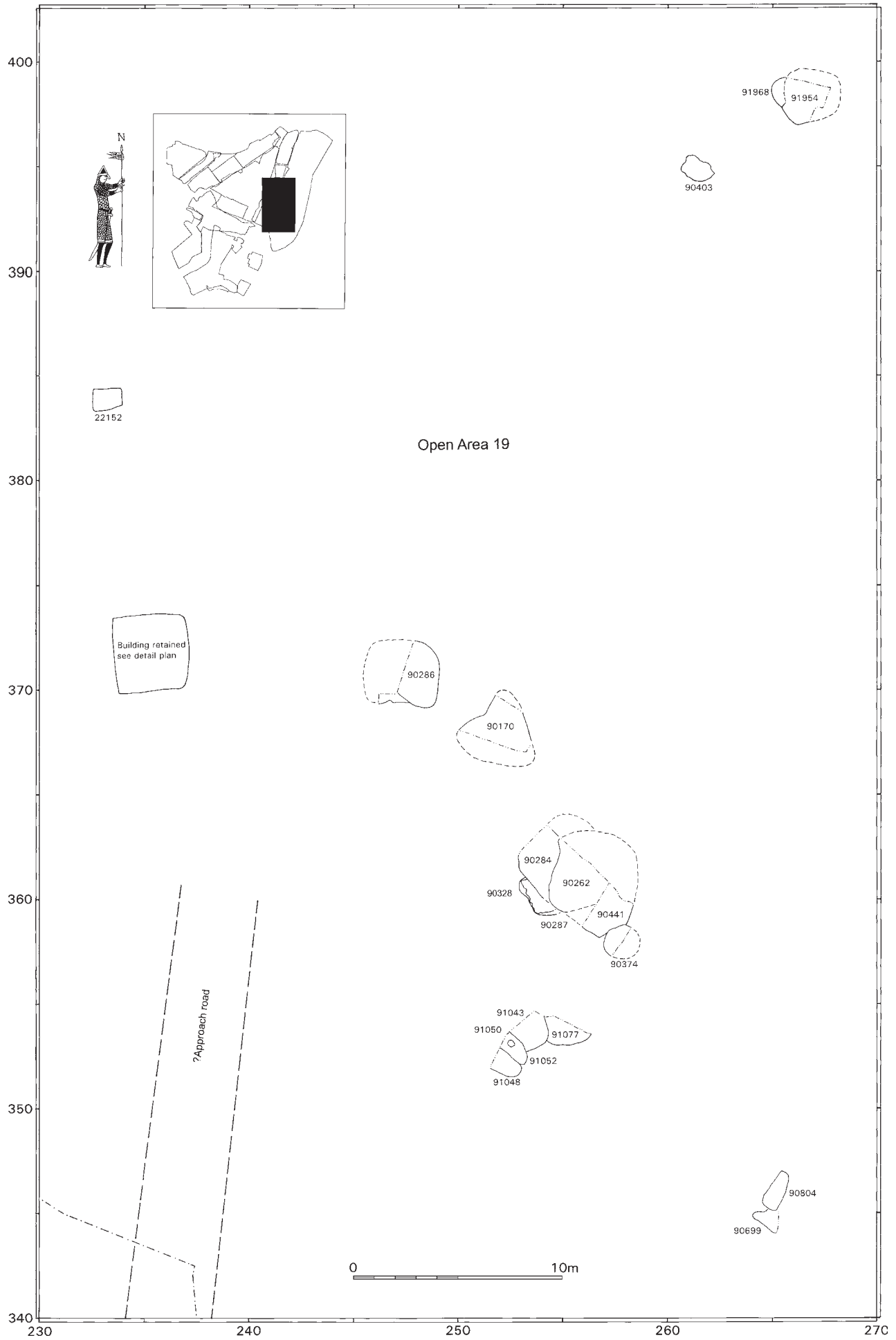


Figure 5.17 Period 2.1: Plan of pitting to the east of the castle approach route within the early Castle Fee/south bailey, Open Area 19 (Areas 9 & 22). Scale 1:250

and 20). Larger jars were less common although again, the same rim types were more numerous: types AC11 (four rims), AC13 (three rims) and AC14 (five rims); other rims recorded included types AC1, AC5, AC6 and AC16. Only three small jar rims were recorded (types AA9 and AA10 — two rims). Some of the TTW is probably residual; long-lived rim form types AB11, AB13 and AB14 are most common, with few 10th-century type AB7 and AB16 rims present, although fewer diagnostic 11th-century type AB9 rims were recorded.

Other fabrics were present in much smaller quantities; Late Saxon wares included NEOT and Stamford ware (Fabric A) body sherds. EMW included rims from a ginger jar and small cooking pot (type J1b; Fig.5.44, no.25), while a number of EMSW vessels were represented by jar rims (types AB11 — two examples, AB14 and AC11) and bases. Only two sherds of YTW were recovered, including a base fragment. Fine wares were represented by a small number of Stamford ware (Fabric B) sherds.

Botanical and Zoological Remains

by Peter Murphy, Umberto Albarella, Mark Beech and Jacqui Mulville
Two samples from fills of pits 90441=90262 (BS994, 90385 and BS90433, BS1014) produced small flots of charcoal, small numbers of cereal grains, grass/cereal culm nodes, weed seeds (*Plantago lanceolata* (robwort plantain), *Polygonaceae* (dock family)), occasional fish bones and bone fragments. These fills are undistinctive in character. Pit 91954 contained a horse hind limb in anatomical connection (see Chapter 5.IV and Plate 5.18).

Building 25, Phase 2: use

Sunken-featured Building 25 (Period 1.4) may have remained in use (or even have been constructed) in the post-Conquest period (Fig.4.63–4.66). If so, the building would have lain just to the west of the postulated castle approach route. Finds from post-holes within the building give some idea of the use to which it was put. They include a buzz-bone (SF6586), an antler strip (SF6657) decorated with ring and dot which was probably part of a comb connecting plate, distorted by fire, and a bone comb (SF6630) consisting of a pair of side plates with three iron rivets. The bone strips found in pits assigned to Period 2.1 are identically fashioned, although without the rivets (Huddle, Chapter 4.III). The presence of these objects could suggest that the building was the focus for comb manufacture during the early castle period, serving as a workshop within the early bailey. Bone strips, manufacturing waste, were found in adjacent pits and in upper fills of the crescentic ditches, suggesting that the activity continued well into the 12th century (see Chapters 5.V and Chapter 13). The destruction of the building by fire is described in Period 2.2.

Period 2.2: Alterations to the Defences (c.1067/70 to c.1094/early 12th century)

Summary

(Fig.5.18)

The castle's defences were tested by military action in 1075 and 1088. On both occasions the castle was occupied and after the 1075 siege over three hundred men-at-arms were garrisoned there. The archaeologically attested strengthening of the castle's defences may have been related to these events. Weathering of the outermost ditch (probably forming the Castle Fee boundary) was evident. Within the south bailey two new sets of double ditches, defending the southern approach route to the castle, were put in place. Consolidation dumps were used to infill the hollow to the west of the site, perhaps as a preliminary to the eventual construction of the overlying south bailey

rampart (Period 3.1). Thirty pits and a few possible structural elements were recorded in the western part of the south bailey. A new ditch may have been excavated to the north-east, perhaps forming or redefining the limit of the Fee to the east of the castle and/or the defences of the north-east bailey.

The ?Castle Fee Ditch

Initial fills of the northern part of the ?Castle Fee ditch (Ditch 3, Castle Mall Area 8 and Golden Ball Street Area 2) may date to the period between the establishment of the castle (c.1067–70) and the laying out of the south bailey ditch and its rampart (c.1094–1121/2). Although the ditch had been heavily truncated, its surviving fills suggest infilling to a depth of nearly 2m before the south bailey ditch was cut through it.

Ditch 3, Phase 2: weathering and erosion (Figs 5.4 and 5.7)

Castle Mall Site

The effects of weathering and erosion of the ditch sides were evident in the clean fills at the base of the ditch (G8/11; 80233, 80234, 80239, 80314, 80315, 80308, 80382 and 80519; Fig.5.4), the earthwork having been cut through natural sands and gravels. Few finds were recovered and there is insufficient evidence to date these fills. Above them was a possible recut or cleaning action, which left a skim of earlier fills along the sides and base of the ditch. A further sequence of erosion and silting ensued with alternating bands of silt and sand/gravel suggesting the gradual accumulation of inwash interspersed with more stable periods (G8/12; 80235, 80236, 80237, 80318, 80312, 80316, 80311, 80310, 80309 and others not illustrated in section). Some fills (e.g. 80311=80316) were of loose grey banded gravel, silt and sand, the coarser elements perhaps representing individual depositional actions (such as storms and freeze/thaw), the bands of silt representing less energetic periods of deposition. The thin bands suggest fairly rapid accumulation. The coarser inclusions (such as pebbles) were notably concentrated in upper fills and it is possible that some of this material may have derived from an associated rampart on the inner side of the ditch. There is no evidence for the inclusion of domestic/craft refuse, although environmental samples indicate the presence of human sewage.

Much further to the east, in the eastern arm, fills of what may have been part of the same ditch (G9/46, part; fills 91528, 91557, within cut 91566, Fig.5.30) consisted of chalk, silty loam and small pebbles mixed with charcoal. At the base of the main area of machining through the later barbican ditch, a section (S.974) recorded a narrow and shallow cut (c.1.10m wide and c.0.40m deep, G9/4) through natural chalk at the base of the later ditch. The recorded fills may indicate ditch fills, although their russet colour indicates a more probable interpretation as fills of a solution feature.

Golden Ball Street Site

by Elizabeth Shepherd Popescu and David Whitmore
The lowest recorded infilling of this ditch at Golden Ball Street comprised thick layers of pale yellow sands (GBS Group 27; 557, 537 and 580, Fig.5.7) which probably represent relatively rapid weathering of the natural sands combined with the possible slumping of the upcast

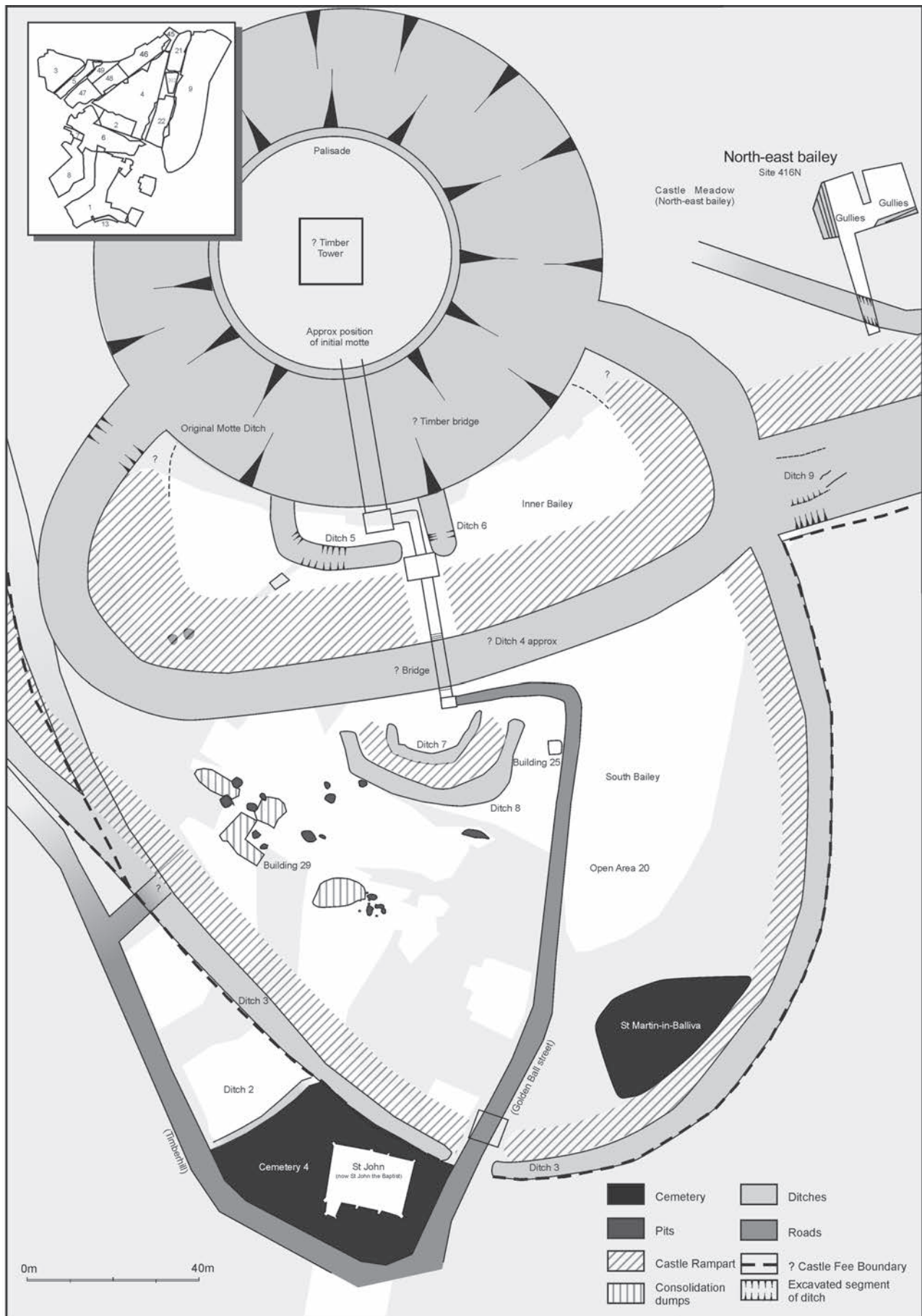


Figure 5.18 Period 2.2: Phase plan – Early Norman (late 11th to early 12th century). Scale 1:1250

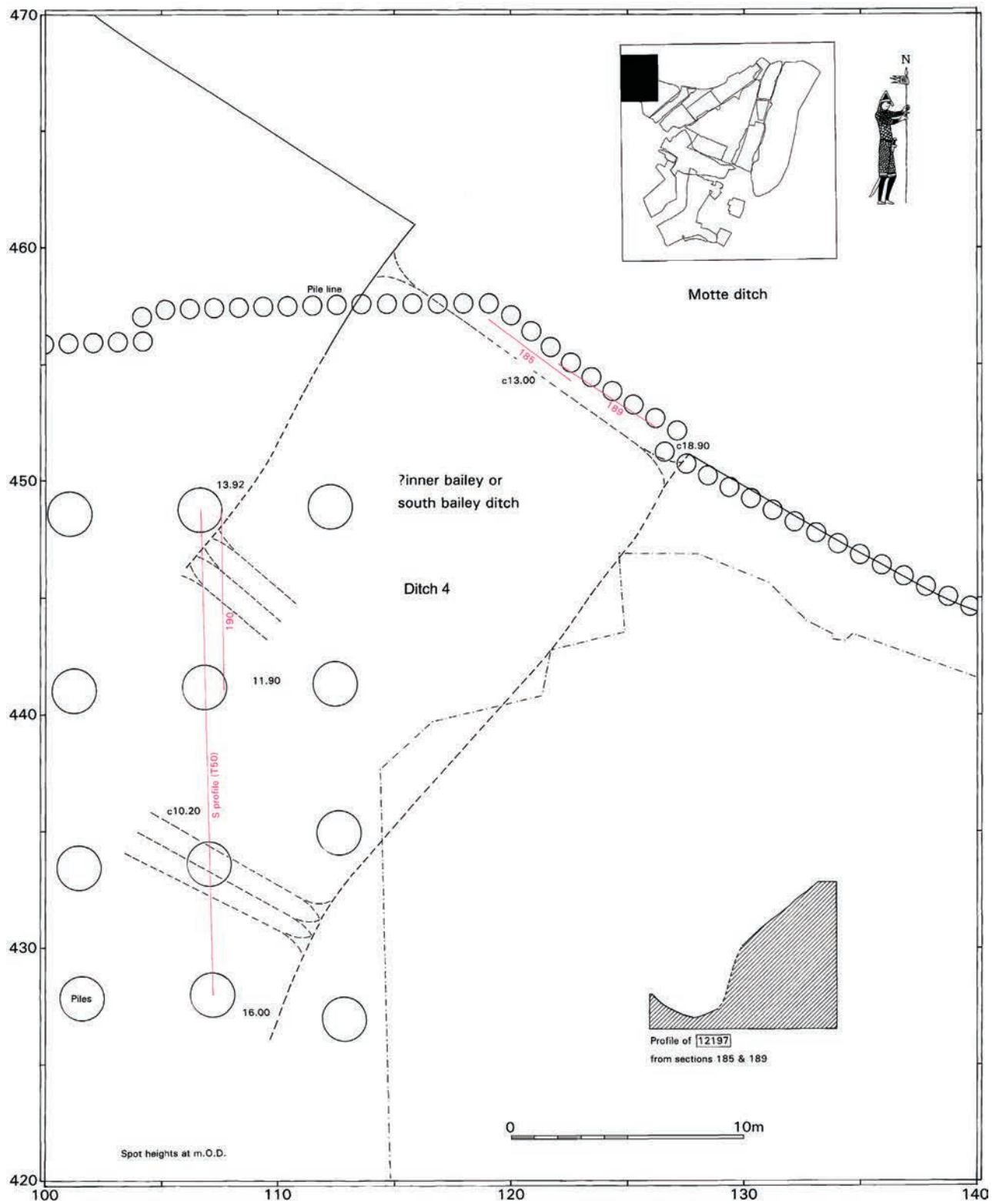


Figure 5.19 Period 2.2: Plan of Ditch 4 (?inner bailey/south bailey ditch) recorded in a watching brief in the north-western part of the site (T100, S.185 & 189). Scale 1:250

fold out

fold out

earthen rampart that ran along the northern edge of the ditch. These deposits were interspersed with thin bands of silty sand (535 and 536) that probably indicate refuse deposition. These deposits infilled the ditch to a depth of c.1m from the lowest recorded level of this stretch of the ditch. An anomalous deposit of light greyish brown silty sand (458) filled a slight step on the north edge of the ditch cut. Pottery from this deposit was clearly much later than that from the dumped refuse layer that appeared to seal it, indicating an intrusive action, perhaps by a burrowing animal.

Pottery

by Irena Lentowicz and Richenda Goffin
(Fig.5.45 on CD)

A total of 0.811kg of pottery was recovered, consisting of TTW, NEOT, EMW and LMU. A total of 0.353kg of pottery came from fills at Castle Mall (G8/12; Fig.5.45 on CD): here the absence of later material, such as LMU, suggests a mid to late 11th-century date. A total of 0.257kg of pottery was recovered from two pits associated with the possible ditch observation to the east in Area 9 (G9/46). A date range of 10–11th-century is indicated by the 0.198kg of pottery recovered from ditch fills at Golden Ball Street, although the stratigraphic position indicates a date towards the end of this range. See Appendix 6.

Botanical Remains

by Peter Murphy

Castle Mall, Phase 2

Two samples (BS566, 80381 and BS564, 80441) produced very small flots with charcoal scraps, occasional cereal grains, uncharred elder and bone scraps. Two others (BS720, 80384 and BS904, 80235) contained very sparse cereal remains with some mineral-replaced plant material (weed seeds, bramble and elder), mineral-replaced arthropods, 'faecal concretions', etc.. The presence of this material implies an influx of nutrient-rich effluent (e.g. sewage). Two samples are detailed further in Table 5.19 and Chapter 5.IV.

Ditch 3, Phase 3: deliberate infilling and refuse deposition

Castle Mall Site

Deliberate infilling of the north-western section of the ?Fee ditch (G8/13) may have included the levelling of part of the bank into the ditch. This comprised clean orange yellow sandy clay (80309) in the east-facing section and slightly dirty redeposited natural in the west-facing section (80460). This section of the ditch was now completely infilled to its full surviving depth of 2m.

Although some of the fills recorded in the Area 1 observation may be contemporary with this infilling (and that recorded at Golden Ball Street), they have been assigned to Period 3.1 due to the difficulties in interpreting the position of the possible recut within this section of the ditch (*i.e.* the presentation here implies the complete recutting of the Area 1 section).

Golden Ball Street Site

by Elizabeth Shepherd Popescu and David Whitmore

The first extensive episode of deliberate infilling of the ditch terminus recorded at Golden Ball Street took the form of a dark greyish brown silty sand (GBS Group 51; 457, 543), tipping down from the east and north. A redeposited orange yellow clay sand infilling (456, 542) may indicate continued erosion of the associated rampart into the ditch. Above it lay a second dumped refuse layer (527), composed of mid greyish brown sandy silt, which survived as a thin band of soil and may indicate that it had been partially removed by later recutting. These fills

did not extend to the base of the ditch, leaving it open to a depth of c.1m (25.24m OD), although the ditch had been recut above this point (see Chapter 6.II, Period 3.1).

Small Finds

Finds from this phase of fills included metalworking debris (SF135) and worked bone (?secondary waste) (SF247).

Pottery

A total of 2.078kg of TTW, NEOT, EMW, EMW, YTW and EMSSW was recovered, indicating an 11th- to 12th-century date. See Appendix 6.

?Inner Bailey Ditch

Evidence for the presence of a ditch across the northern part of the south bailey is largely circumstantial, due to the fact that the subsequent barbican ditch (Period 4.2, Chapter 7) removed virtually all evidence of earlier activity in the relevant part of the site. The combination of the observations detailed below offers several possible interpretations: that they represent elements of an inner bailey ditch, the Fee ditch or indeed the later south bailey ditch (Period 3.1), perhaps forming a horseshoe shape to the south of the early motte. The north-east bailey ditch (and ?recuts) recorded to the east of the site (Periods 2 to 4, Area 9) must either have run beneath the subsequent barbican ditch, forming a continuous circuit or, more likely, must have abutted either the ?Fee ditch, south bailey ditch or an inner bailey ditch in a similar position to the later barbican ditch. Further discussion of these possibilities is given in Chapter 12. The presence of such an early inner ditch might imply the existence of an associated rampart, perhaps to its north.

Ditch 4: excavated and circumstantial evidence

by Elizabeth Shepherd Popescu, Andy Shelley and Niall Donald
(Fig.5.19)

The profile of a ?ditch was recorded in a watching brief to the west of the site (12197a, T58/22, S.185, Fig.5.19), its base lying at 13.00m OD. This ?ditch profile was exposed clinging to the contiguous pile wall around the site. It shows a feature with a U-shaped profile, although to the east appeared to have cut an earlier squarer cut filled with sand. The top of the cut at this level was approximately 4m wide. The upper part of what may have been the same ditch was recorded at a higher level (T58/17, S.189) where a stain of dark loam on the pile wall indicated the presence of a steep-sided cut (also 12197a). The top of the cut was recorded at 18.50m OD, the lowest recorded part here being at 16.20m OD. The recorded information therefore suggests a ditch depth of at least c.5.50m.

Further, if circumstantial, evidence is provided by the fact that two small semi-circular ditches (Ditches 7 and 8 described below) are likely to have defended either a bridge landing or gatehouse and their butt ends suggest that they respected the line of a ditch immediately to the north (pre-dating the insertion of the barbican ditch proper in the 13th century).

During a watching brief to the east of the site (T56, G9/38) a slot was excavated across what appeared to be a ditch (92555, S.9173, located in Fig.5.30). It was not planned although the excavator tentatively suggested that it ran north-to-south. The profile was concave or flat based, the base lying at c.9.19m OD. The recorded fills were a mixture of clay, silt, sand and chalk, probably

the result of erosion and silting (92550, 92551, 92553, 92554, and 92552). Although lying within the confines of the later barbican ditch (Period 4.2), consideration of the position and depth of this observation and the batter of the sides of the later ditch suggests that they cannot have been part of the same feature. This may have been the base of an earlier ditch (*i.e.* forming an inner bailey) in the same approximate position as the later, larger ditch. This however, seems highly unlikely, given that no continuation of such a ditch was recorded at a higher level. Another possibility is that this was a solution feature or part of the northern edge of the feature connected with the north-east bailey. None of these interpretations is entirely satisfactory.

Pottery

The small amount of pottery (41g) recovered from fills recorded in T56 comprised TTW and EMW body sherds.

?Rampart

by Elizabeth Shepherd Popescu and Andy Shelley

A rampart would probably have lain to the north of the ?inner bailey ditch (if it existed) and subsequently the barbican ditch (Period 4.2, Chapter 7). Virtually all traces of this postulated rampart were removed during landscaping activities in 1738 (Period 6.3, Chapter 10.II) and 1862 (Period 7.1, Chapter 11.II). Elements of such a rampart, however, may have survived within earlier features due to shrinkage of earlier fills and subsequent consolidation/slumping of overlying deposits. The upper fills of two pre-Conquest pits (G5/10, Period 1.3) were of redeposited natural; one containing over 3m of sand at the top. Upcast from the ditch may also have been deposited into an adjacent ditch (Ditch 5 below), indicating that it soon fell out of use. Two sand and clay surfaces (G47/57) may have formed part of the rampart and sealed a number of earlier features (Periods 1.4 and 2.1).

Ditches Defending Motte Bridge Landing

Two ditches may have defended a crossing over the motte ditch leading from the south bailey, perhaps forming a small ?rectangular enclosure. Their inner edges may have been defended with a palisade or rampart (although no evidence was excavated to support either interpretation). An entrance into this enclosure may have existed to the south-east, in an unexcavated area of the site.

Ditch 5: Phases 1–5: cut and fills

by Elizabeth Shepherd Popescu and Andy Shelley (Figs 5.20–5.21, Plate 5.8)

To the west lay an L-shaped ditch, its western end running northwards, presumably to join an early version of the motte ditch. The ditch presumably butt-ended to the east, although no direct archaeological evidence for this fact was recorded.

Phase 1: construction

The westernmost ditch (49271, G5/15; Figs 5.9 and 5.20) was largely recorded in section, with a short length recorded in plan running east-to-west, although its western and eastern alignment and extent remain uncertain. The ditch cut into earlier deposits within the inner bailey and, by implication, into fills of an earlier hollow (Hollow 2, the consolidation fills of which are described in Period 2.1). As recorded, the ditch was 2.40m deep and 5.75m

wide, with a stepped, roughly V-shaped profile (recorded in S.4912, Fig.5.21, Plate 5.8). It may not have suffered substantial horizontal truncation, with its top edge lying only 1.50m below the medieval road surfaces recorded at the base of the castle bridge (Chapter 6, II). The ditch was, however, severely damaged by the insertion of the barbican ditch and later quarrying. It is possible that some of the material excavated during the laying out of this ditch was used to infill the adjacent hollow. Although the exact route of the ditch is uncertain, it may have run northwards at its western side and may have butt-ended to the east. This would allow space for the entrance suggested above.

Detailed description

Moving along the ditch from east to west, the relevant observations are as follows (G5/18). Furthest to the east a section (S.4913) was placed at c.45° to the projected northern ditch edge. The uppermost level of the cut recorded here was 25.77m OD. Any continuation of the ditch to the east of this point had been truncated by subsequent quarrying.

To the west another section (S.4912, Fig.5.21) recorded a slot placed across most of the width of the ditch, providing evidence for its profile. The stepped V-shape is apparent, with the southern edge being steeper than the northern edge. The base of the ditch here lay at 23.78m OD, with the top surviving to 25.41 suggesting a depth of 1.63m.

Just to the west, another section (S.4915) ran north-to-south through ditch fills, recording a depth of 0.80m of deposits. A long section (S.4909) ran along the southern edge of the ditch, parallel to its course and exposing its southern edge and fills. Adjacent to this section, a length of the southern ditch edge was recorded in plan. To the extreme west, another section (S.315) may show fills of the ditch (?or fills of Hollow 2), while just to the south-west (S.316) deposits recorded at the northern end of this section (G5/63) may also have filled the upper part of the ditch.

Phase 2: initial silting and erosion

The basal fills of the ditch consisted of erosional deposits with small quantities of refuse (49285 and 49284). These deposits had apparently been largely washed in from the north and infilled the base of the ditch to a depth of less than 0.5m.

Phase 3: ?organic growth

The ditch apparently fell out of use fairly rapidly. A thin band of which may have included refuse and/or organic growth was observed along its northern side (49252, 49280 and 49256).

Phase 4: silting and sand/gravel infills

Subsequent fills of the ditch consisted of a series of deposits probably deriving from inwash/silting, followed by what may have been deliberate infilling with ?rampart material, although the ditch remained a substantial hollow and continued to be infilled with refuse (see below). These fills were recorded in a number of the sections (S.4907, 4912 (Fig.5.21), 4913 and 4915; 49282, 49283, 49281, 49254, 49255, 49392, 49144, 49253, 49246). These deposits may have been tipped/washed into the ditch from the south, perhaps deriving from a rampart to the ?inner bailey ditch just to the south. The ditch was now infilled to a depth of c.1.4m.

Phase 5: refuse fills

The hollow left at the top of the ditch became filled with refuse in the formed of mixed silty layers which contained charcoal, oystershell and small chalk fragments (49245 and 49394, S.4912, Fig.5.21; 49143, 49141 and 49155).

Small Finds

Finds from phase 3 fills included the branch of a type 2A horseshoe, 8 horseshoe nails and 2 nail shanks (all SF6873) and a lead strip (SF6838). Phase 5 fills contained seven nails and shanks (SF6790, SF6836 and included with SF6830), a horseshoe nail (SF6833), lead spillage (SF6832) and a type 2 horseshoe (SF6830).

Pottery

(Fig. 5.46 on CD)

A total of 0.747kg of pottery was recovered; two sherds from Phase 2 deposits, 0.131kg from Phase 3, 0.018kg from Phase 4 and 0.608kg from Phase 5 (Fig. 5.46 on CD). Fabrics (TTW, EMW, EMSW, YTW, Pingsdorf type ware and LMU) and forms suggest early 12th- or general 12th-century dates. The dominance of EMW, presence of YTW and fresh LMU dates the Phase 5 deposits to the early 12th century. See Appendix 6.

Botanical Remains

by Peter Murphy

The flot from a sample from fill 49245 from Phase 5 (BS1815) included charcoal, a few charred cereal grains, including *Hordeum* (barley), bone fragments including fish and shell fragments. Tree roots were common. It does not appear to be interpretable, other than as a deposit of mixed refuse.

Ditch 6, Phase 1: cut

by Elizabeth Shepherd Popescu and Andy Shelley (Figs 5.20 and 5.22–5.23, Plate 5.9)

Lying approximately 7m metres to the east of Ditch 5 was another ditch, this time running roughly north-to-south with a butt-end at its southern limit, presumably running northwards to join the motte ditch. The original ditch cut (46666, Fig. 5.20) which cut through pre-Conquest pits had been heavily truncated by a later recut (Period 3.1, Chapter 6), although enough survived along the western side of the later ditch to be recorded over a length of 3.30m (S.4612, Fig. 5.22, Plate 5.9 and 4613, Fig. 5.23). It was shallower than its successor, with its concave base at 22.97m OD (less than 2m deep). Its surviving width was 0.85m although its original width, taking the effects of truncation into account, may have been c.6.00m. The presence of stoneworking waste in its earliest fills indicates that these were deposited during the second phase of castle construction and they are therefore described in Period 3.1.

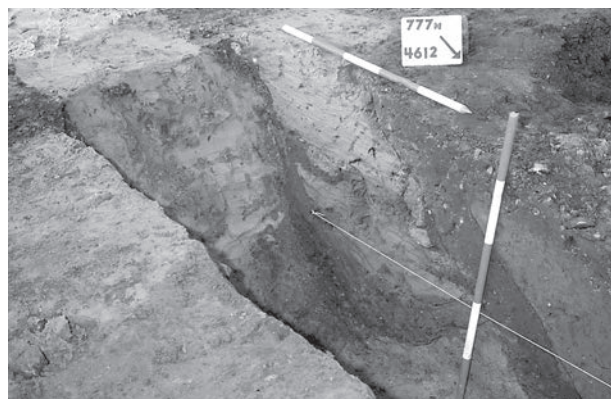


Plate 5.9 Section across Ditch 6 (S.4612, Period 2.2), showing its later recut (Period 3.1)



Plate 5.10 Section across Ditch 7 (S.202, Period 2.2)



Plate 5.11 Profile across Ditch 8 (Trial Hole 2, Period 2.2)

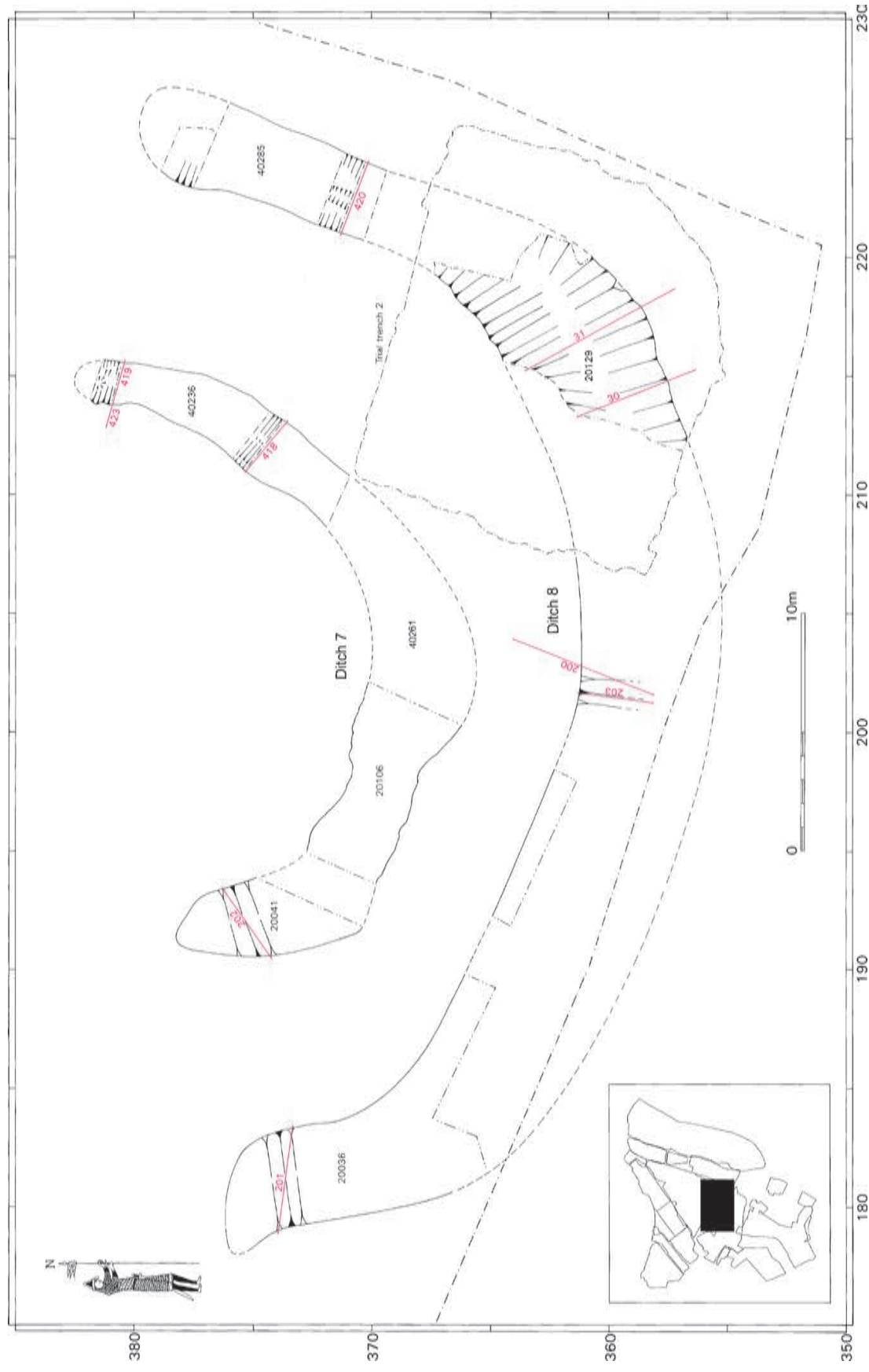


Figure 5.24 Period 2.2: Plan of crescentic Ditches 7 and 8, defending an early ?bridge landing within the south bailey (Areas 2 & 4, Trial Trench 2).
Scale 1:250

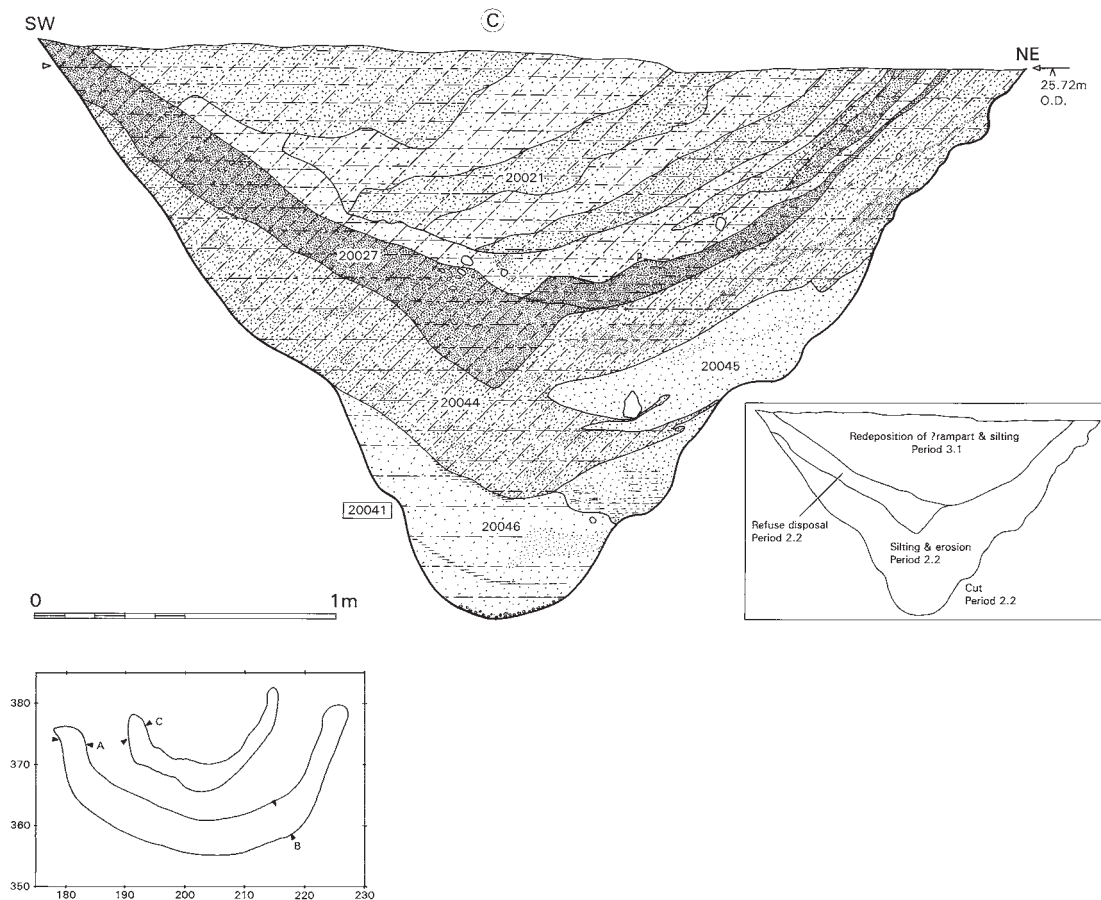


Figure 5.25 Period 2.2: South-east facing section across Ditch 7 (inner crescentic ditch) (Area 2, S.202). Scale 1:25

Crescentic Ditches Defending Bridge Landing

by Elizabeth Shepherd Popescu and Andy Shelley
(Figs 5.24–5.27, Plates 5.10–5.12)

Two concentric semi-circular ditches were excavated to the immediate south of the postulated inner bailey ditch, defending a probable landing of a bridge over this ditch (Fig.5.24). The innermost enclosed an area of *c.*10m north-to-south by *c.*21m east-to-west. Both ditches had been heavily truncated by the subsequent insertion of air raid shelters (Period 7.2, Chapter 11.II), particularly towards the south. Final infilling of the features is detailed in Chapter 6.II, Period 3.1.

Ditch 7, Phase 1: cut

The inner ditch (20041=20106=40236=40261) varied in width (surviving to 3.40m wide to the east, 2.10m wide to the south-east and 1.88m wide to the west), probably reflecting the angle of later truncation since a similar effect was noted in the outermost ditch. This implies that the area through which the western part of the ditch was cut was higher than that to the east. To the east, the uppermost level of the ditch was 25.20m OD, while to the west it survived to 25.73m OD. The inner ditch was butt-ended to the west, the eastern end having been truncated by an air raid shelter. The ditch did not reappear on the other side of the shelter, confirming the position of another butt end. The westernmost section recorded across the ditch (S.202, Fig.5.25, Plate 5.10) shows a V-shaped profile with a rounded base. An observation further east

(S.419) indicates a shallow, U-shaped profile, while a third section (S.418) to the south-east, shows a flat base (0.20m wide) at this point. Its maximum surviving depth was 1.80m.

Ditch 8, Phase 1: cut

The outermost ditch (20036=20058=20129=20112=40285=40357) lay *c.*5m away from the inner ditch (although the distance between them varied). Again, to the west this ditch was wider and deeper. A section recorded across the north-western part of the ditch, just to the south of its butt end (S.201, Fig.5.27) shows a V-shaped profile with a pointed base. This part of the ditch survived to a depth of 1.70m and was 4.20m wide. The line of the ditch to the east was less obvious than that of the inner ditch, due to truncation and the proximity of the limit of excavation. It was, however, well recorded in Trial Trench 2 where a large area was excavated (S.30, Fig.5.26, Plates 5.11–5.13). This ditch at this point was at its widest being 6.80m across, as well as its deepest (2.45m). Again, it had a relatively pointed base. A section recorded across the eastern end of this ditch (S.420) shows a markedly different profile with a step along its western side. The southern part of the ditch (S.203) again shows a v-shaped profile with a pointed base.

The ditches cut through several earlier pits and a surface (Periods 1 and 2.1). The uppermost parts of some of these pits contained sand and gravel which may have been upcast during ditch excavation.

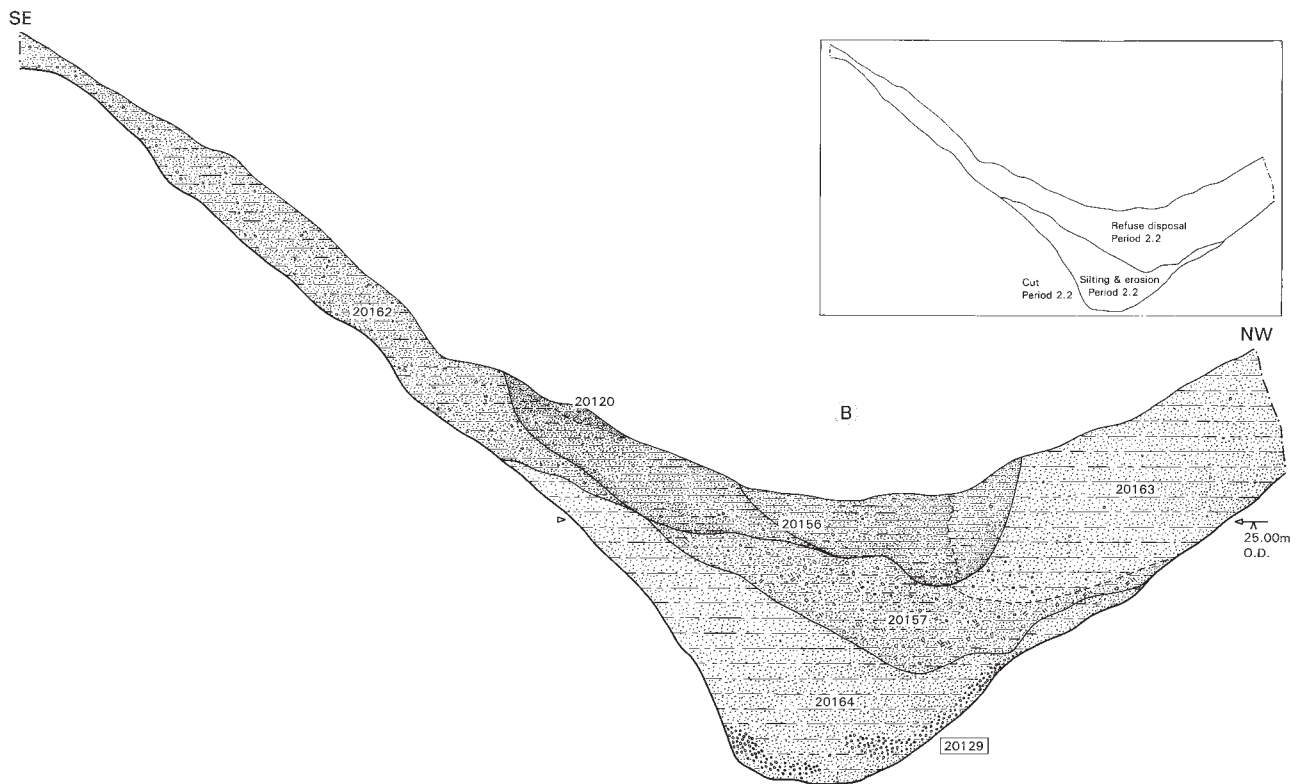


Figure 5.26 Period 2.2: South-west facing section across Ditch 8 (outer crescentic ditch) (Trial Trench 2, S.201). Scale 1:25

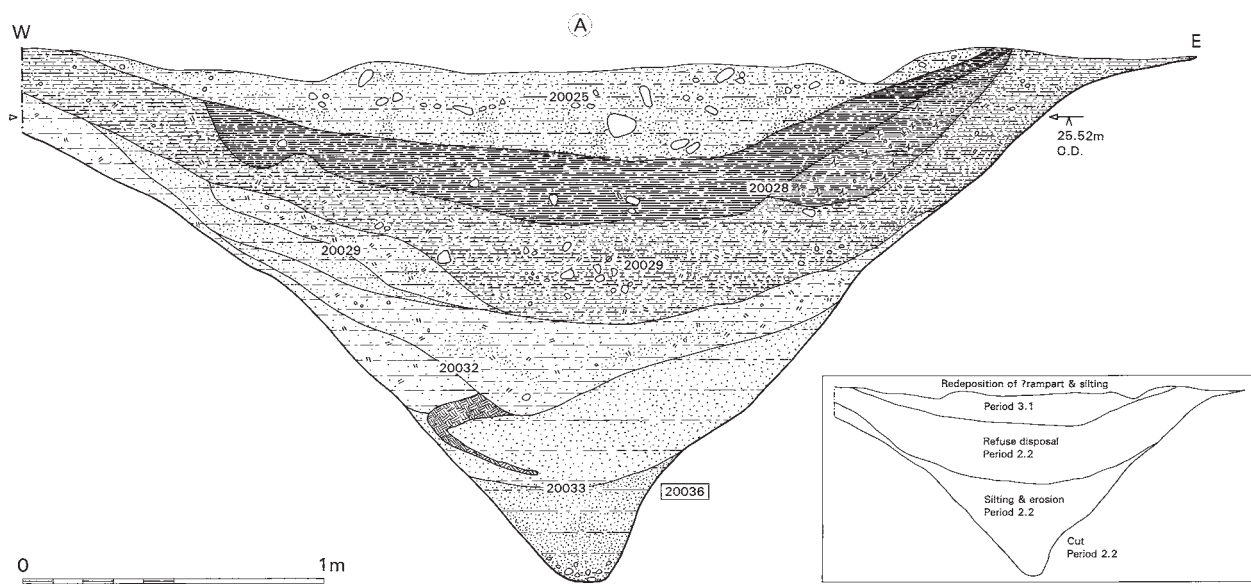


Figure 5.27 Period 2.2: South-facing section across Ditch 8 (outer crescentic ditch) (Trial Trench 2, S.30). Scale 1:25

Ditches 7 and 8, Phase 2: primary silting
 The ditches apparently began to silt up quickly (G2/1). The inner ditch was subjected to considerable deposition of redeposited natural (S.202, Fig.5.25, 20046, 20045 and 20044, S.418–419), to a depth of more than 0.5m. The outermost ditch demonstrates a similar phenomenon and became infilled with erosional deposits to a depth of up to 0.85m. This inwash appears to have been concen-

trated along its western side (S.201, Fig.5.27, 20033 and 20032, S.30, 20164, S.203 and S.420).

Ditches 7 and 8, Phase 3: refuse fills and vegetal growth
 After initial silting, both ditches became a repository for refuse (G2/2). The main refuse fill within the inner ditch (S.419, 40193) contained frequent pebbles and flint. Further to the west, where the ditch survived to a greater



Plate 5.12 Excavation of Ditch 8 in progress (Trial Hole 2, Period 2.2). This ditch formed the outermost of two crescentic ditches defending an early bridge landing



Plate 5.13 Detail of a cross-section of Ditch 8 (Trial Hole 2, Period 2.2), showing the sharp surviving profile

depth another refuse fill (S.418, 40228) had been tipped into the feature from the east to a depth of *c.*0.40m. The eastern part of the ditch (S.202, Fig.5.25) was apparently subject to the least waste disposal and here a single deposit had been thrown into the ditch from the east (20027).

Similar refuse deposits were recorded in the outer ditch in Trial Trench 2 (S.30, 20157, 20163, 20120 and 20156), and along the length of the feature (S.420, S.203, S.201, Fig.5.27, 20029 and 20028). Both of the latter fills provided useful environmental samples and a range of refuse including fish and animal bone. The fills here amounted to a total thickness of 0.45m. Fills of both ditches contained partial animal skeletons (see below).

Small Finds

Ditches 7 and 8, Phase 2

The fact that finds were recovered from the initial silting episodes suggests that refuse disposal may also have been taking place. The innermost of the two ditches contained two nails (including a horseshoe nail, SF5521), a stone finial or gaming piece (SF5509). The outermost ditch contained a fragment of pottery with internal colouring (possibly madder dye, SF5544) and an incomplete perforated bone strip (SF484), broken across the hole.

Ditches 7 and 8, Phase 3

Finds from the refuse fills are tabulated in Table 5.3 (on CD). Of note is a belt mount in the shape of a dagger or cross (SF411; Fig.5.33) and a rare iron horse-harness pendant (SF408; Fig.5.54) which has a non-ferrous metal coating, possibly gilding. Such pendants are more commonly found in copper alloy; only one parallel is known in Norfolk (see Mould and Ashley, Chapter 5.III). Eleven incomplete bone strips were also recovered (see Chapter 5.III).

Pottery

by Irena Lentowicz
(Fig.5.47a and b)

Ditches 7 and 8, Phase 2

Pottery from Ditches 7 and 8 is illustrated in Fig.5.47 a (Ditch 7) and b (Ditch 8) and totals 0.965kg. A few sherds came from unspecified fills of the innermost ditch, Ditch 7 (G2/1, 0.005kg) consisting of small, fragmentary pieces of TTW which may have been residual. A greater quantity was assigned to the cut of Ditch 8, again deriving from unspecified fills (0.529kg). Although TTW comprised a much greater proportion (represented by jar rims (types AC13 and AC14) and cooking pots (type AB13) and bases) much of this material was abraded and noted as shabby. Again the majority of the fabric was probably residual. Early medieval wares accounted for the majority of the rest of the assemblage, but EMW, EMSW and YTW were represented by body sherds only. A sherd of a calcite gritted fabric similar to EMSSW was also recorded. In addition to the early medieval fabrics present, sherds of a single LMU vessel were recovered. They appeared to be under-

fired, but the fabric was recorded as medieval rather than transitional EMW/LMU.

Primary silting of the two ditches was dominated by early medieval wares (G2/1), though TTW was a large element of material from both ditches. A slightly larger assemblage was recovered from these primary fills of Ditch 7 (0.251kg). Early medieval wares were more common and represented by an EMW ginger jar, EMSW bowl (type BB5) and YTW jar with a flattened, upright rim. TTW, though present, was noted as abraded and probably residual in this context. Fine wares were represented by a single sherd of Andenne-type ware. The primary fills of Ditch 8 produced a smaller quantity of material (0.180kg). Again, EMW was slightly more common, but the TTW present included a large fine variant base which was probably not residual. NEOT was represented by a jar with an everted rim; but this was also probably residual along with the abraded TTW recorded.

The residual nature of the TTW present, together with the presence of fully fledged LMU and YTW, could date these fills as early as the late 11th century, but more probably to the early 12th century.

Ditches 7 and 8, Phase 3

Nearly 3kg of pottery came from the refuse fills of both ditches (G2/2, 2.998kg, Fig.5.47). Inner Ditch 7 produced the smaller assemblage (0.425kg; Fig.5.47a) and though TTW dominated it was again much abraded and probably residual. However, sherds of the finer variant of TTW were again recorded, indicating that at least some of the material was contemporary. Forms recovered included jars (types AB6 and AB11; Fig.5.47a, no. 1). Early medieval wares were fresher, with EMW most common represented by ginger jar rim with applied thumbled decoration around the rim (Fig.5.47a, no.3) and a bowl with expanded rim (Fig.5.47a, no.2). EMSW was represented by the rim and handle from an EMSW pitcher with a plain, upright rim (Fig.5.47a, no.4), while two YTW cooking pot rims were also recorded (type Ya, Fig.5.47a, no.5). Fine ware was represented by a single sherd of Stamford ware (Fabric B), probably from a jug or pitcher.

Outer Ditch 8 produced a larger assemblage (2.573kg; Fig.5.47b). The TTW assemblage was much more varied with some of the material obviously residual, and others contemporary with the early medieval assemblage. Forms recovered included jar and cooking pot rims (types AB1, AB6—two examples, AB9, AB11—two examples, AB12—two examples, AB13—two examples, AB14, AB15, AB16, AC1, AC9, AC13—three examples, and AC14; Fig.5.47b, nos 6–10), as well as two lamp rims, and a number of bases. EMW appeared to be fresher and larger fragments were noted, with clean breaks, though some of the sherds were small. Forms included ginger jar rims mostly with plain rims (type G1) (four examples; Fig.5.47b, no.13) as well as small jars (type J1b—two examples) and cooking pots (J1b and J1c; Fig.5.47b, no.11 and 12). EMSW was consistently recorded as abraded, YTW was represented by body sherds alone. Imports were represented by Pingsdorf-type ware body sherds. EMW/LMU transitional sherds were also recovered, and represented by a ginger jar rim (Fig.5.47b, no.14). An unusual sherd of a very smooth fabric, pale buff-orange in colour was also recorded; a provenance for this sherd was not found. In addition, an intrusive sherd from a GRIL ware jug rim was also recorded.

Comparisons between the fills of the two ditches established that they were similar in character. Much of the TTW and NEOT recovered was residual, but it was also clear that some TTW vessels were contemporary. EMW ginger jars also formed an element in both assemblages,

as did small jars and cooking pots. However, there were also differences — the EMSW in Ditch 7 appeared to be much fresher, although it was abraded in Ditch 8. Transitional EMW/LMU sherds were only recovered from Ditch 8.

Some of the TTW included in these assemblages is clearly residual, although the EMSW is usually abraded and worn. The presence of EMW/LMU sherds and the stratigraphic position/interpretation appear to suggest that infilling was taking place during the late 11th to early 12th century.

Botanical Remains

by Peter Murphy

Ditches 7 and 8, Phase 2

Two samples were taken from the Phase 2 ditch fills (BS197, 20032 (outer) and BS268, 20044 (inner)). These produced small flots, comprising charcoal with small numbers of charred cereal grains (*Avena* (oat), *Hordeum* (barley) and *Secale* (rye)), occasional Pisum-type cotyledons and charred weed seeds (including *Agrostemma githago* (corn-cockle), *Centaurea cyanus* (cornflower), *Raphanus raphanistrum* (wild radish) and *Rumex* sp. (dock)), with bone fragments and ?siliceous globules. The sample from 20044 was selected for full analysis, the results of which appear in Table 5.19 and Chapter 5.IV. The assemblages from these and subsequent refuse fills were very sparse, comprising small amounts of charred and uncharred plant material, some mineral-replaced arthropods and predominantly open-country molluscs. The charred macrofossils seem to represent no more than a thin, dispersed scatter of refuse. The uncharred plant material was only in part mineral-replaced and might have been derived from local scrub and weed vegetation, together with a minor input of sewage.

Ditches 7 and 8, Phase 3

Four environmental samples were taken from this phase of infilling (inner ditch — 20027, BS261; outer ditch — 20028, BS188; 20029, BS195 and 20096, BS278). These produced small flots comprising charcoal with small numbers of charred cereal grains (*Avena*, *Hordeum*, *Secale*), occasional Pisum-type cotyledons and charred weed seeds (including *Agrostemma githago* (corn-cockle), *Centaurea cyanus* (cornflower or knapweed), *Raphanus raphanistrum* (wild radish) and *Rumex* sp. (dock)) with bone fragments and ?siliceous globules. The flots from fills 20028 and 20096 included uncharred organic material — primarily seeds and beetle remains. The factors resulting in preservation of organic material within this ditch are not understood, but anaerobic conditions appear to have been maintained either by the presence of a perched water table, or by the mass of overlying deposit excluding oxygen. In almost all other features from the site, mainly cut into free-draining sands, preservation was either by charring or mineral replacement. Taxa present include *Agrostemma githago* (testa fragments), *Ballota nigra* (black horehound), *Chenopodium album* (fat hen), *Cirsium/Cardus fruticosus* (thistles), *Hyoscyamus niger* (henbane), *Onopordum acanthium* (scotch thistle), *Polygonum aviculare* (knotgrass), *Potentilla* sp. (Tormentil?), *Rubus fruticosus* (bramble), *Sambucus nigra* (elder), *Solanum nigrum* (black nightshade) and *Urtica dioica* (stinging nettle). This is a typical urban ruderal seed assemblage, indicating local vegetation dominated by nettles, thistles and other weeds, with bushes of elder and bramble. No macrofossils of aquatic or wetland plants were noted during scanning. An intact soil sample from 20028 (BS190) was collected, although it appears unlikely that quantitative analysis would add any significant information. The results of full analysis of the sample from fill 20029 appear in Table 5.19 and Chapter 5.IV.

Zooarchaeological Remains

A fill of Ditch 7 (20163) contained a partial dog skeleton, while fills of Ditch 8 (20152 and 40185) produced a partial dog skeleton and a partial cat skeleton respectively (Albarella *et al.*, Chapter 5.IV and Part III).

?Bridge Across Inner Bailey Ditch and Possible Timber Gate

by Elizabeth Shepherd Popescu and Andy Shelley

A timber bridge can be postulated crossing the inner bailey ditch to land in the area defended by Ditches 7 and 8, although there is little in the archaeological record to indicate its presence, the central area confined within the crescentic ditches having been disturbed by later features. Two undated ?beamslots were recorded (not illustrated).

The westernmost (40398; G2/27) remained unexcavated and had been cut to the north by the barbican ditch (Period 4.2) and later features (G2/17, Period 3.1). The slot, which survived to 1.90m in length, was rectangular in profile, with a width of 0.50m and a depth of 0.76m. An adjacent pit just over 2m to the east (40300, G2/8) had a protuberance to the south; perhaps the remnants of the another slot forming the eastern side of the bridge.

To the east of the tentatively identified ?bridge landing was a series of deposits and two posts (G2/26, 40301 and 40137), each 0.30m across. These posts may have related to a timber structure (such as a gate) associated with the crescentic ditches.

Pottery

Only TTW was recovered. See Appendix 6.

Consolidation Dumps and Other Activities Within the South Bailey

A series of layers recorded across the south bailey have two possible interpretations. They may represent ground levelling activities within the newly created castle defences, being enclosed by the outermost castle ditch (*i.e.* suggesting a date of *c.* 1068–1094). The earlier hollow (Hollow 1) would have formed an unwanted dip. In this hypothesis, the underlying organic layers and destruction deposits could still at least partially represent the impact of the castle on pre-Conquest settlement, with this consolidation taking place some time during the years before the cutting of the south bailey ditch. This interpretation would allow a ?road (Period 3.1, Chapter 6) to relate to the initial construction of the castle.

An alternative suggestion is that these deposits represent ground consolidation/levelling connected directly with the construction of the south bailey rampart (perhaps during the period *c.* 1094–1121/2). This would imply that the underlying organic layers relate to the period *c.* 1068–1094, when this area would probably have been confined within the Castle Fee, representing the effects of destruction of earlier buildings and the churning up of underlying deposits by horses *etc.*. The hollow area would still have been visible, disappearing only with the construction of the rampart. This interpretation is perhaps less likely as the subsequent sequence suggests a hiatus in activity (in the form of a soil horizon and pitting) prior to the deposition of rampart dumps.

Open Area 20: consolidation dumps into Hollow 1 (Figs 4.5, 4.39 and 5.28, Plates 5.4–5.5)

A widespread sequence of deposits, in some places over 1m thick, lay above the area of the former hollow (Hollow 1) spreading out northwards from it (Fig.5.28). The effect of this deposition is shown in a composite section (Fig.4.5), showing that the layers formed a roughly level surface, although still reflecting the natural ground slope (*i.e.* higher to the south-east).

Detailed description

Area 1 (G1/14)

In the western part of the northern end of Area 1 was a thick dump of mixed redeposited natural, mostly clay, to a depth of 0.60m (11888, 11931 and 11912, G1/14, S.174, Fig.4.39 and 175, Plate 5.4). This directly overlay earlier organic layers and may have served to consolidate them. Its upper level lay at 27.25mOD. Elsewhere were

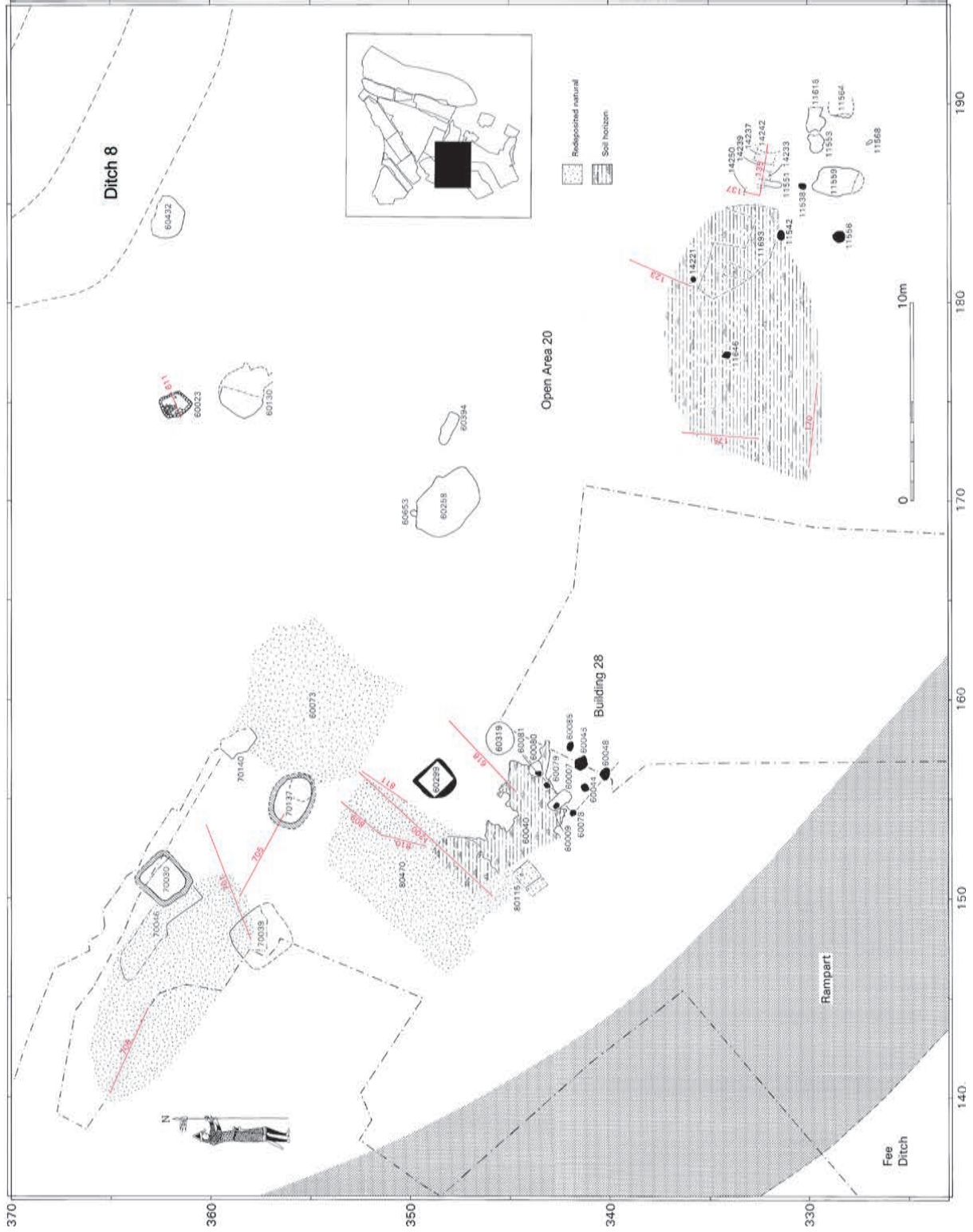


Figure 5.28 Period 2: Plan of Building 28 and Open Area 20, showing soil horizon, pits and posts (Areas 1 and 6-8). Scale 1:300

other observations of possible consolidation (S.123 and 170; 11826; 14265, S.172). Levels here were considerably higher than those to the west, although this appears to be the result of natural ground slope.

Area 6 (G6/26)

A series of dumps were recorded across the western part of Area 6 (G6/26), generally lying within the former hollow and probably serving to raise, level and consolidate the area. Deposits within the hollow were recorded in section (S.616, Fig.4.5) with their top lying at a comparable level to deposits recorded in Area 8 (c.26.30–26.40m OD). These dumps of redeposited natural (60410, 60342 and 60341) may have originated from the excavation of an adjacent ditch, having been thrown or carried northwards to level the area. To the north and perhaps equating with the uppermost hollow fill described above was a similar deposit, extending northwards (60073, Fig. 5.28). No finds were recovered from it and it was machined off at the same time as the organic layers beneath.

A section recorded between Areas 6 and 8 (G6/27, S.1200, Fig.4.5) shows rampart deposits, at the base of which was a series of dumps of redeposited natural (60879, 60880, 60881 and 60882). The lowest deposit may have been a 'turf' line similar to that recorded in Area 8.

Area 8 (G8/18)

The surviving section of the south bailey rampart in Area 8 lay above an area of irregular topography due to the underlying hollow (Hollow 1, Period 1.1) and pre-Conquest pitting. This may have led to initial consolidation and levelling prior to rampart construction, or the dumps included here may relate to the levelling of the area enclosed by the defences relating to the initial castle. Slumping into underlying features was recorded (80490 and 80115), prior to the dumping of redeposited natural sand and clays, mixed with darker siltier material (80470 = 80053, 80060, 80070, 80074, 80079, 80080, 80082, 80094, 80095, 80099, 80105, 80109, 80209 and 80489; see Figs 4.5 and 6.24). Presumably much of this derived from contemporary excavation of a ditch (perhaps the Fee boundary marker or the south bailey ditch). A number of sections (S.811 and 813) clearly show the irregular underlying contours being levelled and tip lines to the south suggest a sequence of small dumps from this side with more homogeneous material to the north (suggesting that the material was probably being dumped from both sides). Much of the original surface had apparently been truncated, although some parts of the original surface survived to the west.

Area 7 (G7/7)

Similar dumps, overlying earlier organic fills of Hollow 1, were recorded across the northern half of Area 7 (G7/7, 70046, 70139, 70140, 70070 and 70148). Any similar deposits to the south had been truncated by the subsequent insertion of a ?road (Period 3.1). These layers may again indicate ground consolidation prior to the construction of the rampart proper. The lower surface level of deposits in this part of the site (0.70m lower than those in Area 8) indicates the degree of truncation in the area.

Pottery

A total of 0.978kg of pottery was recovered, consisting of TTW, NEOT, EMW, EMSW, EMSSW, EMW/LMU and YTW. The assemblage is detailed by area in Appendix 6 and indicates an 11th- to early 12th-century date.

Open Area 20: soil horizon

(Fig.5.28)

A possible soil horizon above consolidation dumps survived in two places (Fig.5.28). To the north (G6/28 part) it was recorded in section and plan towards the centre of the area of the former hollow (S.1200, Fig.4.5, 60040). Other undated deposits recorded in plan and section (G1/16, 11917, 11693, 11606, 11607, 11334, 11335, 11907 and 14209b; S.175 and S.123) may relate. This horizon may have been contemporary with the pitting and structural activity described below. Its upper level lay at c.27.00–27.40m OD.

Pottery

Only 0.065kg of TTW and EMW was recovered.

Building 28: post

(Fig.5.28)

In the south-western part of Area 6 was a series of posts which may have formed a structure contemporary with the possible soil horizon detailed above into which many of them were cut (Fig.5.28). A possible interpretation as a rampart-related structure is possible; pitting was also recorded at this level, indicating a hiatus. The posts were revealed after machining of 'rampart' dumps and formed three lines; two perhaps the corner of a structure, with another line running north-eastwards (60078, 60007/60009, 60079, 60080/60081, 60044, 60048, 60046 and 60085). The most substantial example was 0.43m deep.

Pottery

TTW and EMW were recovered and a ceramic date of 11th-century is suggested. See Appendix 6.

Open Area 20: pits

(Fig.5.28–5.29, Plate 5.14)

Areas of pitting may suggest metalworking and other craft/industrial activities taking place within the early castle defended area, perhaps related to smithing, etc.. Many of them lay beneath the area of the later south bailey rampart, indicating a hiatus between the consolidation dumps and construction of the rampart proper.

Three pits cut into consolidation dumps above the hollow in Area 7 to the west (G7/8). Furthest to the north was a square pit (70030), its shallowness (0.37m) suggesting subsequent horizontal truncation. It may have been clay-lined and contained high proportions of charcoal, burnt clay, chalk and organic matter (possibly refuse from a craft/industrial process). To the south-west was another pit (70039, S.701). It was roughly rectangular in plan, flat-based and shallow (0.25m deep) having again been truncated from above. Its primary fill ran around the edge of the cut, indicating that it was the remnants after pit cleaning. A ?circular pit lying to the south-east (70137, S.705) was just over 1m deep. It widened out at the top, especially to the west, perhaps indicating weathering of its sides. This pit contained nearly 50% (c.3kg) of the ceramic building material from this period, comprising wattle/reed impressed daub and Roman brick (Lentowicz, Chapter 5.III).

Two other pits lay just to the south (G6/28), also cutting through consolidation dumps. These were revealed beneath machining. The northernmost (60299) was roughly square and was wood-lined. It was not bottomed at a depth of 1m. A sequence of seven fills were recorded. The lowest, around the sides of the pit, was of burnt timber lining with some burnt flint. Later fills consisted of burnt sand, ash and charcoal. To the south was a smaller, circular pit (60319).

More pits lay to the north-east. Furthest to the north-west was a square pit (60023, G6/7), 0.31m deep, lined with flint cobbles (60037) acting as a base for burning activities. Most of the cobbles lay to the north-west (S.611, Fig.5.29, Plate 5.14). Above them was a layer of possible setting material (60025), followed by a pinkish/orange clay, sand and ash mixture containing soot and large pieces of charcoal and burnt wood, apparently burnt *in situ* (60024). Above was more debris indicative of fire waste in the form of grey brown loamy ash with frequent flecks and fragments of charcoal and occasional fired

clay (60021). This mixed nature of this material may suggest refuse disposal. The upper fill was of redeposited natural (60020), indicating levelling in compensation for the shrinkage of earlier fills. The fire pit was apparently fuelled in part by crop-processing waste (Murphy below).

To the south was another, fairly large pit (60130, G6/19), irregular in plan and perhaps actually more than one feature (?two pits and a slot running southwards). It was not bottomed but was augered to a depth of 2.70m. It was filled with black sandy silt containing frequent charcoal and metalworking debris, including hearth lining, smithing waste (some with attached hearth lining) and fuel ash.

To the north-east, immediately adjacent to Ditch 8, was an isolated sub-circular pit (60432, G6/31, part). This was not bottomed but contained a refuse type fill including fish bone.

To the south-west was a large pit (60258, G6/19, part) cutting into a post-hole (60653). Adjacent to this pit, just to the east, was a strange grave-like cut (60394, G6/31 part) aligned north-west/south-east and shallow (0.10m deep).

Furthest to the south-east of the recorded features lying within this phase of the early south bailey was an area of pits, post-holes and slots (G1/15) lying above either soil horizon/refuse layers (Period 2.1) or consolidation dumps and sealed by dumps relating to the construction of the south bailey rampart. Their presence implies activity in the area prior to construction of the rampart proper. It is possible that some of the features included

here formed constructional elements within the overlying rampart (e.g. a timber framework). Their upper levels lay at just over 27.00m OD.

To the west were two isolated post-holes (11646, 0.28m deep and 14221, 0.30m deep). West of these were a number of features recorded in plan, including a sequence of six cuts (four small pits and two slots/posts, 14235 etc.) recorded in section. Cutting into them were two slots/posts lying directly beneath rampart dumps. One slot was butt-ended to the south and recorded over a north-to-south length of 1m (11551, 0.17m deep). These features were all backfilled with redeposited natural. To the south and west were three posts (11542, 11556 and 11538, 0.25, 0.43 and 0.16m deep respectively). To the south-east were a number of irregularly-shaped cuts the largest of which (11559) was a pit of uncertain function, 1.04m deep. Early fills of redeposited natural suggest deliberate backfilling, followed by the disposal of organic and ashy refuse.

To the north-east were two irregularly-shaped features (11533 and 11618), one of which may have been a large post-setting (0.83m deep) filled with redeposited natural sand. The slight remains of another pit (11564) with a charcoal-rich fill survived to 0.15m deep. To the south was an isolated post (11568).

Small Finds

Fills of pit 70030 produced copper alloy ?metalworking debris (SF5975) and an intrusive post-medieval harness boss (SF5826; Fig.10.73), together with an iron knife blade (SF5762; Fig.5.50). The latter is a small angled backed knife of Ottaway's subtype A2 more commonly found in pre-Conquest contexts but also occurring in small numbers later (see Mould, Chapter 5.III). Pit 70137 contained sawn antler (SF5830) and a belt mount (SF1062; Fig.5.33). Pit 60023 contained a fragment of riveted iron sheet (SF5860). Finds from pit 60432 included an iron strip fragment (SF5709).

Pottery

(Fig.5.48 on CD)
A total of 5.258kg of pottery was recovered, comprising TTW, NEOT, EMW, EMSW, YTW, Stamford ware (Fabric B), EMSW and LMU, see Appendix 6. A TTW pedestal lamp from pit 70030 is illustrated in Fig. 5.48 (on CD).

Botanical Remains

by Peter Murphy
Samples from fills of the fire pit (60023, BS366 and 389, G6/7) contained well-preserved cereals including rye and chaff, with charred weed seeds and large charcoal fragments. The seed assemblage is dominated by weeds (notably *Reseda* sp., wild mignonette) and wetland plants (notably *Carex* spp, sedges). The assemblage seems to include crop cleaning waste and possibly hay/litter. Both samples were fully analysed and are described further in Table 5.19 and Chapter 5, IV.

Building 25, Phase 3: destruction

by Elizabeth Shepherd Popescu and Niall Donald
(Figs 4.63–66)

The destruction of an earlier sunken-featured building, of possible pre- or post-Conquest origin may have taken place at this time (G22/155; see Period 1.4 and 2.1, Figs. 4.63–66). A thin layer of black/grey/white charcoal, ash and sand (22342) covered the entire floor of the building, overlain by a patch of burnt daub, indicating its destruction by fire. Subsequent deposits of clayey silt were interlensed with ash, charcoal and refuse and may indicate that the building was left abandoned before further mixed backfills of demolition debris were introduced (22349, 22309, 22305, 22298, 22275 and 22272). Most of the structural timbers appear to have remained

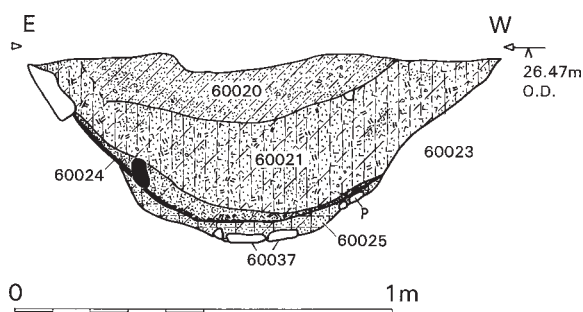


Figure 5.29 Period 2.2: North-facing section across fire pit 60023, Open Area 20 (Area 6, S.611). Scale 1:20

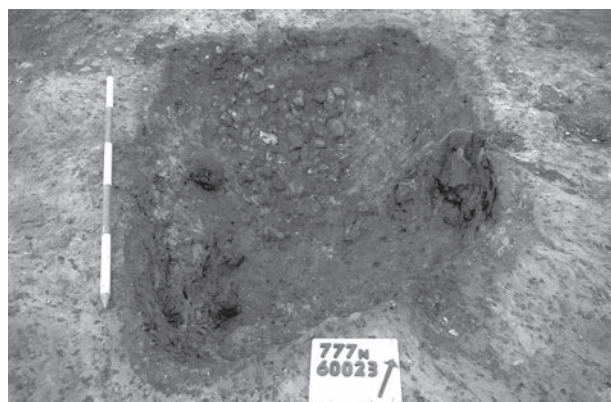


Plate 5.14 Mid 11th- to 12th-century fire pit 60023, Open Area 20 (Period 2.2)

upstanding during the backfilling process: the differential preservation of post-pipes and the revetment may have been partly the result of the removal of some timbers and not others. The building may have lain to the west of the initial course of the castle approach route (Period 2.1), which may have shifted further east later (Period 3).

Small Finds

Finds were of iron nails (SF7592, 1110 and 1109) and lead spillage (SF6600). Finds from deposit 22342 included a glass bead (SF6616, see Chapter 4.III).

Pottery

by Irena Lentowicz
(Fig.5.49)

Ceramics from the destruction deposits totalled 0.234kg (Fig.5.49). Only a small amount of TTW (3g) came from a post-hole (22415). Post-hole 22271 contained a NEOT bowl with inturned rim (Fig.5.49, no.1) and a range of TTW jars (types AB7, Fig.5.49, no.2; type AB13 Fig.5.49, no.3; and type AB16, Fig.5.49, no.5). Post-hole 22414 contained another type AB16 jar (Fig.5.49, no.4).

The remaining material came from destruction debris. Of this, only 22g of TTW body sherds came from layer 22342 and this was very fragmentary. Most of the assemblage came from redeposited destruction debris. TTW was most common and rims from a storage jar (type AF6, Fig.5.49, no.8) and three cooking pots (types AB14, AC16 and cv 22/AB99) were noted, as well as a number of bases and a Black TTW variant base. A jar rim was distorted and may be a waster. A bowl rim was also recorded (type BB7, Fig.5.49, no.7), as well as a base from a pedestal lamp which was burnt. NEOT was represented by a number of body sherds which appeared to come from the same vessel, EMW was represented by a cooking pot rim (type J2b, Fig.5.49, no.9) as well as body sherds, while EMSW was represented by a number of bases. YTW and EMW/LMU were represented by body sherds only. Four as yet unidentified sherds were also noted. A TTW jar with an unusual rim came from demolition debris 22305 (Fig.5.49, no.6).

Much of the pottery was fragmented and, while some of the pottery was contemporary, some was probably residual. The pottery dates the disuse of the building to the late 11th to early 12th century, due to the presence of EMW /LMU ware transitional sherds.

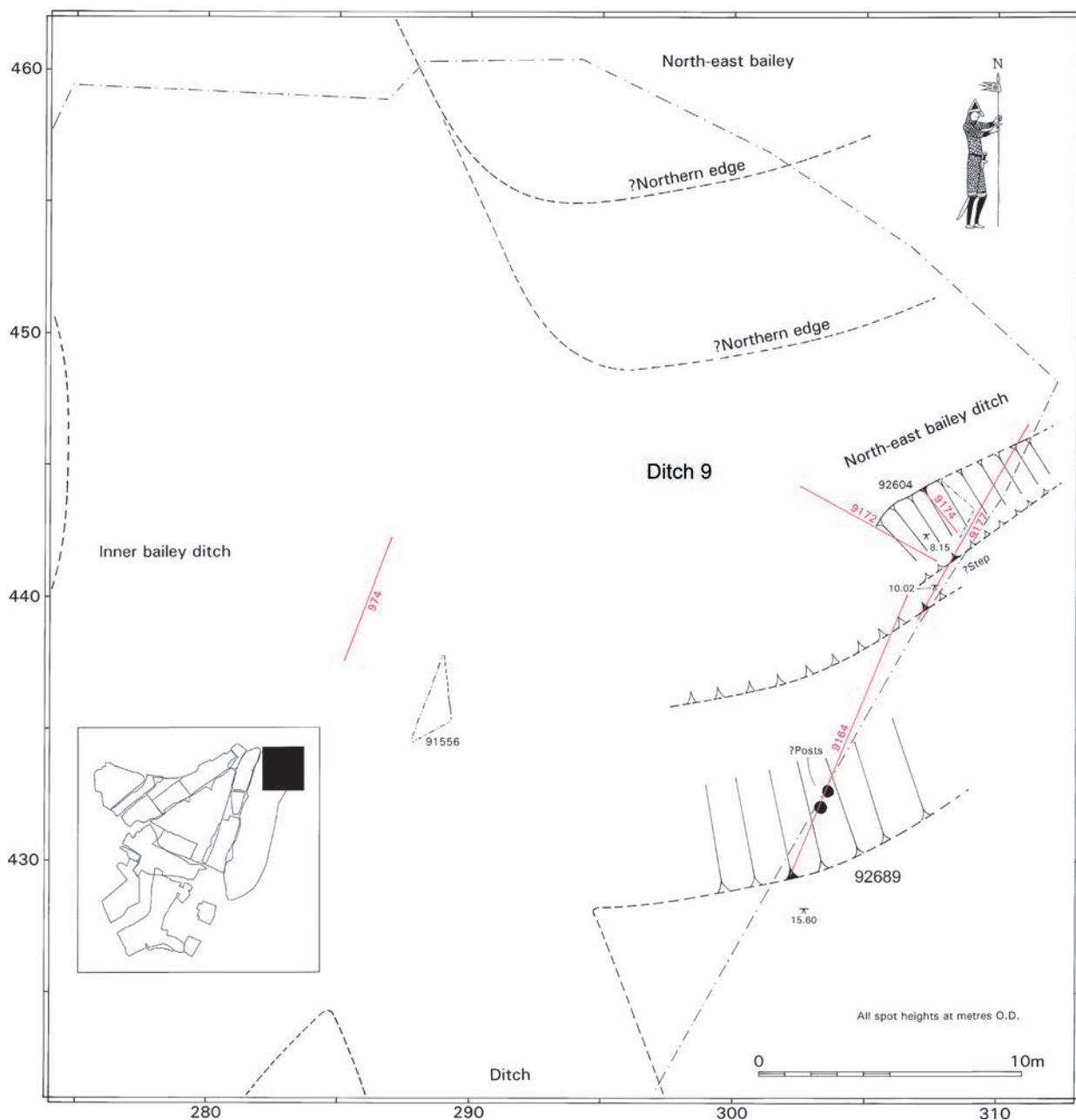


Figure 5.30 Period 2.2: Plan of Ditch 9 (outer north-east bailey ditch) (Area 9). Scale 1:250

Botanical Remains

by Peter Murphy

Flots from samples taken from the building were generally small and composed principally of charcoal with small numbers of charred cereal grains (*Avena* (oat) and *Secale* (rye) predominantly), occasional cotyledons of *Vicia faba* (horse-bean), *Corylus* (hazel) nutshell and some weed seeds (*Chenopodiaceae* (fat hen family), *Galium aparine* (cleavers), *Polygonum* sp. (knotgrass)). Though crop remains were consistently present, none of the assemblages appeared to be interpretable in terms of on-site activities. One sample from 22429 (BS1663), containing a slightly higher density of charred cereals, was selected for analysis as an example of material from the feature (this was phased to Period 1.4; see Chapter 4.IV). Fish bones and bone fragments occurred in small numbers.

The North-East Bailey (Castle Meadow)

by Elizabeth Shepherd Popescu and Niall Donald

(Figs 5.30–5.32)

The north-east corner of the site (Area 9) provides important new evidence for the position of a major ditch (Ditch 9), although its interpretation, layout and the date of its construction remain matters for speculation. Its initial phase appears to have been substantial (Fig.5.30), indicating that it may not have been the original ditch marking out the limits of a north-eastern bailey (documented as the Castle Meadow from c.1349). It is possible

that an earlier, presumably smaller ditch was completely truncated by subsequent ditch digging, or that the earliest ditch was the one recorded further to the north at Site 416N (Ayers 1985). Alternatively, both ditches may have been contemporary, forming a double ditch enclosure, with the outermost ditch serving a dual function of demarcating the Castle Fee boundary. The north-east bailey may have been added to the defences at the same time as other alterations to the defences (e.g. the south bailey ditch, Period 3.1).

Ditch 9 may have abutted a pre-existing earthwork to the west (*i.e.* the ?Fee ditch or inner bailey ditch) rather than turning northwards at its south-western end to meet the motte ditch or continuing westwards. If the recorded northern edge (described in Period 3.1) related to the original cut, it would indicate a width in excess of 26m, with shallowly sloping sides forming a wide, shallow feature with vertical step(s) along the southern edge (Figs 5.31–32). The physical location in a part of the castle defences which would not appear to have required substantial defences may indicate that an originally natural feature (*e.g.* valley) was subsequently used and altered (see further discussion in Chapters 6 and 12). Infilling of the ?ditch appears to have begun in the mid

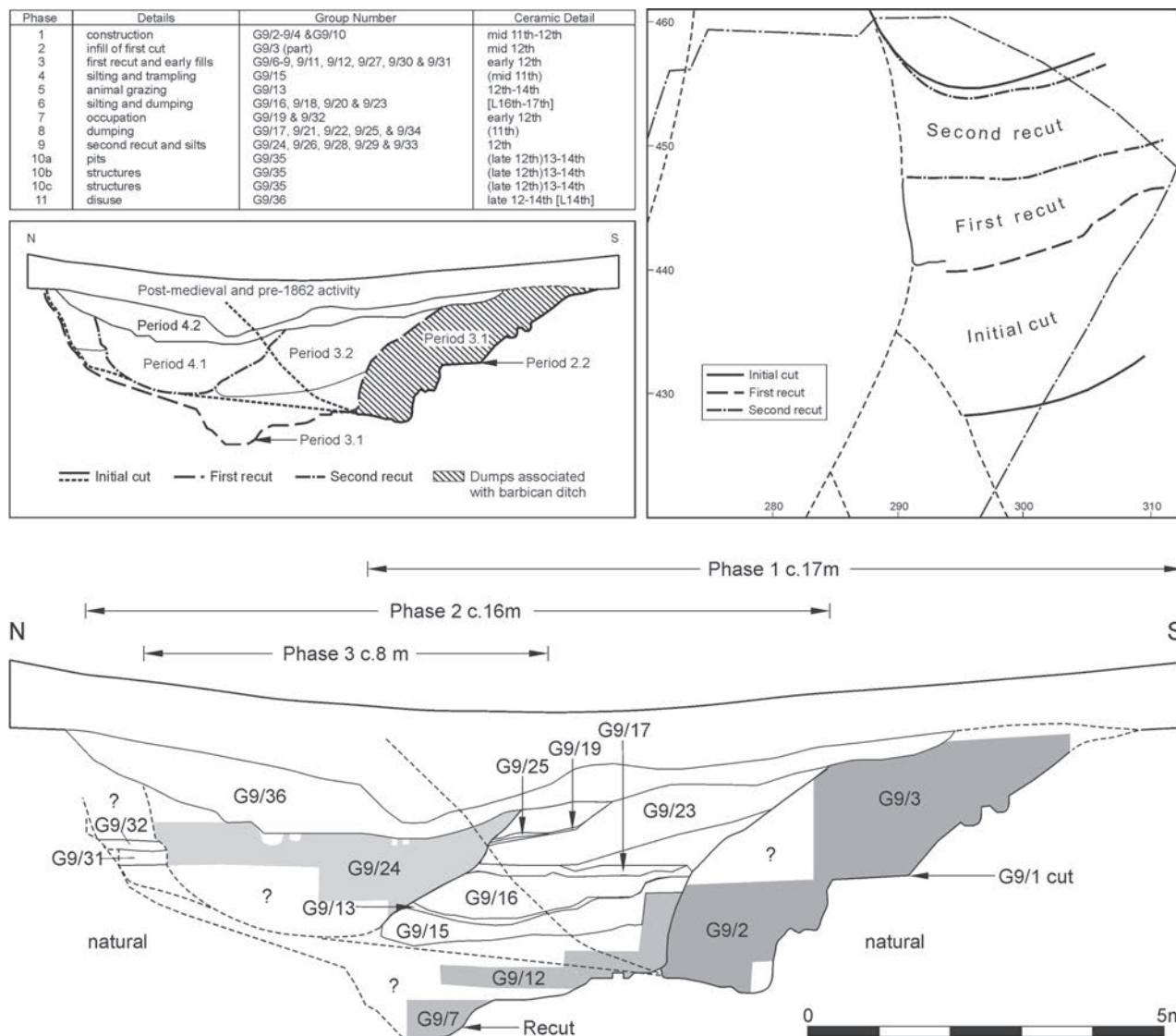


Figure 5.31 Period 2.2: Schematic cross-section of outer north-east bailey defences (Area 9). Scale 1:100

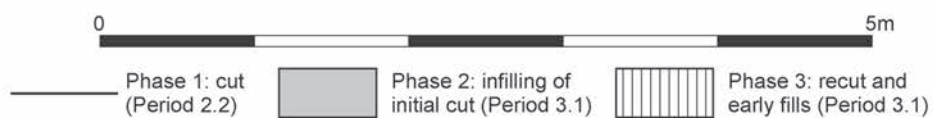
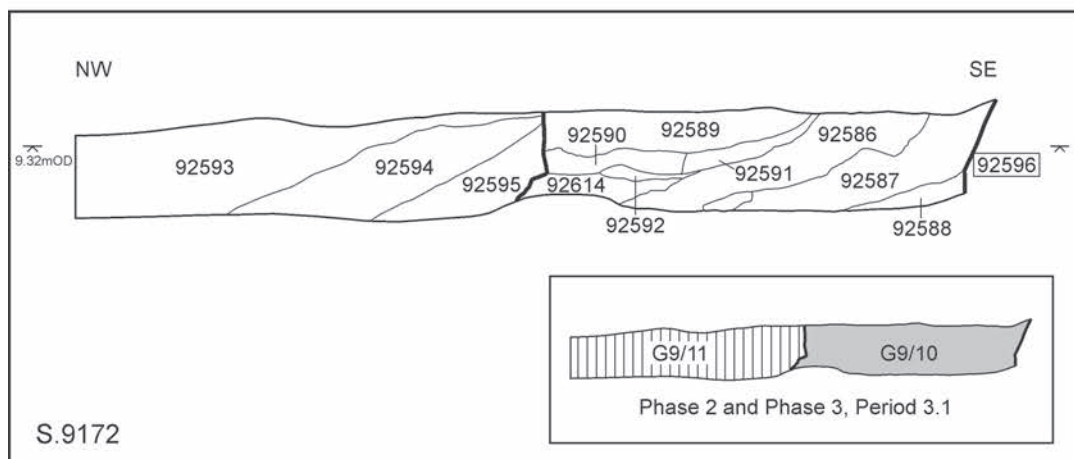
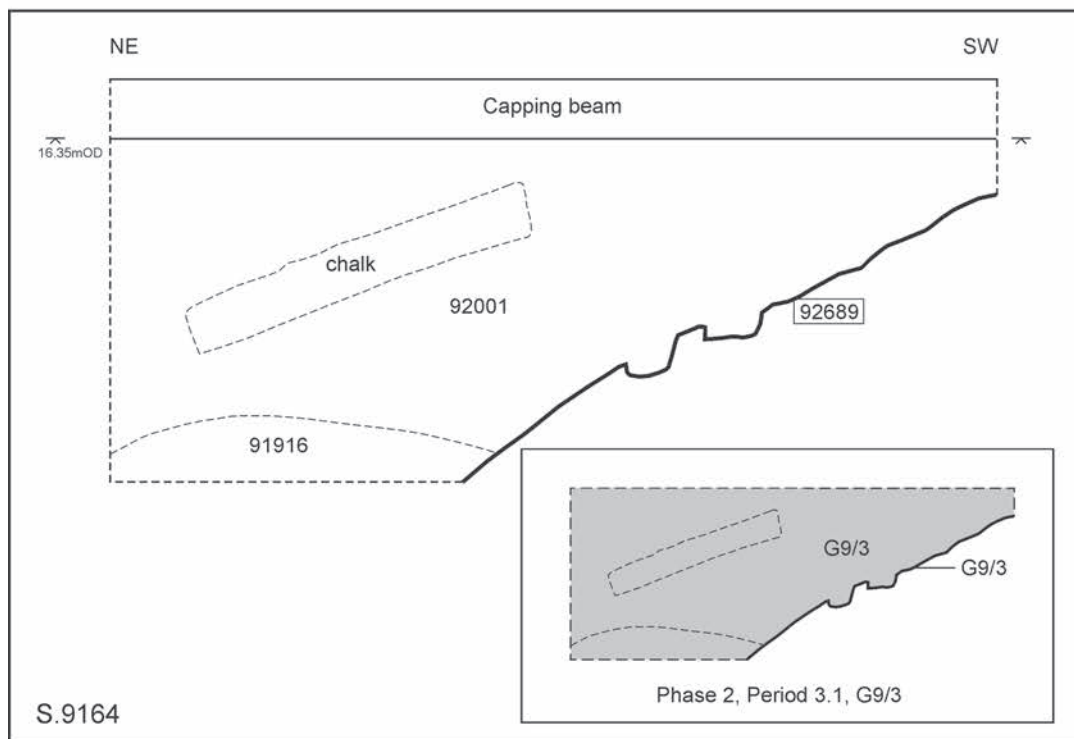
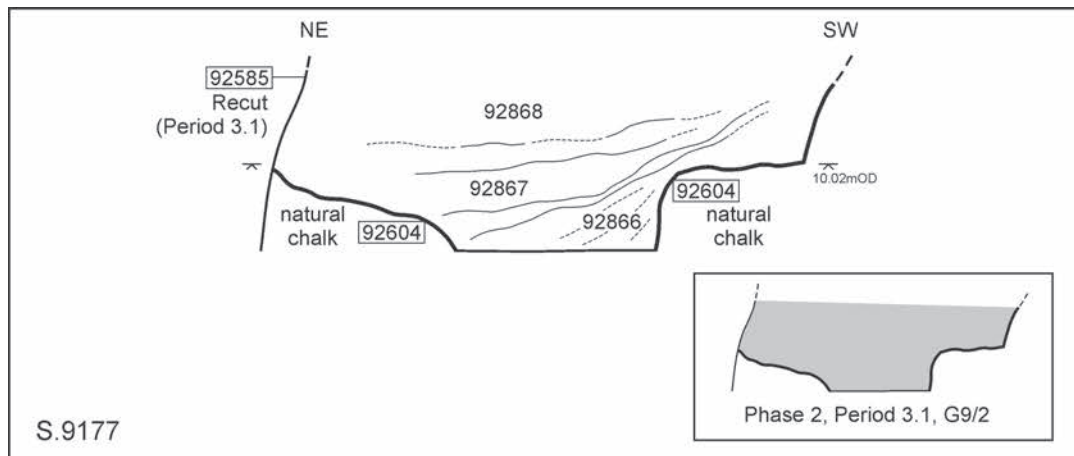


Figure 5.32 Period 2.2: Sections across Ditch 9 (outer north-east bailey ditch) (Area 9, S.9174, 9177, 9164, 974 & 9172). See Fig.5.30 for section locations. Scale 1:50

12th century and is described in Period 3.1. The ditch was subsequently recut twice (Periods 3.1 and 4.1).

The recorded depth of the ditch (assuming that the observations detailed below are indeed all parts of the same feature) is at least 7.45m (not bottomed), to which an additional 1.00–2.00m should probably be added to counter the effects of later horizontal truncation. The original width of the ditch cannot be calculated with any accuracy due to the limited evidence, although extrapolation from the mid point of the postulated base indicates a width of *c.*17m+. By comparison, the ?Fee ditch is estimated to have been *c.*8.50m wide by *c.*3.4m deep and the south bailey ditch (described in Period 3.1) as *c.*14m wide by *c.*5.50m deep. The ditch at Site 416N survived to 6m wide by 2m deep (Ayers 1985, 21). The extreme scale of the proposed north-east bailey ditch is therefore surprising and raises several important questions about the nature and layout of the defences as a whole (further discussion of which is given in Chapter 5.V and Chapter 12).

Ditch 9, Phase 1: cut

Only the southern part of the first phase of the ditch had survived to any great extent (although note that the same southern edge is taken to form the edge of a subsequent major recut and could in fact be entirely of later date). The northern edge had either been removed by subsequent ditch recuts or lay much further to the north. The southern edge is notable for the presence of a major step, almost 2m wide and the presence of two ?post-holes. This step may indicate the presence of a path from the base of the ditch to the top or, perhaps more likely, the base for a revetment although this would have lain at a considerable depth within the earthwork.

Two sections and a plan produced during a watching brief (G9/2, T56, S.9174 and 9177; Fig.5.32) show a large feature recorded over an 8m length (92604) with an irregular profile, stepped along its southern edge. It was not bottomed at a depth of 8.15m OD, with its highest surviving point lying at 10.80–11.20m OD, giving a total surviving depth at this point of *c.*3.05m. The evidence may indicate the base of a ditch running north-east to south-west. Also recorded as part of the same watching brief (T56, G9/10) was a hand-dug slot through ?ditch fills recorded in plan and section (S.9172, Fig.5.32), indicating a steep cut made into natural chalk (92596).

Further south another watching brief (92689, T18, G9/3) recorded a sketched, pile line section (S.9164, Fig.5.32) which shows a deep, wide cut made through natural chalk, presumably forming the southern edge of the ditch. Two irregularities in the recorded profile may have been the result of large post-holes or pits (measuring *c.*0.50m across) either contemporary with the cut or later insertions.

A watching brief observation (T42) of a British Telecom trench ran across the line of the ditch recorded at Site 416N, although no evidence for the ditch was encountered. The ditch at Site 416N was recorded at a level of *c.*13.50m OD, while in T42 the levels were up to 2m above this. It is possible that some of the deposits recorded may represent the uppermost fills of the ditch.

III. FINDS

Introduction

A total of 451 Small Finds was retrieved from Period 2 deposits at Castle Mall (4.3% of the total site assemblage), of which a small proportion were residual or intrusive. This unexpectedly high figure (higher than Period 1) is due to the presence of a group of 192 bone strips, most of which came from a single Period 2.1 pit. A further 5 objects were recovered from Period 2 ditch fills at the Golden Ball Street site.

<i>Period</i>	<i>Small Finds (no. objects)</i>	<i>Pottery (Qty)</i>	<i>CBM (Qty)</i>
Period 2.1	335	8,780	240
Period 2.2	116	1,995	188
Total	451	10,775	428

Table 5.4 Selected Period 2 finds by sub-period at Castle Mall

<i>Period</i>	<i>Small Finds (no. objects)</i>	<i>Pottery (Qty)</i>	<i>CBM (Qty)</i>
Period 2.1	3	99	0
Period 2.2	2	249	4
Total	5	348	4

Table 5.5 Selected Period 2 finds by sub-period at Golden Ball Street

Dress Accessories and Personal Possessions

Dress Fittings

Copper alloy finger- or ear-ring
by Alison Goodall
(Fig.4.69)

An ear-ring, SF5616, found in organic deposits beneath the south bailey rampart (60071, Period 2.1) is of a type which appears to continue from the Roman period through to the early post-Conquest period; it is described further in Chapter 4.III.

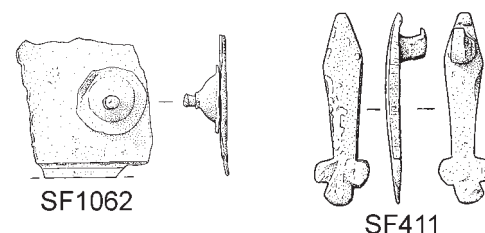


Figure 5.33 Copper alloy belt mounts (SF411 & 1062).
Scale 1:1

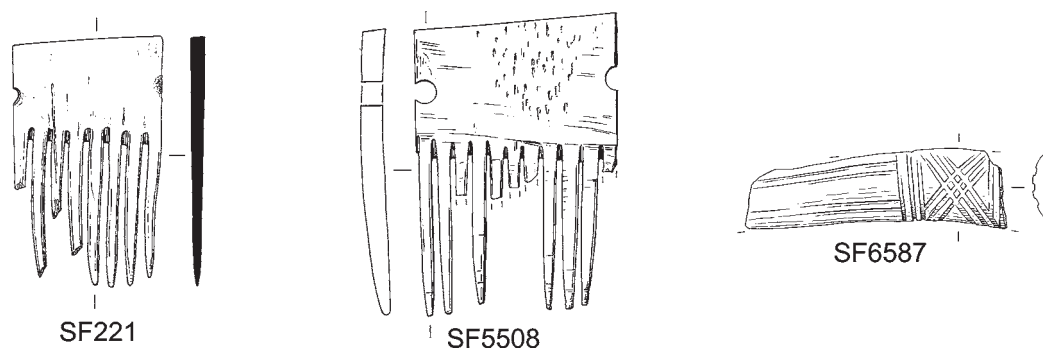


Figure 5.34 Antler combs (SF221, 5508 & 6587). Scale 1:1

Glass beads

by Julia Huddle

An incomplete glass bead (SF6616, not illustrated), broken into many small pieces, came from deposits relating to the disuse of a sunken featured building (Building 25, Period 2.2). The bead may have been residual in its context (see Chapter 4.III).

Belt Fittings

Copper alloy mounts

by Alison Goodall

(Fig.5.33)

A decorative gilded strap mount in the form of a dagger or cross (SF411) came from Ditch 8 within the early castle bailey and would probably have decorated a belt. Egan and Pritchard (1991, 162ff) illustrate a variety of differently shaped mounts spanning the medieval period, but none resembles the Norwich example. A second item came from a pit (SF1062) and is fragmentary: its original form and size can not be determined. It may have been a belt mount or could be part of a larger strap end. The boss-like head to the rivet is distinctive.

SF411 Gilded bar-mount from a belt, in the shape of a ?dagger. One terminal pointed, the other trefoil; single burred-over shank on reverse of pointed terminal.

20154, fill of ditch 20129, Period 2.2, G2/2

SF1062 Belt mount. Incomplete belt mount consisting of a fragment of sheet with single-line grooved border, with ?attachment rivet with decorative flanged and bossed conical head.

70117, fill of pit 70137, Period 2.2, G7/8

Personal Possessions

Antler combs

by Julia Huddle

(Fig.5.34)

Of the eight (possibly ten) pieces of antler single-sided composite comb fragments found at Castle Mall, two came from deposits assigned to Period 2.1 and a third from Period 2.2. This type of comb is well known from 10th-12th century deposits in Norwich and elsewhere (examples and further comments being given in Chapter 4.III). A comb connecting plate fragment (SF6587) is similarly decorated to a near complete comb from St Martin-at-Palace Plain, Norwich (Williams 1987b, 100, fig. 79, no.2).

Two worn tooth plate fragments came from pit 20059 and Ditch 8. Waste associated with the manufacture of bone side plates for horn combs was recovered from both of these features (see 'Bone- and hornworking').

SF221 Comb. Tooth plate from a single-sided comb, with eight teeth (estimate 4 teeth per 10mm), four teeth are broken, and the remaining teeth are 'beaded' at the ends. Rivet hole across edge and iron stain indentation at the other (from missing rivet).

20151, fill of ditch 20129, Period 2.2, G2/2

SF5508 Comb. Tooth plate from single-sided composite comb, with eleven teeth (c.4 per 10mm). Five teeth are broken off, 'beading' visible on remaining teeth. Rivet holes across both ends. L: 40mm. Bone or antler

20060, fill of pit 20059, Period 2.1, G2/5

SF6587 Comb. Decorated strip fragment, slightly convex in section. one end is decorated with incised lines. Probable comb connecting plate fragment, shrunken and distorted by fire.

22289, fill of pit 22208, Period 2.1, G22/147

Iron buckles

by Quita Mould

(Fig.5.35)

Two D-shaped iron buckles (SF1058 and 6579), and a buckle pin were found in contexts assigned to Period 2.1. One buckle (SF6579) was large enough to take a strap c.50mm wide and may have been used on horse harness.

SF1058 Buckle D-shaped frame with narrower pin bar and broken pin. Ht 37mm

70080, organic/refuse fills of Hollow 1, Period 2.1, G7/5

SF6579 Buckle — as above. Ht 60mm

22289, fill of pit 22208, Period 2.1, G22/147

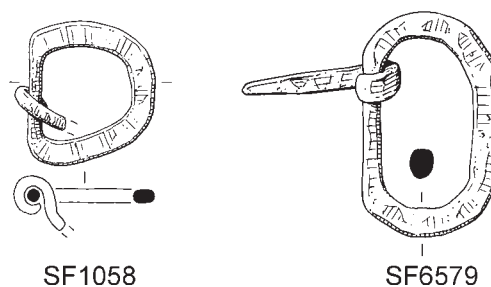


Figure 5.35 Iron buckles (SF1058 & 6579). Scale 1:2

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	10	0.099	<0.1	0.1
TTW	7424	62.976	68.9	76.7
NEOT	139	1.066	1.3	1.3
TTW/EMW Transition	1	0.018	<0.1	<0.1
Stamford ware (Fabric A)	11	0.153	0.1	0.2
Pingsdorf-type ware	10	0.117	0.1	0.1
EMW	2689	11.663	24.9	14.2
EMW/LMU	12	0.029	0.1	<0.1
EMSW	162	2.122	1.5	2.6
EMSSW	21	0.275	0.2	0.3
YTW	96	1.330	0.9	1.6
Stamford ware (Fabric B)	20	0.127	0.2	0.1
Flemish Grey ware	5	0.013	<0.1	<0.1
LMU	129	1.432	1.2	1.7
Non Local Med Oxidised	1	0.004	<0.1	<0.1
Andenne ware	6	0.026	<0.1	<0.1
Misc. Medieval wares	13	0.076	0.1	<0.1
Misc. Medieval import	4	0.048	<0.1	<0.1
Intrusive	20	0.536	0.2	0.6
Unidentified	2	0.033	<0.1	<0.1
Total	10,775	82.143		

Table 5.6 Total quantity and weight of Period 2 pottery by fabric

Furnishings and Household Equipment

Fittings

by Alison Goodall
(Fig. 5.36)

A copper alloy rod was recovered from a consolidation dump beneath the south bailey rampart. This incomplete pierced terminal (SF5898) is too fragmentary for certain identification, although it was probably part of a suspension device (*cf.* from Guestwick, Rogerson *et al.* 1987, fig. 50 no. 2). It could possibly be part of a complex harness ornament with a pendant suspended from it; however, it may have come from something far more utilitarian.

SF5898 ?Suspension device. Incomplete solid trapezoidal-sectioned rod, with expanded and flattened terminal pierced with a circular hole. L: 22mm.
80470, makeup dump, Period 2.2, G8/18

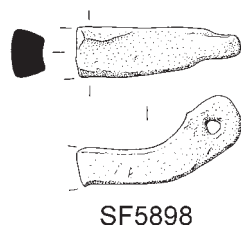


Figure 5.36 Copper alloy ?suspension device (SF5898).
Scale 1:1

Pottery

by Irena Lentowicz
(Figs 5.37–5.49)

Introduction and quantification

A total of 10775 sherds of pottery weighing 82.143kg was recovered from contexts assigned to Period 2 at Castle Mall, accounting for 8.6% of the site assemblage. A further 3.504kg was recovered from the Golden Ball Street site, but is not included in the analysis below. Although only a small proportion of the Castle Mall assemblage has been shown as residual (see Table 5.6 below), some of the Late Saxon and early medieval wares may also have come from earlier usage. This period was characterised by the decreased importance of TTW, the increased significance of early medieval wares and the introduction of a small quantity of locally produced Medieval Unglazed wares (LMU). Fine wares present during this period were regional or continental imports, as local glazed products from the Grimston industry in west Norfolk did not reach Norwich assemblages until the late 12th century.

Late Saxon and early medieval wares continued to dominate the assemblage, accounting for 97.1% of the material recovered. However, though Late Saxon wares still dominated (making up 78.3% of the material), early medieval wares increased to make up 18.8% of the period assemblage. While the early medieval material was undoubtedly contemporary, some of the Late Saxon wares were probably residual by this stage. Some fabrics such as Pingsdorf-type ware spanned the Late Saxon/Norman transition and continued to be imported into the 13th century, but the use of other Late Saxon fabrics such as NEOT and Stamford ware (Fabric A) declined. NEOT

Vessel type	Period 1	Period 2.1	Period 2.2	Period 2 Total
Jar/cooking pot	2168	44	57	501
Storage jar	-	5	1	6
Handled jar	-	-	-	-
Multi-handled jar	10	3	1	4
Ginger jar	10	2	1	3
Spouted pitcher	4	-	-	-
Bowl	22	6	-	6
Lamp	8	-	3	3
Other	-	dish	lid	2

Table 5.7 Number of TTW rims in Period 2

was represented by jars (eight rims), cooking pots (two rims) and bowls (one rim), while Stamford ware (Fabric A) vessels were represented by body sherds only.

Fabrics and forms

Thetford-type ware

Production of TTW continued into the early 12th century but as mentioned above some of the pottery recovered must have been residual, although this is difficult to quantify accurately. There was evidence that the TTW potters were trying to meet the demand for early medieval vessels by producing 'ginger jars' and smaller cooking pots with simple, everted or upright rims into their repertoire.

A similar range of TTW vessels in similar proportion to the assemblage from Period 1 was recorded (see Table



Plate 5.15 Complete Thetford-type ware jar from late 11th- to early 12th-century pit 22208 (Period 2.1)

Vessel type	Period 1	Period 2.1	Period 2.2	Period 2 Total
Jar/cooking pot	39	39	16	55
Ginger jar	23	78	13	91
Bowl	1	4	-	4
Lid	1	-	-	-
Vessel	1	-	1	1

Table 5.8 EMW vessel forms represented by rims

5.7). Of the 525 rims present, jars and cooking pots were the most common vessel form, accounting for 95% of known rims. The proportion of cooking pot rims were slightly greater than in Period 1, but this was probably not significant. Medium-sized (type AB) vessels were more prolific than either small (type AA) or large (type AC) jars/cooking pots. The range of rim types continued to be wide, and no significant clustering of individual rim types or between 10th- and 11th-century rim types was noted. This was not particularly surprising as the assemblage from Period 1 also included both 10th- and 11th-century rim types. Whether the 10th-century rims are residual is not clear; they make up *c.* 13% of the dateable rims.

The only other forms represented by rims in any quantity were storage jars and bowls. As mentioned previously, storage jars were better represented by large body sherds with applied thumbled strips than by rims (seven). Multi-handled jars were represented by three rims. Bowls were only recovered from Period 2.1 contexts and included three bowls with flaring form, straight sides and a plain rim (type BB2) and two large, curve-sided bowls with expanded rims (type BB7), as well as an unclassified bowl rim. 'Ginger jar' rims were also present but in smaller quantity than in Period 1; the quantity of these rims in EMW increased and perhaps there was a preference for these vessels in EMW rather than TTW. Lamp rims were recovered only from Period 2.2 and could come from either pedestal or spike lamps; however, where bases are recorded these are always from pedestal lamps. One new form was introduced during this sub-period, the profile of a plain, straight-sided dish (type BA1) was recovered. Both handled jars and spouted pitchers were also absent from this period assemblage.

Other Late Saxon wares

Other Late Saxon wares were also recovered. NEOT accounted for a similar proportion as in Period 1, and was again represented by rims from jars (eight examples) and a single bowl. No cooking pot rims were identified. The quantity of Stamford ware (Fabric A) increased and, while a sagging base was recorded, no rims were represented.

Early medieval wares

Early medieval wares form a much larger percentage of the period assemblage, 18.8% of the pottery recovered, as opposed to *c.* 5% of the Period 1 assemblage. However, the difference between the Period 1 and Period 2 proportions was less marked when comparing the Period 2 assemblage with that from Period 1.4, where 18.5% of the pottery recovered was made up of early medieval



Plate 5.16 Early medieval ware bowl with stamped decoration from pit 20070 (Period 2.1)

fabrics. Some fabrics were represented by a small number of body sherds only, such as EMSSW and EMSW; very little can be added about these coarse wares.

EMW was the second most common fabric, and 41.7% of all EMW recovered came from this period (with a further 25% from Period 1, indicating that two-thirds of the fabric came from contemporary contexts). A much larger number of rims were recovered from this period (501 examples), and while rims from jars and cooking pots would usually be the most common vessel form recovered, most unusually ninety-one of EMW rims from this period came from 'ginger jars'. These accounted for 60.3% of the Period 2 rims, contrasting with 42.6% of the Period 1 rims. Again, as with the Period 1, 'ginger jars' with upright or slightly everted rims (type G2 — forty-six rims) were twice as numerous as plain rims (type G1 — twenty-nine examples). Only two 'ginger jars' with internal beads (type G3) were recorded, and a further fourteen rims could not be allocated a type. Whether the dominance of these vessels in this period was significant is difficult to assess; 'ginger jars' are the definitive vessel form for the mid 11th century, and their proliferation in this period may be a reflection of this rather than of use. Discussion on the dating of the introduction of the 'ginger jar' form is given in Chapter 13.

A total of fifty-five jar and cooking pot rims were recovered from Period 2 contexts, of which thirty-nine came from small-sized jars (type J1) and sixteen from medium jars (type J2). The majority of small jars had simple everted rims (type J1b — seventeen examples), while upright rims were also common (type J1a — twelve examples) with fewer everted rims coming to a point (type J1c — seven rims). The rim types for medium-sized jars were the same, with everted rims coming to a point most common (type J2c — seven rims), but other rim types equally well represented (types J2a and J2b — four and five rims respectively). Rims with more unusual profiles were also recorded such as type Jj with hammer-head rims or a jar with an almost lid-seated rim, but these tend to be single instances.

Analysis of the rims and comparison between Periods 1 and 2 assemblages provided little additional information. Medium-sized jars were more common in Period 1 and smaller jars in Period 2 which appears anomalous, as EMW is thought to have developed smaller vessels as an alternative to larger TTW ones.

Other vessels were not recovered in great quantity. Three of the four EMW bowls from the site came from in this period, including a rather fine almost complete vessel, a deep straight-sided bowl with stamped decoration (Fig.5.39, no.2). This was an unusual, as yet unique, EMW vessel as although bowls are not unknown, such large vessels are uncommon. Also recovered was an unusual socketed bowl (Fig.5.39, no.6); these are known in TTW but not common in EMW and both vessels may indicate that the EMW potters were copying TTW forms. The third bowl was less exotic and had a carinated profile and everted rim. Further comments on these vessels are made by Goffin below.

Other early medieval wares were found in smaller quantity, with only EMSW and YTW recovered in any quantity. Another coarse ware, Early Medieval Sparse Shelly ware (EMSSW) made up a small element of the early medieval assemblage in Period 1 (<0.1%), but accounted for 0.3% of this period assemblage. Only body sherds were recovered from the previous period, while a single cooking pot rim was recorded with an upright, flaring rim (*cf.* Jennings 1981, fig. 12, no. 255).

EMSW accounted for the largest proportion, making up 2.6% of this period assemblage, similar to the 2.1% it constituted in Period 1. Again, jars and cooking pots were the most common form recorded, with medium-sized vessels dominating (type AB — twelve examples, types AA and AC — two examples respectively). Very few were typically early rim forms, only one example of the traditional 10th-century rims (types AB7 and AB8) were recorded and 11th-century types dominate (types AB1, AB2, AB10 and AB11), although long-lived types such as AB13 and AB14 were also common. Although the larger assemblage was recorded from Period 1, the range of rim forms was more varied in Period 2. Other forms recovered included a storage jar (type AG5), a bowl with an expanded rim (type BB5), a 'ginger jar' and a pitcher with an upright rim.

Yarmouth-type ware

YTW was recovered from Period 1 but only accounted for 0.1% of the assemblage, while in Period 2 this increased to 1.6% of the material. Of the 3.296kg recovered from the excavations, 10% came from Period 1 and 39.2% from Period 2; by Period 3 this had decreased to 29.8% but the fabric's share of the assemblage was larger at 6.5%. This confirms that YTW continued to form part of the pottery assemblage well into the 12th century.

Of the ten rims recovered, jars and cooking pots were the most common form; other vessels represented by rims include a typical mid 11th-century 'ginger jar' with upright, slightly everted rim (type G2) and a bowl rim with an everted rim coming to a distinct point. While some attempt was made to recognise changes to rim typology over the periods, the assemblage was not large enough to produce a statistically valid argument. Jars/cooking pots with everted rims expanded to a wedge shape were the most common rim type recorded (type Yb — five examples); while three vessels with a distinct neck/body join and rim everted to a point (type Ya) and a single example of a single, squared rim (type Yc) were also present; an unidentified rim was also recorded.

Finewares and imports

Other early medieval wares recovered included finewares. Regional wares such as Stamford ware (Fabric B) were represented by the rim from a jug, while imported wares Pingsdorf-type ware and Andenne-type ware were represented by body sherds. A new import was introduced

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	5	0.055	<0.1	<0.1
TTW	6320	53.012	72.0	78.5
NEOT	90	0.602	1.0	0.9
Stamford ware (Fabric A)	8	0.117	0.1	0.2
Pingsdorf-type ware	6	0.053	<0.1	<0.1
EMW	2018	8.879	23.0	13.1
EMW/LMU	10	0.027	0.1	<0.1
EMSW	113	1.565	1.3	2.3
EMSSW	7	0.208	0.1	0.3
YTW	67	1.095	0.7	1.6
Stamford ware (Fabric B)	14	0.090	0.1	0.1
Flemish Grey ware	5	0.013	<0.1	<0.1
LMU	81	1.222	0.9	1.8
Non Local Med Oxidised	1	0.004	<0.1	<0.1
Andenne ware	2	0.011	<0.1	<0.1
Misc. medieval import	3	0.034	<0.1	<0.1
Misc. medieval wares	12	0.060	0.1	0.1
Intrusive	16	0.433	0.2	0.6
Unidentified	2	0.033	<0.1	<0.1
Total	8,780	67.513		

Table 5.9 Total quantity and weight of Period 2.1 pottery by fabric

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	5	0.044	0.2	0.3
TTW	1104	9.964	55.3	68.1
NEOT	49	0.464	2.4	3.2
TTW/EMW Transition	1	0.018	<0.1	0.1
Stamford ware (Fabric A)	3	0.036	0.1	0.2
Pingsdorf-type ware	4	0.064	0.2	0.4
EMW	671	2.784	33.6	19.0
EMW/LMU	2	0.002	0.1	<0.1
EMSW	49	0.557	2.4	3.8
EMSSW	13	0.053	0.6	0.4
Early Medieval Shelly ware	1	0.014	<0.1	0.1
YTW	29	0.235	1.4	1.6
Stamford ware (Fabric B)	6	0.037	0.3	0.3
LMU	48	0.210	2.4	1.4
Andenne-type ware	4	0.015	0.2	0.1
Misc. imports	1	0.014	<0.1	0.1
Grimston Glazed ware	1	0.016	<0.1	0.1
Intrusive	6	0.136	0.3	0.9
Total	1,995	14.630		

Table 5.10 Total quantity and weight of Period 2.2 pottery by fabric

during this period, Flemish grey ware — represented by a sherd from a ladle.

Medieval fabrics

Medieval fabrics played the same role in this period as early medieval wares did in the former. Transitional EMW/LMU sherds were commonest from Period 2.1 (ten sherds weighing 0.027kg) and included a rim from a small jar (type J1b); a ‘ginger jar’ rim was recovered from Period 2.2 which was represented by only two small sherds (0.002kg). Developed LMU was a small but persistent presence noted from a range of features, and c.1kg of pottery was recovered. LMU was recorded in both sub-periods and represented by a small number of rims; jars and cooking pots in Period 2.1 (types J2b and J2l) and a jug rim from Period 2.2. Non-local oxidised body sherds were also recorded.

Stratigraphic distribution

Assemblages are detailed by group in Chapter 5.II and Appendix 6, where details of illustrated items can also be found.

Period 2.1

(Figs 5.37–39 and 5.44; Figs 5.40–5.44 on CD)
By far the largest proportion of the period assemblage came from Period 2.1, 8780 sherds weighing 67.513kg (82.2% of the Period 2 assemblage). Residual material formed a small proportion (less than 1%) and this was comprised entirely of Roman pottery. TTW, while still being the most dominant individual fabric, accounted for only 78.8%, which echoes the proportion in Period 1.4. Early medieval wares also made up a similar proportion as in Period 1.4, with EMW being most common, and EMSW, EMSSW and YTW all represented, along with regional and imported finewares, Stamford ware (Fabric B), Pingsdorf-type ware and Andenne-type ware. Medieval wares were gradually introduced during this sub-period, mostly locally produced LMU unglazed ware but also including Flemish Grey ware.

Period 2.2

(Figs 5.45–5.26 and 5.48; Figs 5.47 and 5.49 on CD)
The assemblage from Period 2.2 was similar to that from Period 2.1, probably because the distinction used in much of the phasing between the two was functional rather than necessarily temporal. Just under 18% of the period assemblage was recovered from contexts assigned to this sub-period, 1,995 sherds weighing 14.630kg. TTW was the single most common fabric making up 68.3% of the assemblage, but early medieval wares were becoming more of a feature and medieval fabrics a small but distinct element.

Discussion and conclusions

by Richenda Goffin

This phase covers a relatively short period of time in terms of the history of the site, broadly relating to the timber phase of the castle (c.1067–70 to c.1094). The ceramics were recovered from a wide range of features, including ditch fills associated with the establishment and early modification of the castle itself and the contents of numerous pits within the early Castle Fee/south bailey. Difficulties in dating the pits, particularly those that were stratigraphically isolated, mean that some may have

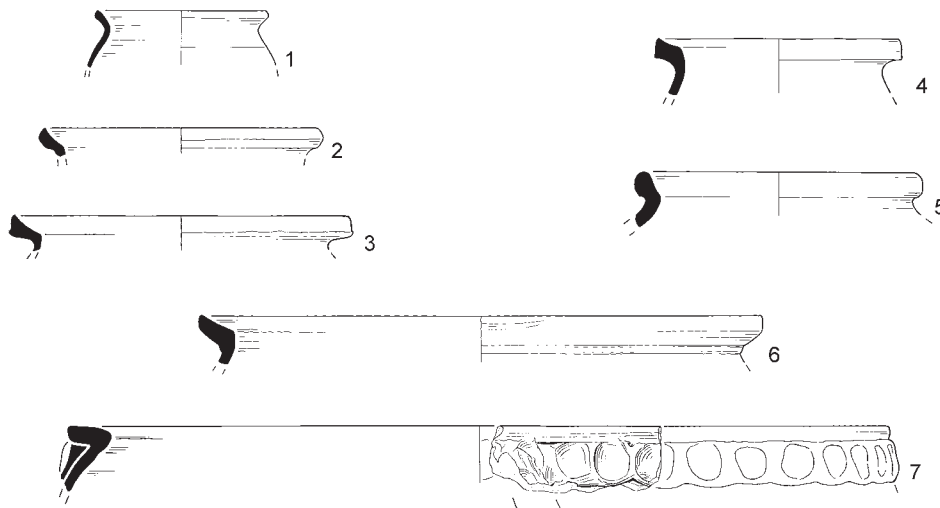


Figure 5.37 Pottery from organic layers & related deposits, Open Area 19 (G1/13). Scale 1:4

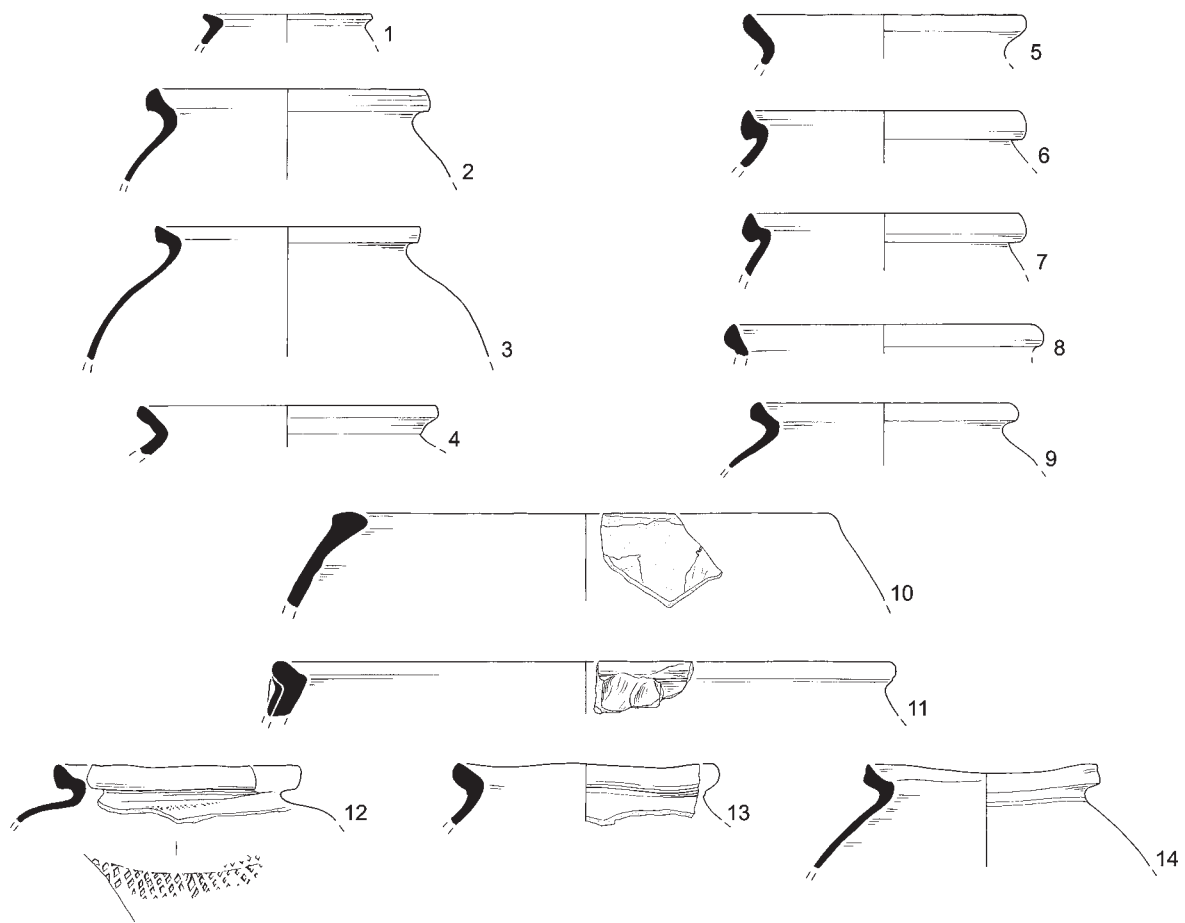


Figure 5.38 Pottery from organic layers & related deposits, Open Area 19 (G8/8). Scale 1:4

originated in the Late Saxon period. Many, however, contained metalwork or other objects indicative of a Norman date. Amongst the pits were examples which

may have remained open for some time, perhaps accumulating redeposited ceramics gradually. Other pits used for the disposal of refuse and cess appear to have contained

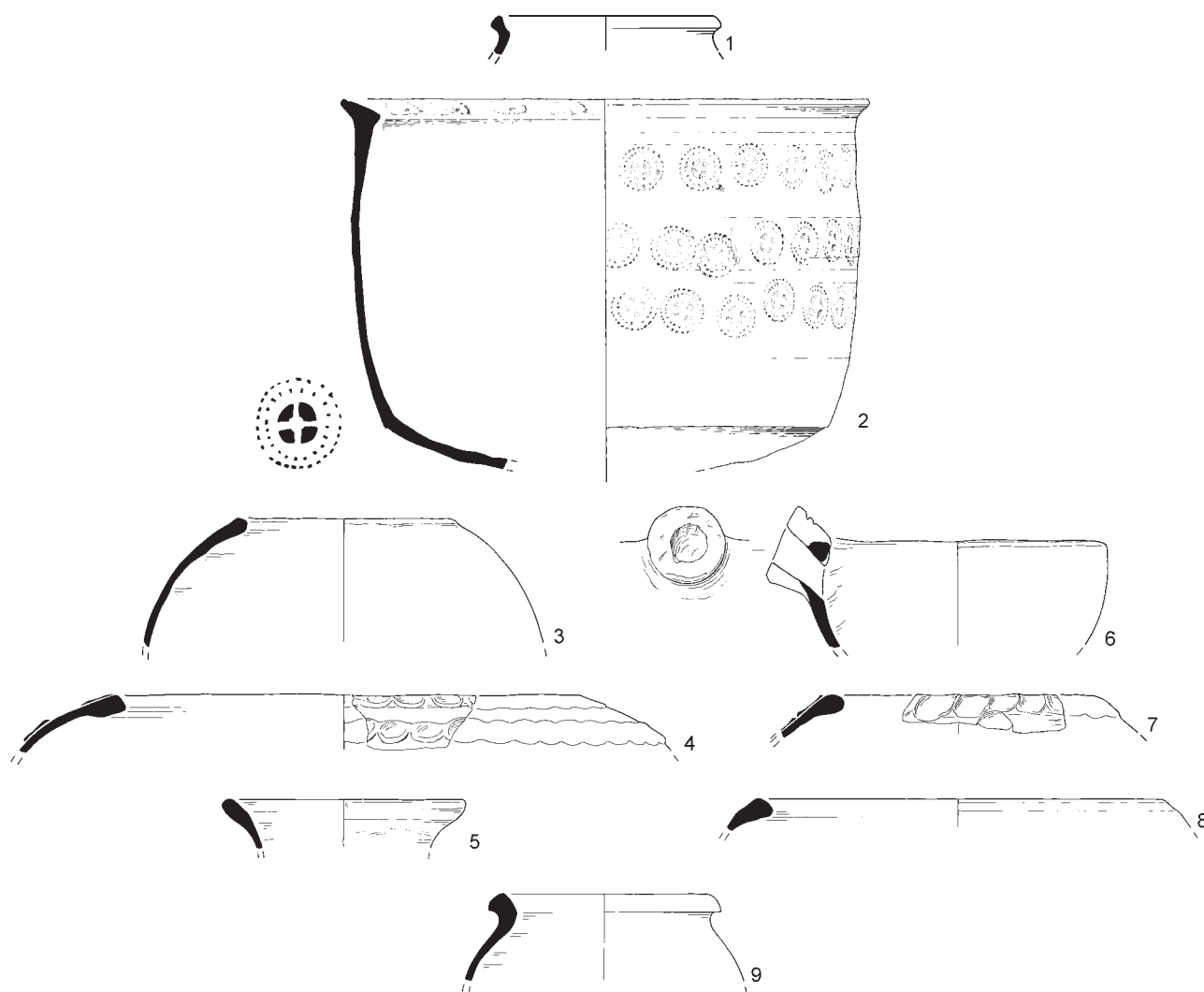


Figure 5.39 Pottery from pits, Open Area 19 (G2/5). Scale 1:4

more contemporaneous pottery. All were dug in open areas within the southern bailey of the castle and many contained evidence of the domestic and craft activities undertaken by those dwelling within its confines during its early years. A single building was located (Building 25) which may have been built before the Conquest.

As has been already discussed, the pottery recovered included a high proportion of TTW (62.976kg, 76.7% by weight). There can be little doubt that some of this material was residual by the second half of the 11th century, although it has not been possible to quantify this to any degree. The consolidation of ground surfaces and deliberate infilling of earlier pits provided an opportunity for much redeposition of pottery from elsewhere and the level of residuality in these circumstances would therefore be potentially high, and not restricted to TTW. However, since the fabric is so ubiquitous in Norwich it may form a substantial residual element right through to the post-medieval period on many sites in central Norwich. At the Greyfriars excavations to the east of Castle Mall, 52.5% of the TTW came from later deposits and was clearly residual (Lentowicz, in Emery 2007). A second example is the ceramic assemblage from the waterfront at Whitefriars Street. Here the period IV (?early 13th-

century) phase was dominated by residual TTW which made up nearly 74% of the assemblage by sherd count (Ayers and Murphy 1983).

Considering Period 2 at Castle Mall overall, the main ceramic trends show that Early Medieval ware was increasing in frequency, together with other fabrics of 11th- to 12th-century date such as Early Medieval Sandwich ware, Stamford ware, and shell-tempered fabrics such as Yarmouth-type ware and Early Medieval Sparse Shelly ware. Small quantities of LMU wares are also present in the ceramic record, although few diagnostic rim sherds were present. This general pattern is reflected in other assemblages of a similar date elsewhere in Norwich (see below). The pottery was dominated overall by domestic wares consisting mainly of cooking vessels and jars, with 'ginger' jars, storage jars, bowls and lamps. Fragments of drinking vessels and jugs are also present in the assemblage. These are mainly Stamford wares, which are supplemented by imported vessels of Andenne-type wares and Pingsdorf ware. Despite the evidence of metalworking waste and slag recovered during this period, only two fragments of crucibles were identified.

Perhaps the most remarkable vessel from this period was found in pit 20070, attributed a late 11th-century ceramic date (Period 2.1). The almost complete stamped bowl (Fig. 5.39, no. 2) is most unusual and so far unparalleled. The stamped roundels have been applied around the interior of the rim and in three horizontal rows on the exterior. They are shallowly impressed rather than deeply imprinted and are comparatively complex in their design. Stamped early medieval wares themselves are not uncommon and have been previously recorded elsewhere in Norwich, for example at the Gasworks site, Bishopgate (Jennings 1981, 23), the Cathedral Lower Close (Jennings in Atkin and Evans 2002, 61) and at the recent excavations at the Shire Hall (Goffin in prep.c). However, the form itself is unusual, as deep bowls are not part of the standard Early Medieval ware repertoire, although two examples of large bowls were identified in pre-friary levels at Greyfriars (Lentowicz, in Emery 2007). The vessels usually associated with EMW are cooking vessels or jars, 'ginger' jars and some small bowls/lamps.

In addition to the stamped bowl, the rims of at least twenty different EMW 'ginger' jars were present in the same fill. Some of these are ornamented with a variety of incised and applied decoration. Parallels for this group can be found in another intriguing assemblage of pottery recovered from recent excavations of the Castle Mound at the Shire Hall which awaits further analysis (Goffin in prep.c). Here, amongst the redeposited material which made up part of the second phase of the Castle Mound (*i.e.* constructed in the period *c.* 1094 to *c.* 1121–22, equivalent to Castle Mall Period 3.1), several contexts contained a quantity of specialised products of the late Thetford/early medieval ware pottery industry. These consisted mainly of lamp and/or small bowl fragments, with some 'ginger' jars. The vessels showed signs of being over-fired and none of them had been used. They appear to represent unsatisfactory or failed products which were dumped in one event. In addition to these lamps and jars, many pieces of a particularly unusual vessel had been distributed throughout several different contexts. The cooking vessel/jar has a simple everted rim and closed hollow tripod feet. It is hand-made and oxidised with a very similar appearance to EMW (Goffin in prep.c). It is possible that this small group at Castle Mall and the second assemblage from Shirehall represent the remnants of specialised non-standard forms which are evidence of an emerging ceramic production spanning the transition between TTW and early medieval wares, possibly within the period *c.* 1000 to *c.* 1067–70, although Lentowicz assigned a late 11th-century (*i.e.* post-Conquest) date to this particular pit assemblage (*i.e.* pit 20070). It may be that these vessels were some of the products of the pottery kilns along Pottergate (see Chapter 13).

Evidence of sub-standard TTW at Castle Mall was not just confined to Period 1 but was also identified during Period 2.1, by which date the material may have been residual. Several jars recovered from organic layers and related deposits beneath the later south bailey rampart (Open Area 19) are distorted, although they show evidence of use (Fig. 5.38, nos 13–15). A further example was present in pit 90441 (Fig. 5.44, no. 13). Such pottery further supports the possibility that TTW was not only being produced in the kiln sites to the west of the

castle, but may have been made in the area beneath it (see Chapters 4.III, 4.VI and 13).

Some relative comparisons with other sites can be attempted. As noted above, Period 2 at the Castle Mall excavations spans a relatively short period during the latter part of the 11th century. At Dragon Hall to the south-east of Castle Mall, the Period 1 pottery dating from the late 10th to late 11th centuries comprised 85% by weight of TTW, 0.2% NEOT, 0.6% EMSW, 6.0% EMW, 3.6% YTW. In addition to small quantities of residual ware there were also fragments of LMU wares and some imports (see below) (Anderson 2005). Pottery from the Period 1 levels at the much larger Greyfriars site nearby dating to the 10th to 11th century comprised 88.9% (or 86.2%) by weight of TTW, with 0.9% NEOT, 3.8% EMW, 4.4% EMSW, and 0.1% Stamford ware (Lentowicz, in Emery 2007). The Period 1 pottery (dating from the late 10th to 11th century) from a small site on King Street nearby consisted of 90.4% by weight of TTW, 7.8% by weight of NEOT, and less than 1.0% of Stamford ware and early medieval wares each (Site 26460; Goffin in Shelley and Brennan, forthcoming). The late 10th- to 11th-century deposits excavated at Whitefriars Street Car Park contained 77.7% by sherds count of TTW, with very small quantities of other local wares and Stamford ware, and a higher percentage of imported wares, perhaps due to its proximity to the waterfront (Ayers and Murphy 1983, 19 and see below).

A small quantity of imported wares from the Castle Mall Period 2 assemblage comprising Pingsdorf ware, Flemish greyware and Andenne-type wares made up <0.1% by weight (25 sherds; 0.214kg). This figure compares well with other Norwich assemblages at this early date. Imports during the late 10th to late 11th centuries at Dragon Hall, Norwich comprised 1% of the group (Anderson 2005). At Greyfriars the Late Saxon assemblage included a similar quantity of imported wares, which made up 0.5% by weight of the pottery from this period, and consisted of fragments of Pingsdorf and Andenne-type wares. The imports from the excavation at Whitefriars Street Car Park made up 13.6% by sherds count of the Period 2 assemblage, a high figure which was skewed by the presence of 25 sherds of Pingsdorf ware in Phase 5 (Ayers and Murphy 1983, 19).

Further afield, only broad comparisons can be made with some groups of pottery recovered from the rural castle of Hen Domen (Ratkai 2000, 83–93). Here the shallow stratigraphy and the intense building activity on the motte resulting in much movement of pottery has created groups which may contain residual and intrusive elements, which make dating interpretation particularly difficult. The sparsity of independently dateable imported wares also adds to the problem. However, there is little ceramic evidence associated with the earliest occupation of the motte, and pottery is more common in the middle and later periods of occupation, (although there may be early residual sherds present in later contexts). Generally however, both the motte and bailey assemblages comprised a high proportion of cooking pots and jars, with some glazed wares and jugs. Again the ceramics appear to be unremarkable — 'despite, in contemporary terms, the high-status character of the site, the range of pottery used seems no different from that encountered on rural and urban sites of the period' (Ratkai 2000, 90). Within the context of the castle itself, the pottery from

the motte was not characterised as being any more high status than other areas of the complex (Ratkai 2000, 90).

In conclusion, analysis of the Period 2 assemblage from Castle Mall provided only limited evidence for changes in the ceramic assemblage between Periods 1.4 and 2.1, although this is not particularly surprising given the immense uncertainties over dating the Saxo-Norman interface in ceramic terms. Although a massive cultural change is known to have taken place here only a few years after the Norman Conquest, this was not reflected in the ceramic record. Rather than demonstrating the site's newly acquired royal status, the assemblage broadly attributed to the timber phase of the castle was almost entirely domestic in character, represented by a wide range of kitchen wares and finer table or serving

wares imported from regional centres and, to a far lesser extent, from the Continent.

Illustration Catalogue

Period 2.1

Fig.5.37: Organic layers and related deposits, Open Area 19 (G1/13)

- no.1 TTW, jar with upright rim (type AB1), ?buried soil 11365
- no.2 TTW, jar with everted rim, internal hollow, expanded to wedge shape (type AB13), ?buried soil 11365
- no.3 TTW, cooking pot with everted rim with internal hollow, expanded to degenerate wedge shape (type AB14), ?buried soil 11365
- no.4 TTW, cooking pot with everted rim with internal hollow and developed external pendant (type AB15), ?buried soil 11365
- no.5 TTW, cooking pot with everted rim with internal hollow and rounded edges (type AB16), ?buried soil 11365

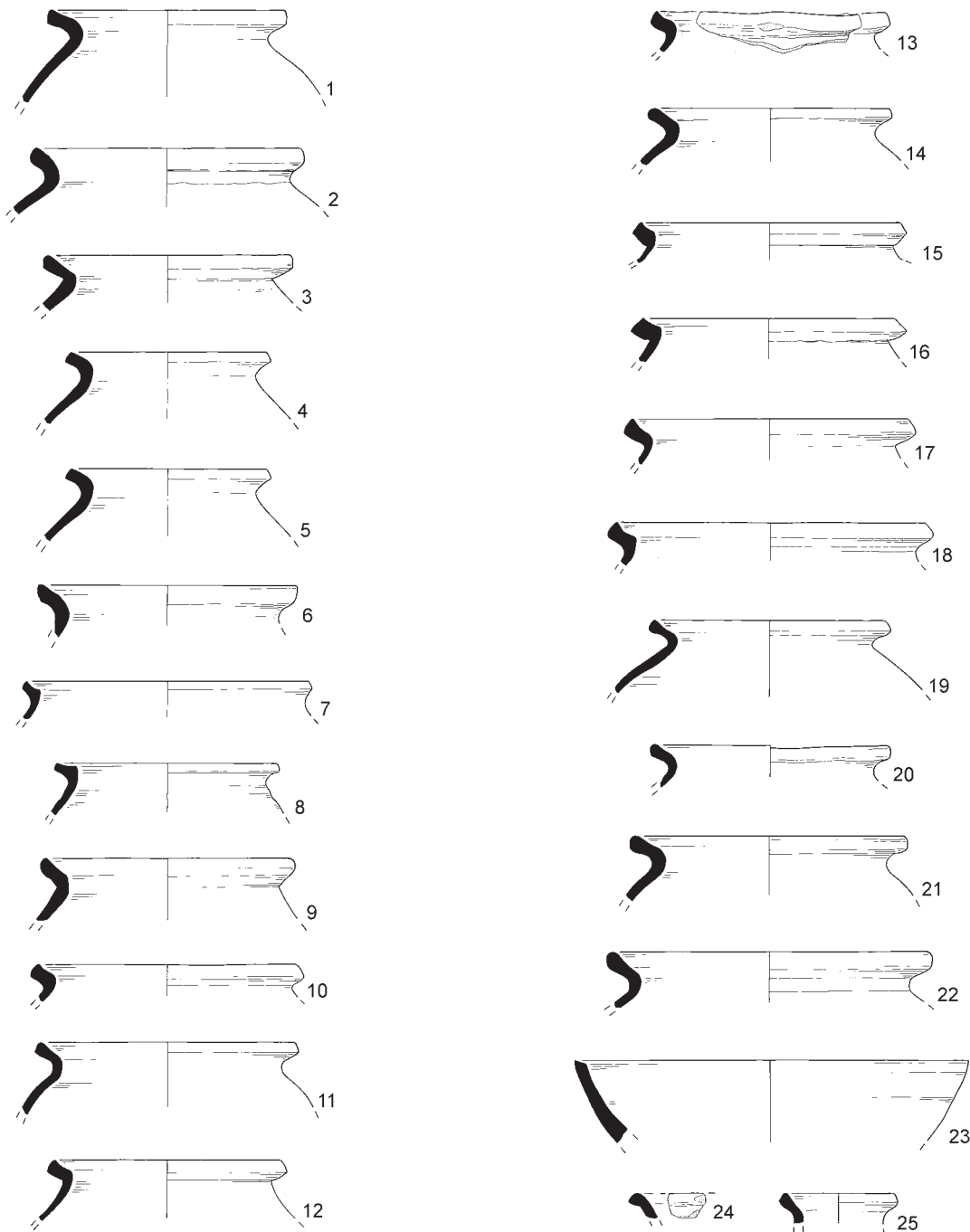


Figure 5.44 Pottery from pit 90441, Open Area 19 (G9/72). Scale 1:4

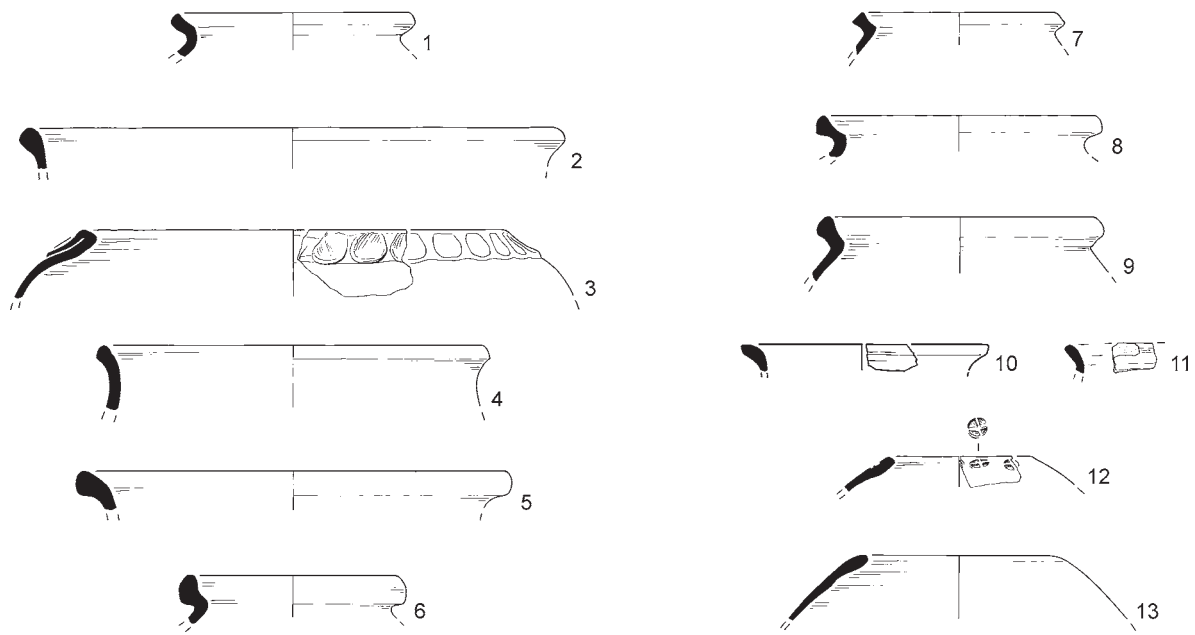


Figure 5.47 Pottery from Ditches 7 & 8 : Refuse fills (G2/2). Scale 1:4

- no.6 TTW, large jar with everted rim with internal hollow and tapering sides (type AC10), ?buried soil 11365
- no.7 TTW, storage jar with everted rim, sides expanded usually to wedge shape (type AF9), ?buried soil 11365

Fig.5.38: Organic layers and related deposits, Open Area 19 (G8/8)

- no.1 TTW, small jar with everted rim with tapering sides (type AB4), organic layer 80471
- no.2 TTW, jar with everted rim with internal hollow and developed external pendant (type AB15), organic layer 80471
- no.3 TTW, jar with everted rim, sides expanded to a wedge shape (type AB6), organic layer 80471
- no.4 NEOT, cooking pot with everted rim, organic layer 80471
- no.5 NEOT, cooking pot with everted rim, organic layer 80471
- no.6 EMSW, jar with rim with exaggerated internal hollow (type AB12), organic layer 80471
- no.7 EMSW, jar with everted rim with internal hollow and developed external pendant (type AB15), organic layer 80471
- no.8 EMSW, jar with everted rim with internal hollow and rounded edges (type AB16), organic layer 80471
- no.9 EMSW, jar with everted rim with internal hollow and rounded edges (type AB16), organic layer 80471
- no.10 EMW, ginger jar, organic layer 80471
- no.11 TTW, bowl with expanded rim (type BB7), organic layer 80471

- no.12 TTW, distorted cooking pot with everted rim with internal hollow, expanded to wedge shape (type AB13), organic layer 80471
- no.13 TTW, distorted jar with plain, flared rim (type AB1), organic layer 80471
- no.14 TTW, distorted jar with lid-seated rim with parallel sides (type AB11), organic layer 80471

Fig.5.39: Pits, Open Area 19 (G2/5)

- no.1 EMW, small jar with lid-seated rim, Pit 20070, fill 20040
- no.2 EMW, bowl with stamped decoration, Pit 20070, fill 20064
- no.3 EMW, 'ginger jar' with plain rim (type G1), Pit 20070, fill 20040
- no.4 EMW, 'ginger jar' with internal bead and applied thumbed decoration (type G3), Pit 20070, fill 20040
- no.5 EMW, small jar with upright rim (type J1a), Pit 20059, fill 20060
- no.6 EMW, socketed bowl, Pit 20059, fill 20060
- no.7 EMW, 'ginger jar' rim with internal bead and applied thumbed decoration (type G3), Pit 20059, fill 20060
- no.8 EMW, 'ginger jar' rim with internal bead (type G3), Pit 20059, fill 20060
- no.9 YTW, jar with rim everted to wedge shape (type Yb). Pit 20059, fill 20060

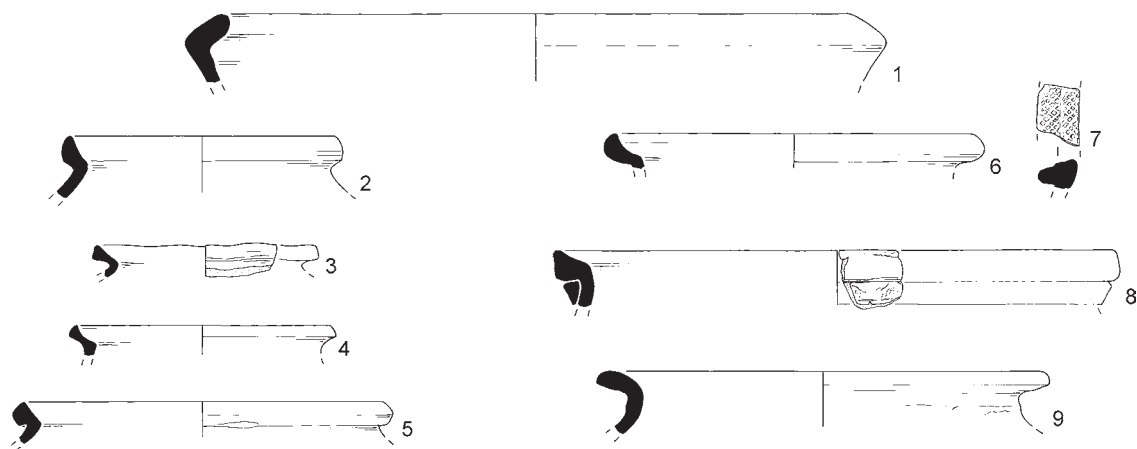


Figure 5.49 Pottery from Building 25 (22/155). Scale 1:4

Fig.5.40 on CD: Pits, Open Area 19 (G2/9)

- no.1 EMW, 'ginger jar' rim with plain rim and applied thumbed decoration (type G1), Pit 40291, 40230
- no.2 EMW, jar with everted rim (type J2b), pit 40355, fill 40354
- no.3 TTW, jar with rim everted to degenerate wedge shape (type AB14), Pit 40200, 40182
- no.4 TTW, jar with lid-seated, upright rim (type AB9), Pit 40200, 40182
- no.5 TTW, jar with lid-seated rim with parallel sides (type AB11), Pit 40200, 40182
- no.6 TTW, jar with everted rim with internal hollow, expanded to wedge shape (type AB13), Pit 40200, 40182
- no.7 TTW, jar with everted rim with internal hollow and developed external pendant (type AB15), Pit 40200, 40182
- no.8 YTW, jar with distinct neck/body join and rim everted to a point (type Ya), Pit 40200, 40206

Fig.5.41 on CD: Pit 22208, Open Area 19 (G22/147) (see Plate 5.15)

- no.1 TTW, jar with everted rim, sides expanded to a wedge shape (type AB6), fill 22288
- no.2 TTW, jar with everted rim with internal hollow, expanded to wedge shape (type AB13), fill 22288
- no.3 TTW, cooking pot with everted rim with internal hollow, expanded to degenerate wedge shape (type AB14), fill 22289
- no.4 TTW, storage jar with applied clay at rim (type AG4), fill 22289
- no.5 EMW, cooking pot with simple upright rim (type J2a), fill 22289

Fig.5.42 on CD: Pit 40320, Open Area 19 (G2/7)

- no.1 TTW, small cooking pot with plain, flared rim (type AA1), fill 40319
- no.2 TTW, small cooking pot rim with parallel or almost parallel sides (type AA10), fill 40319
- no.3 TTW, jar with everted rim, sides parallel or almost parallel (type AB5), fill 40319
- no.4 LMU, cooking pot with everted, rounded rim (type J2l), fill 40319

Fig.5.43 on CD: Pit 90284, Open Area 19 (G9/70)

- no.1 TTW (smooth variant), jar with plain, flared rim (type AB1), fill 90271
- no.2 TTW, jar with everted rim, sides expanded to a wedge shape (type AB6), fill 90272
- no.3 TTW, jar with everted rim with internal hollow, expanded to wedge shape (type AB13), fill 90272
- no.4 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90271
- no.5 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90271
- no.6 TTW (coarse variant), large jar with lid-seated rim with parallel sides (type AC11), fill 90272
- no.7 EMSW, jar with everted rim with internal hollow, expanded to degenerate wedge shape (type AB14), fill 90271

Fig.5.44: Pit 90441, Open Area 19 (G9/72)

- no.1 TTW, jar with plain, flared rim (type AB1), fill 90396
- no.2 TTW, jar with plain, flared rim (type AB1), fill 90396
- no.3 TTW, jar with plain, flared rim (type AB1), fill 90396
- no.4 TTW, jar with plain, flared rim (type AB1), fill 90396
- no.5 TTW, jar with everted rim, sides parallel or almost parallel (type AB5), fill 90395
- no.6 TTW, jar with everted rim, sides expanded to a wedge shape (type AB6), fill 90376
- no.7 TTW, jar with everted rim with internal hollow and tapering sides (type AB10), fill 90396
- no.8 TTW, jar with everted rim with internal hollow and tapering sides (type AB10), fill 90396
- no.9 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90396
- no.10 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90396
- no.11 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90396
- no.12 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90376
- no.13 TTW, distorted jar with lid-seated rim with parallel sides (type AB11), fill 90395

- no.14 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90395
- no.15 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90396
- no.16 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 90396
- no.17 TTW, jar with everted rim with internal hollow, expanded to wedge shape (type AB13), fill 90396
- no.18 TTW, jar with everted rim with internal hollow, expanded to wedge shape (type AB13), fill 90396
- no.19 TTW, jar with everted rim with internal hollow, expanded to degenerate wedge shape (type AB14), fill 90396
- no.20 TTW, slightly distorted jar with everted rim with internal hollow, expanded to degenerate wedge shape (type AB14), fill 90396
- no.21 TTW, jar with everted rim with internal hollow and rounded edges (type AB16), fill 90385
- no.22 TTW, jar with everted rim with internal hollow and rounded edges (type AB16), fill 90396
- no.23 TTW, bowl or lamp rim with straight sides and plain rim (type BB2), fill 90395
- no.24 TTW, bowl with straight sides and expanding rim (type BB4), fill 90433
- no.25 EMW, small jar with simple everted rim (type J1b), fill 90433

Period 2.2

Fig.5.45 on CD: ?Castle Fee Marker, Ditch 3: Weathering and erosion (G8/12)

- no.1 TTW, multi-handled storage jar with everted rim, sides parallel or almost parallel and applied clay around rim (type AG6), fill 80384
- no.2 TTW, 'ginger jar' with slightly upright rim (type G2), fill 80810

Fig.5.46 on CD: Ditch 5: Final fill/refuse dumping (G5/18)

- no.1 EMW, 'ginger jar' rim (type 1) with applied thumbed strip at rim, fill 49141
- no.2 EMW, small jar with upright rim (type J1a), fill 49245
- no.3 EMW, small jar with simple, everted rim (type J1b), fill 49141
- no.4 EMW, jar with simple everted rim (type J2b), fill 49245
- no.5 Pingsdorf-type ware, pitcher handle, fill 49245
- no.6 LMU, jug rim, fill 49245

Fig.5.47a: Ditch 7: Refuse fills (G2/2)

- no.1 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 20027
- no.2 EMW, bowl with expanded rim, fill 20027
- no.3 EMW, 'ginger jar' with applied thumbed decoration folded from plain rim, fill 20027
- no.4 YTW, jar with distinct neck/body join (here broken at join) and rim everted to a point (type Ya), fill 20027

Fig.5.47b: Ditch 8: Refuse fills (G2/2)

- no.5 TTW, jar with plain, flared rim (type AB1), fill 20029
- no.6 TTW, jar with upright rim with internal hollow (type AB9), fill 20008
- no.7 TTW, jar with everted rim with internal hollow, expanded to degenerate wedge shape (type AB14), fill 20029
- no.8 TTW (oxidised), jar with everted rim with internal hollow and developed external pendant (type AB15), fill 20029
- no.9 TTW, jar with everted rim with internal hollow and rounded edges (type AB16), fill 20029
- no.10 EMW, small cooking pot with everted, tapering rim (type J1c), fill 20029
- no.11 EMW, small cooking pot with simple, everted rim (type J1b), fill 20029
- no.12 EMW, 'ginger jar' with plain rim (type G1) with stamped decoration, fill 20029
- no.13 EMW, 'ginger jar' with plain rim (type G1), fill 20029

Fig.5.48 on CD: Pit 70030, Open Area 21 (G7/8)

- no.1 TTW, pedestal lamp, fill 70120

Fig.5.49: Building 25: destruction (G22/155)

- no.1 NEOT bowl with inturned rim, post-hole 22271, fill 22270
- no.2 TTW jar, with lid-seated rim with triangular section (type AB7), post-hole 22271, fill 22270

- no.3 TTW jar with distorted everted rim, expanded to wedge shape (type AB13), post-hole 22271, fill 22270
- no.4 TTW jar with everted, lid-seated rim with expanded rounded rim (type AB16), post-hole 22414, fill 22438
- no.5 TTW jar with everted, lid-seated rim with expanded rounded rim (type AB16), post-hole 22271, fill 22270
- no.6 TTW jar with unusual rim, lid-seated and rounded, demolition debris 22305
- no.7 TTW bowl with curved profile and expanded rim with rouletted decoration (type BB7), post-hole 22405, fill 22442
- no.8 TTW non-handled jar with upright, lid-seated rim (type AF6), demolition debris 22275
- no.9 EMW large jar with simple everted rim (type J2b), demolition debris 22275

Implements

Knives

Copper alloy and iron knife
by Alison Goodall
(Fig.5.50)

A late 11th- to early 12th-century fill of Ditch 7 contained a knife handle (SF5569) apparently made up of alternating plates of copper alloy and iron with an iron tang. This form of knife handle is found in the 11th to 13th centuries (I.H. Goodall 1980, 90).

SF5569 Circular end-cap from a knife handle, now very corroded but apparently made up of sandwiched layers of iron and copper alloy, with the remains of a rectangular-section iron tang on one side.
20027, fill of ditch 20041, Period 2.2, G2/2

Iron knives
by Quita Mould
(Fig.5.50)

Six other iron knives or knife fragments were recovered from Period 2 deposits. A small knife (SF5762) and a blade from a much larger example (SF5924) have angled

backs rising upwards from the tang, a pre-Conquest type (Ottaway's subtype A2, Rogers 1993, 1273). Although commonly found in Late Saxon contexts, knives of this type also occur in small numbers later — see for example the three knives from later 12th-century deposits in London (Cowgill *et al* 1987, 78 and fig.54, 4–6). These knives, therefore, may not necessarily be residual. The other knives found have narrow blades; one (SF5912) has a distinctly worn cutting edge, a feature commonly found on knives dating to the 9th to 11th centuries (Ottaway 1992, 574).

SF5762 Small knife with narrow blade with angled back and straight edge, wide tang with sloping shoulder. Weld lines visible in x-radiograph. L 93mm w 12mm
70026, fill of pit 70030, Period 2.2, G7/8

SF5912 Narrow knife with straight back and worn edge with centrally-placed tang, broken before the tip. L 87mm w 16mm.
80471, organic layer beneath south bailey rampart, Period 2.1, G8/8

SF5924 Knife blade with angled back rising before it drops to meet the edge at a pointed tip. L 121mm w 25mm
80471, organic layer beneath south bailey rampart, Period 2.1, G8/8

Iron shears
by Quita Mould
(Fig.5.50)

A blade broken from a pair of longer slender shears (SF5798/5798.01) was found in a deposit of late 11th-century date. Such shears were probably used in cutting cloth or shearing sheep.

SF5798/5798.1 Long narrow blade with straight back and edge meeting at a central tip, concave choil and rectangular-sectioned arm with remains of broken spring. Blade L: 118mm w 15mm, total L: c.212mm
80104, organic layers beneath south bailey rampart, Period 2.1, G8/8

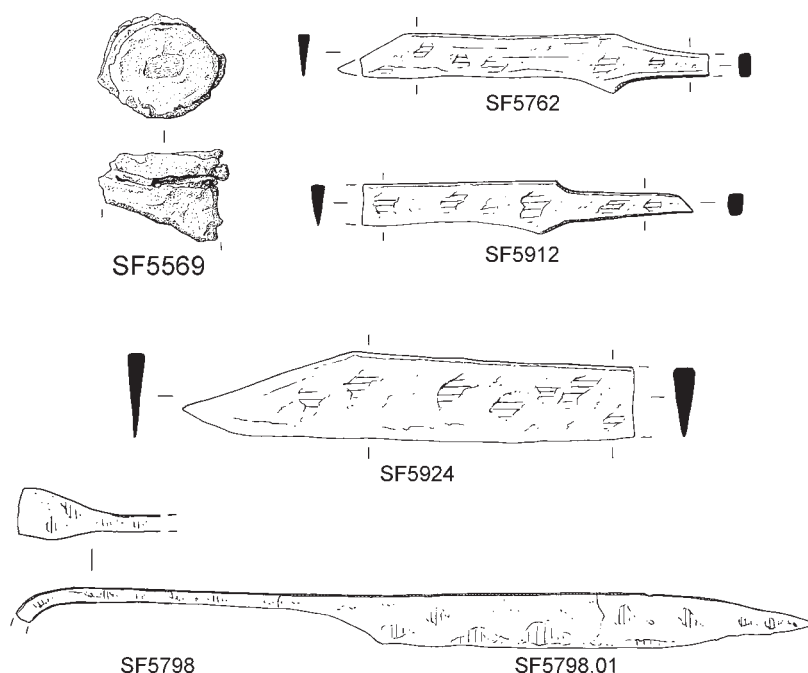


Figure 5.50 Iron and copper alloy knife cap-end (SF5569). Iron knives (SF5762, 5912 & 5924). Iron shears (SF5798 & 5798.01). Scale 1:2

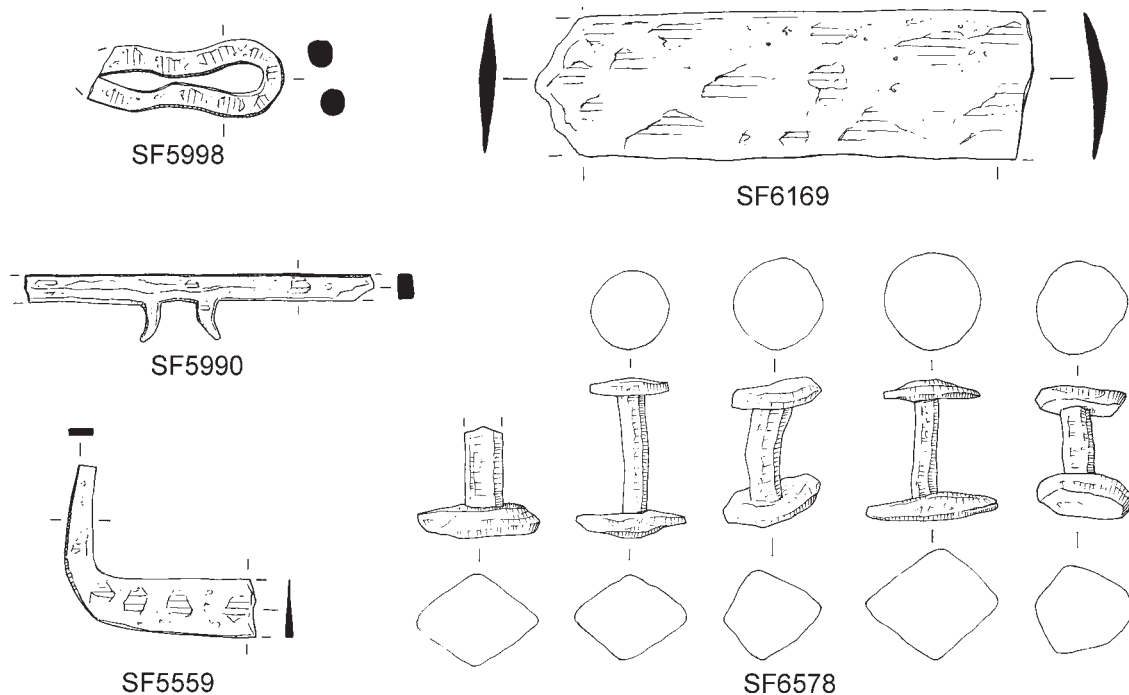


Figure 5.51 Ironwork: chain link (SF5998); strap (SF6169); joiner's dog (SF5559); clench bolts (SF6578); lock bolt (SF5990). Scale 1:2

Miscellaneous Fittings

Iron chains

by Quita Mould
(Fig.5.51)

A figure-of-eight chain link may have served as a simple cheek piece from horse harness, a ring handle or other point of attachment.

SF5998 Chain link figure-of-eight shaped with round section L: 54mm
80471, organic layers beneath south bailey rampart, Period 2.1, G 8/8

Iron straps and bindings

by Quita Mould
(Fig.5.51)

A fragment of wide strap with a dished profile (SF6169) may be broken from the iron tyre of a wheel. A fragment of nailed binding (SF6564.01), a small strap fragment (SF5989) and nailed sheet (SF5860) were also found (not illustrated).

SF6169 Strap, straight-sided with concave curved section, slightly thickened in the centre and broken at each end. L: 124mm, W: 37mm.
80471, organic layer beneath south bailey rampart, Period 2.1, G8/8

Buildings

Structural Ironwork

by Quita Mould
(Fig.5.51)

Joiner's dog

A large joiner's dog (SF5559) for joining timbers was found in a refuse pit associated with late 11th-century pottery. A staple (SF5885, not illustrated) of similar form but much smaller in size with an arm height of just 10mm was also found in a Period 2 context. It may have been used to repair a wooden bowl.

SF5559 Joiner's dog, flat sectioned strip with upstanding arm at one end, other broken. L 52mm, W 15mm, Ht 28mm.
20060, fill of pit 20059, Period 2.1, G2/5

Clench bolts

A total of 60 clench bolts were found in all periods at the site, of which 42 (70%) were deposited in a large, possibly timber-lidded, pit dating to the 11–12th-century in Area 22 and may have derived from the lid itself (pit 22206, see illustrated examples SF6578). The rest were scattered in small numbers throughout the excavations occurring in contexts dating from the 11th century to the 19th century. Clench bolts were used in the construction of ledged and boarded doors and shutters and in shipbuilding. The majority comprised a round, flat head at one end with a lozenge-shaped or square rove at the other, occasional examples had round heads at each end (e.g. SF476, not illustrated). The length of the shank of the clench bolts from the Norman pit indicated they had been fastened in timber of c. 1½ inches in thickness (length varying from 28–32mm).

SF6578 Clench bolt with round head and lozenge-shaped rove separated by a central shank. Shank L 30mm, head 23mm rove 34mm
22192, fill of pit 22206, Period 2.1, G22/139

Nails

A total of 73 timber nails including 47 broken nail shanks were recovered from Period 2 deposits. The vast majority were flat-headed nails of similar size to those found in Period 1. In addition, a large timber stud with a domed head was found in Ditch 8 (fill 20156, Period 2.2).

Locks and Keys

by Quita Mould
(Fig.5.51)

A sliding iron bolt (SF5990) from a fixed lock opened with a rotary key was recovered from a pit.

SF5990 Lock-bolt, rectangular-sectioned shank with pair of projecting teeth in the centre. L 92mm teeth ht 10mm
40182, fill of pit 40200, Period 2.1, G2/9

Ceramic Building Materials

by Irena Lentowicz and Richard Kemp (identification)

A small assemblage of ceramic building material was recovered from this period, 428 fragments weighing 10.976kg and accounting for 4.8% of the Castle Mall assemblage. Daub and fired clay Fabrics 136 and 129 continue to dominate the assemblage, although the proportions recovered are relatively equal. At Golden Ball Street, only 4 intrusive fragments weighing 0.116kg were recovered.

Period 2.1

Almost two thirds of the period assemblage came from this sub-period, 228 fragments weighing 4.998kg (45%). Fabric 136 dominated the assemblage by number of fragments, with Roman CBM and medieval tile more numerous by weight than the other fired clay/daub Fabric 129.

A large group was recovered from layers beneath the later south bailey rampart, of which the largest assemblage came from Area 8 (G8/8, 2.691kg). Contemporary material included large fragments of daub Fabric 136 with daub Fabric 129 represented by smaller fragments. However, the assemblage was dominated by Roman tegula, intrusive roof tile and brick fragments. Material from similar deposits in Area 6 (G6/18; 0.051kg) also included both daub Fabrics 129 and 136; some of the former were recorded as lime washed and at least one fragment of the latter was burnt. Only one comparable group contained daub Fabric 136 (G1/13, part, 0.070kg). The remaining groups all included daub Fabric 129 (G5/28, 0.095kg which also included intrusive medieval brick; and G5/35, 0.003kg) or daub Fabric 129 and Roman material (G5/35, 0.030kg; G5/49, 0.015kg).

Almost 0.5kg of material was recovered from secondary fills of Hollow 1 (G7/5, 0.494kg). This included both daub Fabrics 129 and 136, with the latter being more common, as well as fired clay Fabric 300 and Roman tile fragments. The remainder of the assemblage came largely from pit fills.

Period 2.2

A total of 200 fragments of CBM weighing 5.978kg (55%) was recovered from contexts assigned to this sub-period. In contrast to the preceding sub-period, Fabric 129 dominated the assemblage with Fabric 136 being much less common.

A fairly large assemblage came from fills of Ditches 7 and 8 within the early castle bailey (G2/2, 2.319kg). The majority of this was daub Fabric 136, some fragments with wattle and reed impressions, with only one large fragment of daub Fabric 129 which had straw/reed impressions recorded. Both ceramic Fabric 136 and daub Fabric 129 were recovered from a ditch terminal (G9/46, 0.002kg) but this assemblage was very fragmentary. Refuse dumping into Ditch 5 (G5/15) produced a larger assemblage with contained only daub Fabric 129 and ceramic Fabric 300 along with medieval roof tile fragments (G5/18, 0.146kg). All of the material from Golden Ball Street came from fills of the ?Fee

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	48	0.450	4.1
Roman	26	2.411	21.9
Fabric 129	122	3.132	28.5
Fabric 136	154	3.900	35.5
Fabric 300	54	0.040	0.3
Medieval	16	0.483	4.4
Post medieval	8	0.560	5.1
Total	428	10.976	

Table 5.11 Period 2 — Total number of fragments and weight of CBM at Castle Mall by fabric

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	42	0.429	8.5
Roman	17	2.377	47.5
Fabric 129	37	0.103	2.0
Fabric 136	112	1.635	32.7
Fabric 300	10	0.014	0.2
Medieval	8	0.325	6.5
Post medieval	2	0.115	2.3
Total	228	4.998	

Table 5.12 Total number of fragments and weight of CBM at Castle Mall by fabric in Period 2.1

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	6	0.021	0.3
Roman	9	0.034	0.5
Fabric 129	85	3.029	50.6
Fabric 136	42	2.265	37.8
Fabric 300	44	0.026	0.4
Medieval	8	0.158	2.6
Post medieval	6	0.445	7.4
Total	200	5.978	

Table 5.13 Total number of fragments and weight of CBM at Castle Mall by fabric in Period 2.2

ditch (GBS G51) and included intrusive medieval and post-medieval brick fragments.

Most of the material was recovered from pits. Nearly 50% of the sub-period assemblage was recovered from a single feature, pit 70137 (G7/8 part, 2.948kg). This assemblage was dominated by daub Fabric 129 much of which was recorded with surface skimming and wattle/reed impressions, with the only other CBM represented by a fragment of Roman brick.

Discussion

A much smaller assemblage of ceramic building material was recovered from Period 2 than from Late Saxon deposits. A large assemblage might have been expected, given that that the immediate post-Conquest period was one of much land use change with the demolition of structures for the establishment of the castle. Much of the material came from ditch fills and Fabric 129 was recovered in more equal amounts alongside Fabric 136; by Period 2.2 Fabric 129 is more common than Fabric

136. The early castle structures are likely to have been constructed of similar materials to their pre-Conquest antecedents (timber, thatch and clay). Further comments are given in Chapter 13.

Miscellaneous

Stone object

No parallel has been found for a stone finial or gaming piece (SF5509, not illustrated) from fill 20044 in Ditch 7 (Period 2.2, G2/1).

Occupations, Industry and Crafts

Metalworking

Introduction

Despite the fact that activities within the new castle bailey included evidence for a range of small-scale craft and 'industrial' activities, little metalworking waste was recovered from these deposits (4.716kg; 3.5% of the total site assemblage). This material was roughly equally divided between the two subperiods (2.452kg and 2.264kg respectively).

Chronological and spatial distribution of metalworking debris

by Irena Lentowicz and Justine Bayley (identification)

Period 2.1

Debris was found in deposits and pits immediately post-dating the Conquest within the early Castle Fee/south bailey (Open Area 19), including small amounts of ferrous and non-ferrous scrap. Smithing slag, hearth lining, fuel ash slag and hearth bottoms came from extensive spreads of dark organic material sealing earlier deposits within Hollow 1 and underlying the south bailey rampart (G6/18, 8/8 and 7/5). A crucible used for non-ferrous metalworking, associated with copper alloy spillage identified as leaded copper, were also found within these layers, both in Area 8 (see Mortimer below). Pit 70101 (G7/6) in the same area contained smithing slag and attached hearth lining as well as iron pan. Pitting at the centre and to the east of the bailey also contained metalworking debris. This included fuel ash and smithing slag from pit 20022 (G2/9, part) and smithing slag from pits 20059 (G2/5, part) and 20098 (G2/42). A hearth bottom was recovered from pit 22206 (G22/139). Copper alloy spillage was identified from pit 22198 (G22/148) and cinder from pit 22152 (G22/152).

Period 2.2

Metalworking waste was recovered from initial fills of the Castle Fee ditch (G9/46, Ditch 3). Smithing slag and iron pan came from the primary silting of the two crescentic ditches, Ditches 7 and 8 (G2/1 and 2/2), the latter of which also contained evidence for non-ferrous casting (see Goodall below). Debris from ground levelling activities above Hollow 1 and consolidation within the south bailey included smithing slag, hearth bottom and tap slag from dumping (G8/18). A possible area of metalworking activity was identified in the newly sub-divided south bailey (Open Area 20). A hearth bottom was recovered from a post-hole of a possible structure (G6/28). An adjacent fire pit 60023 (G6/7) may suggest *in situ* craft/industrial activity within the early defended area. Tap slag and hearth bottom was recorded from it while hearth lining, smithing slag and fuel ash slag came from nearby pit 60130 (G6/19).

XRF analysis

by Catherine Mortimer

Analysis of copper alloy spillage and fuel ash slag from layer 80471 (G8/8, Period 2.1) beneath the later south bailey rampart indicated the presence of leaded copper. A fragment of fired clay/crucible with external tool marks

from layer 80674 (in the same group) yielded a trace of copper alloy.

Ferrous and non-ferrous scrap and associated evidence by Quita Mould (ferrous), Alison Goodall (copper alloy) and Elizabeth Shepherd Popescu (lead)

A very small quantity of formless fragments (x 12), apparently debris from ironworking, was found in Period 2 contexts. A piece of bar iron (SF6143, fill 70143, pit 70144) and a strip were also recovered. A number of layers and pits within the early south bailey (Period 2.1) contained fragments and off-cuts of copper alloy sheet (x 17; e.g. SF5625, layer 60071; SF5693, pit 40200 and SF5986, pit 40291). Debris from non-ferrous casting came from fills of Ditch 8 (Period 2.2, SF218, 219, 220 and 222) and may hint at 'industrial' activity. A small group of leadworking waste (sheets and spillage, x 8) was recovered, largely from deposits assigned to Period 2.2. It derived from features in Areas 2, 22 and 49.

Discussion and conclusions

by Elizabeth Shepherd Popescu

Although metalworking debris was recorded within the early Castle Fee/south bailey, related activity was considerably less than in the pre-Conquest period. In similar circumstances at Winchester, construction of the royal castle appears to have halted metalworking activity in the area (Biddle 1990, 99). Scant evidence of both ferrous and non-ferrous metalworking came from the Norwich south bailey (Open Areas 19 and 20). Although this suggests the production of objects for the castle and its garrison, the small quantities recovered indicate small-scale and possibly sporadic metalworking rather than the transition to permanent smelting and smithing required by a high status site. A small concentration of horseshoe nails and horseshoes in one part of the site (Area 49) has been tentatively identified as indicating the presence of a smithy nearby (see Mould below), although the quantities of material are not large. At least one small fire pit was recorded within the early bailey (Area 6) and could suggest another focus of metalworking activity. It was fuelled in part by crop-processing waste (Murphy, Chapter 5.IV).

Textile Manufacture and Needlework

Iron fibre processing spikes

by Quita Mould

A total of six fibre processing spikes were recovered from Conquest deposits (none illustrated). Three came from organic deposits beneath the south bailey rampart (SF1060 and SF5862, 70080; SF6080, 80471, Period 2.1), two came from pits (SF6649, pit 40200; SF6297, pit 91048, Period 2.1) and the other from Ditch 7 (SF5687.01, Period 2).

Bone spindle whorls

by Julia Huddle

Two bone hemispherical spindle whorls were recovered from Conquest deposits, one from a pit fill (SF6800, pit 49251=49064, Period 2.1) and the other from a fill of Ditch 7 (SF5727, Period 2.2). Both were made from the heads of cow femurs. For a discussion of similar simply-made whorls, see Chapter 4.III, where the majority of stratified examples were recovered.

Leather- or Woodworking

Iron awl

by Quita Mould

(Fig.5.52)

An awl with the point and tang separated by a slight shoulder was recovered from a pit fill. A small tool of this type may have been used in leatherworking or wood-working.

SF5671 Awl with slight shoulder tapering to a pointed tip at each end.
L 56mm max w 13mm
40182, fill of pit 40200, Period 2.1, G2/9

Antlerworking

by Julia Huddle

(Fig.5.52)

Although only a single piece of secondary waste was recovered from Conquest period deposits, identified as an offcut from a composite comb (SF229), the primary waste recovered is likely to be the result of comb manufacture on or near the site (see 'Antler Combs' above). Until the Conquest, composite combs accounted for the majority of the antler industry (further discussion is given in Chapters 4.III and 13). The two pieces of primary

waste found in Period 2 contexts consisted of sawn and/or split red deer antler tine and/or beam (SF6591 and 5830, latter not illustrated). Another piece of sawn fallow antler beam came from an early fill of the St John's cemetery boundary ditch at Golden Ball Street (SF248, Period 2.1, not illustrated). The significance of the presence of fallow deer antlers is discussed by Albarella *et al* in Chapter 4.IV and Part III.

SF229 Worked antler. Antler strip, of plano-convex section, possible offcut from a comb connecting plate. L.35mm. Finished with a ?file
20168, fill of pit 20167, Period 2.1, G2/5

SF6591 Sawn antler. Segment of sawn and split antler beam or tine. saw trace measures 1mm. red deer antler.
70080, fill of Hollow 1 (70072), Period 2.1, G7/5

Bone- and Hornworking

by Julia Huddle, with Umberto Albarella, Mark Beech and Jacqui Mulville

(Fig.5.52, Plate 5.17)

A total of 202 bone strip fragments was recovered from the Castle Mall site indicating the manufacture of horn and bone combs. They derived exclusively from Periods 2 (x 192; 95%) and 6 (x 10; 5%). By far the majority of the strips from Period 2 contexts were from the fills

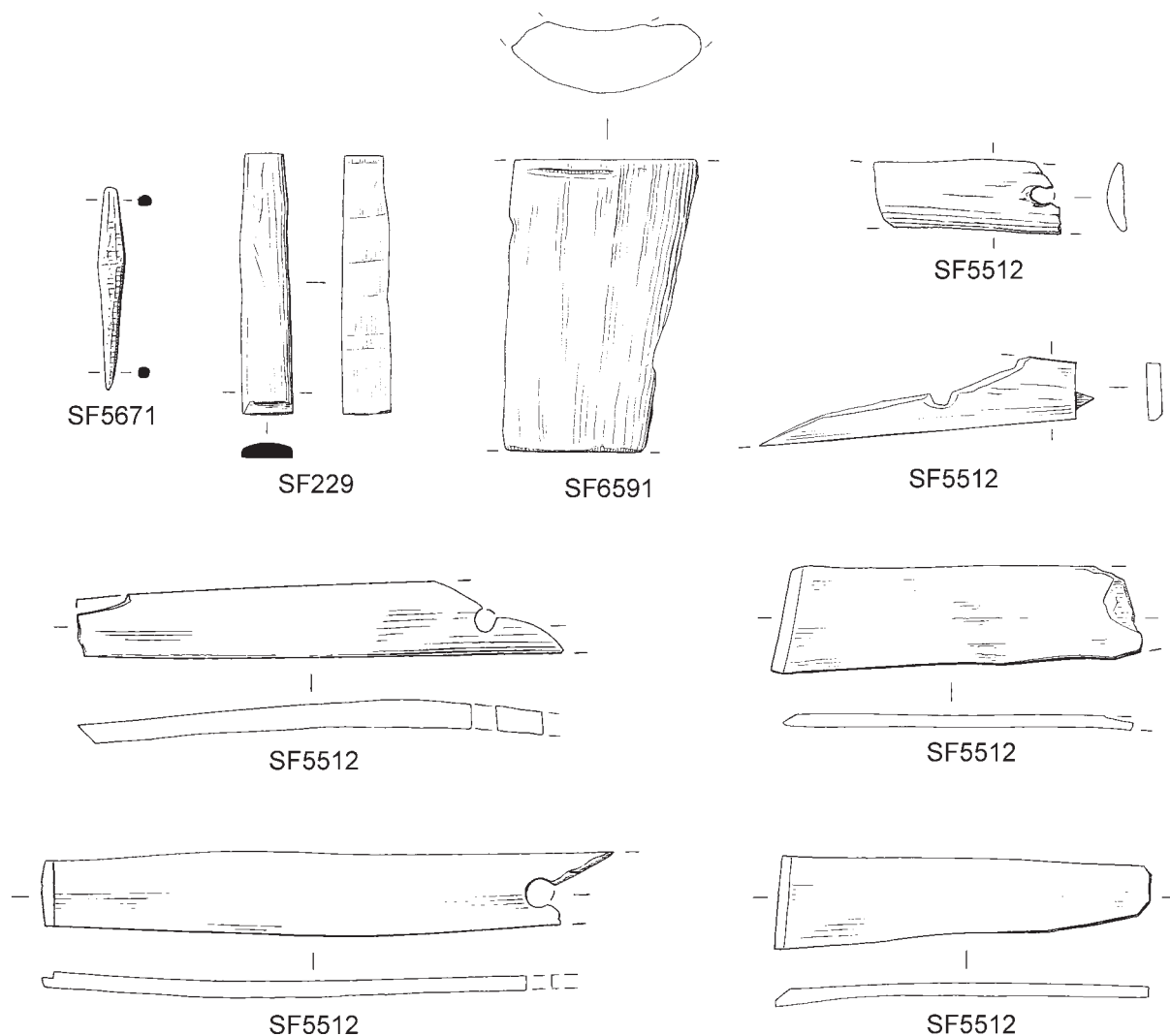


Figure 5.52 Iron awl (SF5671). Scale 1:2. Antlerworking waste (SF229 & 6591). Bone strips (SF5512). Scale 1:1

Feature	Group	Period	SF no.	No. strips	Total no. strips	No. horn cores
pit 20059	G2/5	2.1	5511	12	158 (5 perf)	11 cow
			5512	124 (4 perf)		1 goat
			5563	15		
			5570	7 (1 perf.)		
pit 20070	G2/5	2.1	5510	21 (3 perf.)	22 (3 perf)	
			5513	1		
pit 22152	G22/151	2.1	6593	1	1	
Ditch 7				0	0	1 goat
Ditch 8	G2/1 and G2/2	2.2	402	2	11 (4 perf)	6 cow
			407	5 (2 perf.)		
			409	1 perf.		
			479	1		
			483	1		
			484	1 perf.		
					192 (12 perf.)	19

Table 5.14 Bone strips from Period 2 deposits, showing associated horncores (perf. = perforated)

of two refuse pits within the south bailey (pits 20059 and 20070; x 180, 89%; Table 5.14). Strips were also recovered from later fills of one of the ditches defending a bridge landing which cut into these pits (G2/2, Period 2.2) and sawn horn cores were found in association. Two similar rib fragments were recovered from a Period 2 fill of the ?Castle Fee ditch at the Golden Ball Street site (SF247, not illustrated).

The bone strips are sawn and split sections of cattle sized rib, which have had the exposed cancellous (spongy) tissue on the back flattened, presumably with a file. The cut ends are sawn and finally snapped off, often leaving a small burr along with lower edge. A small percentage (x 12) are perforated and these pieces are all broken on or near the holes and were presumably discarded as a result (see examples in Fig.5.52, SF5512). The other fragments are mainly short and many taper towards one end. These too are likely to be offcuts. The bone strips are, apart from the lack of iron rivets and their incompleteness, identically fashioned to two examples recovered from Late Saxon deposits at the Castle Mall site (SF1079, Period 1.2 and SF6630, Period 1.4, Chapter 4.III) and another found residually (SF6151, Period 5.1, Chapter 8.III).

This assemblage can be compared to 600 bone strips recovered from Late Saxon deposits at Thetford (Rogerson and Dallas 1984, 190–2; Dallas 1993, 158, fig. 159, no. 5), and several from Norwich (Margeson 1993, 65, fig. 413). As noted above, such pieces appear to be the waste products from the manufacture of bone side plates for horn combs, in which a bone strip is attached either side of the single-piece horn comb by either two or three widely spaced iron rivets.

Further evidence for hornworking comes from the assemblage of 32 chopped, cut or sawn horn cores which was recovered Period 2 deposits, deriving from cattle (x 24) and sheep/goats (x 8). A remarkable group of four sheep skulls from which the horns had been removed came from pit 40200 (Plate 5.17). Twelve cattle horn cores with cut/chop marks came from the same pit fill as the majority of the bone strips described above (pit 20059). The occurrence within the same pit of the horn cores and the large group of bone strips, clearly testifies to the manufacture of horn combs with bone side-plates during the late 11th century. Cut marks relating to the removal of the horn sheath from the horn core were noted

in a few sheep/goat horncores also found in Period 2 deposits (Part III, Plate 14). Further comments on bone- and hornworking are given in Chapter 13 and Part III.

SF5512 Incomplete **bone strips** x 124; four are perforated on or near a broken edge. Mammal ribs. A selection (x 6) is illustrated. 20060, fill of pit 20059, Period 2.1, G2/5

Whetstones

by J.M. Mills and D.T. Moore
(Fig.5.53)

Three fragments of whetstone, two of which are illustrated, were recovered from deposits dating to the Conquest (two from organic deposits pre-dating the south bailey rampart (SF5917 and 5938) and the third from a pit fill (SF5592)). All three were made from the ubiquitous medieval Eidsborg Schist hone which is known to come from Telemark, southern Norway (Moore 1978 and 1983; Mitchell *et al* 1984; Crosby and Mitchell 1987).

SF5592 **Whetstone** fragment, broken at both ends, sub-oval cross-section. Pierced for suspension. The hole is very close to one of the broken ends, and may be a re-used/ re-pierced fragment. 40 x 23 x 50mm. Norwegian ragstone. 20056, fill of pit 20070, Period 2.1, G2/5

SF5917 **Whetstone**. Heavily worn rectangular-sectioned whetstone, broken at one end. Each face undulates markedly due to wear, and each face has one groove worn in it — three of these are U-shaped; the fourth V-shaped. even the irregular original end is worn smooth. This item must have seen much use over a considerable period. 160 x 35 x 30mm. Norwegian ragstone. 80471, organic layers beneath south bailey rampart, Period 2.1, G8/8

Querns

by David Buckley

A total of six fragments of lava quern were recovered from Conquest deposits, of which three were from organic layers pre-dating the construction of the south bailey rampart (SF6003, 6015 and 6522, Period 2.1), two from pit fills (SF5907, pit 20320; SF482, 20167, Period 2.1) and another from a fill of Ditch 8 (SF480, Period 2.2). None are worthy of illustration.

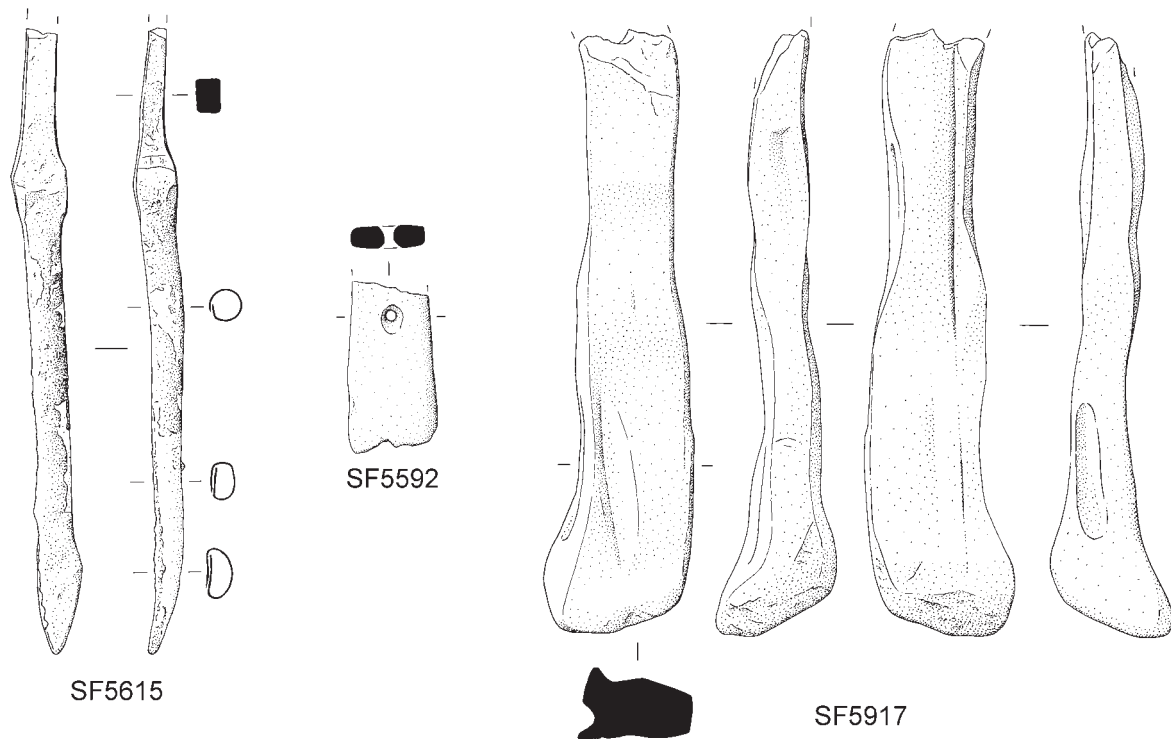


Figure 5.53 Copper alloy craft tool (SF5615). Whetstones (SF5592 & 5917). Scale 1:2

Miscellaneous Tools

Bone ?tool

by Julia Huddle

A possible bone tool came from a Period 2.1 fill of the St John's Cemetery boundary ditch (Ditch 2, fill 513) at the Golden Ball Street site (GBS SF246, not illustrated). This cattle radius had had its proximal end chopped and levelled with the inner area cut away and smoothed out. The distal end had been chopped to form a point.

Copper alloy ?tool

by Alison Goodall

(Fig.5.53)

A copper alloy ?tool (SF5615) was recovered from a soil horizon beneath the later south bailey rampart. This appears to be a craft tool of some sort although how it functioned is uncertain. The tang and shoulders have a glossy black surface coating, but it is likely that this would originally have been hidden by a handle. The purpose of the gilded cylinder into which it has been inserted is obscure.

SF5615 ?Tool with broken solid rectangular-section tang, swelling onto a shoulder. The tang and shoulder have a glossy black surface coating. Below the shoulder, the shank begins with a solid circular-section piece tapering to a point, which is inserted into a hollow rod of varying section, made of sheet rolled longitudinally and thickly gilded over the seam. The tip expands and curves slightly to form a pointed leaf-shaped scoop, with a series of transverse ridges across the back. 60071, soil horizon, Period 2.1, G6/18

Iron implement

by Quita Mould

A fragment probably broken from an open-socketed iron implement was found in a pit fill (SF5597, not illustrated; pit 20095, G2/41, Period 2.1).

Commercial Activity

Coins

by John Davies

No coins of this date were recovered from the site. Two residual Roman coins (SF1025 and SF406) were recovered from a pit and a ditch fill (Ditch 8; see Davies, Chapter 3). A post-medieval coin, two jettons and a token were intrusive in their contexts.

Diversions

Games and Pastimes

Buzz-bones

by Julia Huddle

(Fig.5.54)

Four perforated pig metapodia were found, of which two are from deposits assigned to Period 2 (both from different fills of the same pit, SF5507 and SF5517, latter not illustrated). The two other examples, of Late Saxon date, are detailed alongside further discussion on similar items in Chapter 4.III.

SF5507 Buzz-bone. Perforated pig metatarsal (unfused). 20056, fill of pit 20070, Period 2.1, G2/5

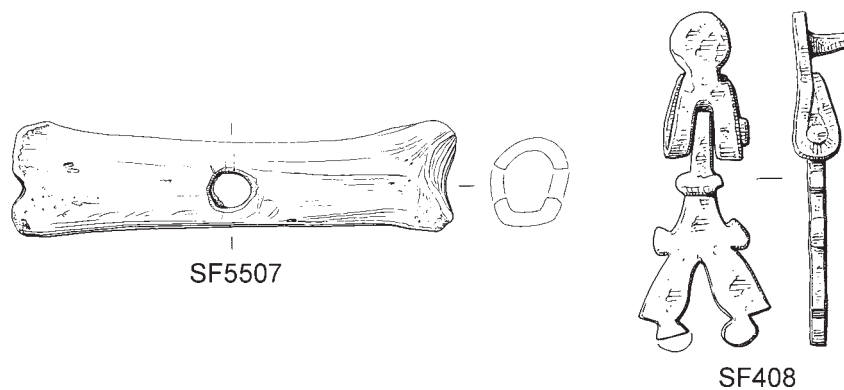


Figure 5.54 Buzz-bone (SF5507). Iron horse harness pendant (SF408). Scale 1:1

Horse Equipment

Iron horse harness pendant

by Quita Mould and Steven Ashley
(Fig.5.54)

A rare 12th-century decorative example of unusual form, of a class of object normally found in copper alloy, was recovered from Ditch 8 in the south bailey (the type, however, is probably only rare because it is not usually recognised). During a recent major survey of medieval armorial horse furniture in Norfolk (Ashley 2002) only one other possible specimen of an iron (shield-shaped) harness pendant came to light (SMR 31559 Sporle with Palgrave). A national survey of both armorial and non-armorial horse furniture has failed to discover any other examples (Griffiths pers. comm.). It is, however, comparable with a pendant fitting of tinned iron (756660) from a later 13th-century deposit in the Lesser Hall at Launceston Castle, Cornwall (Mould in Saunders and Vince, in prep.).

A horse harness mount (SF5826, Period 2.2) is of post-medieval date and therefore intrusive in its Norman context. It is discussed and illustrated in Chapter 10.III.

SF408 Iron horse harness pendant comprising a hinged stud suspending a bifurcated pendant with knobbed finials with non-ferrous metal coating. L 44mm w 18mm. 20149, fill of ditch 20129, Period 2.2, G2/2

Iron horseshoes and horseshoe nails

by Quita Mould

Thirteen horseshoes were recovered from Period 2 deposits, most from pits assigned to Period 2.1 with four examples from Period 2.2 fills of Ditches 7 and 8. A single fragment of a horseshoe of Clark's type 1 (1995, 85–6) was found in Ditch 8 (SF226, not illustrated). The remainder were wavy-edged shoes with countersunk holes of Clark's type 2, the majority (x 8) having round nailholes of Clark's type 2A (1995, 85). A single example (SF6561, not illustrated) with rectangular nailholes (Clark's type 2B) came from a plank-lined pit (22099=22064). The dating of the horseshoes at Castle Mall tallies with that of the London material (Clark 1995, 91–7).

Twenty-three fiddlekey nails used to secure type 2 horseshoes were found in Period 2 contexts. Half were recovered from features in Area 49 and may reflect either the amount of traffic crossing the castle bridge or may

— just possibly — hint at the presence of a farrier in the vicinity.

IV. ZOOLOGICAL AND BOTANICAL EVIDENCE

Mammal and Bird Bone

by Umberto Albarella, Mark Beech and Jacqui Mulville
(Plates 5.17–5.19)

Assemblage Summary

A total assemblage of 990.5 mammal, bird and amphibian bones and teeth (NISP) was hand collected from early Norman deposits at the Castle Mall site, with an additional 123 bones from Site Riddled Samples (SRS) and 109 from Bulk Samples (BS). A further 37 bones and teeth (NISP) were identified at the Golden Ball Street site. The range of taxa recorded at the Castle Mall site is indicated in Table 5.15. Full details of the mammal and avian bone assemblages from both sites are given in Part III.

Status

The presence of a royal castle in the late 11th to 12th century (Periods 2 and 3) might lead to the expectation that evidence of a high status diet might be found. In fact, this was not the case and the typical high status animals such as deer and wild birds, are as rare during the early castle phases as they are in earlier and later times. Continuity, rather than change, could be observed in the transition from Late Saxon to Norman (Periods 1 and 2). Thus it appears that the excavated features, even if related to the castle, did not contain refuse from royal banquets. This is not surprising as visits by the King were very occasional and may have left traces in other areas of the castle, untouched by the excavation. The findings from the plant remains are consistent with the animal bone results; no exotic species or any other evidence of high status was observed (Murphy, below).

Deer bones are generally rare at the Castle Mall site, contrasting with the high percentage of deer bones at many castles (see Part III). Venison consumption was associated with high status and deer hunting was a well known privilege of the aristocracy. The castle refuse may not necessarily, however, have been derived from high status meals and royal visits to Norwich castle were few.

<i>Taxa</i>	<i>Hand collected</i>	<i>SRS</i>	<i>BS</i>	<i>Total</i>
Cattle (<i>Bos taurus</i>)	374	28.5	11	413.5
Sheep/goat (<i>Ovis/Capra</i>)	165	21.5	22	208.5
sheep (<i>Ovis aries</i>)	(44)	(5)	(5)	(54)
goat (<i>Capra hircus</i>)	(2*)	(+)	-	(2)
goat?	(1)	-	(1)	(2)
Pig (<i>Sus domesticus</i>)	181	42.5	27.5	251
Equid (<i>Equus</i> sp.)	27.5	2	1	30.5
Dog (<i>Canis familiaris</i>)	67*	3	6	76
Cat (<i>Felis catus</i>)	40.5*	2.5	2.5	45.5
Red deer (<i>Cervus elaphus</i>)	+	-	-	+
Roe deer (<i>Capreolus capreolus</i>)	3	-	-	3
Hare (<i>Lepus</i> sp.)	1.5	-	-	1.5
Rat (<i>Rattus</i> sp.)	-	-	5	5
House/wood mouse (<i>Apodemus/Mus</i>)	-	-	1	1
Domestic fowl (<i>Gallus gallus</i>)	93	19	25	137
Goose (<i>Anser anser</i>)	26	-	2	28
Duck (<i>Anas</i> sp.)	8	1	-	9
Teal/Garganey (<i>Anas crecca/querquedula</i>)	-	1	-	1
Grey heron? (<i>Ardea cinerea</i>)	1	-	-	1
Swan (<i>Cygnus</i> sp.)	1	-	-	1
Pigeon (<i>Columba</i> sp.)	1	1	-	2
Small wader	-	-	1	1
Turdid	-	1	1	2
Amphibian	1	-	4	5
Total	990.5	123	109	1,222.5

Sheep/Goat also includes the specimens identified to species. Cases where only 'non-countable' bones were present are denoted by a '+'. Pig metapodii and ruminant half distal metapodii have been divided by two, while carnivore and lagomorph metapodii have been divided by four. Due to the difficulty in distinguishing between upper and lower incisors in equids and upper and lower canines in carnivores, all have been recorded and then divided by two. All totals which include material from partial skeletons are denoted by '*': this material is described in further detail in Table 5.16.

Table 5.15 Numbers of mammal, bird and amphibian bones and teeth in Period 2 by collection category (NISP)

<i>Period</i>	<i>Area/Group</i>	<i>Context</i>	<i>Related feature</i>	<i>Collection method</i>	<i>Species</i>	<i>Notes</i>	<i>Plate</i>
2.1	2/5	20168	pit 20167	hand	cat	15 bones	
2.1	2/7	40319	pit 40320	hand	dog	16.5 bones + teeth	
2.1	5/47	49192	pit 49193	hand	cat	32 bones	Plate 5.19
2.2	2/2	20152	ditch 20129 (Ditch 8)	hand	dog	14 bones	
2.2	2/2	20163	ditch 20129 (Ditch 8)	hand	dog	17.5 bones	
2.2	2/4	40185	ditch 40285 (Ditch 8)	hand	cat	5 bones	

(The number of bones and teeth given are the number of countable specimens from each skeleton)

Table 5.16 Summary of partial animal skeletons found within Period 2 features

Deer were much better represented by their antlers, the majority coming from red deer (see below and Chapter 13).

Some findings, such as the evidence for falconry (buzzard and goshawk) in the 11th century (see Chapter 4.IV), or a rather high proportion of pig bones in the Late Saxon to early medieval periods — roast pork was 'the most consistent source of more delicate meat' (Dyer 1989, quoted by Serjeantson forthcoming) — may hint

that some evidence of high status is indeed present. This, however, is not necessarily related to the status of the castle, but may instead be a consequence of the variation and inequality of the distribution of wealth within towns (Dyer 1989). The goshawk was not necessarily a bird associated with the highest aristocracy.

A large number of pig bones have been linked to high status sites (Grant 1988; Albarella and Davis 1996). Pigs are typically 'meat animals' and are thus expected to be

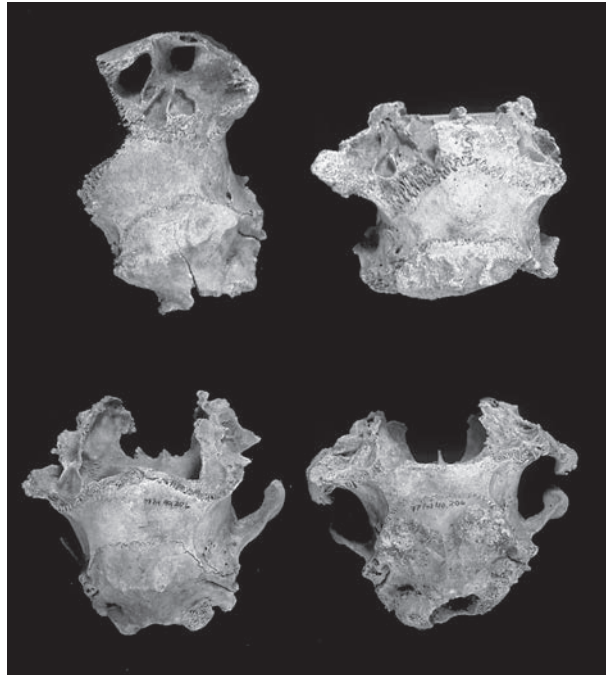


Plate 5.17 Sheep skulls with chopped horncores (from pit 40200, Period 2.1)



Plate 5.18 Horse limb: extremity of hind limb in anatomical connection (from pit 91954, Period 2.1)

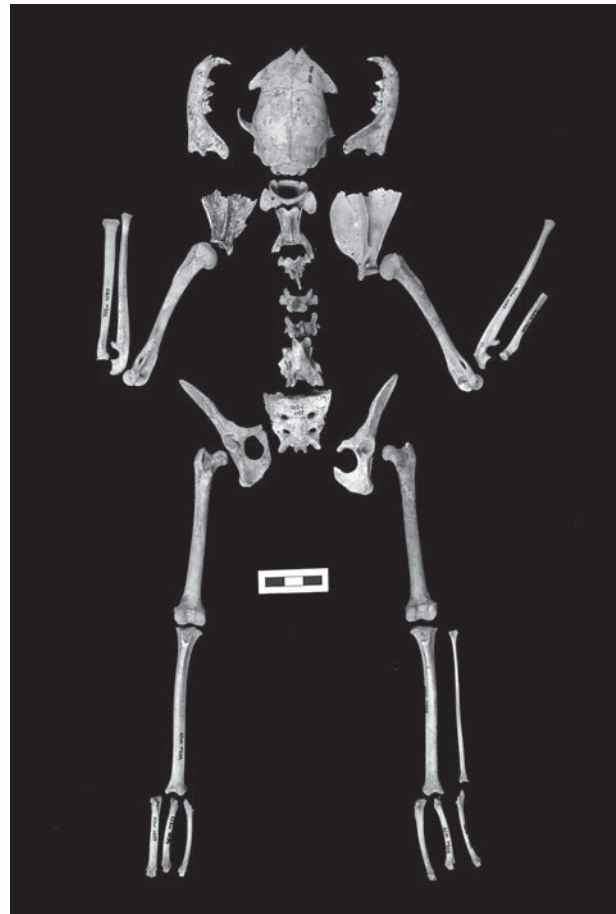


Plate 5.19 Cat skeleton with cut marks on the skull, from late 11th- to 12th-century pit 49193, Open Area 19 (Period 2.1)

more common on sites with a higher meat consumption. Periods 2 and 3 at Castle Mall are those associated with the most active period of the castle's life and thus it is possible to speculate that the higher frequency of pigs recorded in these periods is an indication of status. There is, however, no other evidence of high status for these or later periods. It therefore appears likely that the decrease in the number of pig bones in later periods is a consequence of a genuine change in the animal economy noted at a countrywide level. In general there is a higher variability in castle sites, but even though many exceptions occur they tend to have a larger number of pigs (see further discussion in Part III).

Refuse Disposal

From Period 2 onwards, much of the bone assemblage was derived from the fills of ditches. Some differences in the faunal contents of pits and ditches have been noted and this is probably due to the different use of these two types of features. Ditches may mainly have been used for large-scale dumping (particularly of town refuse in later periods), whereas pits were associated with smaller scale activities.

A number of partial skeletons were found in fills of Ditch 8 (G2/2), including a cat and two dogs, two further cat skeletons and another dog coming from pit fills. An articulated cat skeleton recovered from pit 20167 showed that it had been skinned (Plate 5.19). Comments on dog butchery (perhaps to provide meat for human consumption in times of famine, or relating to the use of dog fat

in cosmetics/medicine) are given in Part III. Evidence for the dismembering of horse carcasses is provided by the extremity of a hind limb, found in articulation in pit 91954 (Plate 5.18). The calcaneus of this specimen is gnawed and the absence of the rest of the skeleton suggests that this limb was separated and given to dogs.

Craft Waste

The main zoologically attested craft at this period was horn- and boneworking, which is detailed in Chapter 5.III and in Part III. Of note is pit 40200 which contained four sheep skulls with the horns removed (Plate 5.17).

Fish Bone

by Alison Locker

A much smaller assemblage of fish bones and a reduced number of species (only 23) were identified from Period 2, mostly from Period 2.1. These are shown below in Table 5.17 and were associated with the early Norman castle, seen as discrete from the preceding and succeeding periods, where the animal bone is viewed as representing waste from the town and burgeoning city. The analysis of the fish, however, did not reveal any differences between this and other periods that could be regarded as significant.

Looking at the BS (Bulk Sieved) column (minus elasmobranch and rays) herring is 69.4% by bone number, cod and large gadid 29.9%, eel 6.6%, whiting 6.9%

<i>Taxa</i>	<i>Hand collected</i>	<i>SRS</i>	<i>BS</i>	<i>Total</i>
Elasmobranch	0	0	9	9
Ray	0	0	2	2
Roker	0	0	13	13
Eel	0	0	73	73
Herring	0	0	765	765
Salmonid	0	0	2	2
Smelt	0	0	6	6
Pike	0	0	7	7
Cyprinid	0	0	2	2
Cod	67	55	136	258
Large Gadid	17	33	22	72
Small Gadid	1	1	0	2
Haddock	0	1	6	7
Whiting	0	6	44	50
Gurnard	0	0	1	1
Bass	0	0	1	1
Scad	0	0	2	2
Sea Bream indet.	0	0	1	1
Mackerel	0	2	20	22
Scombrid	0	1	0	1
Plaice	0	0	2	2
Plaice/Flounder	0	10	11	21
Flatfish	0	5	1	6
Total	85	114	1,126	1,325

Only material identified to species and/or family level is indicated. Indeterminate fragments including fins and rays were not quantified, though all potentially identifiable material was recorded.

Table 5.17 Numbers of identified fish bones from Period 2 by collection category (see Part 3, Tables 81–83)

and mackerel 1.9%. The only other gadid is haddock, poorly represented at 0.6%. Salmonids, smelt, gurnard, sea breams are few and the combined flatfish (largely plaice/flounder which are difficult to separate) are only 2.6%. The comparison of herring and gadids by quantity as represented by portion confirms a large rise of cod in this phase with herring at 5% and cod at 94%, haddock and whiting are low at 0.2% and 0.6% respectively. This is the highest percentage for cod of all the periods when shown by portion. The size range of cod is the same as the preceding period, 50–120cm total length, based on 12 measured bones. As such the importance of cod in castle deposits could be evidence of increased status, and unlikely to reflect any more general change in the supply of marine fish to Norwich in this period. However status reflected by increased numbers of cod is a tenuous link and unsupported by other species that have been linked with status, such as halibut and turbot both present in other phases. The main fisheries for herring, cod and whiting and lesser seasonal catches of mackerel as well as shoreline catches of small flatfish are as in Period 1.

As a NISP percentage herring and all gadids are 85.7% of the Bulk Sieved sample of bony fishes.

Plant Macrofossils

by Peter Murphy

The establishment of a royal castle might lead to the expectation of unusual, high status deposits, although this does not appear to be the case. The macrofossil assemblages recovered are entirely comparable to those from other sites in Norwich, relating to the commonplace activities of food processing and refuse disposal. Contexts available for sampling from Period 2 comprised the lower fills of the castle ditches (Ditches 7 and 8 and the ?Castle Fee ditch) and pits.

Period 2.1

Samples from pit fills and surfaces within the early south bailey (Table 5.18 on CD) produced assemblages differing little from those of Late Saxon date (Period 1), though overall the proportion of oat (*Avena*) grains was still higher: 67.9% of total grains from Period 2 samples were of oats. A high proportion of the oat and barley (*Hordeum*) grains had germinated before charring. Rye (*Secale*) was abundant in a few contexts (notably pits assigned to G2/5 and 2/9). Wheat (*Triticum*) again occurred at very low frequencies, comprising just 2% of total grains. Cereal chaff was again generally rare. Other field crops included flax (*Linum usitatissimum*) and pea (*Pisum sativum*). Weed seeds occurred at variable but low frequencies. Charred fruitstones and hazel nutshells, and macrofossils of heathland and wetland taxa were again noted.

As in Period 1 pits, the assemblages of charred macrofossils were probably mixed, but include two distinguishable inputs: from 'clean' batches of prime rye grain, and batches of cleaned sprouted oat grain, with some sprouted barley, probably produced due to poor temperature control during malt-drying.

Mineral-replaced macrofossils were rare in samples from Period 2, occurring only in BS958 (80561). This context was one of the organic layers infilling Hollow 1. Samples from similar deposits elsewhere (G1/13, 6/18 and 7/5) were scanned, but produced still sparser macrofossil

assemblages. BS958 included abundant charcoal, small quantities of charred cereal remains (mainly oats), weed seeds, hazel nutshell, and a single mineral-replaced sloe-type fruitstone and weed seeds. The assemblage cannot be related to any specific activity, and may merely represent a long-term accumulation of refuse from a variety of sources.

BS 1416 from large pit 12971 (fill 12968) included a sparse assemblage of open-country land molluscs.

Another large pit (20098, G2/42) was excavated by machine, and only a single 15 litre sample was collected (BS281, 20097). It produced a large flot, about 1400ml in volume, composed mainly of charcoal, including large fragments (up to about 50mm.) of mature oak (*Quercus* sp). During assessment the only other charred macrofossils noted were a few very poorly preserved cereal grains. Small fragments of bone, small mammal bones and uncharred fruitstones of bramble (*Rubus fruticosus*) were also noted, the latter probably being intrusive. The sample was thought to consist mainly of structural timber from the pit lining, charred either during destruction in an accidental fire or demolition. Further analysis was not thought profitable.

Period 2.2

Assemblages from the lower fills of the castle ditches (Table 5.19 on CD) were very sparse, comprising small amounts of charred and uncharred plant material, some mineral-replaced arthropods and predominantly open-country molluscs. The charred macrofossils seemed to represent no more than a thin dispersed scatter of refuse. The uncharred plant material was only in part mineral-replaced, and might have been derived from local scrub and weed vegetation, together with a minor input of sewage. Full details of the assemblages from the Ditches 7 and 8 are given in Chapter 5.II.

Fill 60024 (BS366 and 389) from a stone-lined fire pit (60023) included abundant charcoal and many weed seeds and *Carex* (sedge) nutlets, with a few cereal remains and grass/cereal culm nodes. The sample did not provide information on the function of the feature, but indicates that crop processing waste formed part of the fuel used.

V. DISCUSSION

Selection of the Castle Site and Inherited Topography

(Figs 5.55–5.56, 5.58 and 12.1–12.3)

Norwich is one of ninety-three Norman castles documented in England before 1100, almost half of which were urban (Drage 1987, 117; see overview in Eales 2003, 47–53). Of these, thirty-seven were royal fortifications⁶ and 'no less than twenty were built within or against the defences of a town' (Pounds 1990, 57) In eight of the latter examples, including Lincoln, Winchester, London, York and Oxford (located in Fig.12.3), the castle was placed within an Anglo-Saxon burh and the royal castle at Norwich may conform to this model (see for instance, Armitage 1912, 174 and fig.23; Baggs 1963, 3). It was previously suggested, however, that a ditch and bank defending the southern burh at Norwich continued southwards along the line of Ber Street, only the western stretch of the castle's defences reusing the putative

earlier boundary (Fig.12.2). It now appears that any such pre-Conquest ditch probably returned eastwards, rather than running southwards (see Chapter 4.VI and further discussion in Chapter 12). Norwich Castle was built in the south-western corner of the Late Saxon town (Figs 5.1 and 12.2), the limits of which are still partially defined in the modern street layout (sweeping round to the east along present-day Mountergate, formerly Inferior Conesford; see also Atkin and Carter 1985 fig.02, Atkin 1993, fig 8.2, (6) and Ayers 1994a, fig.18). Urban castles were often set on the edge of or outside the settled area (Drage 1987, 117; English 1995, 46), although such peripheral locations in part reflect the economic reuse of earlier defences. 'Many castles were set in an angle of previous defences, and preference was often given to a southern location' (English 1995, 46). It should be noted, however, that the full extent of many towns (including Norwich; see below) and their suburbs remains uncertain (Drage 1987, 119). A reconstruction of Norwich's late 11th-century castle in relation to the inherited topography is given in Fig.5.55, although this is only one of several interpretations offered. Development along King Street and Ber Street during the late 11th and 12th century is evident (Figs 5.56 and 12.2), including the imposition of new churches and the provision of cross routes between the two main thoroughfares (see Chapter 6.V).

Norwich Castle is set within its wider Norfolk and Suffolk context in Fig.12.1 (see Chapter 12). The site selected for the castle had a naturally dominant position, lying at the northern end of a ridge (the Ber Street escarpment) running from Bracondale along Ber Street to a point immediately to the east of present day Opie Street (Figs 5.1 and 5.56). The ground around it fell away: to the west sloping down towards the Great Cockey stream, to the north and east towards the River Wensum (Chapter 3). 'The presence of the [Cockey stream] valley was almost certainly one of the determining factors in the positioning of the late 11th-century castle and, particularly, of the relationship of that castle ... to the French Borough ... and ... the Jewish Quarter' (Ayers in prep.a). The same comments about the stream valley, however, hold true of the pre-existing settlement. The local topography effectively meant that only the southern side of the hill required ditchwork (if such did not already exist) to make the site defensible, although despite these natural advantages ditches do appear to have been placed around the entire circuit. Kirkpatrick described the promontory selected as 'well fitted by nature to be easily fortified ... by making a prodigious large and deep ditch' on the south side (Kirkpatrick 1845, 242). The reasons that Norwich was selected for the royal castle site are considered further in Chapter 12. The physical position of the castle, on a spur of high ground adjacent to or within the loop of a watercourse, is one familiar at many castle sites. Castle Neroche, Somerset, for example, occupies the end of a spur 'projecting from high rolling table-land and commanding extensive views over the low-lying country' at its feet (Davison 1972, 24).

Other than defensive capability, requirements for the siting of a castle included the control of major routeways, proximity to a source of water, accessibility, access to farmland and the ease of egress for cavalry (Pounds 1990, 68). All of these (other than access to farmland) were provided by the site selected at Norwich. The lack of immediate access to farmland was perhaps one of

the driving forces behind the early establishment of the Castle Meadow (see below and Chapter 12).

The Castle Mall and Golden Ball Street excavations have provided significant new information on the impact of castle construction on the Late Saxon town and in more general terms on the development of Norwich's historic core. The urban and natural topography inherited at the time of the Conquest is evident from a comparison between Figs 4.2 and 5.1, with more detailed information being illustrated in Figs 4.139 and 5.56. These new plans can in turn be compared to earlier interpretations (e.g. Carter 1978b, fig.7; Atkin and Carter 1985, fig.02) and both differences and similarities are immediately apparent. These are explored further below and in Chapter 12, which also considers the section of the site in terms of its regional and political context.

While the construction of the castle was eventually to boost Norwich's fortunes, the initial detrimental effects on the general populace have been outlined in Chapter 5.I. The impact of the construction of both castle and cathedral stretched over a wide area of the southern part of the town and a concomitant marginalisation and decline has been noted at the Greyfriars site (Emery 2007). Similar marginalisation can be anticipated in any pre-Conquest settlement that may have existed in the block that now houses St Peter Parmentergate and it is possible that much of this area may have been laid waste at the Conquest.

Alterations to Street Pattern

(Fig.5.1 and 5.56)

The imposition of Norwich castle's precinct still provides the basis of the modern street pattern in the surrounding area and can be traced in earlier maps (e.g. Cleer 1696 (Plate 10.1) and Hochstetter 1789 (Plate 10.3)). Having said this, Beecheno's warning against relying too extensively on the position of houses and streets to indicate the position of castle ditches holds true today (Beecheno MS 1908, 11–12). It is clear from archaeological evidence that some roads do mirror the outer line of the ditches relatively well, while some do not relate to their original form at all. Other roads effectively run within the line of the ditches, while still more run along the inside of former ramparts. A similar case is evident in the urban topography that eventually supplanted Oxford castle's earthworks (Hassall 1976, fig.1).

At Norwich, modern Ber Street terminates at the point at which its northern end met the approach road into the castle defences (now Golden Ball Street). Although proposing a Saxon origin for the defences, Hudson explained the situation thus: 'the Angle chief set his 'burh' right across it [Ber Street] and, if the pathway seen in 1784⁷ was the continuation of Berstrete, he piled up his mound on the top of it. Such a road was of no use to him. The river was his highway. When the place grew into a town and the street was used once more, it was diverted towards the north-west, and the name Berstrete clung to it as far as Orford Hill' (Hudson 1896a, 24). It now appears that the castle approach was set on the same line as a pre-existing route which bifurcated from Ber Street just to the south of the church of St John at the Castle Gate (Figs 4.139 and 5.56). Other early routes across the castle area were obliterated.

As well as the road into the defences, three other routes diverged from the end of Ber Street (Fig.5.56). To the



Figure 5.55 Reconstruction of the early Norman castle, viewed from the south-west. The postulated timber keep is depicted on its small motte with an associated flying bridge. The possible extent of the ditched Castle Fee boundary is indicated, along with the position of other ditchwork set within both the south and north-east baileys. Note the possible existence of a route on the eastern bank of the Great Cockey stream, skirting the Castle Fee boundary. The church and cemetery of St John, in its reduced form, lies just outside the castle's south gate. With the Conquest, St Martin-in-Balliva may have become enclosed within the defensive circuit. Alternative schemes for the early defences are outlined in the text.

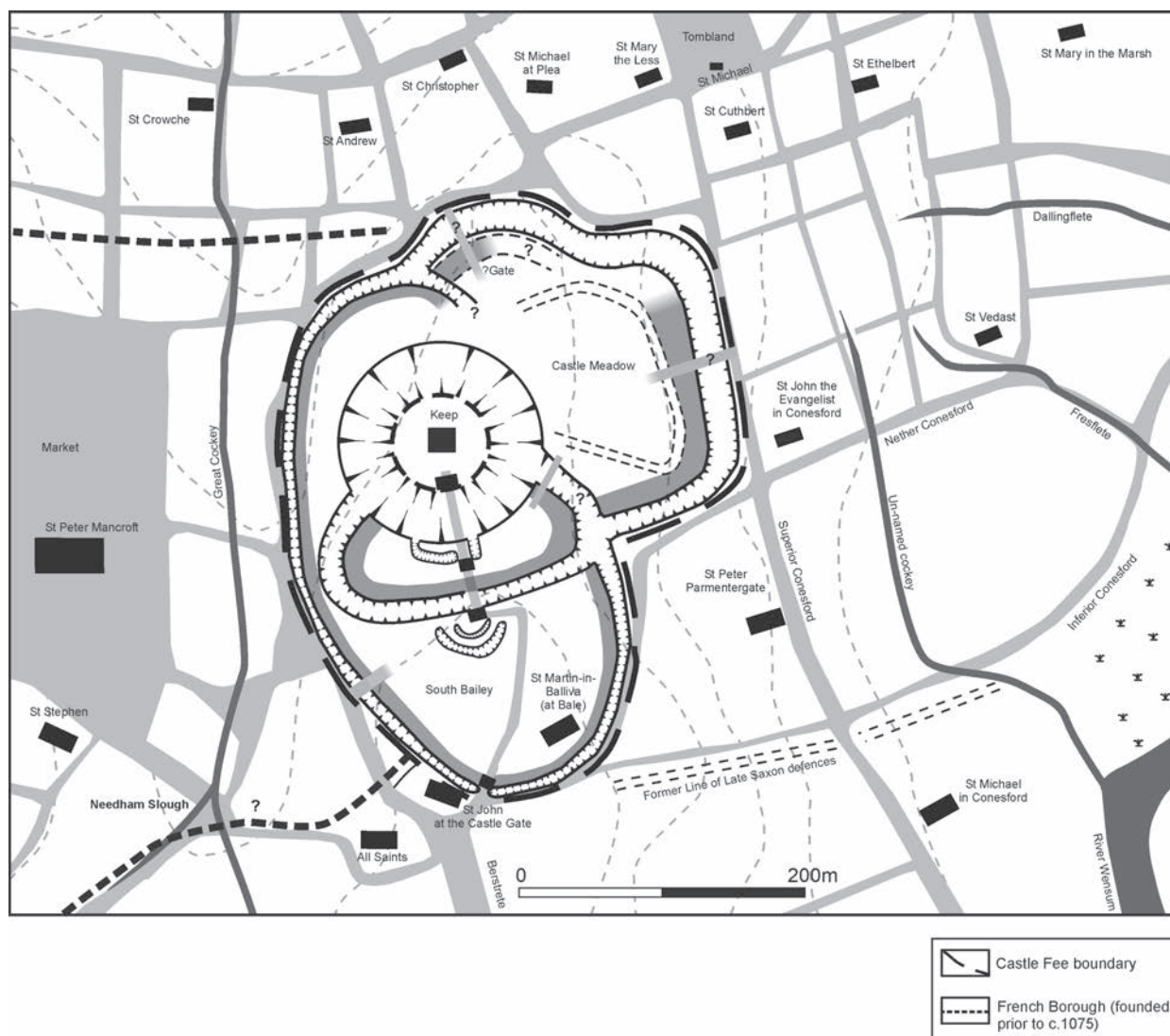


Figure 5.56 The impact of the imposition of the castle precinct on the Late Saxon town, showing the alterations to the local street pattern. Scale 1:5000.

west, ran what was formerly a continuation of Needham Street (now St Stephen's Street), currently Westlegate which runs to the south of All Saints church. The north-westwards continuation of Ber Street (now Timberhill) probably maintained its original course in the direction of the Cockey stream valley, until it joined what is now Red Lion Street before turning west towards the new French Borough. The postulated road running along the eastern edge of the stream may have survived on the course that was later to become Back of the Inns/Castle Street until it joined London Street to the north. Another postulated Late Saxon road running westwards from Rose Lane was effectively cut off and diverted, presumably to run along the eastern side of the defences (roughly along modern Golden Ball Street and Cattle Market Street, although further east than the modern road layout implies). This may have formed a junction with a Late Saxon road (medieval Cockerel Lane/later Stepping Lane) running just inside the postulated pre-Conquest defences.

To the east of the castle, Superior Conesford (King Street) was preserved along its original route, the castle's north-east bailey taking the line of the road as its limit (cf. Fig.5.56 with Carter 1978b figs 7 and 8; Atkin and

Carter 1985, fig.02; Atkin 1993, fig.6.6). A curious alignment of roads to the north-east of the castle has long been the subject of debate. It was once taken to reflect the line of Norwich's pre-Conquest defences (Carter 1973, fig.1; Carter 1978b, 192), although recent excavations have confirmed that these lay further to the south (see Chapter 4.VI). It was also once suggested that it indicates the position of an Iron Age hillfort (Carter *et al* 1974, fig.7; Fig.12.5.F; see Chapter 3 and below). A number of other possible explanations can be offered for this street pattern, including the possibility that it relates to a Late Saxon curved route linking to the natural contours at the end of the natural ridge or that it indicates the position of a northern castle gate (Fig.5.56). A suggestive piece of evidence is the presence of a 'wide stone arch with simple mouldings constructed on stone piers' which was recorded between Opie Street and Bank Plain in the mid 19th century (see Appendix 7), although the arch was probably much later (*i.e.* late 15th century) in origin (see Chapter 10.I). In response to the insertion of such an embanked north gate, the pre-Conquest road postulated to have continued the east-to-west line of St Faith's Lane on the western side of King Street may have been re-routed

(along its later route of Redwell Street/Bank Street) at the Conquest or soon afterwards to curve round to the north-west to skirt the north-east bailey/north gate.

Similar disruption to pre-existing street patterns has been recorded at many urban castles. The imposition of the royal castle at Bedford may have required the realignment of an earlier road demarcating the limits of the Late Saxon town (Baker 1973, 15). At Oxford, traffic was also diverted around the new defences (Hassall 1976, 254). The impact of the Norman Conquest on the Norwich street pattern in the eastern part of the town, which became the Cathedral Close, has recently been discussed (Ayers 1996, 59–72). Further comments on the early Norman street pattern are given in Chapters 12 and 14.

The imposition of a Norman castle might also disrupt the course of earlier defensive ditchwork. At Red Castle, Thetford, for example, a 12th-century ringwork directly overlay the Anglo-Saxon town defences, which may subsequently have been diverted to run around the new earthwork (Knocker 1967, fig.2; Rogerson and Dallas 1984, fig.104). The ringwork displaced earlier plots and a church (possibly dedicated to St Martin) and its cemetery.

Destruction of Properties

The loss of the ninety-eight properties at Norwich recorded by Domesday may have been made at any time (or gradually) between the first phase of the castle (c.1067–70) and 1086 — perhaps with a second stage of clearance linking to the enclosure of the north-east bailey, possibly in the mid 1070s. In some cases, it is known that property taken over for the construction of an urban castle was obtained by compulsory eviction (as at Dover) or by agreement (as at Rochester and Exeter; English 1995, 46). In most examples, however, there is simply no evidence with records only beginning in the 13th century at which time compensation might be paid (Pounds 1990, 209). The effects of castle construction would have extended over quite a wide area, with defensive considerations calling for ‘a clear space around its walls’ (*ibid.*). At Newcastle and Gloucester, houses near the defences were demolished. At Bedford, an area of land that had been cleared of all buildings, protecting the castle approaches, may only later have been enclosed within the castle’s defences (Baker 1973, 17). Sieges, such as those documented in Norwich in the late 11th century (see Chapter 5.I and below), may also have caused extensive damage. It was common practice for besiegers to use locally available materials to infill ditches prior to approaching a castle’s walls. At York in 1069, for example, the 500 Normans defending its two castles themselves burnt the city, with the objective of preventing the attackers from using the houses near the castle to infill the castle ditches (Morillo 1994, 140). Small amounts of compensation were paid following the siege of Bedford in 1227 (*ibid.*). Surrounding land might also be put out of action during, for example, quarrying as occurred throughout the medieval period along the eastern side of the Ber Street ridge.

It has been suggested that at the time of Domesday, much of the English countryside would have consisted of ‘farmlands with islands of wood’ and that ‘the landscape of Norman England was ... like that of modern France. France has now rather more woods and fewer villages than England, but it retains the distinction between

wooded and unwooded areas’ (Rackham, O. 1986, 78–79). Although the area of the Castle Mall site may have been substantially denuded of any tree cover by the Anglo-Saxon period, any surviving vegetation providing cover (e.g. along the Cockey Stream valley) would probably have been removed from the locality with the construction of the castle.

Archaeological evidence from the Castle Mall site confirms that buildings were destroyed or abandoned as part of the clearance prior to the construction of a timber castle and its defences, although surprisingly little in the way of building material was recovered (Lentowicz, Chapter 5.III). One of the sunken-featured buildings on the site (Building 25) may have been damaged or destroyed by fire at the time of the Conquest and burnt areas present in the western part of the site may indicate the clearance of other buildings. Some of the timbers within Building 25 appeared to have remained upstanding while the cellared area was being backfilled, suggesting that it had not been completely obliterated. The ceramic assemblage from these disuse fills has a suggested date of late 11th to early 12th century and could suggest that this building remained in use in the years immediately following the Conquest.

The two post-in-trench buildings on the Timberhill frontage (Buildings 17 and 18) would have lain outside the limit of the Castle Fee and may have continued in use into the post-Conquest period, depending on the extent of the area cleared for castle construction and their constructional date.

Churches and Cemeteries

(Figs 4.140, 5.56 and 12.6)

Church property was also destroyed during castle construction and the Norman disrespect for earlier burials is evident at the Anglo-Saxon cemetery of St Guthlac, Hereford, enclosed within the castle earthworks. Here, citizens watched in horror the ‘bodies of parents and relations, some half-rotten, some quite lately buried, pitilessly dragged from the depths’ in order to be piled up to form a rampart in front of the castle (Potter 1955, 72). Anglo-Saxon churches and cemeteries sealed beneath or enclosed within castle defences have been recorded at many sites including Newark (Marshall and Samuels 1997, 7–8), Newcastle (Harbottle, forthcoming), Cambridge (Renn 1968, 128) and Hereford (Shoemith 1980) (see additional details in Table 14.1). The sheer scale of Norwich castle’s precinct led to the enclosure of six earlier cemeteries (Fig.4.140), although uncertainty over the exact date of insertion of each of the baileys means that these may not all have been encompassed from the outset. Two of the cemeteries were apparently of Early/Middle Saxon date (Cemeteries 1 and 2) and out of use well before the Conquest. The cemetery sealed beneath the later rampart running along the northern side of the south bailey ditch (Cemetery 3) may have fallen from use at or even before the Conquest.

Such enclosure did not necessarily mean the end of ecclesiastical use of the area. At many castles, Anglo-Saxon churches enclosed within the defences continued to be used after the Conquest: examples occur at Thetford, Hastings, Leicester, Old Sarum, Oxford, Pevensey, possibly the Tower of London and Warwick. At Oxford castle, the 12th-century church of St Budoc was itself demolished during construction of the barbican, being

rebuilt outside the Westgate (Hassall 1976, 245 and figs 1 and 5). At Castle Garth, Newcastle, a cemetery spanning c.700–1168 (the date of the castle's construction) included some burials cut into the tail of the rampart, implying that use of the burial ground continued (Barbara Harbottle, pers. comm.). At Hereford, the Anglo-Saxon church of St Guthlac enclosed within the castle precinct was only abandoned when the parish merged with that of St Peter of Hereford in the 12th century (Shoesmith 1980, 5). A second church (St Martin, first referred to in 1150 but probably in existence since the early 12th century) also lay within the Hereford bailey, perhaps on the same site as or even reusing its predecessor (Shoesmith 1980, 56). This new church was apparently erected for the use of the castle garrison. Other castle garrison chapels are known, such as St Mary *de Castello* at Kilpeck which was built c.1140 (Shoesmith 1980, 5).

It is possible that the church of St Martin-in-Balliva (or St Martin at Bale; St Martin at the Castle Gate) survived the Conquest to serve the Norwich garrison, perhaps even being rededicated subsequent to its enclosure within the Castle Fee (Figs 5.56 and 12.4). It remained in use outside the south gate of the castle until the 16th century (perhaps enclosed within a hornwork defence during the 12th century; cf. Lobel 1975, map 2; see also Fig.6.48). Antiquarians debated the meaning of the term 'Balliva' or 'Bailiwick' at length: 'this would appear to imply a bailiwick, jurisdiction of a bailiff, rather than a bailey, court or ward of a castle' (Beecheno MS 1908, 19; Sandred and Lindström 1989, 45–6), although evidence from Castle Mall indicates that it may have lain enclosed within the outermost castle defences, its presence possibly causing the apparent asymmetry of ditchwork here. At least part of St Martin's cemetery would presumably have been sealed by the rampart running along the inner side of the Fee boundary ditch (Fig.4.140). Blomefield believed that both St Martin-in-Balliva and St Michael at Thorn originally belonged to the castle and were given by the Conqueror to Ralph Fitz-Walter, in whose family they remained until the time of Henry I, although his evidence for this assertion is not clear (Blomefield 1806, II, 121). After this time, he states that they were given to the Priory of Horsham St Faiths. In 1221, when the Dean of Norwich claimed jurisdiction over tenants of the Castle Fee, an enquiry found that such tenants had anciently been buried at their respective parish churches (Blomefield 1806, II, 125). Had they all been living in the upper bailey (*i.e.* on top of the mound) they would presumably have used St Martin's in which parish the 'Castle Hill' was, or was deemed to be, situated. Those who died or were executed at the castle were buried at St Martin's until 1562 (Kirkpatrick 1845, 298–9, E372.113; see Chapter 8).

The imposition of Norwich's Castle Fee boundary effectively reduced the size of the cemetery known from the mid 12th century as St John at the Castle Gate (Cemetery 4), cutting through the small ditch demarcating its northern limits (Figs 4.140 and 5.56). At Dover, the cemetery of St-Mary-in-Castro suffered a similar fate when the Norman castle ditch was cut through it and a rampart constructed along its northern side (Biddle 1970, 264). St Mary's church itself survived within the defended area. No burials from St John's cemetery were recorded at the Golden Ball Street site due to the fact that the relevant part of the graveyard had been entirely

removed by the insertion of the ?Castle Fee ditch (Ditch 3). Fills of the ditch recorded at Castle Mall contained redeposited human bone. It is, however, noteworthy that only a single fragment of human jaw bone was recovered from the site at Golden Ball Street (in the fill of a post-medieval feature), with no human remains found in fills of the ?Fee ditch. The burials recorded at the eastern edge of the Castle Mall site did appear to thin out and may indicate that there were few interments in this area (perhaps surprising given the evident intensity of burial in the majority of the rest of the excavated area). The church and its smaller cemetery remained in use and its post-Conquest setting adjacent to the castle's south gate has been outlined in Chapter 4.VI in relation to the group of leper burials it contained. If the burials (many of which have been radiocarbon dated to the Late Saxon period) should later prove to be post-Conquest, the alignment of burials in the eastern part of the cemetery may be taken to reflect the position of the ?Fee boundary marker, now also demarcating this part of the graveyard. During this period the church of St John may have been rebuilt in stone (a foundation date of 1066–1087 having previously been suggested; see Chapter 4.VI).

Two cemeteries have been located beneath the Castle Meadow (north-east bailey), with another group of burials immediately to the north of the castle mound (Chapter 4.VI). The timber church and associated cemetery at Site 416N could have survived a decade or so after the Conquest until the laying out of the north-east bailey (provided there was no early demarcation of the Fee in this area). The siege of the castle in 1075 'probably entailed some destruction of buildings in the area and this little church and cemetery may have suffered accordingly. ... Alternatively, ... the castle bailey may have already enclosed the churchyard and any destruction in 1075 merely accelerated the process of estrangement from the Saxon population' (Ayers 1985, 63). In this hypothesis, the initial late 11th-century castle defences 'may then conceivably consist of the oval enclosure ditch postulated at the north end of Ber Street and once suggested as being Iron Age' (Atkin 2002a, 75). This hypothesis is explored further in Chapter 12 (see Fig.12.6). There is insufficient information about the two other groups of burials in this area for any firm conclusions about the date of their demise to be drawn.

Further discussion of the 'Castle and Ecclesiastical Landscape' appears in Chapter 12.

The First Castle

(Figs 5.1, 5.2, 5.18, 5.55–5.56 and 12.6)

The scale of the devastation to the Late Saxon town implied by the Domesday reference suggests that extensive earthworks constructed around the motte may have been present from the outset (Campbell 1975, 8) and were certainly in existence by 1086. Evidence from the Castle Mall site indicates that the defences were soon altered (Period 2.2) with the probable addition of a series of ditches set within the Fee boundary, perhaps in response to the siege of 1075.

Although a 'standard' motte and bailey castle at Norwich might be envisaged from the outset, a note of caution must be applied when considering the nature of any castle: 'Imported cultural traditions were always open

to modification by local circumstance. Construction was influenced by local terrain and geology, by labour and materials, and by the random wishes and whims of an infinite number of people' (Pounds 1990, 15). Despite the extensive excavations across much of Norwich castle's south bailey, the precise sequence of earthworks and their subsequent alteration remains equivocal in many senses: their sheer scale and complexity defy straightforward interpretation. Various hypotheses for the layout and development of the early castle are detailed in Chapter 12 (see Fig.12.6), new archaeological evidence for the Fee boundary, the motte and its ditch and elements of the south and north-east bailey defences being discussed here. There are three main hypotheses for the layout of the defences of the first castle, although the demarcation of the Fee boundary as an outer defence is an added complication:

1. a simple enclosure,⁸ with the later addition of a motte and alterations to ditchwork;
2. a simple motte and bailey castle, with main part of the bailey lying to the south, a second bailey to the north-east being added later;
3. a motte, with two baileys (lying to the south and north-east).

Each of these possibilities is explored in more detail in Chapter 12. It has previously been assumed that the main focus of the defences was always towards the south, with the principal approach road; 'it is tempting to interpret in a symbolic sense the fact that the keep looked towards London' (Heslop 1994, 8). Norman castles were often placed partly in the town and partly in the country (as at Wallingford and Oxford) to permit ease of exit to open ground. This may have been the case at Norwich, where the castle precinct lay in the corner of previous settlement, with access to largely open ground to the south (Figs 5.1 and 12.2). Recent excavations along King Street provide the first clear evidence for Late Saxon activity to the south of the main settlement area, although these apparently suggest only piecemeal settlement along the road. To the west, the area may substantially have been open field until the Conquest, at which time the new French Borough was laid out. The southern approach would have been made across a causeway through the ?Fee boundary ditch (recorded at Golden Ball Street, Site 26496N), with a series of gates and bridges implied between the outer earthwork and the motte.

The preferred interpretation is that Norwich castle's first earthwork enclosure may have consisted of a large defended area to the south and perhaps to the north (Period 2.1, Fig.5.2), within which an inner ditch and accompanying defences for bridge landings were soon constructed (Period 2.2, Fig.5.18; the inner ditch was subsequently obliterated by the construction of a much larger ditch in the 13th century). Norwich's early bailey may have been accompanied, either from the outset or soon afterwards, by a small motte and timber tower. A note of caution is again advisable: 'only excavation can show whether a motte was (or was not) thrown-up at the same time as the enclosure which now forms its bailey and it is clearly dangerous to assume without direct evidence that the motte of a motte-and-bailey castle necessarily dates from the earliest recorded military occupation of the site' (Davison 1969, 38). At Castle

Neroche in Somerset, for example, the initial defences⁹ consisted of a ditch and rampart which enclosed an area of 7.5 acres at the end of a spur of high ground. This was subsequently altered soon after the Norman Conquest by the construction of a smaller enclosure set within the former defences and the site was later converted into a motte and bailey. The whole complex was apparently out of permanent use by the early 12th century (Davison 1972, 16), giving the Norman elements a lifespan of perhaps less than 50 years. Mottes are usually placed on the perimeter of bailey defences (*cf.* Castell Crugerydd, Powys; Higham and Barker 1992, plate 7.19a), although examples of them being placed within baileys are known. Many castles had multiple baileys, in some cases as many as four or five. At Kilpeck in Herefordshire, for example, a relatively unimportant castle had five baileys and a village enclosure (King 1991 47).

Norwich castle's initial earthworks may, then, have consisted of a simple bank (probably with a palisade) and ditch enclosure 'necessarily constructed at great speed in a situation of extreme danger' (English 1995, 48). Davison proposed that England's very earliest castles (constructed in the years 1066–68) may have been ring-works with a bank and ditch, to which a motte and bailey was perhaps added later (Davison 1969). An example comes from Winchester, where the 1067 castle consisted of a bank and ditch through the previously occupied area (including streets and houses), with the motte not being constructed until the 1070s (Biddle 1990, 470–88). Once the outer precinct was defended, the motte could then be constructed in safety, perhaps a very short time after the excavation of the ditch. The acreage enclosed within Norwich's first castle remains uncertain due to the differing possible interpretations of defensive layout, although an enclosure in the region of c.6.2ha (c.15.4 acres) has been postulated in Chapter 12. It is possible that the initial defences would have been 'enlarged as the hurried fortifications of the 1060s were developed as permanent administrative centres for the shires' (English 1995, 47). Many castles were later enlarged, entirely rebuilt or even moved (see Chapter 12). Early additions and alterations to Norwich castle's defences, such as the north-east bailey and two sets of double-ditches defending probable bridge landings for a southern approach route, may have been added within the first few decades of the castle's life, possibly in response to the 1075 siege.

Although little evidence survived for early ramparts at Norwich (limited evidence for a bank inside the ?Fee ditch coming from Site 28N to the west of the castle and from Golden Ball Street), they doubtless existed in association with each of the ditches. Castle banks were often only 2m high, although the provision of a ditch and palisade 'would have proved an effective deterrent to all except a large force with a siege train' (Pounds 1990, 16). Norwich Castle's defences were clearly substantial by 1075, having had several years for the earthworks to develop. Further discussion relating to the siege, the possible location of besieging forces, constructional labour and rates appears in Chapter 12.

The Castle Fee

(Figs 5.1, 5.55, 5.56 and 7.2; Plate 7.1)

The physical limits of Norwich Castle's Fee have, to some extent, now been clarified by excavation and it appears to have enclosed an area of about 23 acres. Blomefield,

Harrod and Beecheno all theorised about the extent of the Fee (see Chapter 5.I), but it was Beecheno who produced the definitive plan drawn largely from later Castle Fee rent lists (Beecheno MS 1908, 12ff; Plate 7.1 and Fig.7.2). A ditch to the west of the castle has long been interpreted as either the Fee boundary and/or part of the Anglo-Saxon defences (see below), while the discovery of a group of decorated bronze plaques to the west of the castle in the 1960s led to speculation that large marker posts may have been ranged around the perimeter. These, however, are demonstrably later than the Norman period (see Chapter 7).

The recent excavations at both Castle Mall and Golden Ball Street have confirmed the presence of a ditch which may have defined the early limits of the southern part of the Castle Fee and part of another which may have defined an early enclosure around the Castle Meadow. Within this circuit, archaeological evidence confirms the presence of a second set of ditches within both baileys (Figs 5.55 and 5.56). The southernmost ditch would effectively have cut off the northern end of the natural ridge on which the castle was placed. This latter ditch recorded during recent work at the Castle Mall site (Ditch 3, Period 2.1) would originally have been about 8m wide and 3.5m deep, with a roughly v-shaped although slightly stepped profile. Its southern stretch may have been recut to form a hornwork around the southern castle gate, linked to the construction of the spectacular masonry donjon in *c.*1094 to *c.*1121–22 (see Chapter 6). Certainly, the length of ditch recorded in the western part of the excavated area (Area 8) had been infilled at the time the south bailey ditch was dug, the latter clearly cutting through it. The few finds recovered from the infilled northern part of the ditch (see Period 2.2) provide a date range of 10th- to 12th-century. To the south the ceramic date range was 11th- to 14th-century, with a fairly large mid 12th- to 13th-century assemblage (see Periods 3 and 4; Chapters 6 and 7). Other observations of what may have been the same ditch were made to the west and east. Excavations at Golden Ball Street in 1998 proved that the ditch terminated at its junction with the castle approach road, implying the presence of a causeway. A small remnant of rampart to the north of the ditch survived.

The situation to the west and north of the castle remains unclear. Ditch 3 at Castle Mall (Areas 1 and 8) may have run in one of a number of alternative locations to the west of the castle. One interpretation is that it continued to run northwards, equating with earlier ditch observations (Fig.5.57), such as that at 18 Davey Place in 1961 (Site 218N) and 30 London Street in 1973 (Site 291N). At Site 218N, a ditch at least 9m (30 feet) wide was recorded 4m (14 feet) below street level. At Site 291N, finds were recovered from what may have been fills of a ditch. More observations of possible ditch fills were also made at 20 White Lion Street, Castle House/Davey Place and 11–17 Castle Street (Sites 26474N, 543N and 28N), the latter also recording what may have been an associated bank on the eastern side of the ditch. Further comments on possible interpretations of the western stretch of ditch are given in Chapter 12.

Several observations have been made around the remainder of the postulated Fee circuit (Fig.2.2 and 5.57). North of Site 291N, running clockwise around the castle, these are 60–62 London Street, Barclay's Bank, Royal Hotel, 2 Agricultural Hall Plain, 34–40 King Street, 24

Cattle Market Street, 23 Cattle Market Street and the Bell Hotel (Sites 26135N, 723/26011N, 26002N, 418N, 217N, 26315N, 26404N, 276N and 314N). Most of these produced little or no archaeological evidence and no other sign of the ditch has been recorded. Two sites did produce useful information: evidence for a later castle ditch (Site 314N) and for human burials (Site 418N). Both of these are detailed further elsewhere in this report. Within the north-east bailey a ditch was recorded beneath the southern end of the Royal Hotel in 1902 and again beneath Hardwick House in 1866.¹⁰ The possible presence of two ditches within this bailey is a complicating factor.

There are few known parallels for the Norwich Fee. The best known example is at Chester, where the Fee enclosed a large area around the castle's defences, encompassing a hamlet (Pounds 1990, fig.8.7). At Reigate, the castle ditch was used to mark the boundary between the castle and the town (Pounds 1990, 211). At Lincoln, the word 'castle' was used to define a much larger area than the physical site itself — perhaps the whole of the upper city which was known from the 12th century onwards as 'the Bail' (Stocker and Vince 1997, 223–224). At the Tower of London, the area known as the Franchise or Liberties was first clarified in 1382, although such an enclave may have been under royal control from the time of the castle's establishment (Keevil 2004, 12). In the Norwich example, the 'Men of the Fee' may have been housed in the large area enclosed to the south of the motte and possibly also the Castle Meadow (see Figs 5.55 and 5.56). The reconstruction now offered indicates that the local topography in the area to the west of the castle would have prohibited the presence of buildings here. It is likely that the large open areas implied in Figs 5.55 and 5.56 (which offer two slightly different interpretations of layout) would have been sub-divided defensively, perhaps by timber palisades or fences (*cf.* Hen Domen; Higham and Barker 2000, 37–40).

Structured Norman settlement within the Castle Fee as originally envisaged in the initial project design (Chapter 1) was not encountered during the excavations, although some buildings assigned to Period 1.4 (Chapter 4.II) may be immediately post-Conquest in origin: these, however, are just as likely to be stables or other ancillary buildings as dwellings housing the Men of the Fee. Both the number and nature of 'domestic' pits of late 11th- to early 12th-century date found within the early castle enclosure (Chapter 5.II, Period 2.1) do, however, appear to indicate a permanence of settlement rather than sporadic garrisoning or maintenance of open space. Ditchwork recorded within the north-east bailey in 1979 (Ayers 1985) may be associated with such activity and/or with agricultural/drainage activity. At Launceston Castle 'regular planned development within the outer bailey ... has been interpreted as a community rather than the castle household' (Drage 1987, 129; Saunders 1964, 1970, 1977). Excavations at Launceston yielded evidence for timber- and stone-built structures with sanitary provision comprising a range of both utilitarian and residential buildings (Saunders 1977, 137). Traces of domestic buildings were also located in the large outer ward at Barnard Castle (Austin 1979, 58). Although such examples may be the exception rather than the norm, these 'settlements' may indicate a permanence of occupation rather than temporary refuge during the initial stage

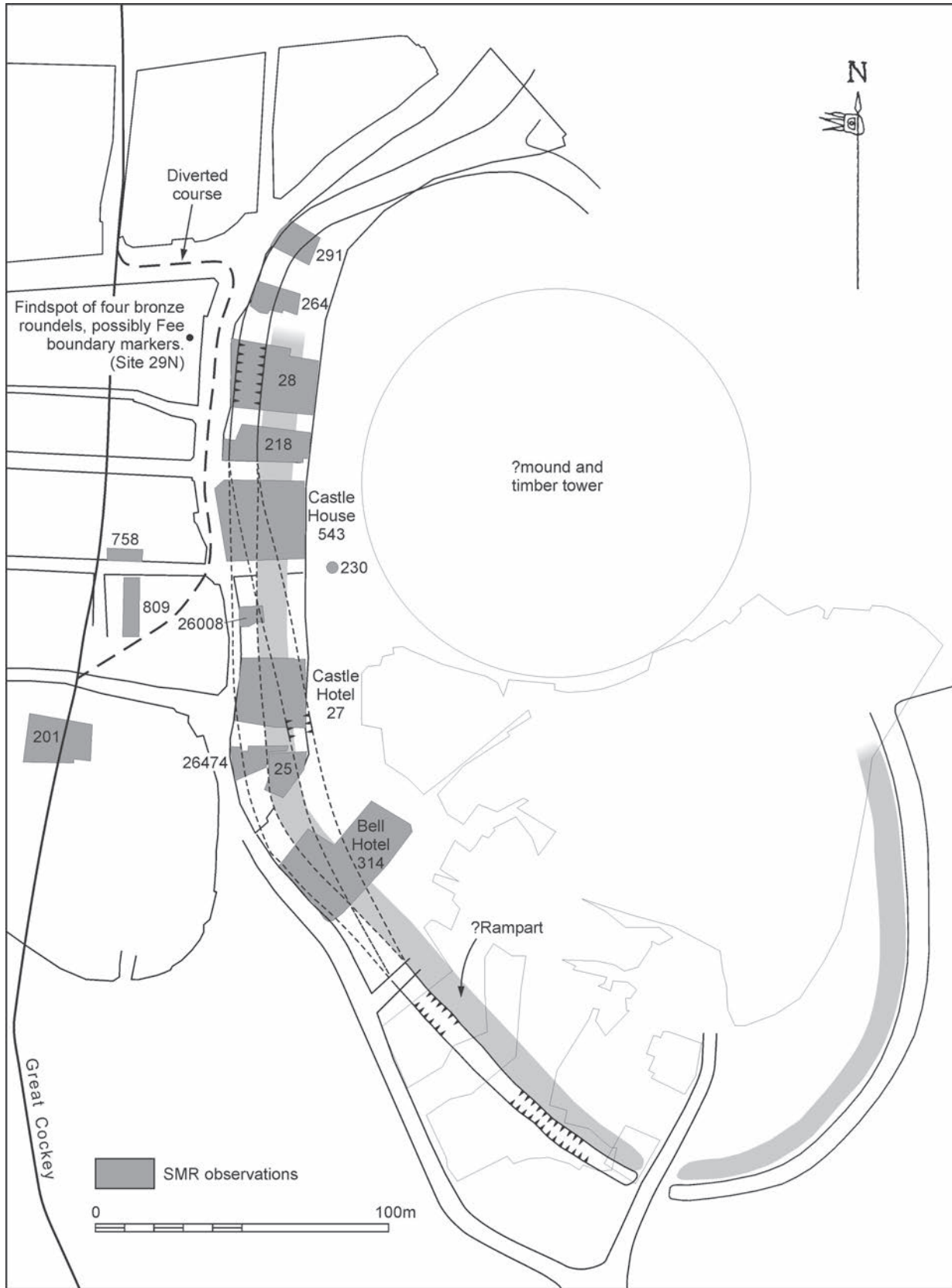


Figure 5.57 Possible sitings of the ?Castle Fee ditch to the west of castle, in relation to the ditchwork recorded at Castle Mall and Golden Ball Street and the possible first motte (Period 2.1), also showing observations of the Great Cockey stream valley and the possible first motte (Period 2.1). Two possible courses of the ditch are shown. Scale 1:2000

of castle development. Village enclosures attached to castles are numerous and include a striking example at Stafford where roads and plots are evident (Darlington 2001, fig.7; see Fig.12.8.C), although at time of writing the full archaeological discussion of these and crucially their dating has yet to be published.

The Defensive Layout

(Figs 5.58, 12.6 and 12.7)

As has been noted, the entire Castle Fee circuit enclosed an area of approximately 23 acres. The hypothesised inner extent (*i.e.* the area within the postulated rampart) of the first castle enclosure indicated in Fig.12.6.A amounts to c.11.4 acres (c.4.6 ha), with a further c.2.8–3.2 acres (c.1.1–1.3 ha) enclosed within the defences of the north-east bailey (see below and Table 12.2). For a discussion of the speed of castle construction, necessary workforce, units of land measurement and associated issues, see Chapter 12. A schematic cross-section of the early defences appears in Fig.5.58.

During the initial phase of castle construction at Norwich, the ditch laid out to demarcate the Castle Fee may also have effectively delimited the initial south bailey. As has been noted, the sloping north-east bailey may have been a slightly later addition. Secondary ditch-work may soon have been added within both baileys, (Figs 5.55–5.56 and 12.5.E–F; *cf.* Green 1966; Carter *et al* 1974, fig.7; Ayers 1985). It is possible that Norwich castle's large south bailey was subdivided to form two smaller baileys of unequal size at an early stage. The evidence for the presence of a precursor to the barbican ditch is largely circumstantial, the ditch itself probably having been obliterated by the insertion of a massive ditch in the 13th century (see Chapter 7). The evidence for the presence of such a ditch during the Norman period is considered in Period 2.2, when it would appear to have been in position. It may, however, have existed from the castle's outset.

The First Motte

As has already been outlined, it is entirely possible that Norwich's first 'castle' consisted of a bailey enclosure (Figs 5.2 and 12.6.A), unaccompanied by a motte at its first few years. The primary phase of the motte (Fig.5.18) was constructed at the highest point of the natural ridge, to be later extended prior to construction of the masonry donjon. None of the observations of the motte and surrounding ditch made during the Castle Mall excavations can be directly related to the initial construction of the castle, although evidence comes from another NAU excavation (Wallis in prep. a). For the first time it has been possible to make an estimate of the amount of time required to construct the initial motte, totalling approximately 5,024 man days (c.50 days for a team of 100 men). Full details of this calculation are given in Chapter 12, where caveats are noted.

The Fee/Early South Bailey

Preparatory Landscaping

The Castle Mall investigations revealed evidence for landscaping which was probably associated with the construction of the castle above earlier settlement. This included the infilling of the upper parts of some of the Late Saxon pits with substantial quantities of clean sand and

gravel. Elsewhere, earlier hollows (and possibly buildings) were levelled. At Oxford, a Late Saxon building beneath the castle earthworks was similarly infilled with gravel (Hassall 1976, 250). Comments on the destruction of buildings at Norwich Castle are given above.

At Castle Mall, a widespread sequence of deposits, in some places over a metre thick, lay above the area of a former hollow in the western part of the site (Hollow 1), spreading out northwards from it (Period 2.2). Two possible interpretations of these deposits are suggested; either that they indicate ground consolidation and levelling of the dip caused by the underlying hollow lying within the early bailey/Fee or that this activity was directly associated with the construction of the south bailey rampart. The latter interpretation is less likely as the subsequent sequence suggests a hiatus in activity prior to the deposition of rampart dumps. The effect of this deposition was to form a roughly flat surface, although still reflecting the natural ground slope (*i.e.* higher to the south-east). Similar ground consolidation took place over the possible trackway (Hollow 2), with natural sands and gravels dumped into the feature (although these dumps could also have been associated with the construction of a large well; Period 3.1). Presumably the intention of this landscaping was simply to level the ground within the defences. Surviving areas of soil horizon(s) lay above these dumps, cut into by pits and post-holes.

Scarping of the ground surface was recorded in the north-east bailey (Ayers 1985, 21), the material apparently being redeposited to the west to increase the already considerable natural slope, sealing earlier small ditches in the area. The reasons for this alteration are not clear. Part of a meadow surface may have been recorded above these deposits, sloping gently down from west to east, perhaps partially cobbled over in the 13th century (Ayers 1985, 21 and fig.18).

Bridges and Bridge Landings

Two ditches excavated at the northern end of the Castle Mall site may have defended a crossing over the motte ditch, perhaps forming a small rectangular enclosure or courtyard at the base of a timber bridge leading to the first mound (Fig.5.18). The westernmost, L-shaped ditch (Ditch 5) had a V-shaped profile and survived to nearly 6m wide by 2.5m deep. Lying some metres to its east was a ditch (Ditch 6) running from north-to-south. This had been heavily truncated by a later recut (Period 3.1), although had an estimated original width of c.6m and depth of c.2m. The westernmost ditch appeared to have fallen out of use fairly rapidly, with some indication of vegetation and/or refuse disposal (Period 2.2). Possible redeposition of an associated rampart into the ditch was followed by more refuse deposition, pottery from which indicates an early 12th-century date.

To the south, on the opposing side of the ditch subdividing the early bailey, was a second set of concentric double ditches (Period 2.2) which cut into some of the apparently immediately post-Conquest pits. Again, these ditches may have defended a bridge landing. They enclosed an area of about 10m north-to-south by about 21m east-to-west. Very slight evidence for the presence of a timber bridge was recorded in the presence of two possible beamslots confined within the arc of the innermost ditch. The latter (Ditch 7) measured nearly 3.5m at its widest and survived to nearly 2m deep. The outermost

earthwork (Ditch 8) was slightly larger at just over 4m wide (surviving to over 1.5m deep). Both had roughly V-shaped profiles.

No evidence for banks relating to any of these ditches survived and the limited space inside the inner set may suggest that none were present, a suggestion supported by later developments within the courtyard (see Chapter 6). The upcast from excavation of the outer set of ditches appears to have been thrown into the upper parts of surrounding pits which may suggest the original presence of an earthwork above them. A direct north-to-south approach across these ditches appears unlikely and it is possible that the approach was actually circumnavigated from the east via a timber gate. The reconstruction which appears in Fig.5.55 offers the possibility of a small bank surmounted by timberwork between the two crescentic ditches (see also the working version in Reeve 1992, 22). The dog-leg effect thus created would have been effective in defensive terms, although might be problematic in terms of traffic access. It has proved difficult to find a direct parallel for this arrangement, although the later barbican arrangement at Sandal Castle is broadly similar (Mayes and Butler 1983, fig.3).

It seems probable that both sets of ditches described above, each of which may have been accompanied by timberwork such as gates and palisades, were inserted to defend the southern approach route to the early castle. The relatively small size of the contemporary ?Fee ditch could imply that these ditches were necessary to form an outer limit to the main stronghold and were perhaps inserted in response to the events of 1075.

The refuse disposal evident within the outer set of the double ditches, combined with the fact that they became overgrown with vegetation, suggests that they were not maintained for any length of time. This may have resulted from their decline in importance at the time of the construction of the larger form of the south bailey ditch (Period 3.1, Chapter 6). The rapid erosion evident from basal deposits within the two ditches may link to the harsh weather conditions in the later 11th century (see Chapter 5.I). The nature of the finds assemblage recovered from the ditches (boneworking, horseshoes and horseshoe nails, small amounts of metalworking waste) gives some insight into the nature of early activities within the early castle (see below).

The North-East Bailey (Castle Meadow)

Norwich Castle's north-east bailey was used as a defended meadow and remained in use as pasture after it was transferred into the hands of the city in 1345. The first reference to the *Castelmedwe* was made in 1349, although it was also known as Pelloures Meadow¹¹ by 1349 (Sandred and Lindström 1989, 23). In addition, land and meadow in Earlham was subject 'to the ward of the arbalistry of Norwich, when it happened, 2s' (Kirkpatrick 1845, 257–91). It has been suggested that the Castle Meadow may also have been 'where the meat supply of the garrison was kept on the hoof' (Green 1966, 9). Castles frequently had meadows under their control, such land being highly valued as it provided winter feed (Pounds 1990, 199). Each castle also had a hay barn to accompany its stables. Documented examples of the value of meadows are Newcastle-upon-Tyne, West Derby, Bamburgh and cases of hay being taken to the castle are given at Hope Castle

(Flintshire) and Dudley (*ibid.*). Ludlow had a 'meadow called Castelmede' (*op. cit.*, 211).

Prior to the Castle Mall investigations, it was often suggested that Norwich castle's north-east bailey was a later addition (for example, Roberts 1974, 64). Excavations within its confines in 1979 indicated that it was 'less well defended than the bailey to the south and that its construction may therefore be an afterthought. It is quite possible that it was added following Guarder's rebellion of 1075' (Site 416N; Ayers 1985, 63). This interpretation implied that the added bailey 'remained militarily weak until in 1345 it passed formally into the possession of the City' (Pounds 1990, 126). The implication of the Castle Mall excavations is that — in the early years at least — this bailey may have been militarily stronger than the former perception, with the relatively small undated ditch recorded at Site 416N enclosed within a much more substantial feature that was repeatedly reshaped. This double boundary reflects the interpretation published in the 1970s (Carter *et al* 1974, fig.7, drawn from an earlier interpretation first published in 1962; Green 1966; see Fig.12.5.E and F), with the outer boundary demarcating the limits of the Castle Fee. The angle and spatial position of the Site 416N ditch, however, led to an awkward reconstruction when first published (Ayers 1985, fig.2) and is at odds with the evidence from Castle Mall. Although the double ditch hypothesis remains attractive (Fig.5.55), there are numerous alternative interpretations for the Site 416N ditch, which include the possibilities:

1. that it indicates a very early form of the north-east bailey and/or that it was an early demarcation of the Fee boundary. In both cases, it may have fallen from use prior to the insertion of the larger ditch recorded at Castle Mall and in antiquarian observations;
2. that it relates to a different type of ditched feature (*cf.* the ditches defending bridge landings recorded in the south bailey which are of a similar scale), although its position makes this possibility unlikely: discussion of access points between the baileys and the later insertion of what was to become Holkham Lane are considered elsewhere in this volume;
3. that it was not a ditch at all, but was a large pit or linear quarrying (a suggestion discounted on the basis of the admittedly limited evidence for feature morphology).

The major earthwork recorded at the Castle Mall site (Area 9) may have entailed the reuse and enlargement of a natural dip (local contours indicate a natural depression in its approximate position). The first phase of this outermost ditch (Ditch 9) appears to have been substantial (*c.* 17m+ wide by *c.* 8m deep), its scale tending to suggest that it did not date to the very early years of castle construction. It is possible that an earlier, smaller ditch was completely truncated by subsequent ditch digging, or as noted above that the first ditch around the bailey was the undated ditch recorded at Site 416N. The ditch recorded at Castle Mall may then have been added to the defences at the same time as other defensive ditches were enlarged, abutting a ?pre-existing ditch to the west (*i.e.* the southern part of the Fee boundary ditch) rather than turning northwards at its south-western end to meet the motte ditch. Some of the earliest fills of Ditch 9 suggest a mid 12th-century date (Period 3.1), before it was recut

twice in the second half of the 12th century (Period 3.1 and Period 4.1). It had been deliberately infilled prior to the excavation of the barbican ditch in the 13th century (Period 4.2). Ceramic types from the latest features within the ditch (a series of pits and possible structures) provide a 13th- to 14th-century date range (see Chapter 7). The presence of large posts and a 'step' set into the southern side of the ditch may suggest the presence of a revetted walkway or palisade, although this would have lain at a considerable depth from the top of the ditch. At Tamworth, a series of posts was set into the slope of the bailey bank, which had been terraced (Higham and Barker 1992, 293, figs 8.52a and b). The Tamworth reconstruction suggests the presence of a palisade and fighting platform.

The line of Norwich Castle's north-east bailey ditch illustrated in Ayers 1985 follows Beecheno's work, rather than Harrod's (1857). Beecheno scaled down the size estimates for the ditch given by Harrod on the grounds that the Castle Meadow would have had a shallow fortification: he considered that the stated width of 100 feet (c.30.79m) represented both bank and ditch (Beecheno MS 1908). The suggested substantial width for the feature recorded at Castle Mall leads to the possibility that Harrod's measurement could in fact be broadly correct and that the ditch observations recorded in 1806 and 1902 (Carter *et al* 1974, fig.7; Fig.12.5.F) actually relate to the wide ditch recorded at Castle Mall, rather than a smaller inner ditch. The ditch may not, however, have maintained such a substantial width for its whole course, the recorded part being where it joined other earthworks (perhaps widening at this point as a result of local contours).

Assessment of the size and shape of the north-east bailey is problematic due to the problems of defining its extent that have already been outlined, allied with accounting for inner ramparts and the position of gates. The maximum inner perimeter of the bailey (ignoring the ditch recorded at Site 416N) would have enclosed an area of approximately 2.8–3.2 acres (1.1–1.3ha; see Chapter 12, Table 12.2).

Access

(Figs 5.1, 5.55–5.56)

As noted above, it has long been asserted that the major route into Norwich Castle was from the south from the outset: 'the bulk ... [of the defences were] ... undoubtedly concentrated to the south which was always the principal approach to the site and was where the main gateways and bridges leading to the formal entrance to the keep itself could be found' (Heslop 1994, 8). At some other major urban castles (*e.g.* Warwick and Winchester) the main entrance similarly faced away from the town, even though the castle may have been placed on the edge of former settlement (see also those illustrated in Drage 1987, fig.53). Many other castles, however, had their main entrance facing the town, as at Northampton (Pounds 1990, 213–214).

Although no direct archaeological evidence (*i.e.* a metalled road) for a route into Norwich Castle from the south was found at Castle Mall, indirect evidence comes from the inherited road layout and the position of two sets of ditches apparently defending the bridge landings detailed above. The Golden Ball Street excavations have conclusively demonstrated the position of a causeway

leading the road into the defended area (presumably via a timber forerunner of the castle's south gate). Harrod (1857, 142 and 133, map) believed that 'Pump Street is the most ancient way to the castle', implying an entrance between junction of the south and north-east baileys (*cf.* Campbell 1975, maps 2 and 3; see Fig.12.5.G), although there is no archaeological evidence to support this assertion. While this might account for the peculiar alignment of the ditch recorded at Site 416N, other ditchwork in the area argues against it (see Chapter 12).

Castles often had a second point of exit or postern and at Norwich such a feature might be expected towards the west providing an access point to the French Borough and new market. If no such route existed, access from the castle to the French Borough would have been tortuous; across the south bailey southwards, returning westwards along what is now Timberhill. A possible route and associated timber gate slightly to the south-west are described in Chapter 6.II (Period 3.1), although it is possible that they were in place at an earlier date. The only other archaeological evidence for a route westwards is a possible trackway which has been interpreted as being pre-Conquest in origin (Hollow 2, Chapter 4). An early reconstruction produced during post-excavation analysis suggested a possible direct link to the French Borough and Market Place, which could have run to join White Lion Street (*cf.* Ayers 1994a, plate 9). Subsequent work, however, refined this interpretation (see Chapters 6 and 12).

It is probable that at least one gate led out from the north-east bailey, either onto King Street (see Fig.5.56) or northwards onto what is now London Street via a gate set within an outwork (see 'Street Pattern' above). Browne described a 'postern, or back gate .. on the north-east' (Browne 1785, 5), although this refers to the carriageway inserted in 1721 (see Chapter 11). Access to the early motte from the north-east bailey was probably via a flying timber bridge. Clarification of the position and means of access between the two baileys is problematic, although such a route probably existed at the junction of the two, either across causeways or timber bridges.

Bailey Usage and Castle Life

(Figs 5.2, 5.18 and 5.55)

The reconstruction of the early Norman castle offered in Fig.5.55 indicates the probable character of the late 11th century castle, with buildings and demarcated areas within each of the baileys. Few other early Norman urban castles (*i.e.* pre-1100) have been the subject of extensive excavation within the bailey. At Gloucester, the bailey surface proved to be littered with features such as pits, posts, a drain and fences or screens, taken to imply a segregation of activities (Darvill 1988, 46), while similar features and ancillary buildings were recorded at Hen Domen (Higham and Barker 2000).

Archaeological evidence from Castle Mall indicates that the outer part of Norwich Castle's early south bailey (Period 2.1, Fig.5.2) may have been used for craft and other activities, including grain storage and processing, disposal of stable waste and, surprisingly, the manufacture of combs (see wider discussion in Chapter 12, 'Castle Life'). Although there is no direct archaeological evidence, the bailey would also have housed the Men of the Fee, part of the garrison and buildings with a range of functions. The excavated bailey at Hen Domen had a

<i>Period</i>	<i>Indeterminate</i>	<i>Latrine</i>	<i>Industrial</i>	<i>?Quarry</i>	<i>Refuse</i>	<i>Storage</i>	<i>Fire</i>	<i>Total</i>
2.1	34	0	1	6	13	0	0	54
2.2	27	0	2	0	0	0	1	30
Total	61	0	3	6	13	0	1	84

Table 5.20 Period 2 pit types

<i>Period</i>	<i>Total no. pits</i>	<i>Total no. measured</i>	<i>Depth < 1m</i>	<i>Depth 1–2m</i>	<i>Depth 2–5m</i>
2.1	54	18	6	5	7
2.2	30	8	5	2	1
Total	84	26 (31%)	11	7	8

* some pits were not bottomed and some had been heavily truncated. Others were not excavated.

Table 5.21 Surviving pit depths *

<i>Period</i>	<i>Pit number</i>	<i>Fig./Plate</i>	<i>Depth</i>	<i>Lining</i>	<i>Details</i>
2.1	22020		4.00m	?unlined	fill contained burnt wickerwork or wattling, although apparently not acting as pit lining
	20059		3.06m +	?unlined	fills of this pit produced 146 strips relating to the manufacture of bone/horn combs
	40200	Fig.5.13 Plate 5.6	2.10m	?timber	
	40291	Fig.5.12	3.10m	unlined	
	22064= 22099	Fig.5.16	3.40m	circular plank shaft	timber lining burnt
	22050	Fig.5.15	3.96m	clay	
	22152		2.26m	unlined	
2.2	60130		2.70m	unlined	

Table 5.22 Period 2 ‘deep’ pits

<i>Lining type</i>	<i>Period 2.1</i>	<i>Period 2.2</i>	<i>Total</i>
timber	4	1	5
cobble	0	1	1
wattle	0	0	0
clay	3	2	5
Total	7	4	11

Table 5.23 Pit linings

clear central area which ‘seems always to have been a cobbled open space, for assembly, fires and the corralling of horses’ (Barker 1969, 22). A similar situation can be envisaged in part of the bailey at Norwich. As well as providing a defended meadow, the north-east bailey may also have housed part of the garrison, stabling and other castle-related occupations. Knight’s horses, however, may have been kept in the innermost enclosure due to their high value (Higham and Barker 1992, 199). At Oxford, a field to the west of the castle was used to exercise knights and to provide a field of fire (Tom Hassall, pers. comm. 1998). Further consideration of castle life in the Norman period can be found in Chapter 12.VII.

Pits

A total of 84 pits of possible Conquest date was recorded within the confines of the early south bailey/Fee at Castle Mall, of which 11 (13%) were lined, many being notably larger than Late Saxon examples. The majority of the pits assigned to the Conquest period are attributed to Period 2.1 (Fig.5.2), many having been cut into by two ditches defending a subsequent bridge landing (Period 2.2, Fig.5.18). Allocation to this sub-period was made largely on the basis of the presence of Yarmouth-type ware and/or type 2A horseshoes, although it is possible that some of the features included here were pre-Conquest in origin (see discussion of the dating of Yarmouth-type ware in Chapter 13, ‘Pottery Overview’).

A total of eight ‘deep’ pits was recorded (categorised as those surviving to over 2m deep), representing 9.5% of the total number of possible Conquest pits excavated, although more may have existed and several were not tested for depth. The pits ranged in depth from less than a metre to over 4m.

Similar Norman pits have been recorded at Vyse Lane, Southampton ranging in depth from 1.82–4.26m (6 to 14 feet) and many had been used for storage: ‘One pit had post-holes along the sides and at one end which must be for a fixed cover’ (Dunning 1958, 207). A pit excavated at Castle Mall may have had a plank lid, held together

with clenched bolts and another provided evidence for a structure within it in the form of posts and stakes. Covers of timber or wattle have been postulated to keep out the weather and animals, two such pits having been excavated near Whitstable (Dunning 1958, 207). Collapsed wattle was found in a number of pits at Castle Mall and, together with the examples with posts or stakes at the base, may suggest further cases of lidded pits.

Of the eleven lined pits, most employed either timber or clay. One had cobbles at its base and had clearly been used as a fire pit, fuelled in part by crop-processing waste (Plate 5.14). The clay and timber-lined examples may have been used for storage. Sewage waste appears to have been deposited both in pits (although no purpose-built latrine pits were identified) and in early fills of the castle ditches. No wells of early Norman date were identified and the early location of a defended source of water, particularly necessary during times of siege, is unknown. The earliest recorded well at the site probably dates to the 12th century and provided a defended water supply adjacent to the castle bridge (Period 3.1, Chapter 6).

Soil Horizons/Middens

A complex sequence of deposits was recorded to the west of the site (Areas 1 and 6–8), partially infilling an earlier hollow (Hollow 1). The layers include a natural soil horizon, midden waste, destruction debris and the probable accumulation of mud and vegetation (Period 2.1). These may have begun to accumulate in the pre-Conquest period, although ceramic fabrics and forms present suggest that they continued to develop into the late 11th century (although note the comments on ceramic dating given in Chapter 13). Environmental samples indicate that the material derived from a number of sources. Another surviving area of the original soil horizon lay to the north (Area 49). Again, this contained pottery which indicates that deposition continued into the Conquest period; other finds recovered included a wavy-edged horseshoe of 'Norman' date (type 2A).

Ditch Fills

Early fills of the castle ditches indicate the effects of weathering and erosion, although recuts/cleaning episodes proved difficult to identify archaeologically. Samples from all of the early ditches indicate the early inclusion of human sewage (Murphy, Chapter 5.IV). Banded fills recorded in the ?Fee ditch (Period 2.2) may demonstrate the effects of swift deposition as a result of storms/thaws and slower periods of deposition. It has been suggested that such 'individual bands could result from brief erosion events, *i.e.* storms, or that the pattern of banding could be affected by turf falls' (Bell *et al* 1996, 236).

Plant macrofossils from the crescentic ditches (Ditches 7 and 8) provide evidence for a typical urban weed assemblage, indicating local vegetation dominated by nettles, thistles and other weeds, with bushes of elder and bramble. The evident refuse disposal and growth of vegetation within these ditches, ceramically dated to the late 11th to early 12th century, suggests that they were not maintained for any length of time. This is somewhat surprising at a period when regular cleaning and recutting might be anticipated. Observation of the erosion rates of experimental ditches (Bell *et al* 1996, 70ff) has shown that it would take about twenty years for a ditch to become stabilised by vegetation, the presence of the

latter preventing the bank eroding into the ditch further. If the crescentic ditches were dug (as proposed) in around 1075, the vegetation evident within them could therefore have accumulated by *c.* 1094, making it possible that the decline in their importance linked to the construction of the larger south bailey ditch *c.* 1094 to *c.* 1121–22 (Period 3.1). A wide range of refuse was dumped into these two ditches including partial animal skeletons (see below).

Gullies

Several small, intercutting ditches were recorded within the north-east bailey during excavations in 1979 (Site 416N; Ayers 1985). Three lay to the west of the site, running north-to-south with possible returns westward at their northern ends (Fig. 5.18). Two others, aligned east-to-west, lay at the southern extent of the main trench. 'These were clearly not defensive in character. Rather it seems likely that they acted as drainage ditches within the fortified meadow, allowing the run off of excess water during rainstorms ... They may ... have been channelling rainwater into storage tanks, especially as the area is likely to have been used for the keeping of cattle' (Ayers 1985, 65–66). Alternatively, such ditches may have been used to demarcate different uses within the bailey and/or may relate to agricultural activity within the defended meadow.

Ancillary Buildings

No clear evidence for buildings of Norman date was recorded within the castle precinct, although some of the structural remains noted in Period 1.4 (Chapter 4) could date to this time and one small structure (Building 25) may have remained in use after the Conquest. A single building (Building 28) may indicate a structure associated with the construction of the overlying rampart (Period 2.2). Several of the structures assigned to Period 1.4 were on different alignments to earlier buildings and employed different constructional techniques (with rectangular structures employing beamslots¹²). The absence of archaeological evidence for early Norman buildings may, in part, be due to the possibility that they had no foundations, but were surface-laid timber structures. Such buildings were apparent at Hen Domen, where evidence for some of the very earliest buildings excavated (dating to the late 11th or early 12th century) consisted only of clay floors or patches of destruction debris (Barker and Higham 1992, 333 and fig. 9.4). Subsequent building phases imply that, in the 12th century, Hen Domen's bailey was overcrowded with structures of varying size. These were principally of post-hole construction, accompanied by wattle with clay cladding and solid clay walls.

The evidence for ancillary buildings within Norwich castle's first south bailey remains largely indirect, coming from artefactual and ecofactual evidence indicating the presence of, for example, a brewhouse and possibly a bakehouse in the vicinity.

Environmental remains from pits within the bailey include a large charred deposit of prime grain, perhaps held in a sack (pit 20070, Fig. 5.11, Period 2.1). From the same pit came crop cleaning waste, charred malt and cress. This suggests that crop storage (and/or processing) was taking place nearby or perhaps even within the pit. The use of such pits for storage is known at other Norman castles. At Pevensey Castle, a deep Norman pit (4.87m or 16 feet deep) contained evidence for a ladder

(Dunning 1958, 205–217). The upper part of the pit had been infilled in the late 11th or early 12th century and contained two wooden spades. Other finds from the base of the pit included wooden bowls, sacking and a wine cask, suggesting that the pit had been used for storage. The small shovel and bowls may have been used for transferring grain or other foodstuffs out of the pit (*op. cit.* 207), which may have been deliberately abandoned due to side collapse, the ladder being left in position.

There is some indication in the Castle Mall Period 2 deposits of an increasing proportion of oats (Murphy, Chapter 5.IV) and generally the samples show two main sources; ‘clean’ batches of rye grain and sprouted oat and barley, the latter two probably the result of poor temperature control during malt-drying. Samples of the latter type proliferated within fills of the north-east bailey ditch (starting meagrely here but increasing in later periods), which may suggest the presence of a brewhouse in the vicinity. In larger castles, the bakehouse and brewhouse would often have been separated from the kitchen (Pounds 1990, 193). A number of querns were recovered at Castle Mall and would have supplemented any larger mill located outside the castle precinct. Such hand-mills would have been particularly necessary in times of danger. See Chapters 6.I and 13 for discussion and overview of documented food supplies to the castle.

Several environmental samples taken from pit fills suggest the disposal of hay or litter, presumably deriving from stables within the bailey. One area produced a concentration of horseshoe nails (Area 49), as well as four horseshoes, tentatively suggesting the presence of a smithy nearby. Further west a small fire pit (noted above) was fuelled at least partially by crop processing waste and an adjacent wood-lined pit with evidence for *in situ* burning may link to a similar activity (Area 6). Metalworking waste indicates the small scale production of both ferrous and non-ferrous objects for the castle and its garrison.

Cats and Dogs

The partial skeletons of a cat and two dogs were recovered from Ditches 7 and 8 within the early south bailey, with further examples from adjacent pits (two cats, two dogs; Albarella *et al.*, Chapter 5.IV and Part III). One of the cats had been skinned (Plate 5.19), while the dogs may have been butchered for dog or human consumption, the latter possibly during the siege of 1075. Additional evidence for the feeding of dogs comes from a horse hind limb (Plate 5.18).

Disposal of Pottery

A significant number of the pits excavated within the early bailey provided interesting ceramic assemblages (Goffin, Chapter 5.III). One, for example, (pit 22208, Fig.5.41) contained a number of complete and near complete pots demonstrating some unusual features, with the range of fabrics and forms being notably greater than usual. The fabrics and forms present (including LMU) date the pit fills to the late 11th to early 12th century. A second pit (20070, Fig.5.39) produced a fine ceramic assemblage, including an EMW deep bowl with stamped decoration imitating TTW (Plate 5.16). Several other pits produced large ceramic assemblages, one of which contained a jar which had been snipped at the top to produce an open vessel (pit 22119). An extremely large quantity (over

17kg) of mid to late 11th-century pottery came from another pit (90441=90262, Fig.5.44). Further consideration is given to these transitional assemblages by Goffin in Chapter 5.III, while Chapter 13 explores the post-Conquest development of the local pottery industry.

Antler-, Bone- and Hornworking

Apparent evidence for the manufacture of bone and horn combs, concentrated near the outermost crescentic ditch (Ditch 8), was recovered. Of the total of 201 bone strip fragments from the site, 89% came from the fills of two refuse pits pre-dating Ditches 7 and 8, within the south bailey (Figs 5.52). Most came from a single pit which contained a type 2A horseshoe and pottery of late 11th-century type. Further strips were recovered from the two ditches themselves. All of the strips are undecorated and none bear traces of cut marks for comb teeth: they may have been discarded due to breakage during manufacture. Chopped, cut or sawn horn cores (cattle and sheep/goat) were also recovered from these and adjacent pits apparently indicating the *in situ* manufacture of the horn combs with bone side plates during the late 11th to early 12th century. The presence of such activity is, perhaps, anomalous in the context of an urban castle and it could be suggested that the tiny combs (used for human hair) were either the by-product of another activity, such as the production of lanterns (MacGregor 1985, 67), and/or relate to finished objects other than combs (*cf.* the *tabula* set excavated at Gloucester castle (Kenyon 1990, 175 and plate 176; a direct parallel is not suggested). The presence of a group of sheep skulls from which the horns had been removed (Plate 5.17), alongside other evidence for hornworking (Huddle *et al.*, Chapter 5.IV), does indicate that this noxious activity was being conducted at the early castle site. Antlerworking may also have been undertaken on the site at this time (see Chapter 13 for further details) and a few antler combs were recovered.

Other Activities

Limited evidence for working with textiles comes from finds recovered from the site such as shears (for cloth cutting or sheep shearing), spindle whorls and heckle teeth. Other objects provide occasional hints at activities and daily life within the early castle (including horseshoes, a leatherworking tool, an iron tyre fragment, harness fittings, a joiner’s dog, querns and whetstones). Two buzz-bones were recovered from fills of a single pit in the south bailey.

Artefactual/Ecofactual Indications of Cultural Change?

As has been commented upon elsewhere in this volume, the issue of distinguishing pre- from post-Conquest activity has been one of the main problems faced during the analytical programme. Not least in this regard is the lack of diagnostic artefacts of Norman type and the ongoing difficulties relating to scientific versus ceramic dating in relation to the stratigraphic sequence (see Chapter 4). There are a number of brief comments to be made in relation to the Norman presence at the site. The ceramic assemblage from Period 2 deposits is almost entirely domestic in nature, represented by rims from a wide range of kitchen wares as well as finer table or

serving wares imported from regional centres as well as from the Continent. Of the group of thirteen horseshoes recovered from early Norman deposits, all except one are of the wavy-edged type (Clark's Type 2A) indicative of a post-Conquest date (Mould, Chapter 5.III). Of note amongst the artefactual assemblage is a tiny gilded belt mount in the form of dagger (SF411, Fig.5.33; Goodall, Chapter 5.III) and a rare Norman horse harness pendant (SF408, Fig.5.54; Mould and Ashley, Chapter 5.III).

The presence of a royal castle in the late 11th to 12th century (Periods 2 and 3) might lead to the expectation of evidence for a high status diet. This was not the case, however, and the typical high status animals such as deer and wild birds, are as rare during the early castle phases as they are in earlier and later times (Albarella *et al*, Chapter 5.IV and Part III). Continuity, rather than change, could be observed in the transition from Late Saxon to Norman in terms of the fish, fowl and meat consumed. It appears that the excavated features did not contain refuse from royal banquets, a fact which is not particularly surprising as visits by the King were very occasional and may have left traces in areas that remained untouched by the excavation. A substantial increase in the number of pigs (often linked to high status sites) was, however, noted in mid to late 11th century (Period 1.4, Chapter 4.IV), deriving from deposits which may either immediately pre- or post-date the Conquest. This could be interpreted as a consequence of the high status that the site acquired with the erection of the castle, but is more probably due to some change in animal exploitation or in use of the site which was brought about by the arrival of the Normans. The presence of fallow deer and rabbit bones, both Norman introductions, has also been noted in Chapter 4.IV. The findings from the plant remains are consistent with the faunal results, with no exotic species or any other evidence of high status being observed (Murphy, this volume). Further comments on the provisioning of the castle can be found in Chapter 13.

Conclusions

This chapter has sought to demonstrate the new evidence for the impact of the construction of Norwich Castle on

pre-existing settlement and has added to the previously limited understanding of the formation and development of the Castle Fee. Evidence for formalised 'settlement' within the latter (as envisaged in the original project design) has proved elusive, although excavation has demonstrated a range of activities within the defended area. The location and nature of the earthworks has been clarified, confirming a scale, sophistication and complexity which had only been hinted at in previous interpretations. By the end of this period, in the thirty or so years since the dramatic changes to the city's landscape engendered by its imposition, Norwich Castle was about to undergo another of the many changes to its appearance with the strengthening and refinement of both its earthwork defences and its donjon.

Endnotes

1. See comments in Chapter 12 relating to the possible siting of the first castle elsewhere.
2. The term 'ma(n)sura' has links to the French *maison* and the English legal term 'messuage'. It is used in Domesday to refer to a plot of land, group of buildings or a house (English 1995, 56, n.10).
3. This figure is sometimes given as 113 (e.g. Williams and Erskine 1987; Allen Brown 1977, 51), adding in the burgesses (*i.e.* 15 + 17 + 81 = 113).
4. Wilkins calculated around 23 acres (1796, 146); Ayers has 14 acres/5.6 hectares, although this figure excludes the Fee (1994a, 43).
5. The total area covering about 43 hectares (105 acres); see Chapter 4.VI.
6. It has been suggested that, in origin, all urban castles were originally royal (Drage 1987, 121)
7. A footpath or road beneath the motte was recorded during well excavation (Fenn's notes in Gough 1789).
8. The term 'ringwork' has been avoided in order to offset confusion over the smaller type of enclosure that might eventually be filled in to produce a motte.
9. of unknown date, although suggested as of possible Iron Age or Anglo-Saxon origin (Davison 1972, 23)
10. Neither observation has yet been entered into the County SMR.
11. The name derives from a shortened form of *appellour* 'an accuser, one who makes a formal charge against somebody' (Sandred and Lindström 1989, 126).
12. The general similarity in constructional techniques between the Late Saxon and Norman buildings should be noted.

6. Norman Castle and City (c.1094 to 12th century)

‘The castle of Norwyz hath for name Blanchefflower of ancient time, whereof no memory runs When the [Pikars] Picards came into England and took the city of Norwich, and besieged the castle of the said city, then entered the men of the fee ... into the castle, and saved the castle honourably to the use of the king which it then was.’

Liber Cartarum et Placitorum [Book of Charters and Pleas]; Kirkpatrick MS 42; quoted in Woodward 1847, 28

I. ARCHAEOLOGICAL, HISTORICAL AND DOCUMENTARY BACKGROUND

Norman Norwich

(Fig.6.1)

By the time of Henry II (1154–89), ‘only London and York paid more in aids than did Norwich’ (Campbell, 1975, 9). William of Malmesbury stated that the city was distinguished for its trade and its large population (quoted in Campbell 1975, 9; *Gesta Pontif* (RS), 151). Norwich’s income came from its importance as a market, administrative centre and ecclesiastical focus, as well as the fact that it housed an important Jewish community. Its castle ‘by its commanding situation and great strength, was competent to overawe the citizens when inclined to be rebellious, and to keep the city itself from attack’ (Kirkpatrick MS 42). Although the town

was a hundred¹ by the time of Domesday, little else is known of its jurisdiction until it was granted a charter by Henry II in 1158. This was superseded by Richard I’s charter of 1194, giving the city increased independence, arguably the most significant event in the city’s 12th-century history.² At this time, the Castle Fee remained under the control of the Sheriff of Norfolk (Hudson and Tingey 1906, xviii–xx).

In c.1094–5, Bishop Herbert de Losinga moved the seat of the East Anglian see from Thetford to Norwich and began construction of the cathedral and its priory. The foundation date for the cathedral is given in the priory chronicles as 1096 (Dodwell 1996, 41), although work may have begun slightly earlier. Construction work followed the demolition of an earlier church and the new, albeit incomplete, building was probably consecrated by 1100 at the latest (*ibid.*). It seems probable that Norwich’s castle donjon and cathedral church were planned together; 124 instances of such pairings have been suggested for the

Date	Event
1094–1121/ 1100–1135	Construction of stone keep & alterations to earthwork defences (William Rufus/Henry I)
1103 and 1108	Henry I lodged at the castle
1121/2	Henry I visited Norwich castle for Christmas Crownwearing
1135–6	Norwich castle held by Hugh Bigod
1135–1154	Construction of the first city ditch (probably in the <i>Westwic</i> area)
1136	King Stephen visited Norwich, retaking the castle and placing his son, William of Blois, in control.
1140 and 1154	King Stephen visited Norwich
1157	First reference to (<i>Ecclesia</i>) <i>Sancti Johannis ante portam Castellii</i> or ‘St John at the Castle Gate’ (later St John de Berstrete/Timberhill)
1158	Henry II’s Norwich charter
1160–61	Building work at the castle
1172–73	Norwich castle bridge repaired (first documentary reference)
1173–4	Invasions led by would-be Henry III (backed by the King of France); Norwich burnt and plundered
1174	318 Flemings led by Hugh Bigod quartered in the castle and baileys
1175–6	Extensive repairs to the castle
1191–2	Repairs to castles of Norwich, Eye & Orford
1194	Richard I’s Norwich charter

Table 6.1 Key events: 12th century

11th and 12th centuries (Thompson 1986, 307, table 1). De Losinga also had influence on developments of other aspects of Norman Norwich, acquiring large parts of its rural areas for the church (Campbell 1975, 8). Prior to the

Conquest, most of the lands around the town were either owned by the crown or small scale landowners; only Heigham was in ecclesiastical hands (*ibid.*). The bishop acquired Eaton, Newton and Thorpe, with a Benedictine

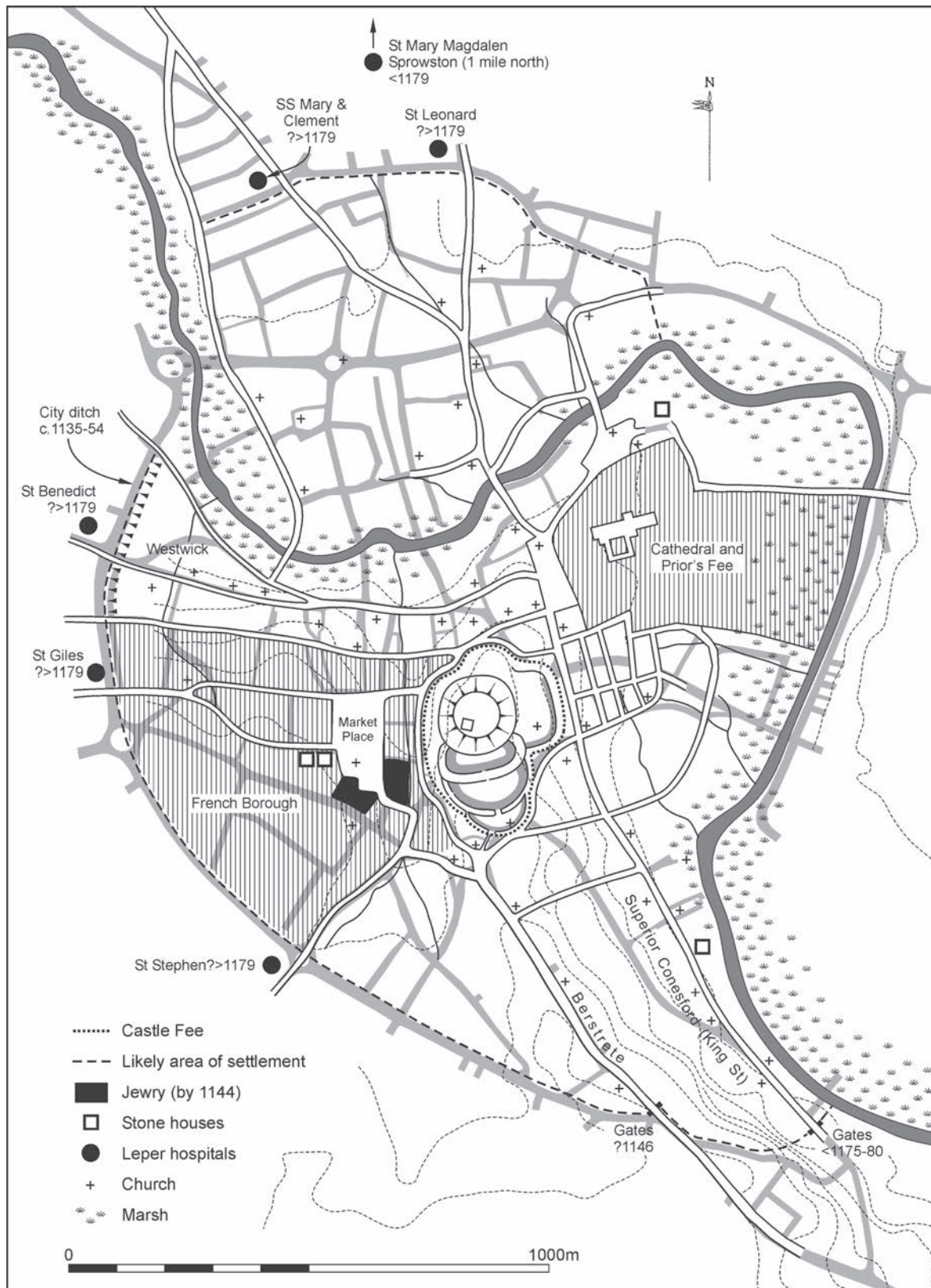


Figure 6.1 Map of 12th-century Norwich, showing the reworked castle defences, the imposition of the cathedral precinct (c.1094) and related alterations to street pattern. The Jewry to the west of the castle was established before 1144. Scale 1:12500

nunnery at Carrow being founded in *c.*1146 within the city fields to the south at Carrow. St Paul's hospital was founded to the north-east in the early 12th century (Rawcliffe 1995, 61ff) accompanied by an area of urban development. By the end of the 12th century, the city was therefore virtually enclosed by church-owned lands.

A large new market had been established to the west of the castle, around which the French Borough was constructed (see Chapter 5.I). It eventually eclipsed the old market of Tombland. The eastern limit of the new Borough (which was probably in existence by 1075, see Chapter 5) was marked by the Great Cockey stream, the eastern bank of which was reflected in the limit of the Castle Fee. It was in this area (within the new borough) that the Jewry was established (Lipman 1967, fig.13; see further discussion below).

As well as planned urban expansion, less structured settlement began to extend along major routes to the north and south (Fig.6.1). The earlier Anglo-Saxon burh ditch on the northern side of the river had been infilled by about 1100 (Atkin, Carter and Evans 1985, *passim.*), while the newly discovered ditch around the southern burh appears to have been infilled during the 12th century (Lloyd *et al* 2002, 8). Recent excavations along King Street have provided new insights into the 12th-century development of this area, with more churches perhaps being established. New houses along King Street included a stone house belonging to Jurnet, a Jew (see below) and many other Norman stone buildings are documented in the city. A well-preserved example survives at the site of St Martin-at-Palace Plain (Site 450N; Ayers 1987c), while the remains of two others were found at excavations within the Norman French Borough (Percival and Hutcheson, in prep.).

Although little is known of the city defences prior to 1253 (see Chapter 7.I), a new ditch was constructed around at least part of the city³ during King Stephen's reign (1135–1154). Conesford Gates were in existence before 1175–1186 and Ber Street gate may have been mentioned in 1146 (Jope 1952, 289 and fig.1; although see caveats in Campbell 1975, 10, fn 30). In the latter part of the 12th century, Norwich Castle was therefore set well within the defended city (Figs 6.1 and 12.2), rather than on its fringes as had earlier been the case.

Churches continued to be founded in Norwich during the late 11th and 12th centuries. These included St George Colegate and St George Tombland (a popular dedication after the first crusade of 1096), St Margaret Newbridge, St James and St Margaret *in Combusto* to the north of the river (Ayers 1994a, 59–60). Many others were founded to the south of the river, such as those within the French Borough and several along King Street and Ber Street (two having been destroyed by enemy action in 1939–45). Along Ber Street, to the south of the castle precinct, was St Michael at Thorn (Norman; first reference 1254–75), St Bartholomew (first reference 1258; deconsecrated 1549) and St John de Sepulchre (a possible pre-Conquest church; first referenced in Domesday). Along King Street were St Peter Parmentergate (first reference 1269), St Michael Conesford (first reference 1147–9), St Julian (pre-Conquest or Norman; first reference 1260), St Etheldreda (possibly pre-Conquest; first reference 1254–75), St Edward (first reference 1267), St Olaf (pre-Conquest or Norman; first reference 1254–75) and St Peter Southgate (Norman; first reference 1175–

86). Carrow Priory was founded at the southern end of the city in *c.*1146 (Fig.7.1).

Land reclamation along river margins took place; recent excavations indicate the presence of Norman revetments which may have consolidated the ground to permit the mooring, loading and unloading of shallow-keeled boats (Site 374N; Brennand and Hutcheson 1998, 17; Site 26464N; Shelley 1998, 12). Norwich became the chief sea port of the region and new bridges were constructed to serve the growing city, some perhaps replacing pre-Conquest structures. Riverside excavations attest to the presence of crafts and industries such as dyeing, tanning, skinning and hornworking, while 12th-century leather-working waste has also recently been recorded on King Street (Shelley 1998, 8).

The 12th-Century Castle

by Margot Tillyard and Elizabeth Shepherd Popescu

Introduction

Norwich's magnificent new *donjon*, detailed further below, saw its earliest use as a royal residence in the early 12th century; Henry I lodged at the castle in 1103, 1108 and 1121–2, the latter visit for one of three annual crown-wearings (at Easter, Whitsun and Christmas), when the king displayed himself in public splendour. Wearing the crown was a ritual formality, the placing of it on the king's head being the exclusive right of the Archbishop of Canterbury (Bartlett 2000, 127–129). At the time of the 1121–2 official crown-wearing celebrations in Norwich, the king's second marriage — to Adela (or Adela) of Louvain — was less than a year old and this was just the kind of event that crown-wearings were designed to celebrate.

When Henry I died in 1135, the then earl (Hugh Bigod) installed himself at Norwich Castle in 1136 (HA, Greenway 1996, 707), whereupon King Stephen took possession of it and placed his son (William of Blois) in charge. For a few years the town was governed directly by the king because the burgesses had supported Hugh, although there seems to have been no fighting in Norwich during any part of the Anarchy. The town prospered: part of a perimeter ditch was dug (West 1932, 14 and above), there were local men to spare for the second crusade of 1147 and the burgesses' houses were described as 'built anew' in 1152.

The castle saw action during the disturbances of 1173–4 (see below). On his accession in 1189, Richard I made Roger (the son of Hugh Bigod) Earl of Norfolk and Constable of the Castle. In 1193, for a consideration, he sold the burgesses the right to collect his taxes themselves.

One of the key figures in the administration of the Norman and later castle was the sheriff (see listings in Rye 1921, 17–23 and 28–29; Round 1920; Le Strange 1890), who had three main tasks:

1. **Military:** the control of the richest area of the kingdom and its defence from attack. To achieve these ends he had to keep the castle and its buildings in repair and to levy, house, arm and provision a garrison;

2. **Administrative:** the management of the king's interests in the area which were chiefly financial (the collection of taxes, tolls and debts and their safe-keeping) and legal (the provision of courts and of a gaol, which was also used for hostages and other long-term prisoners);
3. **Residential:** the provision of accommodation for the sovereign when required, temporary lodging for royal officials and occasional shelter for Jews.

The documentary evidence for the castle below and in Chapter 7.I is arranged under these headings.

Military Functions

Castle Maintenance and the 1174 Invasion

There is no direct documentary evidence for the early history of the donjon. Five pounds per annum was commonly allowed to a sheriff for routine repairs (the items noted in this section represent abnormal expenditure). Whenever unrest or invasion threatened a sheriff received instructions to provision his castle. The king's treasury would recompense him at the end of the year, adding the replacement cost of items used during the hostilities and deducting the value of surplus goods sold off. Under these arrangements the sheriff was claiming £12 12s 1d in 1159–60 (Rye 1921, 13). Royal records for 1160–61 show that he was allowed £12 12s 1d for provisioning the castle. That year the burgesses of Norwich contributed 10 marks towards building work (*operationes*) there (Pipe Roll 7 Henry II, 7).

When invasion from France (led by the would-be Henry III and backed by the King of France) was threatened in 1172–73 considerable improvements were made to Norwich Castle's defences. Over £20 was spent on repairing the stone bridge (the first reference to this feature): *In Reparat. Pontis lapidei....* The same year over £20 was spent on repairing the palisade and the breteshes (*in Reparat. Palicii Breteschar...*) (Pipe Roll 19 Henry II, 117). Breteshes were either wooden lookout towers or wooden siege shutters put up between battlements as a defence against crossbow fire. The castle was provisioned in readiness for attack. Supplies purchased in 1172 and 1173 included 200 loads of wheat (see Rye 1921, 13 for clarification of a 'load'), with three hand mills (querns) for grinding it, salt, salt pork, sausages and 300 cheeses, together with rope and iron (Pipe Roll 19 Henry II, 117). Two years later there was also barley and a large quantity of oats, as well as peas and beans (Pipe Roll 20 Henry II, 37).

At the end of the summer of 1173, the Earl of Leicester, supported by Hugh Bigod, landed in Suffolk, but was defeated near Bury St Edmunds. Some of the Flemish troops wintered at Hugh's castle in Bungay. The first invasion attempt of 1173 was unsuccessful although, with Flemish mercenaries still in the area, Norwich Castle was kept in a state of readiness throughout the winter. Twenty pounds was accounted for *in Castro de Norw. qu. Flandr. fuer ad Bungheia* [when the Flemish were at Bungay (the Bigod stronghold)] (Pipe Roll 20 Henry II, 38). Other payments for foot soldiers, repairs and supplies amounted to £39 15s 8d.

A force of three hundred Flemish knights landed in 1174 and were joined by Hugh Bigod who marched them

to Norwich. The townspeople could not prevent Hugh's forces from burning and plundering houses and taking prominent citizens prisoner for ransom. A contemporary French chronicler, Jordan Fantosme, stated that most of Norwich's men were 'weavers, they did not know how to bear arms like knights' (Howlett 1886, 289). The castle was besieged and a colourful account of its defence is given in the *Liber Cartarum et Placitorum* [Book of Charters and Pleas]:⁴

'When the [Pikars] *Picards* ... came into England and took the city of Norwich, and besieged the castle of the said city, then entered the men of the fee ... into the castle, and saved the castle honourably to the use of the king which it then was. For some of them were good men of arms, some good arbalisters, some good archers, and the others forcible in defence, wherefore all those which were then and since infeoffed have enjoyed their franchises, and ought so to do most honourably in all points' (quoted by Woodward 1847, 31: Kirkpatrick MS 42).

Despite the valiant attempts of the men of the fee, the castle was taken. Three hundred and eighteen Flemings were quartered in the castle and baileys, who, Blomefield believed, were employed in 'deepening the ditches in the strongest manner' (Blomefield 1806, II, 32). However, the king's fortunes were now improving and Hugh retreated in return for a safe conduct. Once again, though, Norwich was in ruins and the king had to remit all but £16 of the fee-farm for the following year. Now back in royal hands, the castle was repaired at considerable expense. In 1174, £47 had to be spent on immediate repairs and a kiln was built to burn chalk for lime. At this time, a payment of 29s 7d for cartage is recorded, apparently in connection with use of the kiln.

In 1175–6, substantial repairs to Norwich's great tower and other defences were carried out (Pipe Roll 20, Henry II, 37; 21 Henry II, 108; 22 Henry II, 59–60). It may be significant that in 1175 Ailnoth and royal carpenters and masons were in Bungay for the slighting of Bigod's castle there (Colvin 1963, 58). Any work paid for directly by the king would not show up on Pipe Rolls. In 1175–6, repairs to the donjon alone amounted to £20, costing as much as those for the rest of the castle put together (which amounted to £20 2s 0d; Pipe Roll 22 Henry II, 5960).

The lime kiln was in use again in 1183–4. That year there were repairs to the bridge: *in emendatione ... pontis Regis castellum de Norwico* [on repairing the king's bridge at Norwich Castle] and to the castle 'houses' (Pipe Roll 30 Henry II, 37). The 'houses' may have included stables, workshops, stores, bakery and brewery lying within the wooden palisade on the mound. There was also considerable new work on a gaol, although its location is not stated. In 1187, 42s was spent in relation to the castle's rampart walks: *pro aluris castelli de N. emendandis* [on mending the rampart walks of Norwich Castle] (Pipe Roll 34 Henry II, 54). In 1191–2 general repairs to the castles of Norwich, Eye and Orford cost £25 8s 8d.⁵

The Garrison

The garrison had to be levied and housed, armed and provisioned (see above). It was originally provided and later paid for mainly by the big ecclesiastical institutions

of the area. Bury St Edmunds Abbey furnished forty knights, ten for each period of three months. This obligation was commuted about 1140 for a money payment and an undertaking to garrison Bury instead. From 1082 the knights provided by the Abbot of Ely only needed to be in Norwich when called upon: otherwise they were to guard Ely. The Abbot was allowed to maintain a fortified house (location unknown) in Norwich, probably to accommodate his men, but he was relieved of his Norwich duty in 1130. Others who provided castle guard included the Bishop of Norwich, the abbot of Holm and certain landowners holding directly from the king. Other estates were held subject to the provision of crossbowmen, or, later, to a scutage payment in lieu. Land and meadow in Earlham was subject 'to the ward of the arbalistry of Norwich, when it happened, 2s' (Kirkpatrick 1845, 257–91).

The tenants of the castle bailey had to act as sergeants, *i.e.* soldiers, in times of war and to man the watch (Kirkpatrick 1845, 300). In normal times, such was the strength of a castle in itself, forces within it were very small.

Amounts paid by sheriffs for mercenaries are found in the Pipe Rolls. For instance, the account for 1157–8 reads *Et in libat. Militu. R q Custodiunt Castell de Norw ...* [on paying the king's knights who guard Norwich Castle] *£51 12s 0d* (Pipe Roll 4 Henry II, 126). In 1173–4 £20 was paid to twenty knights and £6 4s 4d to twenty sergeants lodged at the castle and a further £20 'by order of Count William' when Bungay was garrisoned by the Flemish forces (Pipe Roll 20 Henry II, 37). More detail is given for the year 1193: *Et item in liberatione XXV militum in castello de Norewic de XI diebus L li. Et XXV servientum equitum de eodem termino XVI li et xiii s. et iii d ... Et ... XXV servientum peditum ibidem de eodem termino viii li. et vi s. et viii d.* [Item: for the payment of 25 knights in Norwich Castle for 40 days, £50. And for the payment of 25 mounted serjeants for the same period £26 13s 4d ... And for the payment of 25 foot-serjeants for the same period £8 6s 8d] (Pipe Roll 5 Richard I, 13).

Administrative Functions

Financial

A sheriff was responsible for the collection of the Norfolk portion of royal revenue: a Pipe Roll represents his statement of account. Money came in from castle-guard rents and scutage, from the profits of the county court, from taxes on the burgesses of Norwich and other towns, from forfeitures of the property of condemned felons and from 'Aids' or extraordinary taxes. No reference has been found to the castle treasury.

Sheriffs had other minor sources of income. In the late 13th century Norwich bailiffs protested over the imposition of tolls on catches of fish brought by boat to the city quays or to the market in carts, as well as on loads of withies and earthenware sold in the market (Kirkpatrick 1845, 295). A sheriff would also have had a pound for animals illegally pastured or straying in the baileys and would have charged redemption fees.

Legal

The Normans took over the Anglo-Saxon system of shire and hundred courts. At first the sheriff or the bishop would preside over these, but later they were held by travelling royal justices. Juries were drawn from owners

of large properties in the county. Originally the court had no permanent location. The hearing of 1149, at which it was recalled that such courts had been held for at least fifty years, took place in the bishop's garden. At other times the 'minsters' of St Stephen (*c.* 1114) or St Giles (*c.* 1165 and *c.* 1180) were used (West 1932, 70, 100, 121). Both these churches were in the French town and had large churchyards. A building to house the Shire Court was constructed within the south bailey at Norwich Castle in 1271 (or earlier) and is detailed further in Chapter 7.

The Gaol

Blomefield quotes a reference to a prisoner in the castle in the reign of Henry I (Blomefield 1806, II, 24). The Assize of Clarendon of 1166 reaffirmed that sheriffs were to maintain gaols in a royal castle or borough. That year 54s 8d was spent on Norwich Castle gaol (Pipe Roll 12 Henry II, 17). In 1183–4 45s 6d was paid to two men working there and further work on *operatione domus gaiole* [works on the jail building] followed the next year (Pipe Roll 30 Henry II (1183–4), 2). 'Domus' implies a separate building.

Prisoners were often remembered in wills and bread for them was supplied by the Cathedral priory on Maunday Thursdays (Saunders 1930, 91). The sheriff received an allowance for any royal prisoners or hostages whom he was required to house. This amounted to 61s in 1161–2 (Pipe Roll 8 Henry II, 62). He was also recompensed for

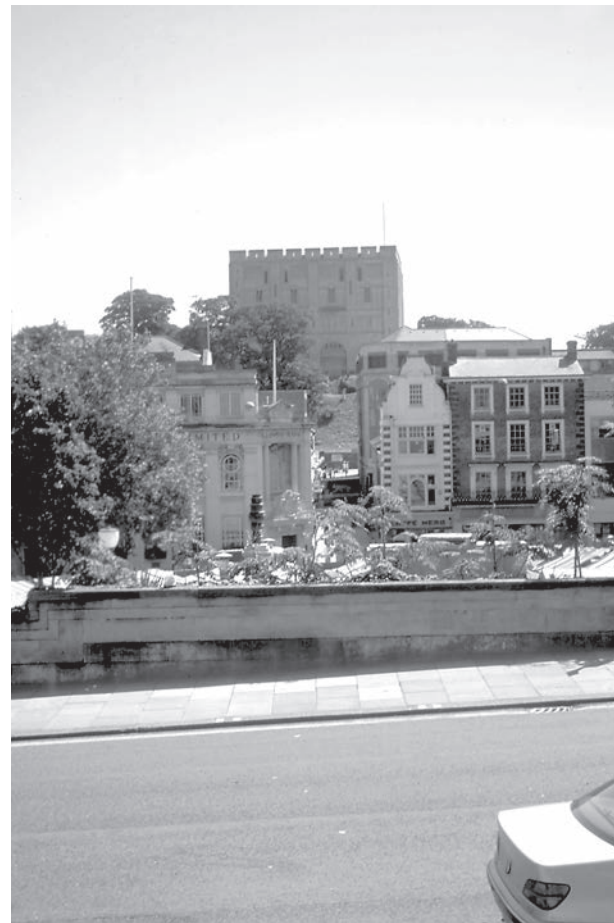
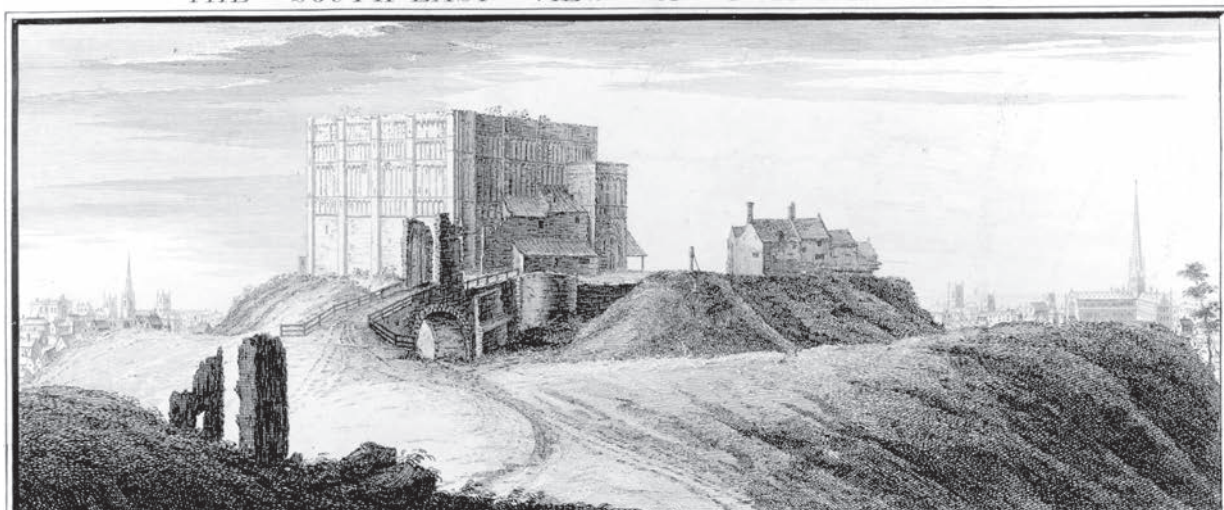


Plate 6.1 Norwich Castle Keep, viewed from City Hall to the west, across the great market, showing the course of Davey Place leading towards the castle.

THE SOUTH-EAST VIEW OF NORWICH CASTLE.



To His Honour Edmund Bacon Bart's Almshouse, Esq.
 Knights of the Shire for the County of Norfolk.
 This PROSPECT is gratefully inscribed by
 their most Oblig'd humble Serv^{ts}
 Sam^l & Nath^l Buck:   THIS Castle supposed to have been built in the beginning
 of the Saxons & afterwards repaired, if not re-edified
 by Hugh Bigod Earl of Norfolk when he fought with
 Prince Henry (Son of St. Hen. 2.) against his Father
 Sam^l & Nath^l Buck delin. et sculp. Publish'd according to Act of Parliament March 25. 1734.

Plate 6.2 Norwich Castle, 1738 by Samuel and Nathaniel Buck (NWCMMH Todd 7, 76A)

escort charges. In 1157–8 he received 13s 4d for this, in 1158–9 45s for maintenance of thieves and their escort and in 1202/3 20d *in custamento ducendi i prisonem a Norwic usque ad Gipeswiz* [in payment for the escorting of one prisoner from Norwich to Ipswich] (Pipe Roll 4 John, 104).

Iron for fetters regularly appears in the sheriffs' accounts. Smith's work was expensive: *per Judiciis et Justiciis faciend de Latinibus xiii s.* [the making of ?irons or ?fetters for ordeals and punishments 13s] in 1157–58 and 11s 10d for the same item in 1206. The threat of *probatione* or *examinatione iudicii* [ordeal] was a terrifying one (Hudson 1896b, 47) and *judiciis* probably means ordeal in irons. This method of trial was not abolished until 1219.

Residential Functions

Royal Visits

As a royal castle, Norwich was used by early kings as an occasional residence. Henry I lodged there in 1103, 1108 and in 1122 for his Christmas crown-wearing, a splendid occasion for which enormous supplies would have been necessary. When King John was at Winchester for Christmas 1206 the sheriff had to provide five hundred hens, five thousand eggs, twenty oxen, one hundred pigs and one hundred sheep. Five hundred yards of linen were needed for tablecloths and napkins. In 1207 the sheriff of Norfolk had to pay 15s 6d *pro nappis R ducendis a Wint' ad Norwiz* [for taking the royal table linen from Winchester to Norwich] (Pipe Roll 9 John, 139). King Stephen was in Norwich in 1136 (HA, Greenway 1996, 707), 1140 and 1154, but in less troubled times the city was seldom visited.

Jews

Jewish moneylenders were brought to England soon after the Conquest. They were the king's property and

the sheriff's responsibility. This was specifically stated in 1236 when his allowance of £60 was for the custody of Norfolk and Suffolk with the castles of Norwich and Orford and for the keepership of the Jews of Norwich. The Norwich community, which was one of the most important in England, was established in the city by 1144 and may have originated in 1135 or earlier (Lipman 1967, 4). As elsewhere, they lived near the castle, mainly south of Sadelgate (now White Lion Street) which led from the castle to the market (Figs 6.1 and 6.48). One owned property, later held by an English goldsmith, beside the 'way to the Shirehouseyard' (now Orford Street; NRO Case 1a Roll 2 m3 Pundreys to St Edmund). Two others held land backing onto the 'fosse of the king' and beside the 'way leading to the bail' (now York Place; Lipman 1967, 113, 136). The westernmost property of the Timberhill block (Figs 7.2 and 7.3, City Property a) was bounded to the west by the Way to the Shirehouseyard (later Orford Street) and to the south by the King's Way (Berstrete/Timberhill). This corner property had belonged to Meyr the Jew before 1287, possibly the poet who survived the expulsions of 1290 and wrote a poem about them (Lipman 1967, 149, 157–9).

The castle would have provided occasional shelter for the Jews, documented examples occurring at Norwich in 1144 and 1189 (see below). The proximity of the Jewry to the castle, and the security this provided, is often paralleled, as at Oxford (Pounds 1990, 215). The Norwich synagogue may have been sited at 7–10 Haymarket (Site 448N) and was demolished in 1286. A stone column recovered in 1962 may have come from this building. Other relevant items include a bronze bowl with a rabbinical inscription (recovered from Norfolk in the 17th century) and an anti-Semitic caricature in an Exchequer document of 1232–33 (Lipman 1967, fig.10). A Jew's house (known as Jurnet's Hall or

the Music House) survives on King Street and may date to c.1175 (located in Fig.6.1).

The sheriff's championship is illustrated by the case of the trumped-up charge brought against certain Jews in 1144, alleging the crucifixion of a Christian boy (William of Norwich) whose body had been found in Thorpe Wood some years before (Lipman 1967, 50–57). To protect them from the mob, the accused were lodged temporarily at the castle. The sheriff escorted them (probably via Castle Meadow) to the Bishop's Court and represented them there (Hudson 1896b, 29, 46). The escheated property of Jews and others hanged for their crimes was allotted to royal servants or supporters. In 1241 William, Usher of the Wardrobe was given the 'houses late Isaac the Jew' in Norwich, while Simon the Chamberlain received 'the houses late Moses Mokke' (Cal. Chart Rolls I 264, 268). Until such allocations were made, the sheriff would administer the properties, taking the profits for the royal revenue.

On the strength of a rumour that Richard I did not favour Jews, there were risings against them in Lynn, Bury and Norwich shortly after his coronation in 1189, upon which the Norwich Jews were taken into the castle for their safety (Lipman 1967, 58). Henry II at the beginning of his reign charged Roger Bigod, then Constable, to give sanctuary to the Jews and to see that they were enabled to recover their debts (Doubleday and Page 1906, 472, 7).

The New Donjon and its Surrounding Earthworks

The Donjon

(Plates 6.1–6.2, 8.1 and 10.2)

'The castle of Norwyz hath for name Blancheflour of ancient time, whereof no memory runs' (*Liber Cartarum et Placitorum* [Book of Charters and Pleas]; Kirkpatrick MS 42; quoted in Woodward 1847, 28). Writing in 1728, Thornaugh Gurdon suggested that this name (White Flower) 'might be given it from the Whiteness of the Stone, whilst it was new and fresh' (1854, 141). While this possible Norman-French sobriquet was noted by antiquarians, it has thus far been overlooked by more recent authors. The French names of castles are often associated with their topographical setting (Creighton 2002, 69), although this is perhaps an example of the naming of castles in relation to young girls (Sandy Heslop, pers. comm. 2003). Further consideration of the issue can be found in Chapter 12, 'The Norman Context'.

Norwich's castle great tower or *donjon* has been described as 'architecturally the most ambitious secular building [of its time] in western Europe' (Heslop 1994, 66; Plates 6.1–6.2). The building has traditionally been interpreted as dating to the reign of Henry I (1100–1135), largely on the basis of stylistic comparison (e.g. with Falaise in Normandy; see Chapter 12). Its construction may have been begun by Henry I after 1119, when there was a break in the construction of the cathedral. An alternative suggestion is that work began in 1094, during the reign of William Rufus, in conjunction with work on the cathedral (Renn 1960, 9; Heslop 1994; Drury 2002b, 211). This hypothesis is supported by the presence of mason's marks which appear within both buildings (Whittingham 1980; Marner 2002). Henry I's visit for his Christmas crown-wearing in 1121–2 (HA, Greenway 1996, 469) may have been in connection either with the

completion of the great tower, or an inspection of work in progress (Beecheno MS 1908 1, fn).

Detailed architectural study of the *donjon* really began with King (1786) and Wilkins (1796), who were followed by numerous 19th-century antiquarians (see Chapter 12). The structure's constructional details and contemporary stylistic comparisons have recently been re-examined, with its ostentation examined in terms of its social context (Heslop 1994). Norwich's *donjon* and cathedral began 'the formation of a distinctive local variant of a style the elements of which can be found piecemeal in England and on the Continent in the late eleventh century ... just as the buildings are unmistakably High Romanesque they are also specifically East Anglian' (Heslop 1994, 64). Heslop sees the effect of Norman architecture in England as colonial and 'designed to overwhelm' (*op.cit.*, 66). Consideration of the wider setting of the great tower is given in Chapter 12, 'The Norman Context'.

Kirkpatrick described the building as 'one of the great ornaments of the city' which 'was so conspicuous ... not only to travellers who were coming to the city, at some miles distance from it, but also in the Market Place, and in many streets of the city, above the tops of the houses' (Kirkpatrick 1845, 241). Its dominance over Norwich's skyline is maintained to this day (Plate 6.1). When finished, the structure was sixty-six feet (20m) high and a near square of about one hundred feet (30.5m), with walls thirteen feet thick (4m). It belongs to the two-storied type (such as Castle Rising, Norham and Bamburgh) and was divided by an internal spine wall (Faulkner 1971, 2). The northern and southern sections of the building were further subdivided on each floor into smaller chambers including a great hall and chapel. Its principal entrance was to the east at first floor level, defended by an elaborately decorated fore-building or tower (Bigod's Tower, largely destroyed c.1795) reached by an external defended staircase (Plate 10.2.C). The presence of this forebuilding at such an early date is noteworthy, its style perhaps reflecting timber forerunners (Heslop 1994, 30). The tower may have housed a drawbridge at the top of the stone stairs (*ibid*).

The lower part of the building would originally have been faced in flint, although perhaps rendered (Heslop 1994, 15). The upper part of the exterior was faced in Caen stone with 'tiers of blind arcading pierced with a pattern of windows' (Renn 1960, 9). The latrine block lay along the western side of the great tower and would have discharged into the motte ditch in view of the French Borough, although the means of drainage have yet to be examined archaeologically. Prior to 19th-century refacing, the exterior of the great tower was recorded by William Wilkins (Wilkins 1796) and Francis Stone. The refacing was carried out between 1834 and 1839, primarily in Bath stone but employing Clipsham and York stone for architectural details. A recent archaeological survey recorded both original details and 'mock' joints in the refacing (Whitmore forthcoming; Shepherd 1998, 10–11). The surviving building is effectively a gutted shell, the interior of which was largely cleared prior to conversion into a museum in the 1880s (see Ayers 1994a, fig.93).

Two major constructional phases have previously been proposed on the basis of changes in style at first floor level, which are also apparent in the treatment of the vaulted floor of the Bigod Tower, where a raising of

the vaulting is apparent (Faulkner 1971, 2). There were clearly some alterations in the design of the building during construction, several of which ‘occurred at or a little above the mid height of the basement storey’ (Heslop 1994, 54). Recent analysis of the primary constructional phase (c.1095–1115), has identified four main phases, indicating both the constructional process and early developments of the design (Drury 2002b, 211).

The new *donjon* was placed on the south-western corner of the enlarged motte. The early timber tower may have lain beneath the new one although there is no archaeological evidence to confirm this as, to date, only small-scale archaeological work has been undertaken beneath it (Chapter 6.V). In 1972, medieval and later pottery and animal bones were recovered from trenches below the floor of the donjon basement. Wall footings were identified and much medieval and post-medieval material was retrieved from trenches through the dungeon. Work by the NAU in 1986 included partial excavation beneath and survey of the great tower (Ayers 1987b, 21–23; Ayers unpublished; see Chapter 2), while further limited evidence was recorded in more recent excavations (Wallis in prep.).

The Enlarged Motte and its Ditch (Plates 6.3–6.5)

The surviving motte at Norwich has clearly been much eroded and was reduced in size at later dates, partly through quarrying (see Chapters 8 and 9). In the mid 18th century, Woodward stated that ‘The ballium [motte] on which the Castle stands is about twenty ft [6m] higher, raised, it is presumed by art, with the soil of the inner [motte] ditch’ (1847, 9). Kirkpatrick thought that the original mound was square, rather than circular; ‘the four sides of it respecting the compass’ (Kirkpatrick 1845, 240). His descriptions of the gradual erosion of the mound are given in subsequent chapters: further comments on its original form are given in Chapter 12, ‘The Motte’. ‘The generally accepted view is that the Mound was made partly with earth scaped down off the end of the long tongue shaped hill or promontory which stretches down from Bracondale and Ber Street at a level of 128ft [39m] towards the Castle, the removal of which would form the ditch around the Castle Mound’ (Rye 1921, 8). An alternative view, expressed by Harmer in 1888, was that the mound was entirely formed from moat upcast, the artificial part of the mound being only 33ft (c.10m) high (see below). He ‘deprecates the idea that anyone destroyed the supposed spur of the high land of Ber Street’ (quoted by Tingey 1901, 151, fn.1). Rye himself suggested that it was more likely that material to construct the mound would have been brought downhill (*i.e.* from the south), than uphill from the motte ditch. Kirkpatrick suggested that the upcast from the motte ditch was thrown outwards, forming a bank on the outside of the ditch ‘though not half so high as any part ... on the south side; but so that on all sides the bottom of the ditch was of equal depth from the top of the hill’ (Kirkpatrick 1845, 242; see caveat in Chapter 7.V, ‘The Barbican Ditch and its Rampart’).

Clearly, given its physical character, the new part of the enlarged motte and raised area of the old motte would have needed time to settle (see Chapter 6.V). An early interpretation of the development of the motte was that ‘only timber castles could at first be built on the hastily



Plate 6.3 Section of the Bayeux tapestry showing the erection of the Norman motte at Hastings (Sussex).

A group of workmen, perhaps Normans or English prisoners, is supervised by a figure who may represent Robert of Eu. Spoil from a surrounding ditch is being thrown up to produce a layered mound. (The Bayeux Tapestry, 11th-century: by special permission of the City of Bayeux)

erected mounds, the stone keeps ... not replacing them for a generation or two later’ (Hudson and Tingey 1906, vii). Rye suggested that the construction of the masonry tower would have been considerably later than the construction of the motte as its ‘enormous weight would have necessarily caused extensive settlements’ (Rye 1921, 8). Subsequent settling of the new mound, supporting the heavy stone building, led to the cracking of the new structure and suggests that the ground had not been sufficiently compacted. Kirkpatrick blamed the cracking on the fact that the new donjon ‘was built so near the brink of the hill’ (Kirkpatrick 1845, 242). The north wall ‘had been subject to massive failure during construction, one half of it being largely demolished and rebuilt’; this wall was to remain weak and was subject to repair until the 18th century (Ayers 1987b, 22).

The stratification apparent in the motte depicted in the Bayeux tapestry (Plate 6.3) is reflected in the known stratification of the Norwich motte, excavations through it having taken place in the early 20th century (Tench 1910). Three colour slide photographs were taken during construction of the Museum rotunda in the late 1960s



Plate 6.4 Excavations through the top of the motte during the 1960s, showing steep tip lines

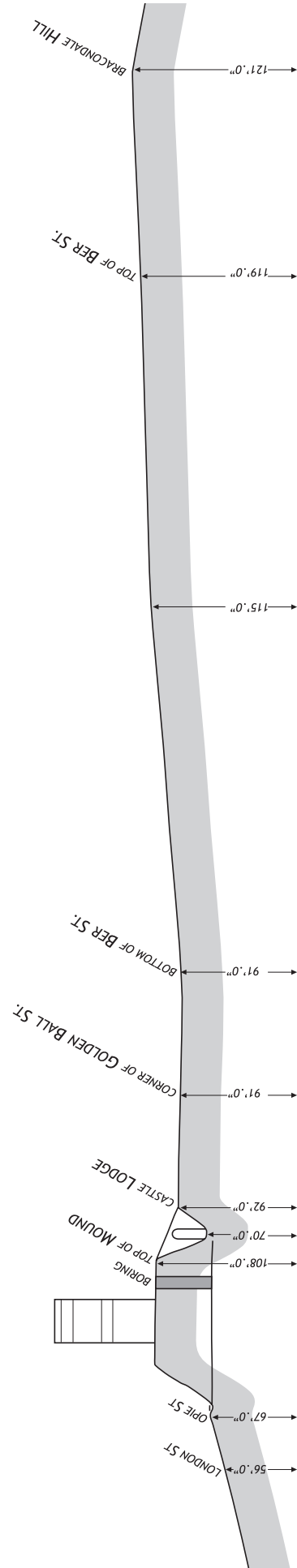


Figure 6.2 H.O.Rowley's section across the castle site of 1911. Note that the horizontal and vertical scales vary (after City Engineer's plan G324/1)

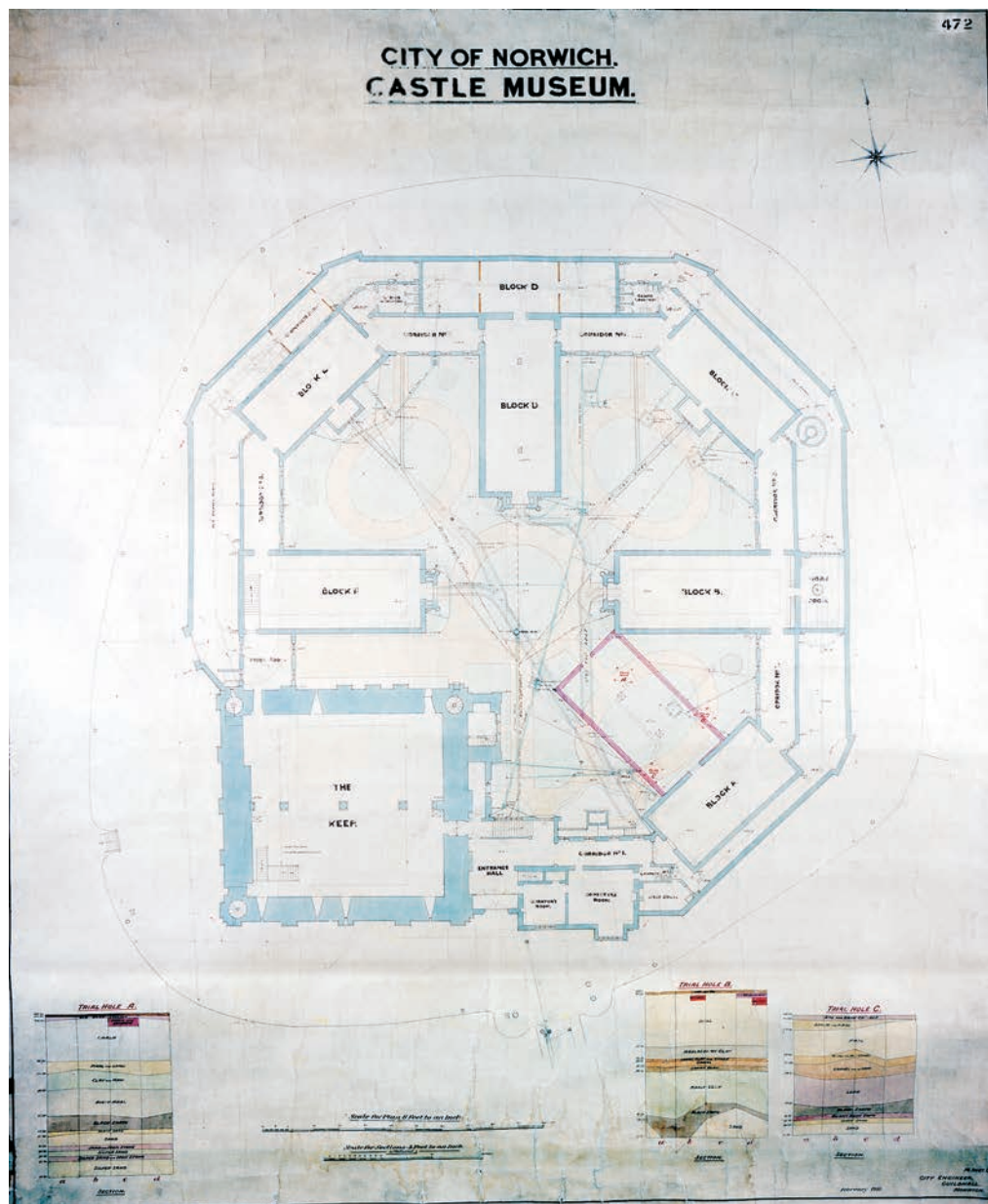


Plate 6.5 Excavations beneath the Castle Mound (H.O. Rowley 1911, City Engineer Plan G324/1)

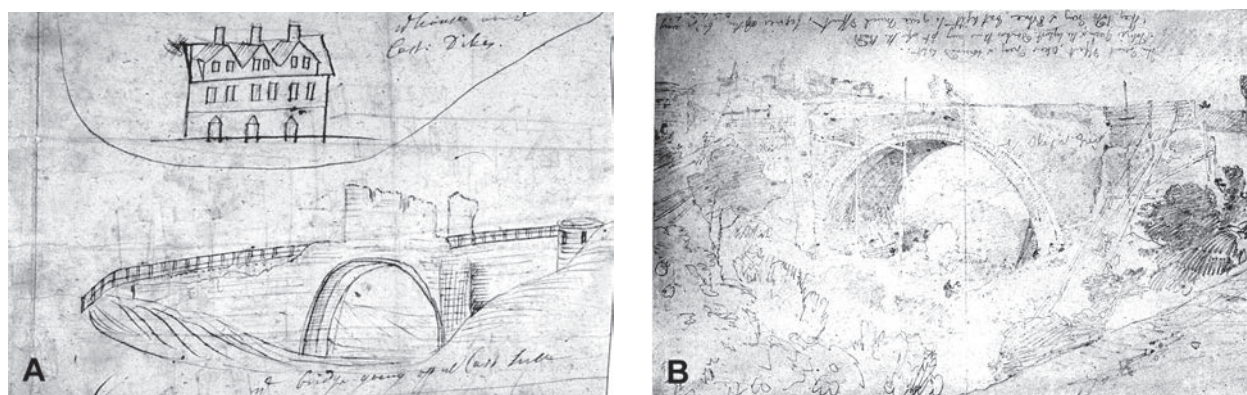


Plate 6.6 Norwich Castle bridge: A = Kirkpatrick (1720s; NWHCM: 1894.76.1686); B = Cotman (1807–08; NWHCM: 1951.235.431)

(Plate 6.4) and show steep tip lines at *c.*45° within the upper part of the mound's construction.

Excavations to determine whether the mound was artificial were carried out in 1888 when the donjon was converted to a museum (Hudson and Tingey 1906, ii). A letter from F.W. Harmer describes these excavations which were observed by himself and Hudson: 'the trial shaft [on the Ber Street side] had gone down through made soil 43ft before it reached undisturbed ground Allowing 10ft for the height of the present floor line of the keep above the surface of the mound, this gives 33ft (*c.*10m) as the depth of the artificial portion' (Tingey 1901, 151, fn.1). Harmer suggested that the artificial part of the mound to the north would have been at least equally as high, built up from material excavated from the surrounding ditches.

Other early work included three deep trenches dug to the base of the south-eastern quarter of the top of the mound in 1911, associated with the construction of the new stairway leading from the donjon to the new Shirehall (Rowley 1911, City Engineer Plan G324/1, Fig.6.2; Plate 6.5). All three trial holes indicate the presence of a layer of 'black earth' (presumably pre-Conquest and therefore detailed in Chapter 4.I) which sealed earlier layers of burnt 'brickearth' overlying dirty sand, before natural deposits were encountered at between *c.*80.9 and 83.8ft OD (24.66 and 25.54m OD). Thick dumps of marl, sand, gravel, chalk and clay followed, indicating that the top of the motte lies at around 105.45ft OD (32.14m OD).

Several archaeological observations and excavations have taken place on the top of the mound in addition to those directly investigating its construction (see Chapter 2). During the construction of prison buildings in 1824 (Site 518N), pottery and coins were found. The latter were alleged to be Romano-British. Excavations prior to construction of the Crome Gallery in 1950

(Site 32N) found objects including Late Saxon and medieval pottery, human bone and a stone capital. In the same year, 15ft (4.5m) of spoil was removed during construction of the Colman Gallery (Site 33N). No trace of timber buildings was recorded, the 19th century prison lying directly above 14th century deposits with nothing earlier being exposed. Finds recovered included 11–14th-century pottery and a pillar capital. In 1967, a specimen of Caen stone was found while the Museum Rotunda was being built (Site 30N).

The profile of the inner edge of the motte ditch, where it met the mound to the east was recorded by Tench during construction work at the Shirehall (Tench 1910). He reported that 'the greatest depth [of the ditch] seemed to have been about 74ft [22.5m] below the level of the top of the Mound, or above Ordnance Datum about 37ft [about 11.27m OD]. The bottom of the ditch was cut into solid chalk. The side of the ditch towards the Mound seems to have been fairly steep, about 40 degrees ... the side towards the east seems, however, to have been much flatter, and was only about 20 degrees.' Finds recovered from ditch fills were mostly post-medieval, although they included numerous coins of varying date, pottery and Dutch tiles and many bones.

The large size of the motte, which may relate in part to the fact that this was a royal castle, may suggest that some of the buildings usually found within the bailey, including the constable's house, were from an early date sited at the top of the mound (Green 1966, 3). A chapel dedicated to St Nicholas lay on top of the motte, the earliest documentary reference again being made in the mid 13th century. Kirkpatrick placed this behind the donjon, like the one at Castle Rising. A second chapel survives within the great tower at principal floor level (Heslop 1994, 44–46). Other buildings, including the kitchen, Great Hall and gaol, may either have lain on top of the motte or within the south bailey.

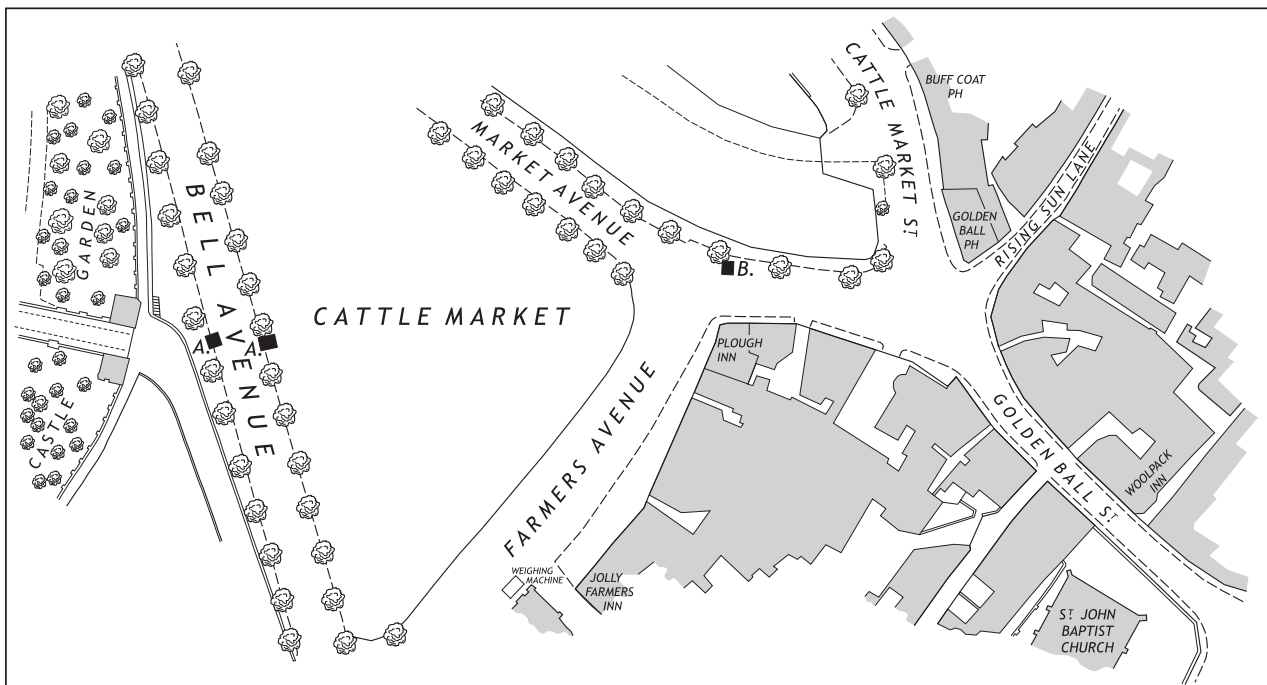


Figure 6.3 Ancient foundations ascertained by Mr J.T. Hotblack, 7th July 1909 (after Hotblack, City Engineer's plan)

The Stone Bridge and the Castle Approach (Plates 6.2 and 6.6)

Two 18th and early 19th century images of Norwich Castle bridge are given in Plate 6.6, with further details given in Chapter 6.V. The bridge was also depicted in Bucks' sketch of 1738 (Plate 6.2). It has long been suggested that the approach to the Norwich donjon was made over three bridges, one over each ditch (*i.e.* the south bailey, inner bailey or barbican and motte ditches). It was considered that the outermost bridge 'has been immemorially destroyed' (Browne 1785, 5), although new evidence suggests the presence of a causeway here (see Chapter 6.II and V). The remains of the second 'bridge' (actually the remnants of a gate; see below) were destroyed prior to alterations to the Cattle Market in 1738 with only the third bridge over the motte ditch still surviving. There was much argument by antiquarians as to the original date of this bridge, which was variously attributed to the Romans and the Saxons. Harrod (1857) believed that 'the only fragments left of the Norman buildings are (1) the bases of the tower on each side of the bridge, (2) the arch of the bridge, and (3) the Keep itself' (Rye 1926, 132, quoting from *Whites Directory*). In the early 20th century, Rye believed that the arch was reconstructed at the time the new County Gaol was built (*c.*1825), with old materials: 'that it is the same arch as that shown in the views of 1556 and 1576 no one can believe, for the pitch is wholly different' (Rye 1926, 134). This led to statements such as that made by Pevsner; 'the bridge is of *c.*1825 but replaces a stone bridge of C12th' (Pevsner 1988 reprint, 257).

Samuel Woodward documented repairs to the bridge in the 19th century and noted that 'on repairing the interior of the arch in 1830, it was found needful to remove it entirely; when it was discovered that the two side walls with their arches were the only original part of the original design; and that the interior space, having perpendicular walls faced with flint at both the upper and lower ends, must have been covered with a drawbridge' (Woodward 1847, 11).

A Second Bridge? and Gatehouse (Fig.6.3; Plate 6.2)

Kirkpatrick (*c.*1720) noted 'that they also made a second ditch [the barbican] ... over which no bridge is now to be seen. But a bridge there was anciently, because on the hill which is without the second ditch ... did formerly stand the shire-house, with which there must have been direct communication ... Another bridge therefore there was, but whereas now not so much of it are to be seen, I suppose it was made of timber' (Kirkpatrick 1845, 243). As noted in Chapter 2, several observations of masonry were made, all of which were probably related to a gatehouse, although many antiquarians postulated that (*inter alia*) these may have been the remnants of a bridge across the barbican ditch. Blomefield stated that in 1741 the ruins of the second bridge remained until the ditches were lately levelled by the city (presumably in 1738). Wilkins remembers seeing in the 1760s the foundations of a bridge over the middle ditch. Browne (1814) said that the foundations of the bridge (in *c.*1788) were 'not to be cleared away without much labour'. The *Norfolk Tour* (of 1777) notes that 'the ruins of the second bridge remained until the ditches were levelled in 1738'. Wilkins stated in the late 18th century that

'workmen were employed some years since to destroy these foundations. Their progress was so slow, from the materials being so strongly cemented together, that their employers desisted from the undertaking, and they still appear, in some places, a few inches above the surface of the ground' (1796, 148, fn. f). It therefore appears that more masonry was removed in 1862. (See Chapters 6.II and 6.V for recorded details of the gatehouse masonry and Chapter 10 for the causes of its eventual collapse).

It was Kirkpatrick who recognised the masonry fragments for what they were: '... for as to the large pieces of old walls which lie in the second [*i.e.* barbican] ditch, whereof one is pitched so perpendicular, or upright on an end, that it might be supposed to have been built there: yet upon information from ancient persons, I find that those pieces did stand on the Hill [barbican] near the north side of that ditch, and the ground settling, or being undermined to dig sand, they fell down into it. These walls, when standing, did seem to have been part of a great gate and tower, which stood here at the end of the walls of the bridge, which probably were continued further south than they now are, and ran across the bank which lies between the two ditches onto the said wooden bridge' (1845, 243–244). Hotblack's plan of 1909 (Fig.6.3) shows the masonry and he comments that a 'large mass of masonry' was lowered and that this masonry extended further north, under the whole width of Bell Avenue.

The South Gate

Blomefield placed Norwich Castle's south gate at the northern end of Golden Ball Lane (1806, II, 121, 124). Wilkins, however, preferred the interpretation that the gate lay at the southern end of the lane as he could not 'conceive there could be any reason for making this sudden turn from the wide road in Berg-street to approach the castle' (Wilkins 1796, 150). Rye noted in turn that 'the oldest maps and views show that the approach took a decided twist to the right' (Rye 1921, 9). This 'twist' which turns first to the right at the top of the Lane and then to the left to enter the south gate is shown, for example, in Cuninghams' map of 1558. Further consideration of the course of this route are given in Chapter 6.V and Chapter 12.

A 'mass of flint rubble' was found at the top of Golden Ball Street in 1909, during the laying of a new gas main. This was observed by Beecheno and its position was plotted by J.T. Hotblack, showing that it lay on the eastern side of the road, opposite the Plough Inn (Fig.6.3). His notes on the plan state that two wrought pieces of freestone were retained and deposited with Norwich Castle Museum. Further observations were made by Rainbird Clarke in 1959, again suggesting the presence of masonry at the top of Golden Ball Street (see Carter *et al* 1974, fig.7).

The South Bailey Ditch

Observations of what were probably fills of the south bailey ditch were made in 1909 when Beecheno observed the digging of a trench three feet wide and five to six feet deep for a new gas main (Beecheno MS 1908, 237; detailed in Chapter 2). Additional observations purporting to be along its line were made in the 1930s (Carter *et al* 1974, fig.7). Sites elsewhere along the line of the ditch (Fig.2.2) have included some which did not go deep enough to record the ditch (Site 750N and 26232N). To

the west, ditch fills of post-medieval date were recorded along Orford Street in 1993 (Site 26401N; Shelley 1993), although it was not possible at the time to ascertain which ditch these lay within. Other evidence comes from beneath the Bell Hotel (Site 314N). Excavation of a small trench in the south-west corner of the Shirehall car park, to the west of Anglia House (Site 150N; Atkin 2002a) recorded part of what was interpreted as the south bailey ditch (but was probably the barbican ditch; see Chapter 7), cutting into a number of Late Saxon ?quarries. Medieval and post-medieval infilling of the ditch was succeeded by cellars, then landscaping relating to the construction of the Cattle Market.

The North-East Bailey (Castle Meadow)

The archaeological and historical background to this second bailey is presented in Chapter 5.I.

II. ARCHAEOLOGICAL SEQUENCE

Period 3.1: Masonry Defences and Contemporary Activity (c.1094 to c.1121–22)

Summary

(Fig.6.4)

This period saw major alterations to Norwich Castle's defensive layout, not least the construction of a masonry donjon on an enlarged motte. A stone bridge, which survives, was constructed across the motte ditch. Masonry gates were added to the southern approach route (the course of which may have been straightened slightly), the remains of one of which were found within a post-medieval quarry. Alterations to the courtyard area at the base of the castle bridge included the insertion of a masonry-lined well shaft. The outermost castle ditch to the south (acting as the Fee boundary) may have been recut to form a hornwork around a new masonry gate. Another ditch (delimiting the reduced south bailey) was cut and parts of its associated rampart survived, sealing pre-Conquest settlement and earlier Norman activities. A road may have run across the rampart to the west, perhaps with a timber postern gate at its northern end set at the inner side of the rampart. Two earlier crescentic ditches defending a bridge landing within the south bailey were infilled and the outermost of the ditches defending the north-east bailey was recut. A few pits (fifteen in all) were recorded. Outside the castle, burial in the cemetery of St John at the Castle Gate presumably continued.

The Donjon

Norwich castle's masonry donjon has traditionally been interpreted as dating to the reign of Henry I (1100–1135), largely on the basis of stylistic comparison. A possible revision of the construction date to between c.1094 and 1121–22 has recently been proposed, however, implying that it began at the time of William Rufus (see Chapter 6.V). This magnificent structure lay outside the remit of the Castle Mall excavations, although archaeological observations relating to it in relation to the development of the earthworks are outlined in Chapter 3.I, 3.V and 12, as well as in more detail by Wallis (in prep.).

The Motte and its Ditch

(Fig.6.5)

Norwich castle is situated at the end of a spur of high ground running into the city from the south, reducing the depth of made-ground necessary during motte construction (see Chapters 3, 6.V and 12 for further discussion). An earlier motte supporting the timber tower appears to have been extended to the north and east, although a considerable period must have been allowed for the new motte to settle prior to construction of the heavy new building. At the same time, the surrounding ditch would have been enlarged and deepened, providing aggregate for the new works.

Motte Construction

by Elizabeth Shepherd Popescu and Andy Shelley

(Plates 6.7–6.8)

The Castle Mall excavations touched only minimally upon the foundation and make-up of the castle mound and most of the recorded elements were comparatively modern. Information was recorded in a series of watching briefs (T36 (Plate 6.8), T44 and T22=T47=T51; Figs 6.5 and 6.6). Further information comes from work undertaken in 1998 and 1999–2001 (Site 429N; see Chapter 2 and Wallis in prep.). The surface of natural deposits at the foot of the castle bridge lay at c.25.40m OD, although dropped away slightly to the north to be recorded at c.23.00m OD beneath the mound itself (Wallis in prep.;



Plate 6.7 Excavations through the front of the motte in 1999–2001, prior to the insertion of a new lift shaft (Site 429N; Wallis in prep.)

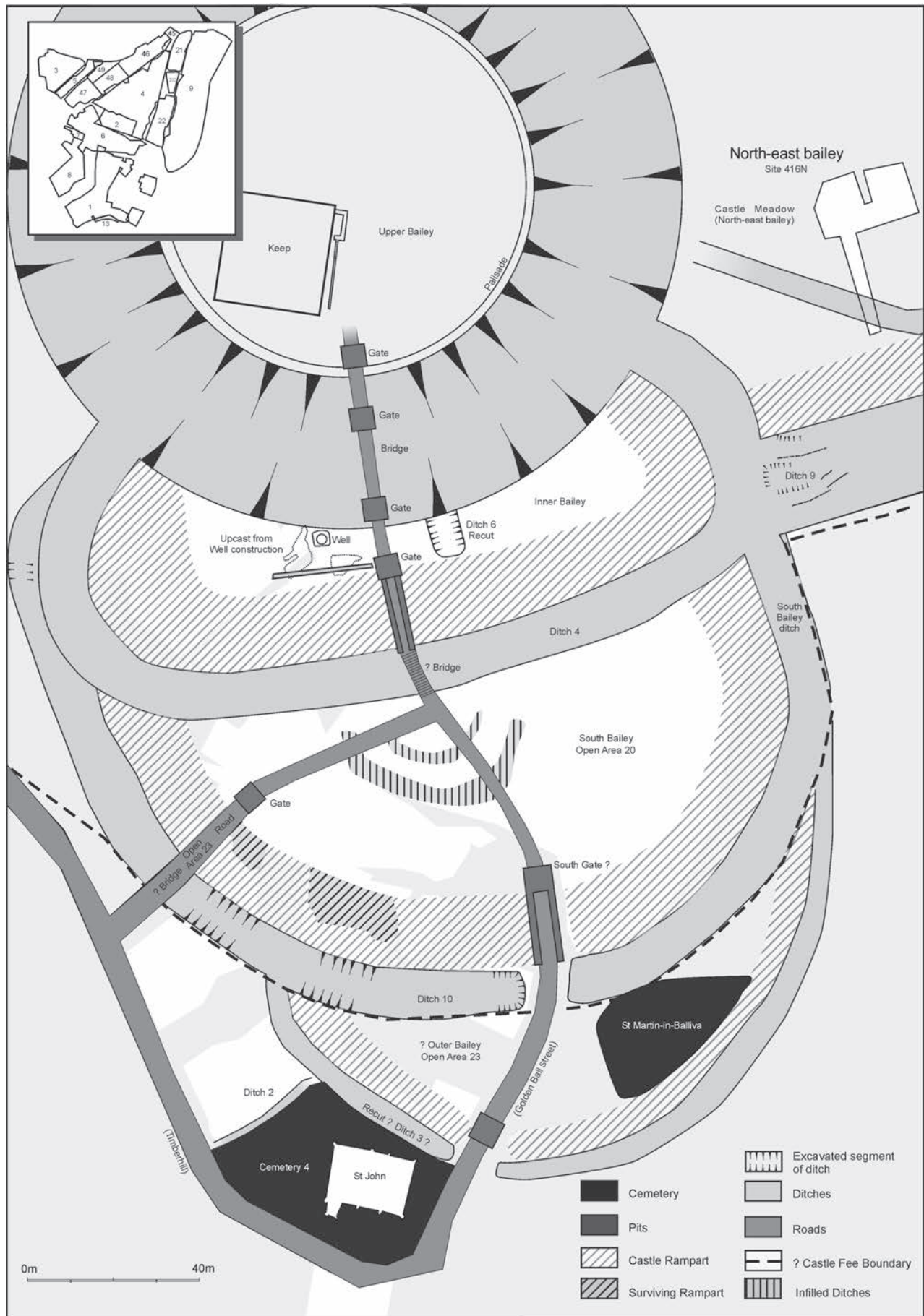


Figure 6.4 Period 3.1: Phase plan — Norman (12th century). Scale 1:1250

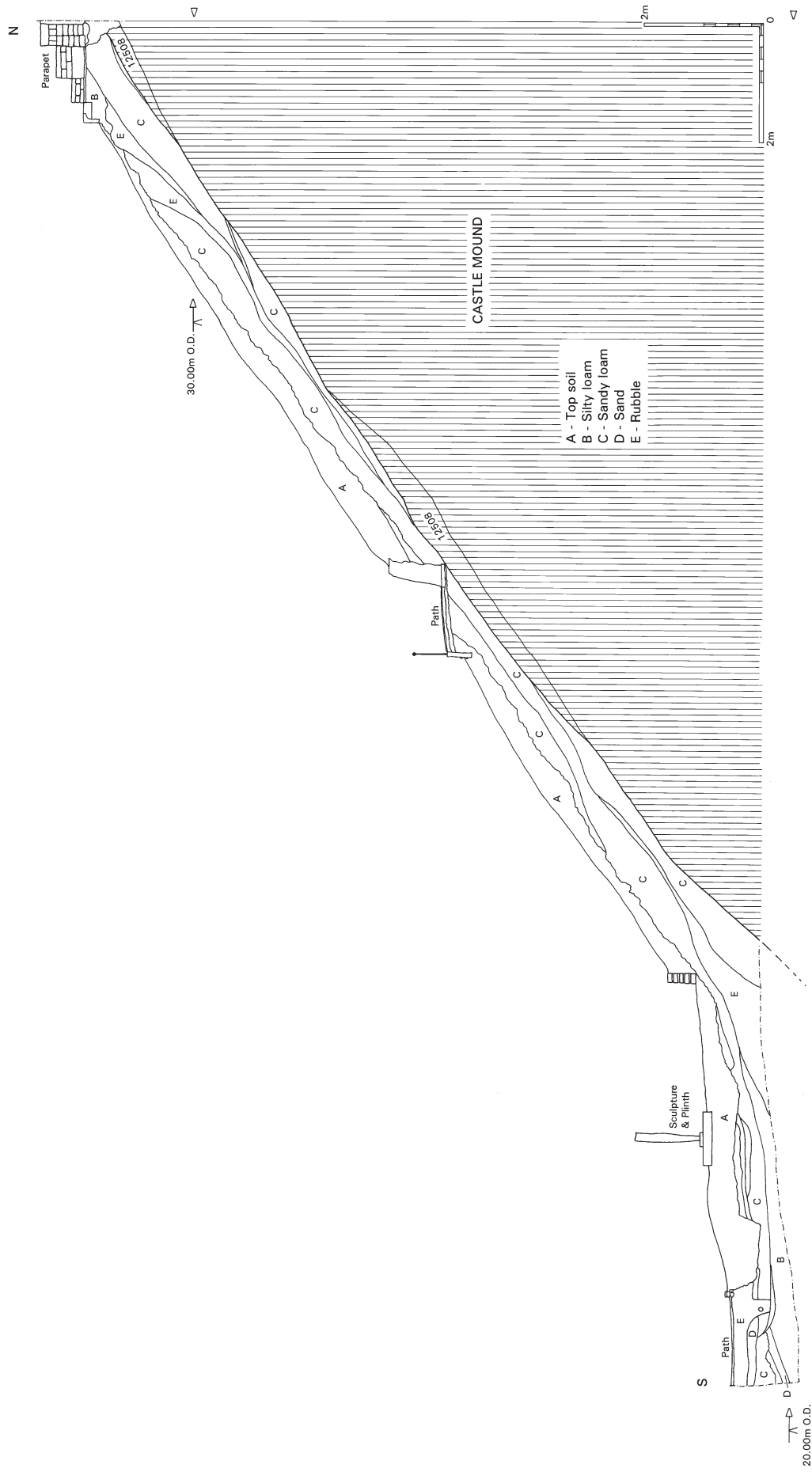


Figure 6.5 Period 3.1: East-facing section through Norwich castle mound (T36, located in Fig.6.6). Scale 1:100

Plate 6.7). At the top of the mound, imported material (excluding modern make-up) was recorded at 30.90m OD, although the original level may have been slightly higher, indicating *c.*8m of Norman made ground at this

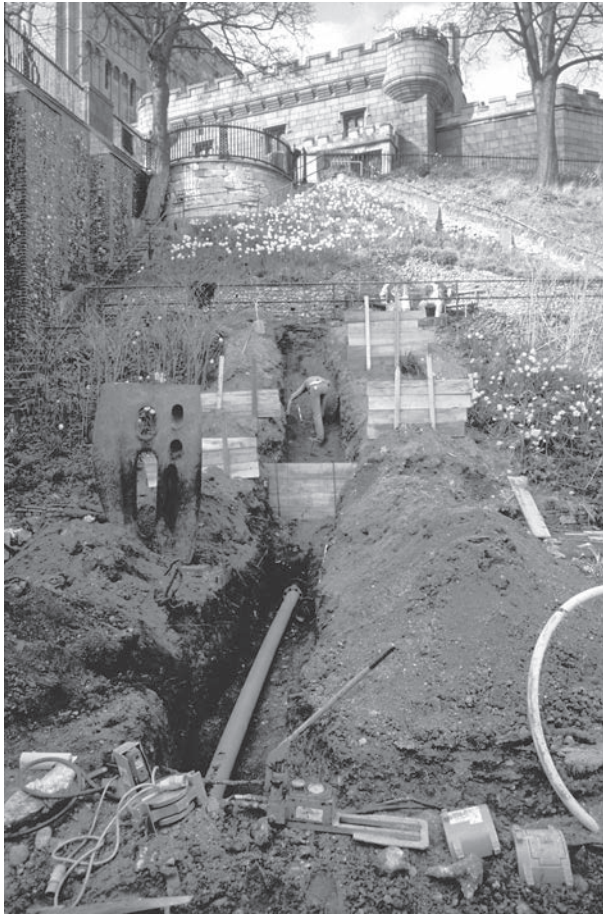


Plate 6.8 Excavations through the south side of the motte at Castle Mall watching brief T36, to the east of the castle bridge

point, although considerably more (*c.*11m) to the north where the ground slopes away (Fig.6.49).

In a trench along the southern edge of the present-day mound to the west of the bridge (T47/4, Figs 1.5 and 1.6) a layer of sand, silt and gravel was recorded at an upper level of 30.90m OD (I2352). This was probably upcast forming part of the mound. A group of post-medieval burials and numerous makeup dumps were also recorded here and are described in Periods 6 and 7 (T22=T47=T51 and T44; Chapters 10 and 11).

In another watching brief (T36/35) a section was drawn through the mound/ditch slope (Figs 1.5 and 6.6). An extremely long service trench was dug from the front of the Shirehall Chambers on Market Avenue, through Castle Gardens to the top of the Castle Mound, running just to the east of the castle bridge. In the stretch running up the mound, a layer of undisturbed, redeposited natural sand and gravel was recorded (I2508, Fig. 6.5), containing occasional iron pan and chalk fragments. At the base of the section this lay at around 20.75m OD, its upper level at the top of the mound being recorded at *c.*30.95m OD. The suggested angle of incline of the mound is *c.*40° from the horizontal.

An evaluation at the eastern side of the top of the motte was conducted in 1998 (Site 429N) suggesting that the original motte surface here lies *c.*2m below the present ground level (the original top lying at *c.*30.00–30.50m OD; Penn 1999, 6).

Small Finds

Layer I2508 included two intrusive fragments of glass (SF5984) from the body of an 'English' wine bottle dating to the late 17th or 18th century.

Ditch 11: fills

by Elizabeth Shepherd Popescu and Andy Shelley

The ditch encircling the motte was not recorded in detail during the Castle Mall excavations, although a small part of it was observed in a watching brief near its junction with the barbican ditch (T100, Fig.1.5). These works were necessitated by the insertion of a circular stairwell,



Plate 6.9 Excavations in progress, showing the castle bridge (left foreground) and, behind it, one of the stepped excavations through the barbican ditch. Viewed from the north-west

entailing the cutting of a 4m radius hole on the Castle Gardens side of the pile line. Fills of the motte ditch, spanning the medieval and post-medieval periods were recorded (see Fig.6.31). Subsequently, a north-to-south slot dug at a lower level exposed primary silting and redeposited natural with an upper level of 21.40m OD (T100/17, 12197b). The presence of a ditch running east-to-west is indicated and the observation suggests that the motte ditch originally lay further to the south

than in its present form. Sections recorded in an adjacent watching brief (T58, S.185 and 189 — see Period 2.2, Fig.5.19) appear to show another ditch running into the motte ditch at this point. The motte ditch would have cut through natural chalk at its base and must have curved to the north immediately west of the T58 observation as it was not observed here. Another observation to the north-east (T24 and T25, Fig.1.5) recorded evidence for modern gardening activities along the southern side of

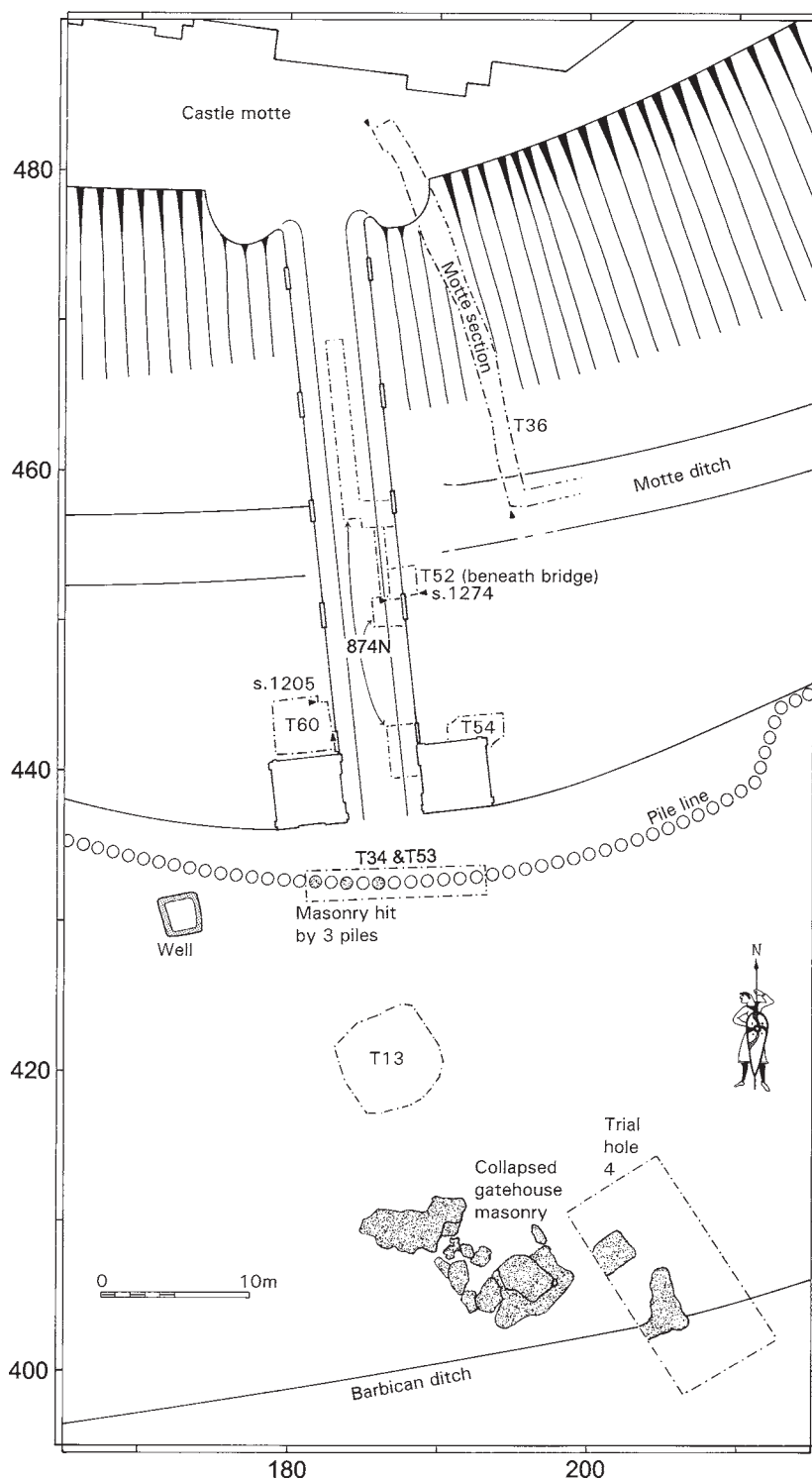


Figure 6.6 Period 3.1: Plan of motte bridge, showing relevant watching brief locations and Trial Trench 4. The flint-lined well shaft lies to the west of the foot of the bridge, with collapsed gatehouse masonry to the south-east. Scale 1:500

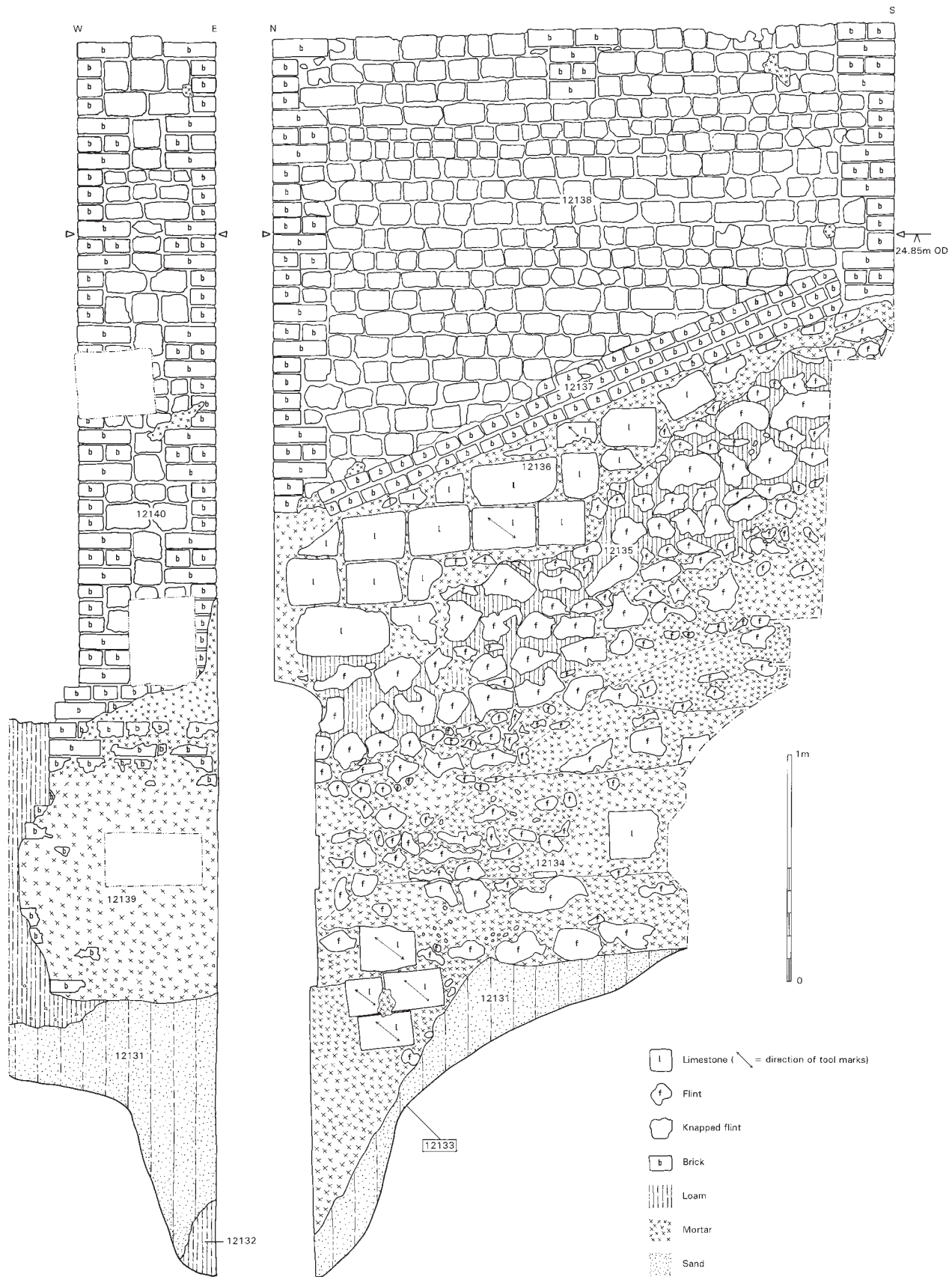


Figure 6.7 Period 3.1: South- and west-facing elevations of the motte bridge (S.1204 & 1205, T60). See Fig. 6.4 for location. Scale 1:25

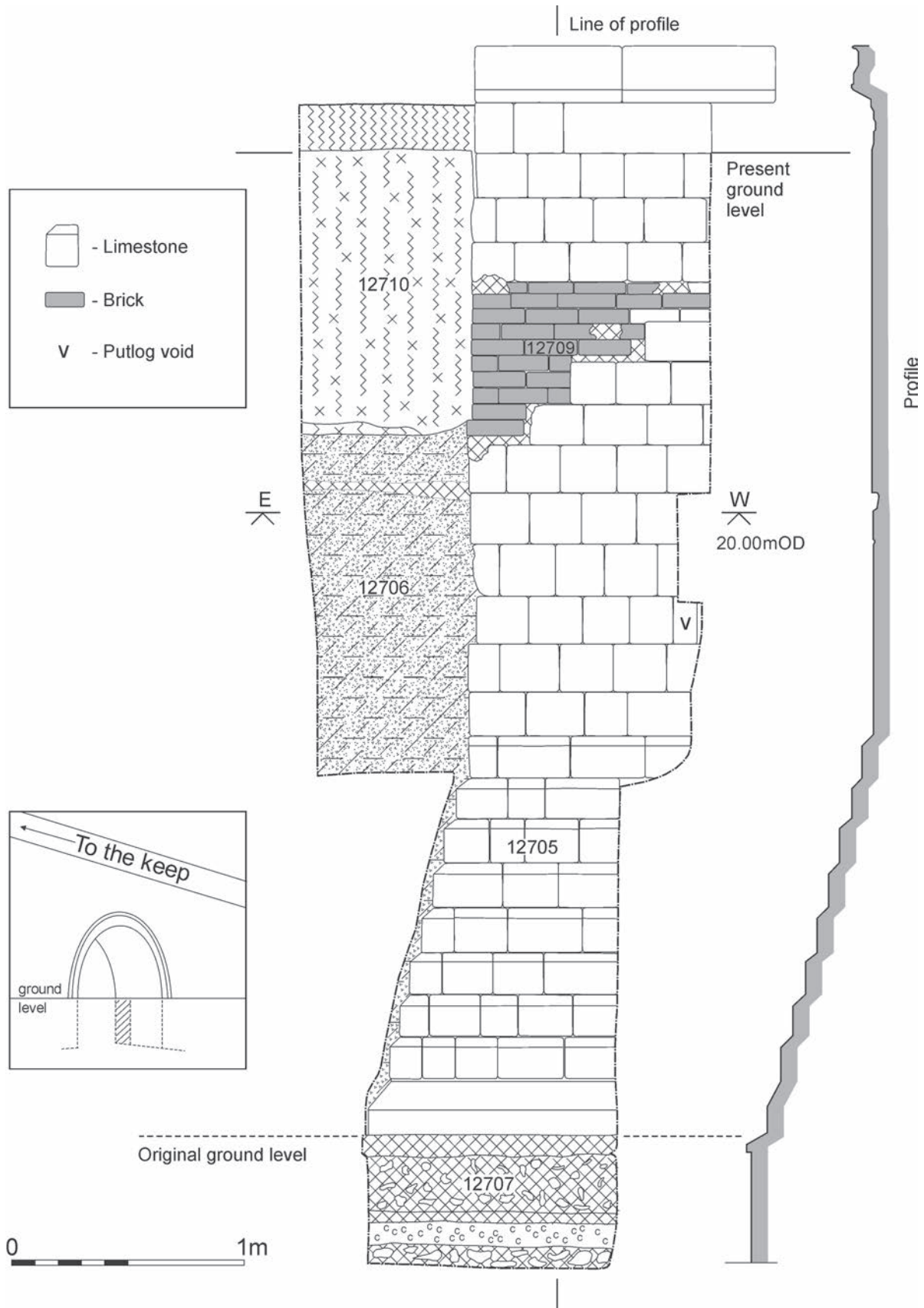


Figure 6.8 Period 3.1: North-facing elevation of the motte bridge, showing the chamfered limestone plinths at its base and their level in relation to the modern ground surface (S.1274, T52). See Fig. 6.4 for location. Scale 1:25

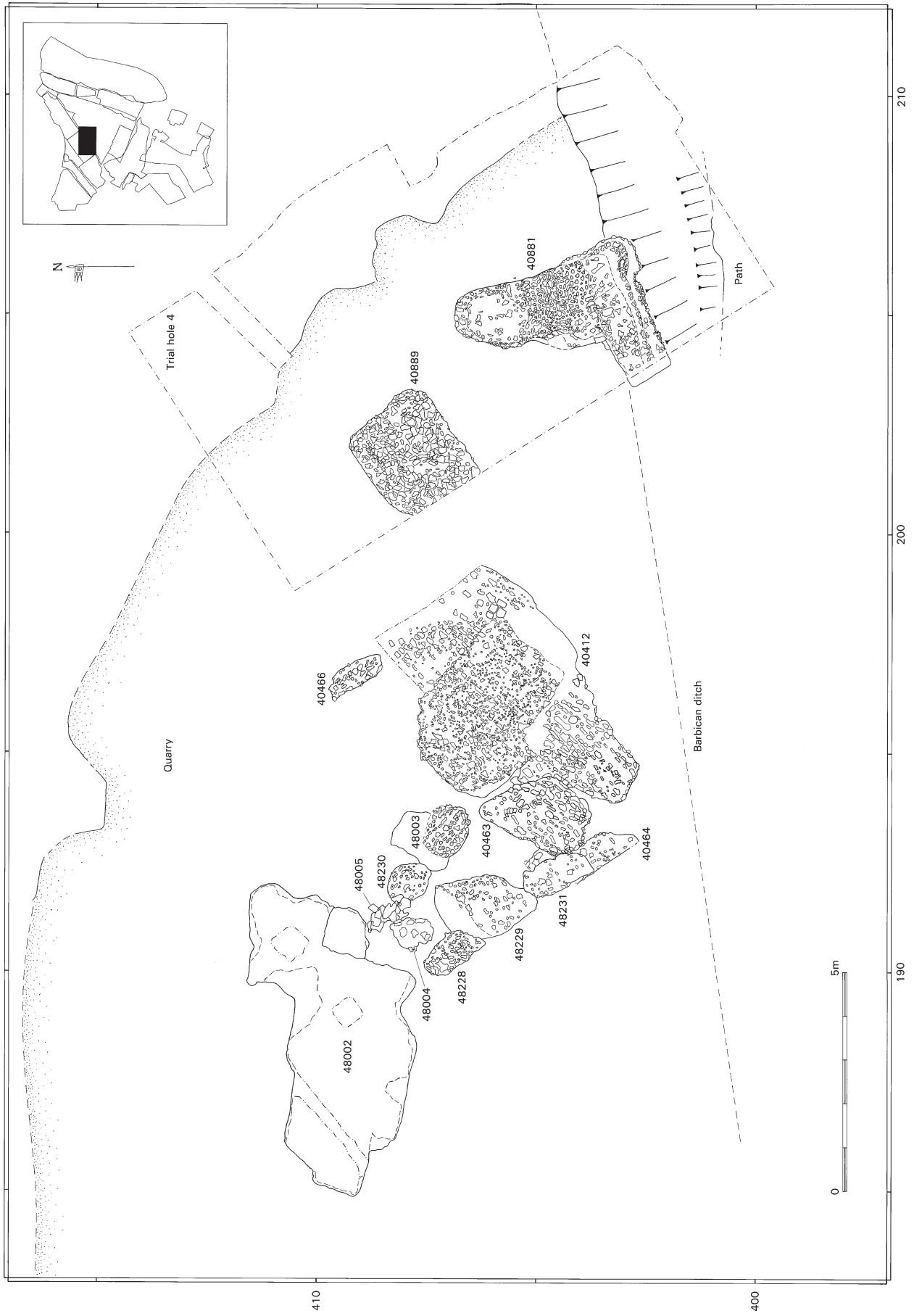


Figure 6.9 Period 3.1: Surviving fragments of one of the castle gatehouses after its collapse into a post-medieval quarry pit (Areas 4, 48 & Trial Trench 4). Scale 1:125

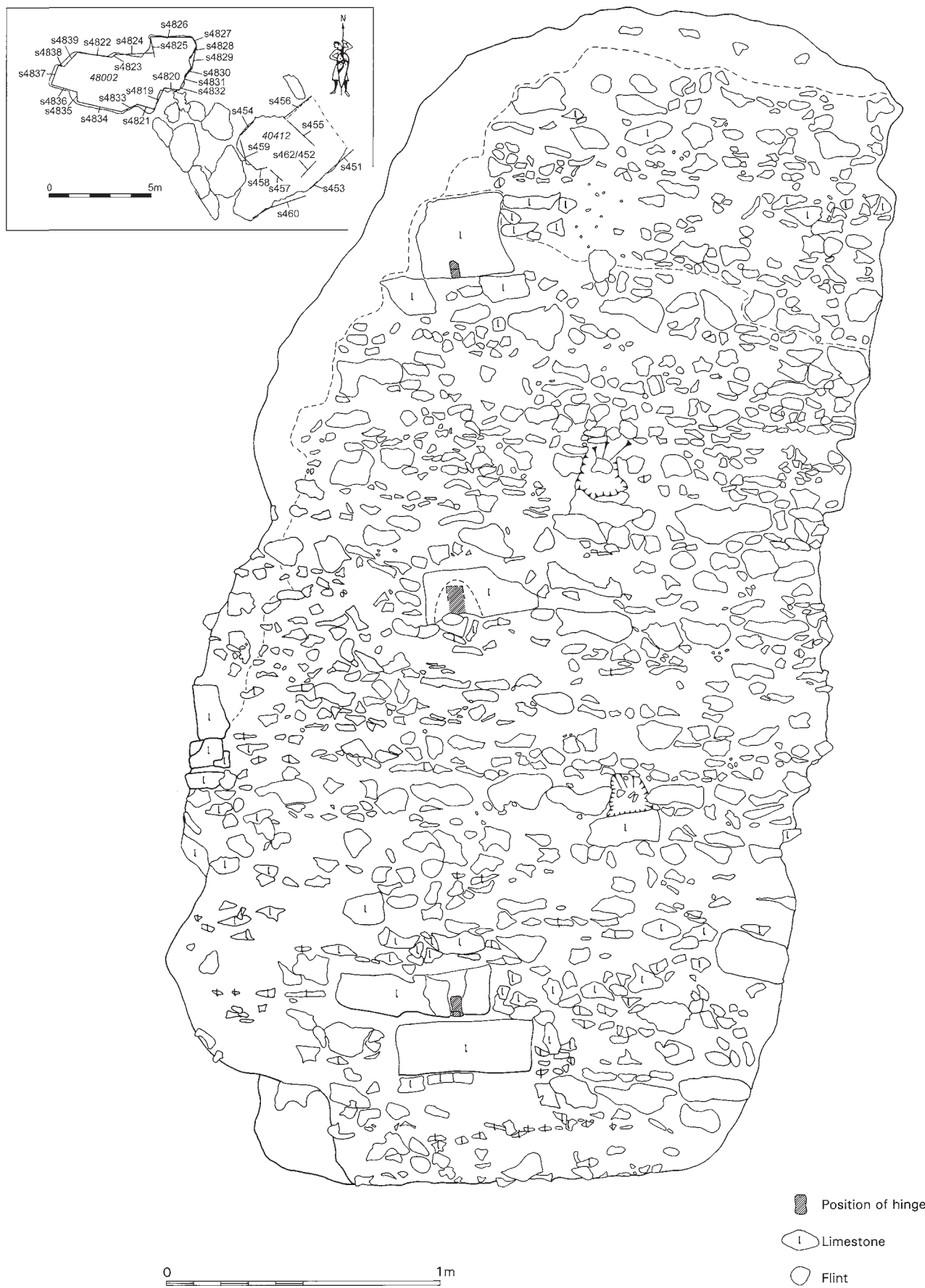


Figure 6.10 Period 3.1: Elevation of collapsed gatehouse buttness 40412, showing the position of hinges and surviving limestone facings (Area 4). Scale 1:20



Plate 6.10 Excavations on top of the castle bridge in 1991–92, which exposed medieval surfaces (Site 874N)

the motte, above fills of the motte ditch (see Period 7.2, Chapter 11).

The Castle Bridge

(Plates 6.9–6.11)

The masonry bridge across the motte ditch (which is documented as having been repaired in the late 12th century; Chapter 6.1) was probably constructed broadly at the same time as the donjon and other masonry elements of the castle (Plate 6.9). It comprises two single span arches with solid piers, the structure being divided into three ‘compartments’. The middle and upper elements of the original bridge may have housed a timber surface, incorporating a drawbridge at the northern end. At a later stage, the bridge apparently housed a masonry gate, perhaps having a timber forerunner (see further discussion in Chapter 6.V). The numerous antiquarian and other observations of the bridge (Sites 874N and 26001N, Plate 6.10) are considered in Chapters 3.I and 12. Despite the extensive alterations to the bridge, it remains substantially a 12th-century structure.

Bridge Construction

(Figs 6.62–6.8, Plate 6.11)

Evidence relating to the motte bridge was recorded in a series of watching briefs (T34, T36, T52–54 and T60; Figs 1.5 and 6.6). A small square trench (1.85 by 2.00m square by 3.3m deep) was excavated adjacent to the easternmost of the southern bridge footings (T52, S.1273 and 1274, Fig.6.8, Plate 6.11). A banded, compact footing (12707) of large mortared flints, chalk, sand and gravel, was topped with poured mortar before the first course of the bridge was constructed. The original well-preserved bridge masonry (12705) was constructed from highly finished Caen stone ashlar blocks displaying distinctive diagonal tooling. A single large block lay at the base of the footing, followed by eight courses each with a 45° chamfer on the top 5cm of the block edges. Each successive course stepped in 5cm from its predecessor.



Plate 6.11 The well-preserved sequence of chamfered limestone plinths which still form the footings of the southern abutment of the motte bridge (Castle Mall watching brief T52, Period 3.1). The base of the Norman bridge lies several metres beneath the modern ground surface in the Castle Gardens

Towards the western side of the exposed face, a putlog hole was recorded at a level of 19.46m OD, measuring 100mm wide, 200mm high and 570mm deep. The good condition of the stone was a result of the fact that it had been sealed, perhaps by an undated dump (12706), perhaps redeposited mound or rampart material. This observation implies that the Norman base of the motte ditch (at c.17.35m OD) would have lain over 4m below the modern ground surface in the Castle Gardens, with the centre of the bridge arch being nearly 15m above the base of the ditch. The span of the arch would have been c.12.00–12.5m in diameter.

Part of the corner of the recorded bridge fabric had been rebuilt in brick (12709), presumably to replace the exposed, weathered Caen stone blocks, the level of reconstruction coinciding with a layer of mortar. This was followed by an obviously later Victorian footing (12710) to the east.

Another watching brief (T60, S.1204 and 1205, Fig.6.7) recorded the western side of the bridge and its footings at a higher level. A small, square machine dug trench (3.20m square by 3.62m deep) was bounded to the west by a Victorian wall footing and to the west by the face of the bridge. Victorian backfilling (12130) overlay the whole area. Natural sand at the base of the recorded section had been cut into by the construction cut for the bridge footing (12133), the primary fill of which (12132) had been heavily disturbed by root activity. This was followed by redeposited natural sand (12131). The original bridge fabric which followed (12134) consisted of limestone, unworked flint, mortar and pebbles, the largest piece of limestone being 25 x 20cm. Areas of light yellow/cream mortar survived on the exposed face. Five blocks of faced limestone were incorporated, of which four fitted neatly together. The construction was in three obvious poured mortar lifts, each c.0.40m high. Above the original masonry was a flint rubble and loam footing (12135) of Victorian date containing clay pipe fragments. This was consolidated above (12136) with a footing consisting of reused limestone blocks set in mortar, followed by brick courses (12137) demarcating Victorian ground level and the start of an obvious rebuild. This rebuild (12138) was of high quality, with knapped flint and brick used in the construction. A Victorian bridge buttress footing (12139) of brick and mortar lay to the north, supporting a buttress of knapped flint and brick (12140).

A watching brief in front of the castle gatehouses at the bottom of the bridge (T34) revealed modern makeup layers above chalk (0.30m thick), sealing a black layer above natural sand (about 2.00m below the modern ground surface). Land slippage against the northern gatehouse exposed an area of brickwork, about 2m deep and 3m wide, forming part of the gatehouse foundations. The bricks were dark red or black, probably Victorian and well-finished suggesting that they were originally exposed.

Later excavations entailed the digging of three trenches on top of the bridge (Site 874N, Shelley 1992 and 1996). These provided further evidence for constructional details which are considered further in Chapter 12. At the southern end of the bridge was as a sequence of metallated (gravel and cobble) medieval road surfaces and associated layers of greasy purple trample, very similar to the deposits overlying the road leading through the

rampart in the south bailey. Ceramics from these layers suggest a 12th-century date. A drainage gully was later inserted along the eastern side of the bridge. No evidence for the suggested gate on the bridge was recorded.

Gatehouses Associated with the Castle Bridge

(Figs 6.9–6.10, Plates 6.12–6.17)

Substantial alterations to the castle bridge may have been made in the 13th century, with the addition of gatehouses at its top and centre (see Chapters 7 and 12), although these may have had Norman antecedents. Those at the top of the bridge are twin circular towers, the bases of which survive and have stylistic comparisons with gates of early 13th-century date. A masonry forerunner to these towers, perhaps square, may have been constructed in the 12th century (Gate 1). A central gatehouse which lay on top of the bridge (Gate 2) was demolished in the mid 18th century. Again, this may have been constructed in the 13th century, perhaps with a timber forerunner in the 12th century. Another gate (Gate 3) may have lain at the base of the bridge, subsequently replaced by Soane's two small gatehouses in 1811. These still survive. A fourth gatehouse (Gate 4) may not have formed part of the bridgework, lying further to the south. Archaeological evidence for each gate during the Norman period is given below, with further discussion in Chapter 12.

Gate 3

by Elizabeth Shepherd Popescu and Andy Shelley
During excavations on the motte bridge in 1992 (874N) a doubly chamfered piece of Caen stone displaying diagonal tool marks and a north-east/south-west splay of 30° was discovered, set into the southern bridge abutment. This single piece of dressed limestone (found at the very southern limit of the 1992 excavation) could suggest that more may have existed to the south forming the foundation courses to a gatehouse directly attached to the bridge. Piling works directly in at the foot of the castle bridge hit masonry at some considerable depth (T53/42; Fig.6.6; at 19–20.00m OD, c.8–9m below the castle gatehouse entrance). This stonework was about 2–3m thick, although its origin is uncertain. The three piles concerned lay slightly to the west of the centre of the bridge and were each separated by one unaffected



Plate 6.12 Collapsed gatehouse masonry (12001=48002), demonstrating that it lay immediately beneath the granite setts of Bell Avenue, which was inserted in 1862 (Castle Mall watching brief T2, Period 3.1)



Plate 6.13 Collapsed gatehouse masonry, incorporating a buttress (40412, Period 3.1), viewed from the south (Area 4)



Plate 6.14 Detail of gatehouse buttress 40412=40631

pile. They were *c.*3m to the south of the existing western gatehouse and may indicate the position of the base of an earlier gatehouse.

A small trench was dug immediately to the north of the easternmost gatehouse (T54) in order to investigate the extant foundations and surrounding deposits. Nothing of archaeological interest was recorded.

Gate 4

by Elizabeth Shepherd Popescu and Andy Shelley (Plates 6.17–6.22)

Another gate appears to have lain just to the south of Gate 3, presumably at the northern end of the bridge crossing the postulated inner bailey ditch and, possibly, an associated rampart. Although there is no direct archaeological evidence for the exact location of the gatehouse, the position in which collapsed fragments of it were found indicates its likely originally position. It seems probable that the gate would have lain either at the front or back of the associated bank (see further comments in Chapter 6.V).

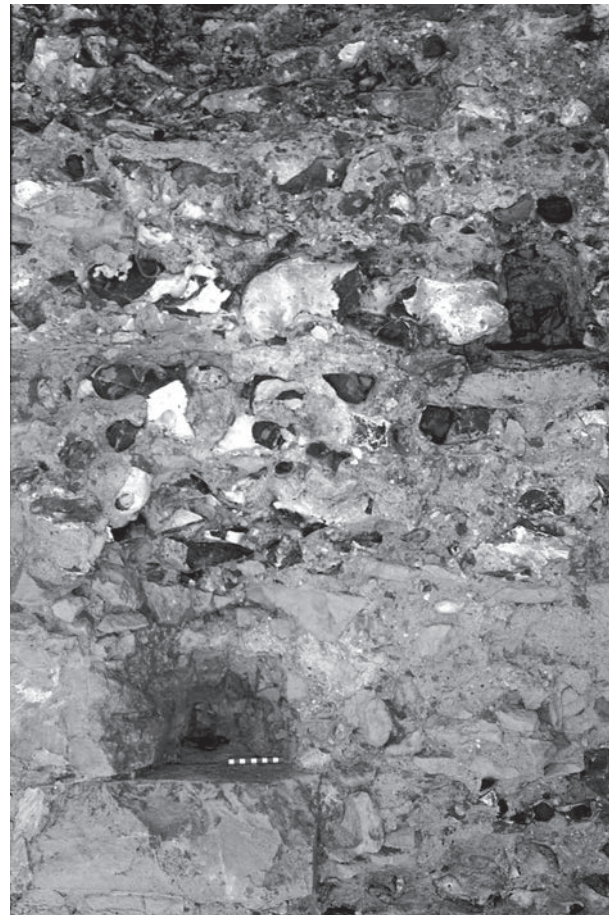


Plate 6.15 Detail of putlog hole (top right) and hinge setting (bottom left) within gatehouse fragment 40412=40631



Plate 6.16 Elements of the collapsed gatehouse (40889 & 40881, Period 3.1), recorded in Trial Hole 4 in 1988

Gate 4 formed the entrance to a courtyard or enclosure, bounded to the north by the motte ditch, to the south by a rampart and to the east by a ditch (Ditch 6), which was recut at this time. A substantial well shaft lay within the western part of the courtyard (see below). There was no evidence for any footings for the gatehouse between the base of the motte bridge and the barbican ditch, largely as the result of subsequent landscaping, although an area of about 11m west of the bridge and 5m east of the bridge was not archaeologically investigated. Antiquarian and other observations of gatehouse masonry are given in Chapters 2 and 12.

Excavated evidence

The remnants of the collapsed or demolished gate were eventually found within a large quarry (Period 6.1, Chapter 10) cutting into the northern side of the barbican ditch (Fig.6.9). The masonry lay flat, having fallen or been pushed into a convenient hole (Plates 6.12–6.17). Twelve bonded fragments of masonry were recorded (the largest measuring 6.5 x 4.5m, G48/2) and are described below in terms of the structural information they provide. Two large fragments were recorded in Trial Trench 4 (Plate 6.16).

During temporary works along the southern edge of Bell Avenue (T2/28), flint and mortar masonry from the gatehouse was uncovered (12001), later recorded in Area 48 (48002). The watching brief observation demonstrates that the masonry lay immediately beneath the granite setts of the 1862 road (Plate 6.12), supporting documentary evidence that it was substantially lowered to permit a level course for the road.

Ten of the large, damaged blocks were retrieved. The surviving masonry presumably formed part of an originally square or rectangular gate structure, the surviving dimensions indicating walls 6.30m long north-to-south and 8.40m high, with a suggested gate opening of c.2.60m. The walls were c.2m thick, the footing for one having survived. The masonry appears to have eventually fallen southwards, a fact implied by the position of air

bubbles in the mortar of one block (48002), caught as the flints were laid.

Part of a buttress survived (40412=40631) and was thicker to the north than to the south in its final position (Plates 6.13 and 6.14). On the obverse of the buttress were three hinge points set in lead, two retaining their pins and limestone facings (Fig.6.10; Plate 6.15). This appears to have formed part of the internal gate post, strengthened from behind with an external buttress. Another fragment (40421=40881) displayed four quoins on an internal right angle, presumably forming an internal corner above ground (Plates 6.16–6.17). Elsewhere, occasional dressed limestone blocks were encountered although all appeared randomly set, rather than forming part of a coherent facing. A shallow off-set in one of the faces (48002), parallel to the coursing, suggests a decrease in width as the height increased. Lifts and/or courses were observed in many of the fragments. On one (48002) these were 1.10m high, with possible intermediate lifts of 0.50–0.60m.

Building materials consisted of unknapped (or occasionally rough-hewn) flints in rough courses, bonded



Plate 6.17 Limestone dressings surviving on gatehouse fragment 40421=40881



Figure 6.11 Period 3.1: Plan of recut of Ditch 6 (Area 46). Scale 1:250

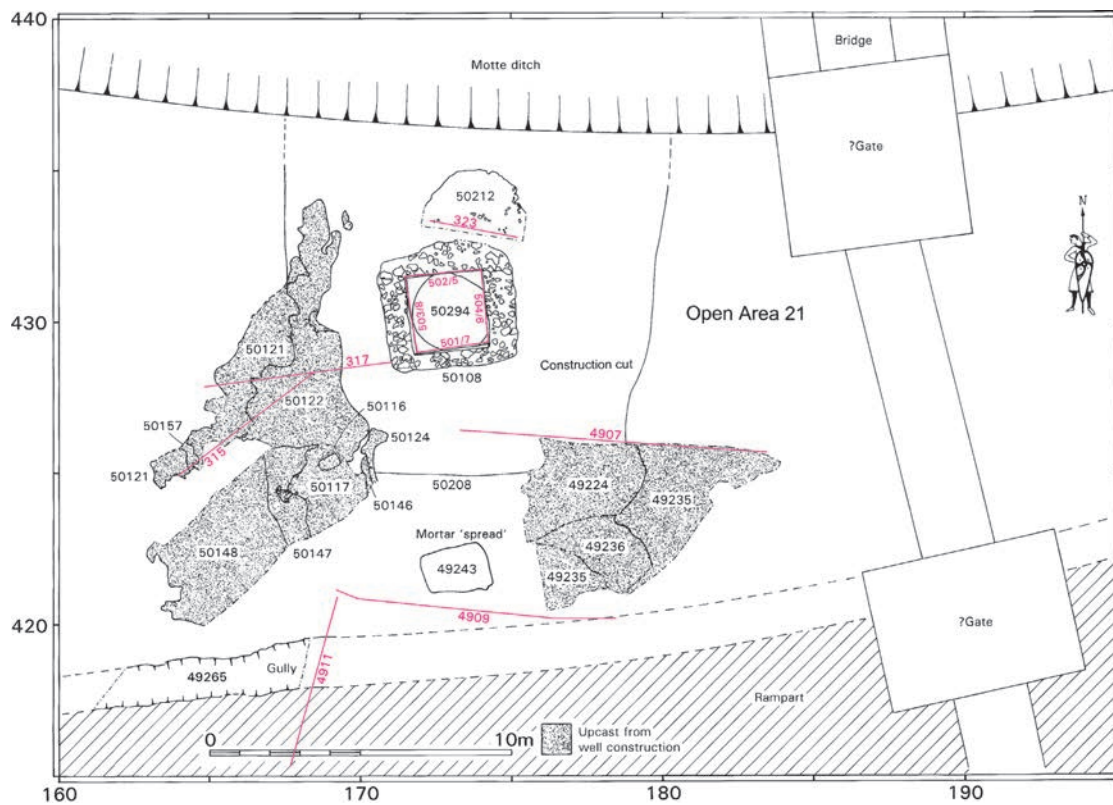


Figure 6.12 Period 3.1: Plan showing constructional details of well shaft at base of castle bridge, within courtyard Open Area 21 (Areas 5 & 49). Scale 1:250



Figure 6.13 Period 3.1: Elevation of interior of well 50108, showing putlog holes (forming scaffolding platforms and an integral ladder) and timber curb at base (Area 5). Scale 1:50

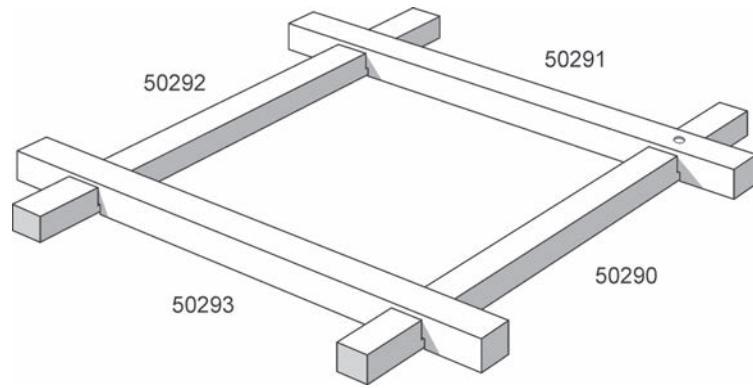


Figure 6.14 Period 3.1: Reconstruction of timber curb at base of well 50108. Not to scale

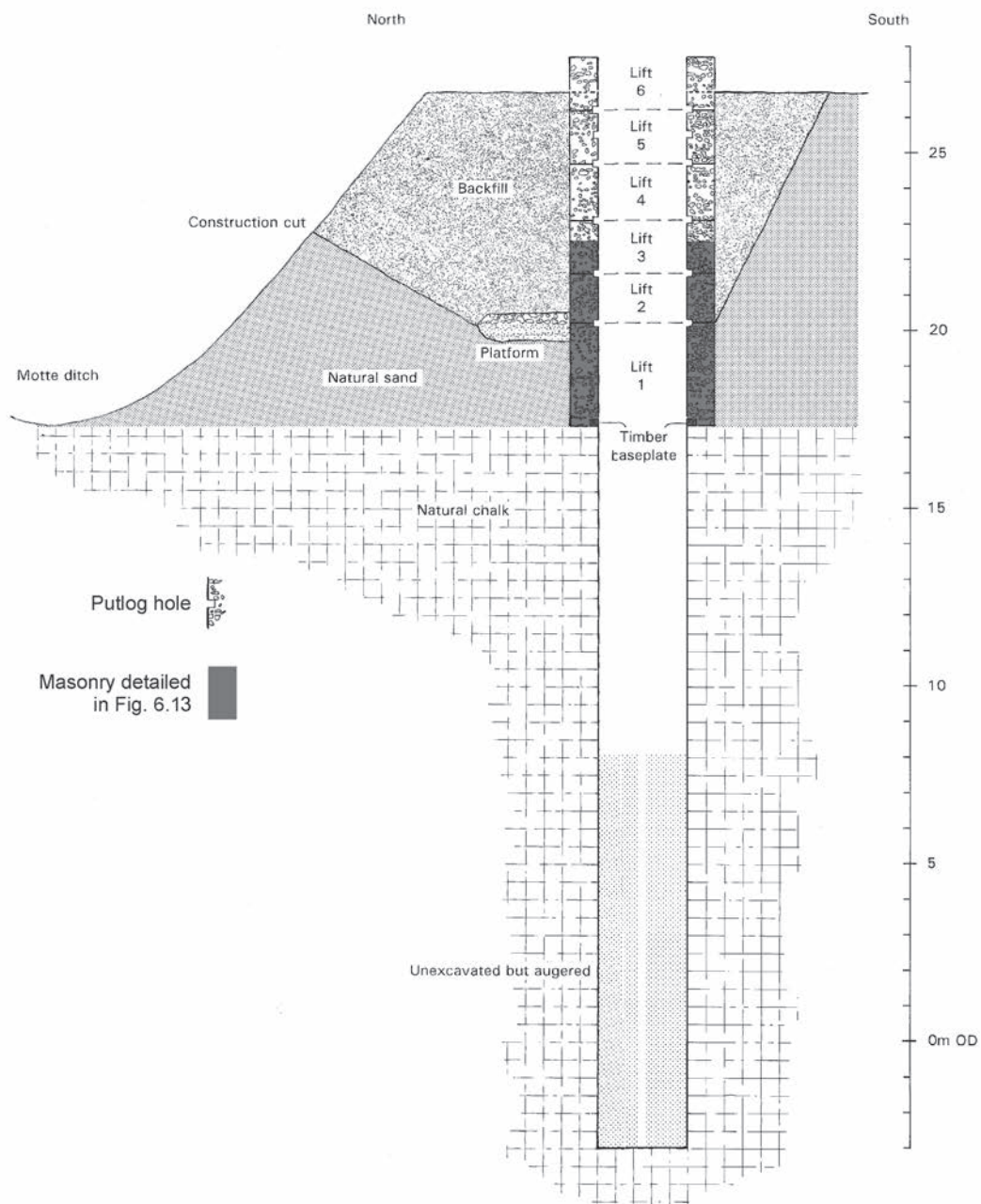


Figure 6.15 Period 3.1: Schematic cross-section of well shaft 50108 in relation to the motte ditch and well construction cut. Also shown are the constructional lifts within the masonry shaft that formed the upper part of the structure. Scale 1:200

with creamy white, soft mortar. Occasional limestone chips and fragments displaying dressings were included. Only one tooled face (as opposed to rougher chiselled sides) survived. The tooling on this piece is the characteristic diagonal marking made by an axe and indicates a date range of *c.*1070–1150 (Stephen Heywood, pers comm). All the blocks are of Caen stone, with the exception of one piece of Barnack (block 40412). A fragment of 12th-century Caen stone dressing (48245, SF6854) was also recovered. Masonry waste was found in fills of an adjacent ditch (Ditch 6) which may have lain open at the time masonry features such as the well were under construction.

Small Finds

Five objects, none of which were Small Found, had been inserted into the gatehouse masonry; three iron nails, a copper alloy object and an iron hinge. Another iron object had been driven into the mortar in block 48002 (S.4836).

'Inner' Bailey

by Elizabeth Shepherd Popescu and Andy Shelley (Figs 5.19–5.23 and 6.11–6.17)

The layout of the inner bailey courtyard was redefined with a substantial well shaft (see below) constructed to the west of the approach road. The earlier ditch to the west (Ditch 5) had been infilled, perhaps in connection with a realignment of the entrance route linked to the construction of a new gate (Gate 4 above). The ditch to the east of the approach road (Ditch 6) was recut. Further discussion of the arrangement of space within the courtyard is given in Chapter 6.V.

Ditch 4

Evidence for the presence of a ditch pre-dating the barbican ditch is described in Period 2.2 (Chapter 5). It is possible that this ditch may have been recut or cleaned out at the same time that alterations were made to the rest of the earthworks, although there is no archaeological evidence to support such a suggestion. Recuts made at this time of both the north-east bailey ditch (see Ditch 9 below) and the south bailey ditch (Ditch 10 below) appear to have butt-ended against the inner bailey ditch, confirming its presence.

Ditch 6, Phase 2: infilling

The easternmost ditch defending the southern castle entrance (46666, G46/19, Period 2.2) was gradually infilled, perhaps as a result of erosion rather than deliberate infilling. The basal fills (46657 and 46655, S.4612, Fig.5.22) were gravelly. These were overlain by a deposit (46665) containing several large flints, a piece of worked limestone and a large fragment of lavastone. The latter had apparently been reworked and mortar adhering to it suggests a secondary use as building material. Above this was a fill consisting of several horizontal lenses of sand (46654), suggesting weathering into the ditch. The same ditch was observed to have a single sandy fill in a section across it just to the north (46675, S.4613, Fig.5.23). This layer also contained three large flints. The ditch had now been backfilled to a depth of 0.95m, the presence of building materials suggesting that construction or demolition had taken place nearby.

Small Finds

Phase 2 ditch fills contained three fragments of Caen stone ?dressing (SF6805, SF6703, SF6640) of probable 12th-century date, the latter

with a triangular mason's mark. Fill 46675 contained three nail shanks (SF6674). A lava quern fragment was also found (SF6641).

Pottery

A very small quantity of pottery was recovered (0.011kg) and comprised TTW and EMW body sherds.

Ditch 6, Phase 3: recut

The earlier ditch was recut (46665) slightly to the west of its original position (Period 2.1). It was butt-ended to the south (S.4614) and was recorded in a series of sections along its length (S.4612, 4613 and 4614; Fig.6.11). The northernmost section (S.4614) did not record the base of the ditch (projected to a depth of about 21.77m OD). The top survived here to 23.82m OD, although an adjacent 11th-century surface (T20/10, Period 1.2) lay at 25.14m OD, suggesting an original ditch depth of at least 3.37m. Early fills (46688 and 46687) indicate weathering of the ditch edge.

Further to the south, the ditch was augered to a depth of 21.90m OD, the top lying at 23.89m OD (S.4613, Fig.5.23). It was filled at the ?base and sides with natural silting deposits (46821 and 46674). Just to the south, another section (S.4612, Fig.5.22) recorded the base of the ditch at 22.17m OD, presumably rising to reach its southern butt end. It had a V-shaped profile and steep sides, slightly stepped to the east. The top of the ditch survived to 23.92m OD. Erosional fills lay along the base and sides of the ditch (46664, 46663, 46662), the lower fills containing a notable collection of large flints and several Caen stone fragments.

Presumably, the ditch had a rampart to the west or east, probably accounting for some of the inwash into it. Its surviving length was 10.58m, probably originally extending another 5–6m to the north to join the motte ditch. The original depth of the ditch may have been between 3.37 and 4.80m, the projection of the sides upwards to this height indicating an estimated original width of at least 7m.

Small Finds

Phase 3 fills of Ditch 6 contained a type 2A horseshoe (SF6642).

Open Area 21: ?rampart revetting posts

In the eastern side of the courtyard three large posts (G46/36; Fig.6.11), up to 0.80m across, may have served torevet the northern side of the rampart to the ?inner bailey ditch (46701, 46703 and 46705). The date of these features remains uncertain.

Open Area 21: gully

An east-to-west running gully was aligned with the well shaft and was perhaps a contemporary feature (G5/32 and G47/53, 57042/49265, Fig.6.12). It had been truncated at either end, surviving to a length of 7.40m, being *c.*1.20m wide. It had sloping sides and a concave base (S.4911, Fig.5.9) and was 0.55m deep at its deepest point. It contained a number of fills of similar character (49037, 49266, 57041 and 57063). The gully cut into earlier surfaces (Period 2.1) and lay at the postulated rear of a rampart for the ?inner bailey (later barbican) ditch. The lack of post-settings may suggest that it did not retain upright timbers, although these could have been set into a series of beams laid within the trench. The lack of masonry suggests that it was not a robber trench for a retaining wall.

Pottery

A YTW body sherd and a non-local medieval glazed sherd were recovered (0.005kg).

Masonry Well

by Elizabeth Shepherd Popescu and Andy Shelley
(Plates 6.18–6.22 and 9.1–4)

One of the major features recorded at the Castle Mall site was a flint-lined well shaft lying in the ?inner bailey at the foot of the castle bridge (subsequently the barbican; Plate 6.18). A large, funnel-shaped construction cut (square in plan) was excavated to contain the masonry shaft which was built in a series of lifts and employed two sets of internal putlog holes. The construction cut, the base of which lay at the junction of natural sands and gravels with underlying chalk, may have been progressively infilled as the shaft rose in height. Once the shaft was in position, a circular well was dug into the chalk.

Ground preparation (Fig.6.12)

A sequence of deposits recorded in section and plan (G5/19, Fig.6.12) to the west of the castle approach road may relate to the levelling of a bank associated with an earlier ditch, overlying refuse fills within it (Ditch 5, Period 2.2, Chapter 5). This action was probably undertaken in connection with ground preparation prior to construction of the well shaft. The most widespread surviving deposit, which included possible trampled areas (49235) lay at c.26.00m OD and levelled the uneven ground. To the north, it was cut by the construction cut for the well. Similar deposits were recorded in section (S.4909, 49180; S.4911 and 4909, 49140; S.4907, 49065, 49061 and 49062).

Pottery

These deposits produced only 0.077kg of EMW and TTW. See Appendix 6.

Well, Phase 1: construction cut (Figs 6.12–6.17, Plate 4.4)

The first stage of well construction was the excavation of the large construction cut (G5/22) into which the flint-built shaft was placed. This dug through the preparatory dumps across the area (described above) and was recorded in several places (50208, 50319, 49416 and 49084; S.315, 317 (Plate 4.4), 4907, etc., Fig.6.16; S.314, Fig.6.17) and schematic sections Fig.6.13 and 6.15). The highest level at which this construction cut was recorded was 26.67m OD, probably the actual level from which the cut was originally made. The construction cut was square with rounded corners, where they survived to the south-west and south-east. It survived to its original east-to-west width of 11.07m and was recorded over a distance of 6.91m north-to-south (originally extending northwards to meet the motte ditch). Its sides had a batter of c.70° from the horizontal. The tapering construction cut was excavated to a depth of about 6.90m, after which an apparently unshored vertical cut was made into the natural sand c.2.60–2.70m deep, giving a total depth for the main construction cut of approximately 9.60m.

Excavation of the construction cut had ceased at the level at which natural chalk was reached (17.10–17.30m OD). If the original cut had been completely square, a thin strip of unstable natural sand would have been left

between it and the motte ditch to the north. This appears unlikely on engineering grounds and it is therefore suggested that the northern side of the construction cut would have run to meet the motte ditch, probably actually having been dug into the ditch edge. The angle of the north side of the cut is estimated to have been about 30° (Fig.6.15).

Small Finds

Few finds were recovered from fills of the construction cut; an iron door bolt (SF7011) came from fill 50319.

Pottery

Only 0.074kg of pottery was recovered, consisting of TTW, EMW and Pingsdorf-type ware. See Appendix 6.

Well, Phase 2: masonry shaft, timber scaffolding and access ladder

(Figs 6.12–6.17, Plates 6.19–6.22)

A timber frame or 'curb' measuring c.2.45m east-to-west and c.2.50m north-to-south internally (50290, 50291, 50292 and 50293) was placed directly onto the natural chalk at the base of the construction cut (Plate 6.19). The timbers had completely rotted away, having left impressions in the chalk and mortar which had been poured behind them, both elements bottoming at the same level. The beams measured 0.17 to 0.20m in width and were between 3.08 and 3.18m long. The southern and northern timbers overlaid those to the east and west, the frame being designed so that the timbers were flush with each other using halving laps to form a level horizontal plane (Fig.6.14). No ironwork suggestive of fixings was found in the voids, although a depression in the northern end of the eastern void could suggest the presence of a wooden peg. The frame appears to have been designed to support the masonry and prevent subsidence and cracking. In places, particularly to the east, the frame would have stood proud of the masonry.

Construction of the masonry element of the well began. The shaft measured 4.3m by c.4.2m externally and 2.6m by 2.6m internally (Figs 6.13 and 6.15). Wall thicknesses varied: the western wall was 0.7m thick; the southern 0.5m; the eastern 0.90m; and the northern up to 1.00m thick. It may be significant that the eastern and northern walls were the most substantial as they would have taken more lateral force, lying towards the motte ditch. The square shaft did not lie centrally within the construction cut, having been placed slightly to the west of centre. It was set at a slight angle to the square sides of the construction cut, aligned north-north-west to south-south-east, rather than truly north-to-south (at about 5–6° to the west of grid north). The masonry shaft was constructed in a sequence of six 'lifts', with an integral timber scaffold represented by a series of putlog holes (see below). Surviving putlogs also demonstrate the presence of a timber ladder, inserted into the north-eastern corner of the shaft (Figs 6.13 and 6.15, Plate 6.20 and 6.21). Its external face was rough and irregular with protruding flints where it had been supported by natural deposits, becoming smooth and regular above the first lift, where it had been supported by an external framework (see below). The internal face was regular and the masonry consisted of unknapped flints set in creamy coloured mortar, with no obvious inclusions in masonry composition other than very infrequent lumps of chalk.

fold out

fold out

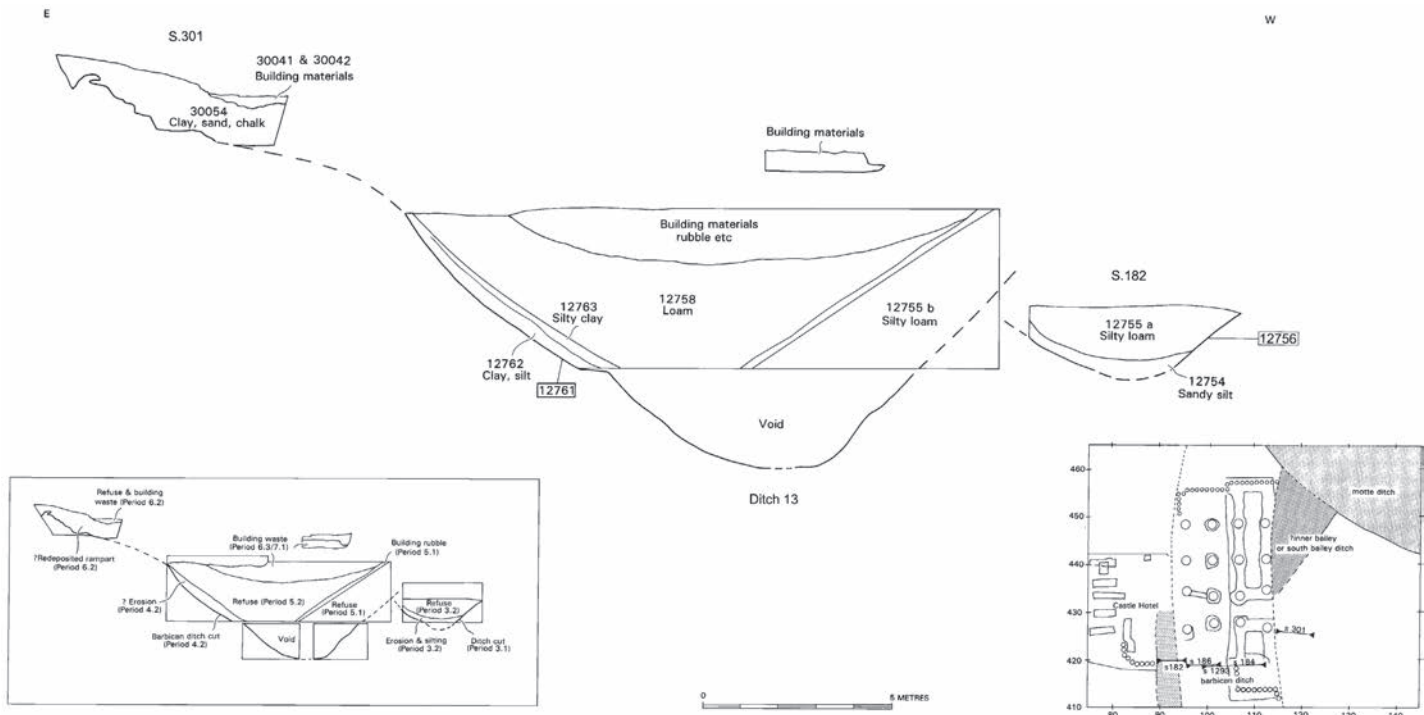


Figure 6.20 Period 3.1: Composite section across ditches recorded beneath the Castle Hotel (T58), including the Fee, south bailey ditch or 'barbican' ditch (Ditches 3, 10 & 4 respectively) and the barbican ditch (Ditch 13). Scale 1:200

The poured mortar gave the internal face the appearance of having been rendered in places.

The recorded shaft survived to a full height of at least 9.57m, the lower 5.5m being recorded in elevation (Fig.6.13). Fifteen internal ladder rungs were observed (of which eleven were accurately plotted), the average distance between them being 0.44m (the greatest being 0.60m and the least 0.40m). The constructional lifts within the masonry were regularly spaced, averaging 1.5m with the first being the tallest: Lift 1— 3.00m; Lift 2 — 1.47m; Lift 3 — 1.53m; Lift 4 — 1.58m; Lift 5 — 1.50m. The fact that the first lift as recorded was exactly twice that of the others indicates that another, unrecorded lift may have been constructed, machining having occurred at the level which would have obscured any evidence for another set of putlog holes.⁶

A large spread of masonry (50212, Figs 6.12 and 6.15, Plate 6.22), c.1.20m thick, extended some 3.40m outwards from the northern side of the shaft at the base of the construction cut, immediately adjacent to the top of the first lift of the well shaft. It consisted of three horizontal bands of flint and mortar masonry separated by 0.10m thick layers of sand and gravel. These masonry bands were thicker to the south, tapering off towards the north. The masonry 'platform', which formed an integral part of the shaft, was eventually truncated by the insertion of the modern pile line. This lump of masonry may have derived from the disposal of excess building material from the first lift of the well, additionally providing an area of hard-standing for construction of the second and subsequent lifts, as well as perhaps forming the base for shuttering/braces. It would also have provided support on the side of the shaft most vulnerable to failure due to the proximity of the motte ditch.

Along the southern edge of the well shaft a robber cut (Figs 6.16 and 6.17; see also Period 5.1, Chapter 8) may have removed a wall constructed at the same time as the fifth lift of the masonry. No traces of wall remained *in situ* although the dimensions of the trench (which was c.2m wide) give an indication of its original size. The wall may have been buttressed at a later date (see Period 5.1, Chapter 8.II) and presumably formed part of the well superstructure.

A summary of the construction of the shaft and associated infilling of the surrounding construction cut follows:

First lift (17.30–20.30m OD)

Timber shuttering was presumably constructed around the inner lip of the supporting frame described above; flints and mortar then being poured into the cavity between the shuttering and the edge of the construction cut. Although the internal face was shuttered, the external face was apparently supported only by utilising the natural sand/crag elevations at the side of the construction cut.

This first lift raised the shaft to a height of c.2.90m (including the timber frame), at which point a framework of opposing timbers in putlogs was inserted to form the primary stage of a timber scaffold/platform from which the next set of shutters could be constructed. Prior to this, the four lowest rungs of the access ladder were inserted across the north-eastern corner of the shaft (putlogs 50289, 50288, 50263, 50281, 50262, 50276, 50264 and 50274). The scaffold timbers were inserted in three pairs (putlogs 50256, 50266, 50254, 50255, 50257 and 50273), acting in conjunction with the fourth rung of the ladder which was set at the same level (c.20.00m OD). Four additional putlogs were set into the east and west faces, to hold two timbers which may have formed cross-braces across the width of the shaft (50258, 50260, 50278 and 50282), lying just above the level of the main framework. These were different to the other, rectangular putlogs, being smaller and triangular or circular, each tapering to a point internally. One (50258) had been set into grey-coloured mortar rather than the usual cream-coloured mortar. The timbers supported would not have lain quite horizontal and it is possible that these were later insertions. This first lift raised the masonry to the top of the vertical shaft at the bottom of the construction cut.

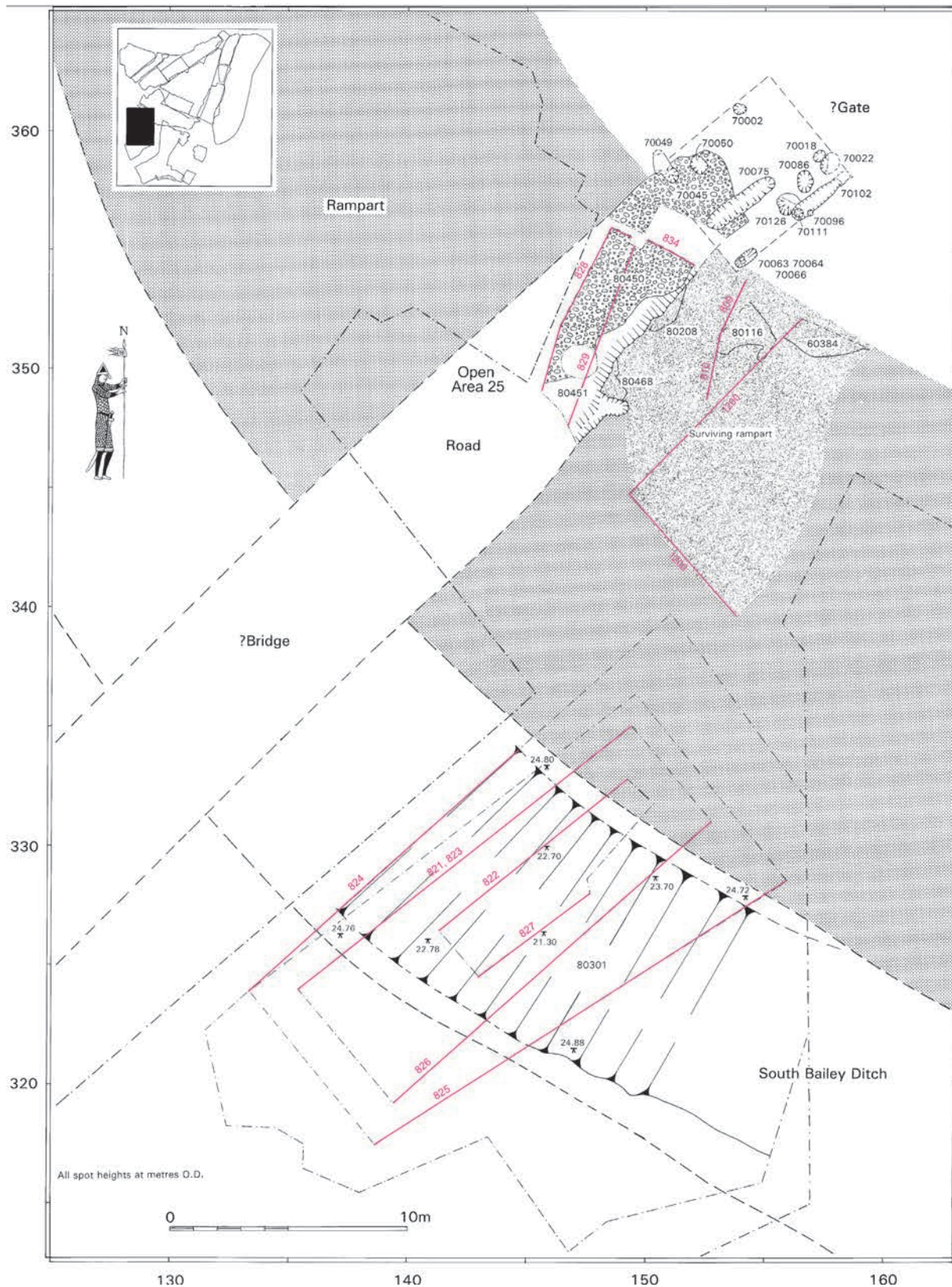


Figure 6.21 Period 3.1: Plan of Ditch 10 (south bailey), showing the machine-stepped section dug across it. Its associated rampart lay to the north, where evidence for a timber ?gate & road was also found, Open Area 25 (Area 8). Scale 1:250

Second lift (20.10–20.30m OD)

The same procedure employed during the construction of the first lift was repeated, presumably requiring a second set of shuttering outside the rubble and mortar shaft, which was now unsupported by the edges of the construction cut (Fig.6.15). The interface between the first and

second lifts was clearly visible on the external face of the shaft. Three further rungs were inserted to form the next stage of the access ladder (50267, 50272, 50268, 50280, 50271 and 50283, Fig. 6.13). At the top of the lift was another set of putlogs supporting the next scaffold platform, again utilising the uppermost ladder rung in the north-eastern corner

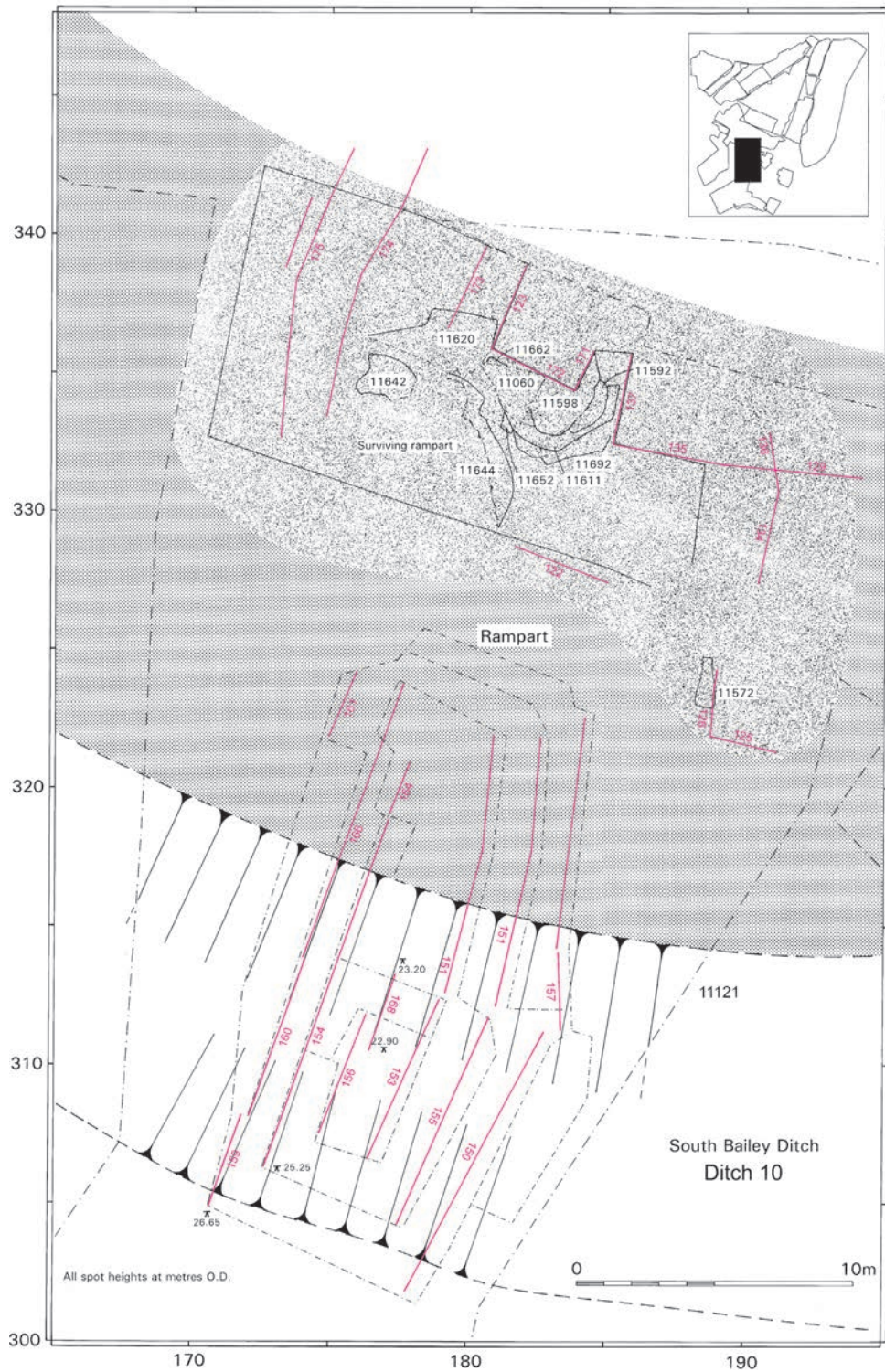


Figure 6.22 Period 3.1: Plan of Ditch 10 (south bailey) showing the machine-stepped section cut through it. To the north were the remnants of the base of its associated rampart (Area 1). Scale 1:250

(50259, 50261, 50279, 50265, 60269 and 50277). The gap between the external faces of the shaft and its construction cut was backfilled with a mixed dump (50214, S.322 and S.323), bringing up the level of the surrounding ground to the top of the new build.

Third lift (20.30–23.10m OD)

The third and subsequent lifts were recorded in less detail for the reasons outlined above. The top of the third lift is assumed from the position of another series of scaffolding putlogs indicating the presence of yet another platform (these do not appear on Fig.6.13 but were observed). Three more rungs were added to the ladder the two lower ones

being the last to be recorded in detail (50270, 50275 and four others, uncontexted). Once the mortared masonry had set, the shuttering would again have been removed and the area between the external face and construction cut backfilled. The backfill at this level was not recorded but was presumably redeposited natural sand.

Fourth lift (23.10–24.68m OD)

The fourth lift is again suggested on the basis of another set of scaffolding putlogs, three more ladder rungs also being added. Subsequent backfilling around the shaft was recorded in a series of sections (S.315, 317, 4905, 4906, 4907 and 4908, Fig.6.16). The lowest



Figure 6.19 Voids left by the decayed timber curb at the well base, showing the lower circular shaft cut into chalk (50108, Period 3.1, Area 5). Viewed from the west



Plate 6.20 Interior of the well (50108, Period 3.1), showing the series of putlog holes in the north-east corner representing the position of a ladder in the north-eastern angle of the shaft (Area 5)



Plate 6.21 Demolition of the well shaft, showing interior putlogs (50108, Period 3.1, Area 5)

recorded section (S.4906) to the east of the shaft shows a large deposit of chalk rubble (49122) with sand lenses (49123), perhaps indicating that excavation of the well down into natural chalk had now begun. Tip lines confirm that the material was coming from the direction of the well. Above the chalk were several layers of redeposited sand, sandwiching a grey sandy silt deposit (49121, 49120, 49119 and 49118). The overlying section (S.4905) shows bands of relatively horizontal redeposited natural sands (49095, 49094, 49093, 49092, 49091 and 49090). These were interleaved (especially on the north-to-south part of the section, abutting the shaft) with lenses of compacted chalk and mortar, again apparently coming from the direction of the well. Later deposits, coinciding roughly with the commencement of the next lift, were thicker layers of cleaner sand (e.g. 49088). A similar process may have been recorded to the west of the shaft (S.317) where redeposited natural layers interspersed with lenses chalk lumps (50333, 50332 and 50331) were followed by very clean sand (50330) at about the same level. Similar infilling of the construction cut at about the same level was also recorded in S.4908, located between the north wall of the shaft and the modern pile line.

Fifth lift (24.68–26.18m OD)

Three ladder rungs were inserted during the construction of this lift and another set of platform supports was added at each internal corner at a level of 26.18m OD. The final part of the construction cut was backfilled to contemporary ground level (25.71–25.80m OD), leaving c.0.38m of the shaft exposed above ground. Most of this final stage of

backfilling consisted of clean, redeposited natural sand (49083, S.4907; 49210, S.4910; 49088, S.4905 and 50329, S.317; Fig.6.16). To the east of the shaft, (e.g. 50139, S.314, Fig.6.17) the fills were horizontal and included a single layer of chalk (49085). To the west, the fills slumped away from the edge of the construction cut. The uppermost backfill to the south (50146) is located in Fig.6.12; like a few others, it extended over the lip of the construction cut. A composite surface plan of these backfills to the east of the shaft was produced immediately prior to the machining, indicating an upper level of 26.14–26.19m OD. This may reflect ground slope up towards the base of the castle bridge to the north-east.

Lift 6 (26.18–unknown)

The highest level at which the masonry shaft was recorded was 26.67m OD. There is no evidence to suggest an arrangement at the top of the well shaft, although it probably continued upwards to form a superstructure housing the lifting mechanism (see further discussion in Chapters 6.V and 12).

Well, Phase 3: shaft dug into chalk (Fig.6.15, Plate 6.19 and 9.4)

As noted above, excavation of the circular shaft dug into natural chalk (top at 17.10m OD) at the base of the casing may have begun during construction of the masonry (Plate 6.19). From this point, the stability of the natural deposits negated the need for a masonry support. The cut was 2.70m in diameter, decreasing as it progressed downwards until the lowest excavated point (at 8.00m OD) where it this measurement had reduced to 2.40m (Plate 9.4). Upcast from the original excavation of the shaft was evident at the top of the construction cut surrounding the well (see below).

Fills of the lower part of the well were half sectioned in 1.20m spits (see Chapter 9). After each was recorded, the ground surrounding the well was reduced by machine and the next section excavated. Seven such sections were recorded and are detailed further in Chapter 9. The lowest part of the well fill excavated (after the removal of 18.87m of fill) was at 7.80m OD, the level of the base of the Castle Mall shopping centre. A core sample was placed through the centre of the remaining fill in order to reach the water table (a developer requirement; Fig.6.15). The core began at 12.00m OD. At 0.00m OD the fill was observed to be of more refuse deposits, observed as far as -2.00m OD. The lowest metre of sand and gravel fill (from -2.00 to -3.00m OD) included frequent flint and limestone fragment inclusions suggesting waste from construction. This gives a total surviving depth to the well of 29.67m.

Upcast from well excavation (Figs 6.12 and 6.16)

A sequence of deposits recorded around the shaft indicates the dumping of upcast chalk (G5/20) from the excavation of the lower, circular part of the well. These deposits were planned to the west of the shaft, above fills of the construction cut and recorded in section elsewhere (Figs 6.12 and 6.16). These included chalk layers with lenses of mortar, interspersed with loam deposits (50157, 50147, 50117=50124, 50140, 50116 and 50121). Some contained frequent flint pebbles and cobbles, some of the flints having been split. To the south-east were more upcast chalk deposits (49236, 49142 and 49181, S.4909).

The presence of mortar and building materials in some layers suggests that construction or finishing of the shaft was continuing at the same time as the cut through chalk was being excavated. Contemporary ground level

is suggested at between 25.67 and 25.97m OD. The presence of quantities of charcoal is notable. The recorded location of the dumps to the south suggests a radius of deposition extending for c. 11.25m from the centre of the well shaft, although the estimated total quantity of chalk removed from the lower part of the well would have been approximately 54 cubic metres, indicating that much of it must have been removed from the immediate area.

Sealing the chalk dumps were further deposits, often of sand containing gravel and flints, apparently serving to level and consolidate the area around the well shaft (G5/21). These deposits may have been the remnants of upcast from the well construction cut, perhaps temporarily piled elsewhere during the construction of the well and subsequently spread over the area to level the ground. Some overlay the backfills of the construction cut, as well as the chalk upcast layers (Figs 6.12, 6.16 and 6.17; 49056, 49138, 49224, 49225, 49153 and 49139, 50131, 50148, 50122, 50110).

To the south of the well shaft, a spread of white mortar with frequent medium and small stones lay within a shallow depression (49243, G5/26, Fig.6.12) cut into the deposits described above. This was presumably residue from finishing works on the well shaft.

Small Finds

An iron ring with its arms twisted together was found in layer 50117 (SF5663).

Pottery

A total of 0.035kg of TTW, EMW and LMU was recovered, indicating an early 12th-century date. See Appendix 6.

The South Bailey

The south bailey ditch and its rampart may have been added to the defences of the castle during the construction of the masonry donjon in the very late 11th to early 12th century, although an association with times of trouble (such as those of the 1170s; see Chapter 6.I) is possible. The south bailey was redefined with the cutting of a new ditch, considerably larger than the earlier ?Fee boundary marker, enclosing an area within the rampart of c. 6,533m² (c. 1.6 acres). The ?Fee ditch may have been recut at this time to form a hornwork around a new south gate (see below). Both ditches were crossed by causeways along the main castle approach. A rampart was constructed on the inner side of the new south bailey ditch, through which a road may have led to a postern gate to the west. The surviving rampart lay about 11m to the north of the ditch, although its extent southwards southwards is uncertain. There may originally have been a berm between the bank and ditch, or the rampart may have been contiguous with the ditch's northern edge. In either case, the surviving rampart had been considerably truncated. Within the bailey, the two earlier crescentic ditches were infilled and the line of the approach may have been straightened.

Ditch 10, Phase 1: cut

(Figs 6.18–6.25, Plates 6.23–6.26)

The western arm of the south bailey ditch was archaeologically excavated in two areas of the Castle Mall site, with tentative evidence for part of the eastern arm returning towards the motte (Fig.6.18). Additional information for the western stretch comes from the Golden Ball Street site (integrated below). The ditch was V-

shaped in profile, although the sides had a stepped effect and had been heavily weathered. In Area 8, the surviving dimensions were *c.* 10.00m wide by 3.6–3.9m deep. To the south, in Area 1, the ditch width was not proven due to the large amount of quarrying that had taken place along its northern edge. Here, it survived to *c.* 5.00m deep. Comparisons between these two observations (allowing for truncation) suggest that the original dimensions were *c.* 12–14m wide by 5.00–5.50m deep. A schematic section showing this ditch in relation to the rampart to the north is given in Fig. 6.50. Initial fills date to the 12th century (Period 3.2). Much of the infilling took place during the medieval period (Period 4, Chapter 7), with late medieval and post-medieval fills also recorded (Periods 5 and 6, Chapters 8 and 10). Further consideration of the line of the south bailey ditch in relation to the natural contours and its impact on subsequent street development is given in Chapters 6.V and 12.

Western Arm, Phase 1

by Elizabeth Shepherd Popescu, Andy Shelley and David Whitmore

Castle Mall, Watching Brief T58

To the west of the castle, the line of the ditch is unclear. What may have been the south bailey ditch cut and its fills were recorded on the southern pile-wall of the Castle Meadow excavations. This ditch (12756, T58/19, S.182, Figs 6.18–6.20, Plate 6.23) was at least 5.6m wide, although as only the lower 1.60m was recorded, it was probably originally much wider. Its original width may have been *c.* 11.5m, with a depth of 5.5–6.0m (allowing for natural ground slope down towards the Cockey stream to the west). It was dug through natural chalk and the base of its V-shaped profile lay at *c.* 13.50m OD. The line of this observation is difficult to reconcile with the postulated line of the ?inner bailey ditch, in particular an observation on the pile line made to the north-east (Ditch 4, Fig. 5.19). This stretch of the south bailey ditch may have run directly from north-to-south (reflected in the line of the later barbican ditch, see insert on Fig. 6.20) or it could have swung sharply eastwards towards the motte ditch and the donjon, with most of its fill being removed by the barbican ditch; this suggestion, however, produces a rather awkward plan (Fig. 6.18). Further comments on the possible interpretations of these various ditch junctions are given in Chapter 6.V.

Castle Mall, Area 8

A more detailed observation through the south bailey ditch was made in Area 8, where it was recorded in a series of machine-stepped sections (80301, G8/14, Figs 6.21 and 5.4, Plate 6.24). Here, it cut through fills of the earlier ?Fee ditch (Ditch 3, Period 2) which had silted up and/or been partially backfilled with its own rampart by the time that the new ditch was cut. It survived to *c.* 10m wide and 3.6m deep. Extrapolation taking truncation into account indicates an estimated original width of 12–13m and depth of 5m (assuming that the ditch was cut from the same level as the top of the consolidation layers above Hollow 1 to the north, Period 2.2; see Fig. 6.50). The profile of this part of the ditch was V-shaped with irregular sides, presumably having been heavily effected by erosion (having been cut through natural sand) and the edges would have ‘settled’ into a stable position fairly quickly after initial excavation. Keeping the ditch clean and in shape must have been a continual problem.

Castle Mall, Area 1

Another machine-stepped trench was dug across the ditch in Area 1 (11121, G1/32, Fig. 6.22, Plate 6.25). The west-facing sections are illustrated in Fig. 6.23 and indicate a depth of over 4m (if the base of the ditch lay at approximately the same level as that recorded to the west in Area 8, the ditch would have been *c.* 5.50m deep). The base of the associated rampart to the north (G1/17, see below) lay at *c.* 27.00–26.40m OD. The southern ditch edge survived to *c.* 26.70m OD, indicating that minimal truncation had occurred in this area. The base of the ditch was not located in this observation, with the lowest recorded fills lying 0.60m higher than the base of the ditch recorded in Area 8. The natural ground slope was, however, upwards towards the south and east and the top of the ditch may therefore originally have been higher here. The northern edge of the ditch had been obliterated by later quarrying and pitting, the north-to-south dimension of the ditch remaining uncertain. A projection of the recorded slope towards the base

of the ditch (S.168), combined with the projected northern edge in Area 8, suggests that the ditch was about 13–14m wide. A similar profile to that recorded in Area 8 is indicated, with similar evidence for the effects of erosion and weathering of the sides. The east-facing sections (S.154, 156, 159, 160 and 161, 164–66) show a similar sequence to those facing west, with a clear ditch edge to the south and the northern edge truncated by later pitting and quarrying.

Golden Ball Street (Site 26496N)

At the Golden Ball Street site the terminus of the western arm of the south bailey ditch was exposed (500; GBS Group 50, Figs 6.18 and 6.24). It was not possible to produce a full plan of the butt end as north-east corner of the site was constantly covered by spoil from the excavation. Natural was recorded along part of the eastern edge of the excavation, however, adjacent to the modern road, while a longitudinal section showed later refuse deposits tipping down into the ditch from the direction of the butt end. The ditch had a pronounced V-shaped profile (Fig. 6.24, Plate 6.26). Its sides had again been affected by erosion, producing a stepped appearance. Only minimal truncation had disturbed the excavated section across the ditch and the complete profile was recorded; from the overlying gravel yard surface to the primary silting. The base of the ditch was at 20.70m OD with overall dimensions of 5.85m depth and 10.10m width. Occasional small depressions noted in the sides may have represented footholds or steps leading into the ditch.

Eastern Arm, Phase 1

by Elizabeth Shepherd Popescu and Niall Donald

On the eastern side of the castle approach road, the south bailey ditch appears to have passed to the south and east of the limit of Area 9. Its exact location had been obscured by the digging of later medieval and post-medieval quarries over a wide area, presumably extending across the area of the rampart to the north of the ditch.

Castle Mall, Area 9

Cutting into an earlier ?ditch to the east of the site (91556, G9/46, Period 2), was another large feature with an irregular profile (91569=?=91562=?=92338, Fig. 6.28) which may have been a ditch terminal, running from north-west to south-east. Alternatively, this may have been a quarry (similar to those discussed in Period 5, Chapter 8). This feature lies in the anticipated location of the south bailey (or ?Fee) ditch, lying just to the south of its postulated junction with the north-east bailey features described below (Fig. 6.25). If the interpretation as a ditch is correct, it would appear to have butt-ended against the ?inner bailey/barbican ditch. The suggested width is about 7.5m.

Castle Mall, watching briefs and boreholes

Most of the eastern arm of the south bailey ditch lay outside the excavated area. Evidence for its location can, however, be derived from numerous watching brief observations (including T3–5, T17, T21, T39 and T41) and the borehole survey (Fig. 3.2). The suggested route of the ditch based on these observations and other records in the SMR is shown in Fig. 6.25. Of note are a number of sections recorded in a combined British Telecom and British Gas service trench dug along the eastern perimeter of Area 9 (T21). One of these (S.128.1), running south-westwards from the south-eastern corner of Area 9 for a distance of 18m, recorded both the edge of the ditch and its fills. An extension to the main trench S.128.3–4 recorded slumping of tarmac and hardcore indicating that this area lay above ditch fills.

South Bailey Rampart

(Figs 6.21–6.22, Plates 6.27–6.29)

The south bailey rampart, which lay on the inner side of the ditch, largely consisted of dumps of redeposited natural, at least some of which would have been upcast from the contemporary ditch (Figs 6.21 and 6.22). The exact position of the inner limit of the bank is unknown, although it must have lain between 18 and 25m to the north of the ditch (suggesting an approximate rampart width of *c.* 20m). Its maximum surviving height was just under 2m. There was no evidence to indicate whether the bank was originally contiguous with the ditch (forming a scarp slope) or whether a berm lay between the two. The date of finds recovered from rampart dumps is consistent with a constructional date of late 11th- to early 12th-

fold out

fold out

century, including residual material from ditch upcast and/or quarrying of material from elsewhere.

The rampart survived where it had not been quarried away during the late medieval and post-medieval periods and where it had survived truncation by later buildings. Its core consisted of fairly evenly layered deposits which may have lain above a turf base. Its construction was not a single unified action, but began with ground consolidation and levelling (see also Period 2.2, Chapter 5). Thin layers of darker material within the constructional sequence may indicate pauses (*e.g.* vegetation/trample), with occasional traces of burning. The development of apparent soil horizons suggesting exposed surfaces within the rampart sequence indicates that it may have taken some time to construct the bank to its full height.

A few remnants of structural timberwork survived, including posts and beamslots. These may have been anchored by the weight of the core on cross-members and some of the posts may have been angled to provide greater support. Comparison between observations in Areas 6 and 8 (see below) suggests that these timber elements must have been near the northern edge of the rampart, with thinner deposits towards the north indicating the washing/silting of rampart dumps down the slope. Further consideration of rampart construction in a wider context is given in Chapter 6.V and Chapter 12, Volume 2, with summary details of observations by site area given below.

Area 8

Evidence for the south bailey rampart survived across the northern part of Area 8 (G8/19), to the north of a later retaining wall (see Chapter 8). It was best preserved to the north-eastern (S.809 and 811; Fig.6.26 and Plate 6.27). The sequence of rampart deposits recorded is described below in six 'phases' with several dumping/constructional events separated by posts and slots. The rampart survived to about a metre in height in this area.

Phase 1

Above consolidation deposits (Period 2.2) were four posts and two slots in no apparent pattern (80204, 80206, 80202, 80031, 80033 and 80487, not illustrated) which may have been related to the structural framework of the rampart.

Phase 2

The base of the rampart proper was laid on thin deposits of grey/brown silt/sand. These may be the remains of a turf base or a ground surface above earlier consolidation dumps. This layer contained frequent charcoal and some burnt clay, possibly indicating adjacent destruction/burning activities (80092, 80183 and 80182, S.809–811, Fig.6.26; 80208 and 80468).

Phase 3

A beamslot running north-west to south-east (80191) was probably butt-ended and about 1.50m long. One of its fills contained fragments of EMW pottery broken *in situ*.

Phase 4

Another sequence of dumps followed (80068, 80069 and 80091, Fig.6.26; 80207 and 80452). These had an irregular surface, sloping down to the west. Two small posts were recorded above (80124 and 80122) and may be linked to others recorded higher in the sequence (Phase 5).

Phase 5

Survival of the main part of the rampart was restricted to a block in the north-west corner of Area 8, measuring about 2 by 5m. This consisted of layered sand dumps, one of which contained frequent charcoal, reaching an upper level of 26.78m OD. These layers were recorded during excavation as 'occupation layers' (including charcoal and

burnt clay) within the rampart sequence (80090, 80194, 80116 and 80073). They were cut by three large (80118, 80126 and 80140) and two small posts (80130 and 80132) (Plate 6.28). Post 80140 (Fig.6.26) contained a square cut post-pad of ironstone/puddingstone at its base, with other fragments acting as post packing. The angle of the sides suggests that the post may have been set at about 20° to the vertical. The post may have related to an underlying slot (Phase 4), lying above its northern end.



Plate 6.25 Excavation of south bailey ditch (Ditch 10) in progress (Area 1, Period 3.1), viewed from the south.



Plate 6.26 Profile of south bailey ditch (Ditch 10), Golden Ball Street (Area 2, Period 3.1), just to the west of its terminal at the castle approach causeway. In the foreground are some of the numerous ground anchors radiating from the Castle Mall development



Plate 6.27 Remnant of south bailey rampart, looking south-east (S.809, Area 8, Period 3.1)



Plate 6.28 Post-holes within south bailey rampart (Area 8)



Plate 6.29 Remnant of the south bailey rampart, looking west (S.1200, Area 6, Period 3.1)



Plate 6.30 Cobbled 'road' surfaces, slumping into underlying Hollow 1, viewed from the east (Area 7, Period 3.1)

Phase 6

The final surviving sequence of rampart dumps were of mixed redeposited natural gravel and some burnt material (possibly disturbed/ redeposited from earlier activities). These deposits were recorded in section only (80089, 80065, 80088 and 80071, 80063, 80087, 80064

and 80086); S.809–811, Fig.6.26). The uppermost surviving rampart dump was of clean sandy gravel (80062 and 80085).

Area 6

The surviving rampart in Area 6 was more extensive standing to just under 2m high (Fig.4.5, Plate 6.29). Two features were recorded at the overlap between Areas 1 and 6 (G6/29, not illustrated) linking with observations made there of features beneath the rampart. To the south was a post-hole or the butt end of a beamslot (60286), aligned north-west to south-east and 0.43m deep. To the north was the base of a pit (60396). Rampart dumps recorded in section (G6/30, S.1200, Fig.4.5) sloped down to the north, although the top had been disturbed by modern activity. Their uppermost level here was at c.28.00m OD, over 0.50m higher than similar deposits recorded in Area 8.

Phase 1

The earliest recorded dumps were of redeposited natural sand and clay (60039, 60877 and 60876). At the top of this dumping sequence was a dark grey loam (60884 and 60872), which may have been left as an exposed surface for some time.

Phase 2

The earlier dumps were cut away at their northern end, perhaps by a large post or pit. Another pit was recorded at this level (60872).

Phase 3

A sequence of mixed dumps followed, laid less regularly than the earlier ones, although still sloping downwards towards the north (60873 and 60885). They were near black to the north, perhaps indicate silting/mud accumulating along the inner face of the rampart. In terms of level, these dumps broadly equate with those in Area 8, Phases 4–6.

Phase 4

A final thick dump of clean orange sand lay along the northern edge of the rampart (60384), equating with a similar dump recorded in Area 8 (80062, Phase 7).

Area 1

(Fig. 6.22)

Phase 1

The main observations of initial rampart dumps in the central part of Area 1 was of clean gravel, clay and sand (G1/17; 11692–11700) which had been truncated on all sides by later features including modern cellars. The dump immediately overlay an earlier soil horizon (Period 2.2, Chapter 5). To the south was a small dump of dark brown silty sand (11572).

Phase 2

Three features cut into the dumps described above and may represent the remnants of a structural framework. To the west were the fragmentary remains of a slot, only the south edge of which survived (11662). This was 0.13m deep and aligned east-to-west, filled with rampart dumps. To the south was a grave-shaped cut aligned north-east to south-west, 0.33m deep (11652). To the east was a butt-ended slot (11735=11772) over 0.50m deep. These slots may have formed part of a rampart-related framework on its inner edge. The pit may have been a large post-setting with refuse having been packed around the post.

Phase 3

A further sequence of dumps (seven in all; 11592, 11598, 11611, 11642, 11643, 11644 and 11620) was recorded in plan and included redeposited natural sand and gravel. Finds included human bone disturbed from the underlying pre-Conquest cemetery (Cemetery 3, Period 1.3).

In observations made in section across the remaining northern part of Area 1 (S.123, 171, 172, 137, 135, 129, 134, 126, 125, 122, 121 and 170) it proved difficult to differentiate between rampart dumps (14209, 14249, 14243 and 14232, 14209) and natural deposits. Again, possible soil horizons were identified. The layers had been disturbed by later quarrying in many cases. Some lay above earlier dark deposits and may have acted in part as ground consolidation (similar to those described in Period 2., Chapter 5). Upper levels lay at around 27.50–28.00m OD.

Phase 4

This 'phase' has been arbitrarily assigned to rampart dumps that were machined off, some of which may have been the residue from later quarrying (see Chapter 8). These probably equate with those described in Phase 3 above, with an upper surface of c.28.00m OD to the west and 27.50m OD to the east, prior to machining. Above the machined layers was another possible rampart dump (11060) which survived to 28.11m OD.

Watching briefs

Another observation of the rampart was made in a small trench (T38, Fig. 6.25) excavated to the south of *Le Rouen* public house.

Small Finds

Finds from the rampart in Area 1 included nails (x 2) and a shank SF5552 and a small triangular piece of iron sheet (from 11060) with possible hammerscale present in the encrustation (SF5442).

Pottery

A total of 1.187kg of pottery was recovered. The assemblages from the various observations of the rampart were very similar and were dominated by TTW of early medieval rather than Late Saxon character. Forms include ginger jar rims and rims from cooking pots/jars with simple everted profile (type AB6). EMW was also present in most features recorded, again represented by ginger jars and jars/cooking

pots with simple upright or everted rims (types J1a and J1b). Medieval fabrics were a small but consistent element represented by LMU and YTW as well as Andenne-type ware body sherds. Further details are given in Appendix 6. A late 11th- to early 12th-century date is indicated.

Open Area 25: road

A metalled road leading through the south bailey rampart stretched over a distance of c.13.5m south-west to north-east, with an estimated original width of c.5.00m (Open Area 25; Figs 6.21 and 6.29, Plates 6.30 and 6.31). The most detailed observation was made to the north (Area 7) where successive resurfacings/repairs had occurred. Three major episodes of resurfacing were evident, with the intermittent accumulation of refuse and debris and occasional patching. Slumping had clearly been caused by the presence of an underlying hollow (Hollow 1, Period 1, Chapter 4). To the south (Area 8) an equivalent sequence was recorded as one event. Road metalling had been inserted into a terracing cut made through earlier Norman consolidation dumps (Period 2.2, Chapter 5). The irregular southern end of the terrace could suggest the presence of a large post-setting revetting the rampart. Plate 6.31 shows deposits above the road within the terrace cut, while Fig. 6.27 shows the sequential development of the resurfacing, which is demonstrated in Plate 6.30. The road had been sealed by dumps of redeposited natural containing puddingstone blocks. This series of dumps also dated to the mid 11th to 12th century and may have blocked the route or have served to level the surface above the hollow prior to further surfacing which did not survive. The associated western entrance would have led through a postern gate (see below) from the south bailey towards the French Borough. The road's position is reflected in the later street and tenement patterns (see Chapter 6.V).

Although in Area 8 the terracing cut for the insertion of the road was recorded, in Area 7 the situation was complicated by the fact that the edge of the underlying hollow (Hollow 1, Period 1.1) ran obliquely across recorded sections (S.703 and 705), at a similar position to the likely position of any such insertion cut. In the northern corner of Area 8, the top of the terrace cut lay at 26.15m OD, with the base recorded to the east at 25.28m OD. The top of the sections recorded in Area 7 lay at c.26.00m OD, suggesting that the upper part of the road here had been truncated away.

Area 7

Phase 1: Ground preparation and initial surfacing

At the base of the terrace 'cut' (G7/9; S.703 and 705, Fig. 6.27A, Plate 6.30) was a gravelly loam deposit (70130). This was similar to deposits underlying road metalling recorded to the south in Area 8 and may indicate a similar process of consolidation or sinking of deposits into underlying organic layers. Comparison of levels with deposits recorded in Area 8 suggests a slope down to the north, presumably reflecting the natural ground slope.

Prior to the laying of initial metalling, clay may have been laid down to act as bedding for overlying cobbles (S.703 and 705, 70087 and 70132). The cobbles were rounded/oval, c.0.08–0.12m in size, with occasional small pebbles, all lying in a matrix of compact black loam. This initial surface was different to that recorded to the south, which was of gravel rather than cobbles. The cobbling was overlain by a distinctive thin skim of purple/black silt which had accumulated during use of the road (70084). A significant dip towards the centre of the road resulted from slumping into underlying Hollow 1. Presumably, this resulted in the necessity for successive repairs to the road surface and was apparently more extreme to the north than to the south (in Area 8 there was little or no evidence for repair/resurfacing).

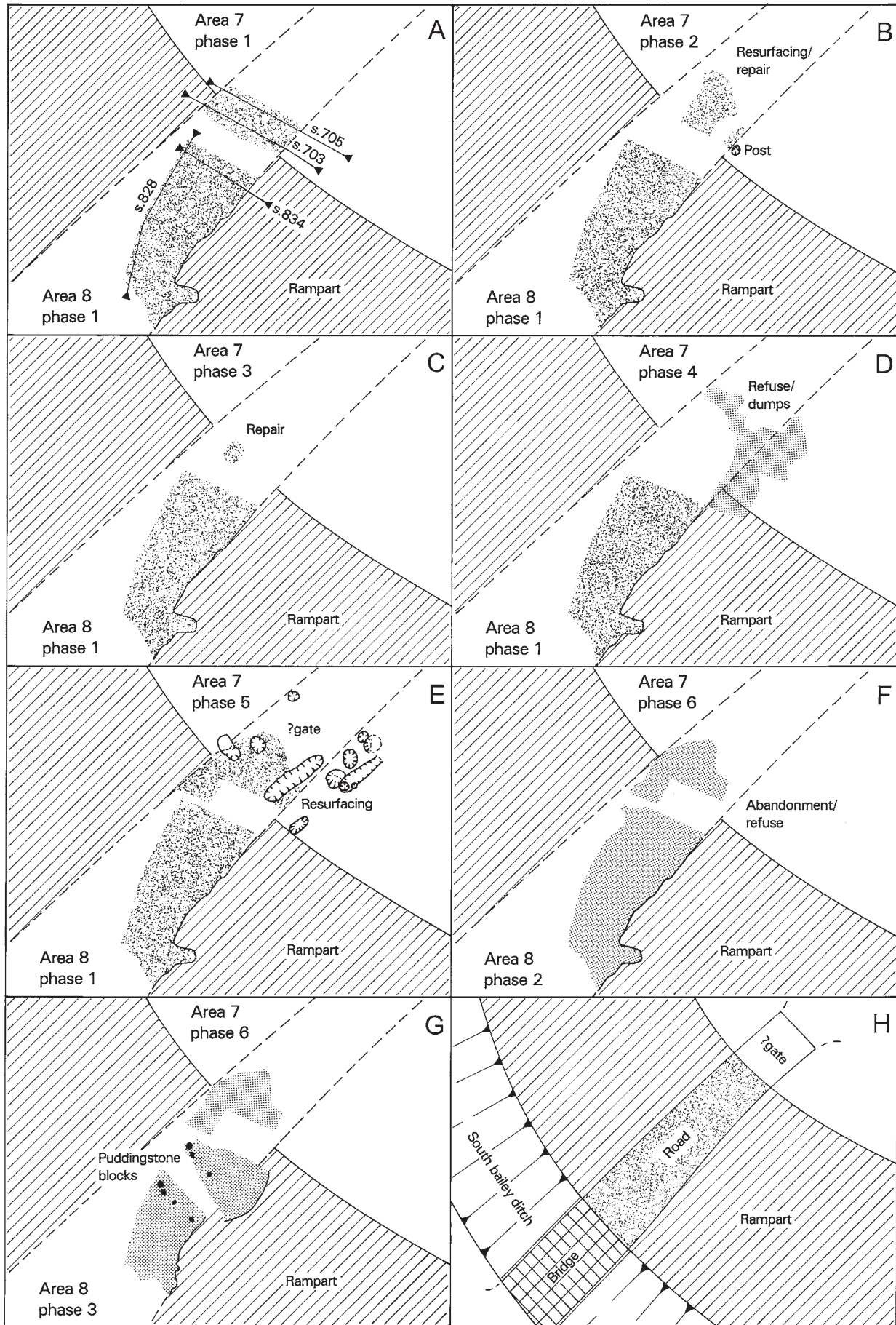


Figure 6.27 Period 3.1: Schematic plans showing development of road through south bailey rampart (Area 7 & 8).
Not to scale

Phase 2: Resurfacing

To the south (S.703, Fig.6.27B) was a possible post lying at the southern edge of the road (70134). The new road surface was of compacted sand and gravel (70082, rounded pebbles of 0.02–0.05m).

Phase 3: Repair

A small patch of cobbles and gravel (70131, S.703, Fig.6.27C) towards the centre of the road may have been a partial repair, above the area most severely affected by slumping.

Phase 4: Dumps and/or debris

Above the second road surface was a sequence of dumps (Fig.6.27D), or perhaps the accumulation of debris suggesting a low standard of road maintenance. These deposits were fairly thick, perhaps acting as levelling to raise the slumped area and were concentrated towards the centre and west of the road (70078, 70076 and 70077). A subsequent dump above the road extended eastwards, perhaps suggesting a turn in the road or indicating that it opened out into a yard (70073, 70145 and 70146).

Phase 5: Resurfacing and ?associated posts

A third surface of gravel/cobbles set in clean sand was similar extent to the earlier road surface (S.703 and 705, 70045, Figs 6.21 and 6.27E). Cutting into this surface were two posts (70049 and 70050) towards the western side of the road and a slot (70075). These may have related to a timber ?gate (described below).

Phase 6: Decline (refuse dumps)

A thick peaty refuse dump lay above the central part of the road (70008, 70014 and 70025, Fig.6.27F).

Area 8

Phase 1: Construction

Cutting through dumps associated with the south bailey rampart (G8/18) was a linear cut running north-east to south-west (80451, Figs 6.20 and 6.27, G8/20), the southern edge of which ran across Area 8. It was recorded over a length of 9m, continuing northwards into Area 7. The 'terrace' cut had an irregular south-eastern edge, a protrusion perhaps indicate the location of an upright post, perhaps inserted torevet the rampart dumps through which it was cut. The construction cut was filled with fairly clean gravel (80503), followed by gravel and cobbles (80450) forming a metallated surface again sloping down towards the west. The surface had been distorted by slumping into underlying pits and the hollow.

Area 8, Phase 2: Abandonment/refuse accumulation

Overlying the metallating was a series of deposits indicating abandonment and organic refuse disposal (Fig.6.27, Plate 6.31; 80449, 80485, 80198, 80151).

Area 8, Phase 3: Dumps above the road

The final group of deposits relating to the road were a sequence of dumps lying above it (80043, 80048, 80133, 80139, 80144 and 80193). These comprised mixed, redeposited natural, three layers containing puddingstone blocks (a similar block was used as packing for a rampart post). It is possible that these deposits related to the constriction of the rampart; in which case the road would have been contemporary with rampart consolidation/turf layers (G8/20), all then sealed by rampart dumps. Deposition of this material left impressions in the soft underlying refuse dumps. The puddingstone blocks are noteworthy; some were apparently worked and others fragments. They are not recorded elsewhere on the site.

Small Finds

Small finds included bone waste (SF5831 from post-hole 70049), three fragmentary horseshoes and a horseshoe nail (SF1066 and 6033 from dump 80151 and SF5803 from dump 81098). Of the three fragmentary horseshoes, one (SF5803) has a fiddlekey horseshoe nail *in situ*; all have wavy edges and round nail holes with countersinkings indicative of a post-Conquest date. A residual silver Short Cross Penny of Cnut (1030–1036, SF1063) also came from dump 80198.

Pottery

(Fig.6.39 on CD)

A total of 2.625kg of pottery was recovered. The ceramic assemblages recovered from the different areas were similar, with TTW a large element represented by sherds from cooking pots and jars, but with EMW, EMSW and YTW accounting for larger proportions of the assemblages. EMW included rims from cooking pots/jars and ginger

jars. This was also one of the first features at the site in which YTW played an important role in the assemblage, represented by three jar rims and a bowl rims. Other fabrics present include NEOT (Fig. 6.39 on CD), Stamford ware (Fabric A) and LMU. Further details appear in Appendix 6.

Gate 5: timber-framed

Cutting into earlier or contemporary road deposits (described above) lay a possible timber gate (Gate 5, Figs 6.21 and 6.27E) which would have lain at the inner side of the south bailey rampart. The proposed structure had dimensions of c.5.5m north-west to south-east by c.6.00m south-west to north-east. It comprised a series of large, roughly circular posts to the south-east, the deepest of which was substantially set at 0.83m deep (the others averaging c.0.30m in depth). Other posts and a post or slot lay to the north-west (7/10 part and 7/12 part). The gap between the two sets of posts was narrow at about 2.5m. Possibly as a later alteration three butt-ended slots were inserted, two of which had posts set at their south-western ends, using flint, chalk or iron-pan as post pads.

The two posts cutting into the road surface (Area 7, Phase 5 above) lay towards its western side (Fig.6.21). One was sub-square (70050), 0.32m deep and filled with gravel and charcoal. The other (70048) was less regular in plan, with a rectangular cut having apparently been made to remove the post. Just to the north-west was an isolated post (70002, G7/12). These three timbers may have formed the north-western side of the ?gate. To the south of the road was a series of slots and posts (G7/10). The northernmost, cutting through the upper road metallating was a linear butt-ended slot (70075) running north-east to south-west. A patch of cobbles (70112) above its upper fill may have been the only surviving remnant survival of a later road surface.

Just to the south was a line of large posts on a similar north-east to south-west alignment. The smallest (70018) was just off-line, to the north of the others. Cutting into this, forming the north-eastern end of the line of three posts was a heavily truncated post-hole (70022). Just to the south-west was another large oval post (70086), perhaps a post-pit, 0.83m deep, indicating that it supported a substantial post. Organic matter at the base of the fill suggests that it decayed *in situ*. Above the southernmost post (70126) was a circular patch of daub.

Furthest to the south-east were two slots. The northernmost slot (70102) was butt-ended to the south-west and was 0.44m deep. Two fills had apparently been tipped in from either side, part way through the deposition of which two posts were inserted at the southern end of the slot on post-pads of flint, chalk and a lump of iron pan. To the south, on the same alignment, was another short slot (70064, 70066 and 70063) and post-pit. The large, oval post-pit, had a flint/stone post-pad at its base, set above which was a decayed post with constructional backfilling around it (S.702).

Small Finds

An iron clenched bolt (SF5754) came from post-hole 70066.

Pottery

A total of 1.239kg of pottery was recovered. Although TTW accounts for a sizeable proportion of this assemblage, early medieval fabrics are more dominant. Some of the TTW sherds were noted as verging on EMW in appearance and could be regarded as transitional. Other fabrics present were EMSSW, YTW, Pingsdorf type ware and LMU.

The assemblage indicates a later 11th- or early 12th-century date. See Appendix 6.

Open Area 24: features and deposits associated with south bailey rampart

Features along the inner side of the south bailey rampart include miscellaneous slots and cuts, some of which may have related to a timber structure associated with the rampart (G1/18). The features were recorded in the northern part of a machine trench in the northern part of Area 1 (S.174 and 175) and included a slot or post (11910) and post-/stake-holes (11941 and 11945). Overlying these features were thick dumps up to 0.70m in depth (G1/19; 11930, 11929 and 11888). These may, in part, equate with deposits, described as lying beneath the rampart (see Period 2), but may have resulted from downwash/weathering from the rampart and/or the accumulation of mud within the bailey.

South Gate and Castle Approach Road

A pile-line proving trench in the eastern part of the site (adjacent to Area 9; T17) extended into the area in which the south gate of the castle and the Norman/medieval road were expected (Fig.6.25). No clear evidence for either the gate or road were recorded. Just to the west, further observations (T8 and 49) also failed to provide evidence for the gate. Masonry was observed during machining at the northern end of Area 1 at Golden Ball Street and it is possible that this related to the remnants of a gate.

Ditches 7 and 8, Phase 4: infilling

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.5.25)

The provision of the enlarged south bailey defences effectively marked the end of the defensive use of the double ditches set at the southern end of the bridge across the ?inner bailey ditch (Period 2.2, Chapter 5.II). Final infilling of these ditches was characterised by sands and gravels (G2/3), much of which may have been derived from levelling of the rampart(s) associated with the ditches. Fills of the innermost ditch (Ditch 7) were generally of clay or sand (20021, 20007, 20003, 20005, 20008, 20014, 40199, 40189, 40188 and 40191; Fig.5.25) often containing flints and gravel. Upper fills of the outer ditch (Ditch 8) were of similar character, although were generally more mixed (20001, 20025, 20135, 20116, 40177, 40176 and 40175, Fig.5.27). Conspicuous amounts of fired clay/daub were present in these fills, as well as smaller amounts of plaster/mortar (not collected).

Small Finds

A type 2A iron horseshoe (SF5539; Fig.6.46) and an iron strip/blade fragment (SF5892) were found.

Pottery

A total of 0.392kg of pottery was recovered from these deposits. Fills from Ditch 7, the inner ditch, included the standard range of early medieval wares represented by body sherds from Thetford-type ware, EMW, EMSSW, YTW and Pingsdorf-type ware (0.156kg). A similar assemblage came from Ditch 8 (0.236kg). A late 11th- to 12th-century date is suggested. See Appendix 6.

Botanical Remains

by Peter Murphy

The samples from four fills (20001, BS276; 20003, BS179; 20008, BS248; 20025, BS187) produced small flots, comprising charcoal with small numbers of charred cereal grains (*Avena* (oats), *Hordeum* (barley), *Secale* (rye)), occasional *Pisum*-type (probably pea) cotyledons and charred weed seeds (including *Agrostemma githago* (corn-cockle),

Centaurea cyanus (cornflower), *Raphanus raphanistrum* (wild radish) and *Rumex* sp. (dock)), with bone fragments and ?siliceous globules.

Pitting enclosed by Ditches 7 and 8

by Elizabeth Shepherd Popescu and Andy Shelley

Five intercutting pits (G2/17, 40371, 40369, 40306, 40370 and 40372, Fig.6.4) lay centrally within the area formerly enclosed by Ditch 7. The pits had near vertical sides and most contained significant amounts of charcoal, as well as fragments of possible surfacing consisting of broken tile and gravel compacted beneath chalk, often surrounded by highly compacted fills. The presence of oystershell in many fills is notable. The discovery of the 'surface' fragments may suggest the position of the castle approach road (although the inclusion of chalk is perhaps anomalous), perhaps reused to act as post-pads in large post-holes. The origin of these features is unclear, although they lay in the anticipated position for a bridge landing over the ?inner bailey ditch.

Small Finds

Finds from pit 40370 included a number of iron objects: a horseshoe nail (SF1044), nail shanks (SF6180, 1118 and 6877) and a spirally twisted bit link from a bridle (SF6204; Fig.4.110).

Pottery

Under half a kilogram of pottery was recovered (0.474kg). The fills may date to the late 11th or early 12th century on the basis of the freshness of the TTW, YTW and early medieval wares. This assemblage included a handle from an East Cambridgeshire-type ware glazed jug. Residual Middle Saxon and NEOT were also present. See Appendix 6.

The ?Castle Fee Boundary

The western part of the ?Fee ditch may have been recut in the late 11th or early 12th century, possibly at the same time as the elaboration of the south bailey defences, to form a hornwork around the south gate of the castle (Fig.6.4). This hornwork would have enclosed an area of c.4,156m² (about an acre). To line of the ditch to the east of the castle approach road remains uncertain (although see further comments in Chapter 6.V). The excavated evidence suggests that the hornwork ditch survived as a functional earthwork until the end of the 13th century and was only completely infilled in the late 14th to 15th century.



Plate 6.33 West-facing section across 12th-century (Period 3.2) fills of the ?Castle Fee ditch (Ditch 3, S.141, Area 1), showing the dark band of refuse deposits

Ditch 3, Phase 4: possible recut
(Figs 5.5–5.7, Plates 6.32 and 6.33)

The profile of the ?recut recorded in Area 1 at Castle Mall is shown in Fig.5.6, with surviving dimensions of *c.*6m wide and a surviving depth of *c.*3.40m. The part of the ditch recorded in Area 8 had been largely infilled by this date (Period 2.2, Chapter 6.II) and the southern element may now have followed a new line, curving northwards to join the south bailey ditch. Fills recorded from the early 12th to 15th century (spanning Periods 3.2–5.1).

Western Arm, Castle Mall Site

The ditch was recorded over a distance of *c.*25m in Area 1, five slots being placed through it (11036, Fig.5.5). The northernmost observation was made in three stepped sections of a machined trench (S.144, 145 and 158), where it had a surviving depth of *c.*3.40m. Just to the south, a slot was placed to ascertain the relationship between this ditch and the boundary ditch to the cemetery of St John at the Castle Gate (Cemetery 4, Chapter 4.II). Only a small part of the Fee ditch cut was recorded here, with an upper level of 26.55m OD where it had been truncated by modern disturbance.

The southernmost observation of the ditch on the Castle Mall site (11036) was made in another machine trench, again recorded in stepped sections. Four of these are illustrated (S.162–141, Fig.5.6, Plates 6.32 and 6.33), although again the upper east and west sides of the ditch were not recorded in section. The lower step (S.162) shows the ditch cut with its base at *c.*24.25m OD. Again, a slightly stepped profile is evident. The next sections (S.139 and 141) show the western ditch edge apparently running off westwards (into S.142 and 143), although it now appears that the ‘ditch fills’ recorded both here and to the north-east were actually fills of an earlier feature (perhaps Hollow 1) and that the ?Fee ditch ran on a much straighter course than was recognised on site. The ditch fills recorded in the upper step (S.140) indicate a surviving ditch depth here of *c.*3.30m OD. Further to the south, two small slots were placed to trace the continuation of the ditch in the far eastern part of Area 1. These were not excavated but show the continuation of the ditch at *c.*26.65m OD (11480 and 11481).

Western Arm, Golden Ball Street Site (GBS Groups 20 and 24)

by Elizabeth Shepherd Popescu and David Whitmore
A recut of the ditch was positively identified during the open area excavation (rather than machine stepping) at the Golden Ball Street site (Figs 5.5 and 5.7). The base of the recut (515) lay at 25.24m OD although was clearly deepening on its course westwards from the terminus (the recorded base at Castle Mall lay exactly a metre lower). At the terminus itself the recorded base of the recut was at 25.50m OD. The recutting had clearly removed much of the eroded rampart material on the north side of the ditch close to the terminus. It only survived around the edges of the butt end and reappeared again approximately 4m to the west of the butt end. Three possible ‘post-holes’ (518, 525 and 529) identified on the northern edge of the ditch may represent steps down into the earthwork, or the position of structural timbers.

Feature within ?inner bailey ditch

Beneath the line of the later barbican ditch was narrow feature (T56, G9/6, 92546a, Fig.6.28) running north-east to south-west over an observed length of 6m, 1.10m wide and only 0.35m deep. This apparently terminated at its south-western end. The interpretation of this feature remains problematic: although it was equated on site with the recut of the north-east bailey ditch, subsequent analysis negates this interpretation. The two observations appear to be completely unrelated and this observation may relate to timberwork set at the base of the ditch junction (such as a palisade or bridge footing) rather than having a direct association with the north-east bailey ditch complex. Alternatively, it may have been natural in origin.

The North-East Bailey (Castle Meadow)

by Elizabeth Shepherd Popescu and Niall Donald
(Figs 6.28–6.29)

The outermost north-east bailey ditch, forming the Castle Fee boundary in this area, may have been recut in the second half of the 12th century (Fig.6.28). A series of vertical cuts was made through earlier ditch fills, varying the alignment of the ditch and increasing its depth. The necessity for a recut was presumably because the ditch had become extensively infilled and was perhaps becoming choked with vegetation. A revetment to hold back earlier, unstable ditch fills would appear to have been required; recorded steps and post-holes may have formed such a structure. Only a short length of the recut was observed and it is unknown whether the entire north-east bailey circuit was recut at this time. There is no evidence for a rampart associated with the ditch, although upcast from the recut could certainly have been used to heighten any associated bank. A land use diagram for the sequence of infilling and other processes is given in Fig.6.29.

Ditch 9, Phase 2: infilling of the first cut

The initial ditch cut had been allowed to silt up and accumulate refuse (including malting waste) to a depth in excess of 2.60m, a depth sufficient to cover the possible step in its southern edge (see Period 2.2, Chapter 6). The earlier ditch (92604; G9/2 and 92596; G9/10, Fig.5.31) was filled with a mixture of chalk, sand and silts, perhaps indicative of erosion deposits. Fills of another part of the ditch (92689; G9/3) may either have resulted from natural accumulation or deliberate dumping. The unusual ceramic assemblage includes a mid 12th-century sherd.

Small Finds

A single iron nail shank (SF6865) was recovered.

Pottery

by Irena Lentowicz
(Fig.6.40)

A total of 0.086kg of pottery came from samples and forms an interesting group containing some nice vessels (Fig.6.40). Rims from a TTW ginger jar (Fig.6.40, no.1) and jar (type AB11, Fig.6.40, no.2) and an EMSW storage jar with applied clay on the everted rim (Fig.6.40, no.3), were supplemented by a single small sherd of Developed Stamford-type ware (Fabric C), decorated with an applied thumbled strip, probably from a jug. All the pottery was fresh and the TTW from fill 92601 was covered in mortar/lime. Developed Stamford-type ware occurs in mid 12th-century contexts in Norwich. Samples from the fills (of 92956) produced only 23g of pottery. A single rim was recorded (type AB17) and the body sherds are also recorded as being covered in mortar/lime.

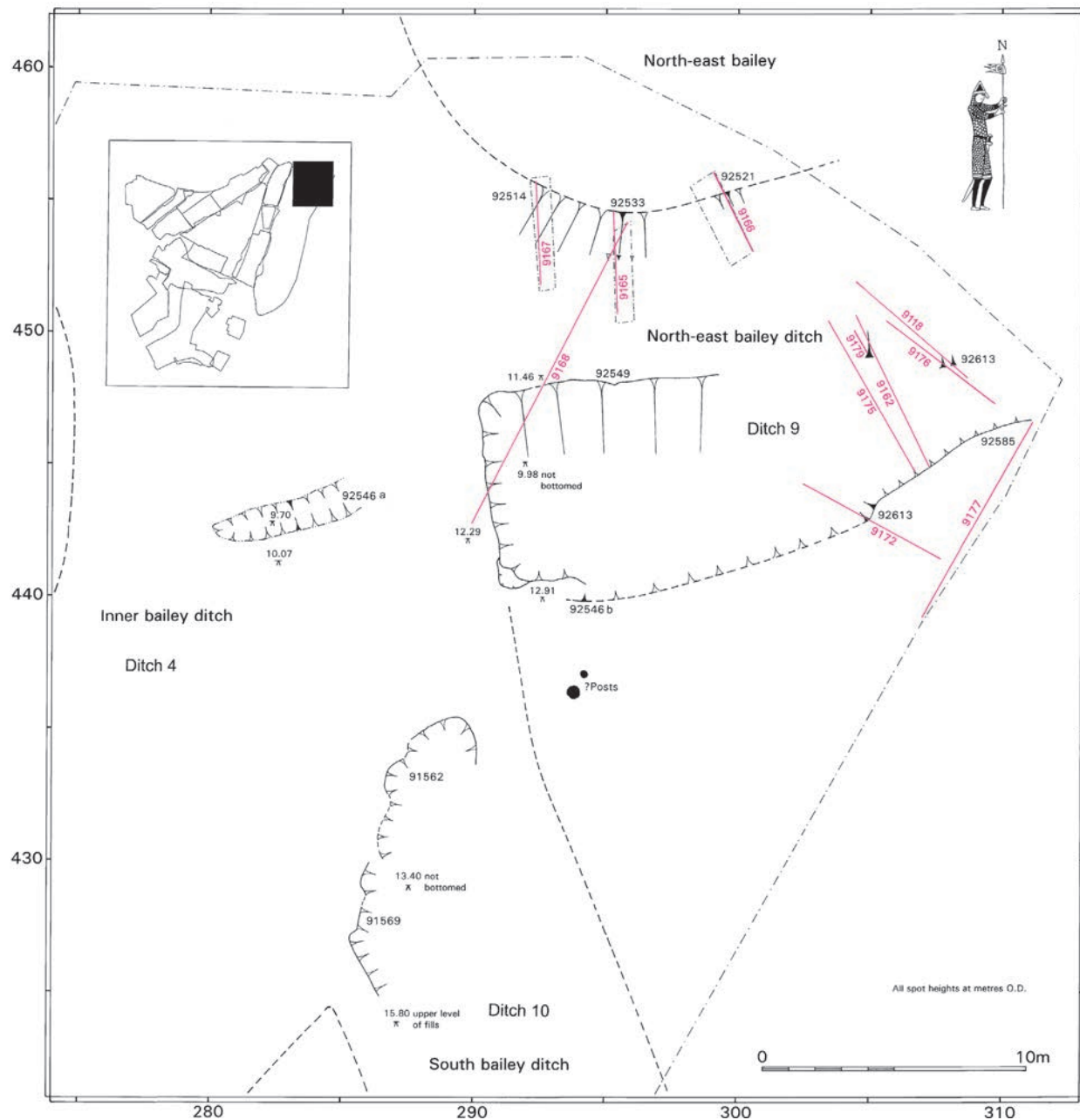


Figure 6.28 Period 3.1: Plan of Ditch 9 (outer north-east bailey ditch) and its possible junction with Ditch 4 (inner bailey) and Ditch 10 (south bailey) (Area 9). Scale 1:250

Botanical Remains

by Peter Murphy

Two samples were taken from the fills (92597, 1807; 92601, 1808) and, amongst other macrofossils, they included charred sprouted *Hordeum* (barley), probably a charred residue from malt-drying. The assemblages were generally very sparse, comprising small amounts of charred and uncharred plant material, some mineral-replaced arthropods and predominantly open-country molluscs. The charred macrofossils seemed to represent no more than a thin dispersed scatter of refuse. The uncharred plant material was only in part mineral-replaced and might have been derived from local scrub and weed vegetation, together with a minor input of sewage.

Ditch 9, Phase 3: recut and early fills

Evidence for a possible recut of Ditch 9 and a related sequence of infills comes from observations made during a watching brief in the north-eastern corner of the Castle Mall site (T56). The stepped profile of the recut may have

been the result of erosion, or may indicate the presence of a path or stepped revetment with associated posts. The recut ditch appears to have been just over 9m deep. The top of the recut is likely to have been placed at a lower level than the top of the original ditch, which would still have left a considerable hollow. The full width of the recut is uncertain, although a minimum width of 14m was recorded during the excavation (the original cut may have been c.20m wide). The alignment of the recut was slightly different to the earlier ditch and may have moved the southern edge of the feature several metres to the north of its original position (cf. Figs 5.31 and 6.28).

The ditch's recorded northern edge may have related either to the initial cut and/or to the recut. If the latter, the recut would have completely removed the former edge. A strong argument against this hypothesis is that

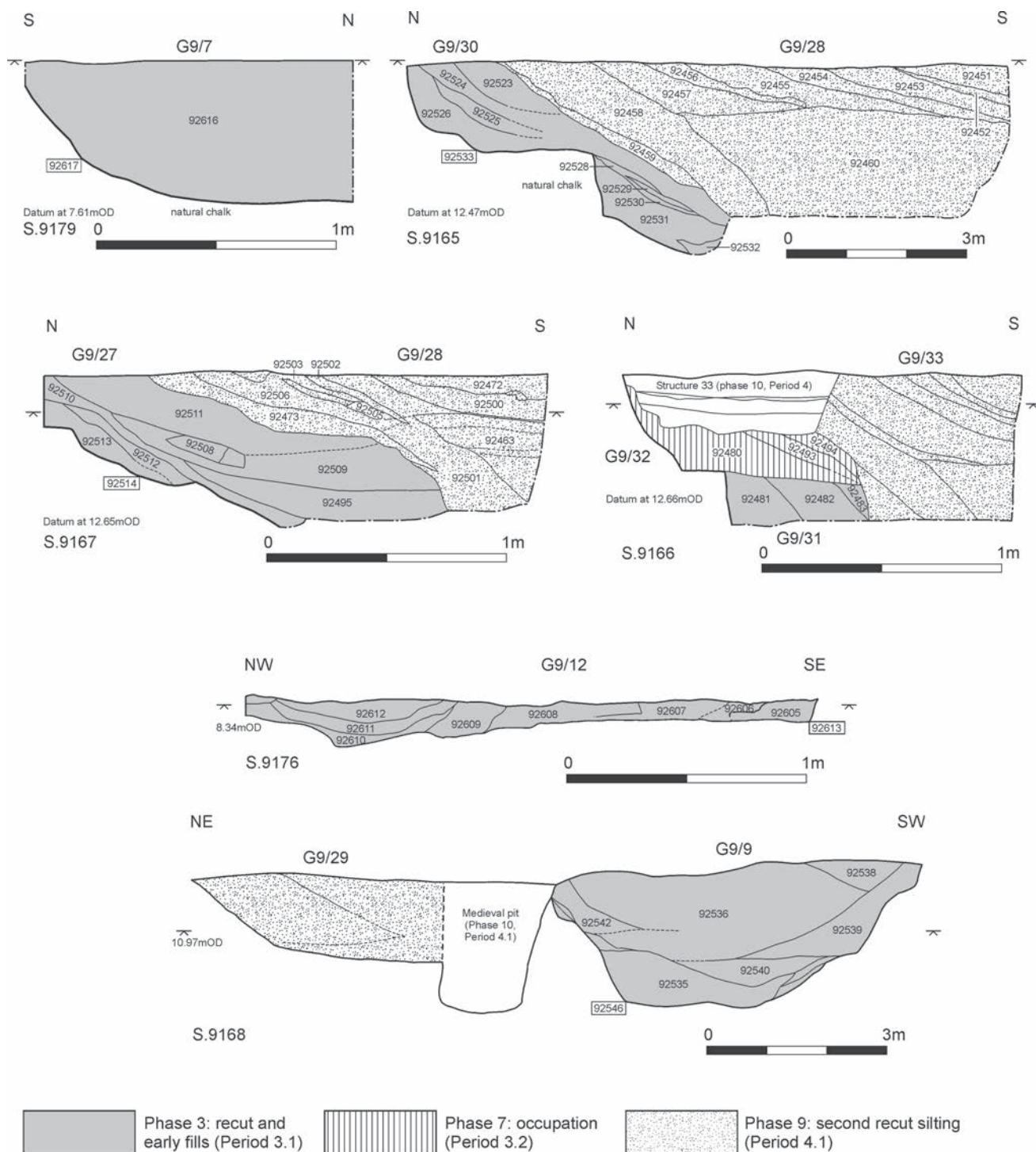


Figure 6.29 Period 3.1: Sections across deposits within Ditch 9 (outer north-east bailey) (S.9179, 9165, 9167, 9166, 9176, 9168 & 9172, Area 9). See Fig.6.28 for section locations. Scale 1:100 & 1:25 (as indicated)

it implies the necessary removal/reshaping of the associated rampart during the widening of the ditch.

The recut ditch apparently filled up rapidly. Many of its fills contained sprouted barley, perhaps indicative of adjacent brewing. Others contained evidence for the disposal of building waste (such as mortar, limestone and burnt sand), intermixed with layers of silting. This waste was presumably related to the construction of masonry features relating to the castle and could indicate the adjacent position of a kiln (see Chapter 6.V).

The ceramic date of the preceding ditch fills indicates that the recutting took place during or after the mid 12th century (the further implications of this are discussed in Chapter 6.V).

Northern edge

Evidence for the location of the northern edge of the ditch was recorded in several sections across the northern part of Area 9 (Fig.6.28). Furthest to the west a section was recorded through the edge (S.9167, G9/27, 92514), located in one of three hand-dug slots in this part of the site. About a metre depth of ditch profile was recorded, with a vertical edge, then a possible sloping step c.1.25m wide, before sloping off

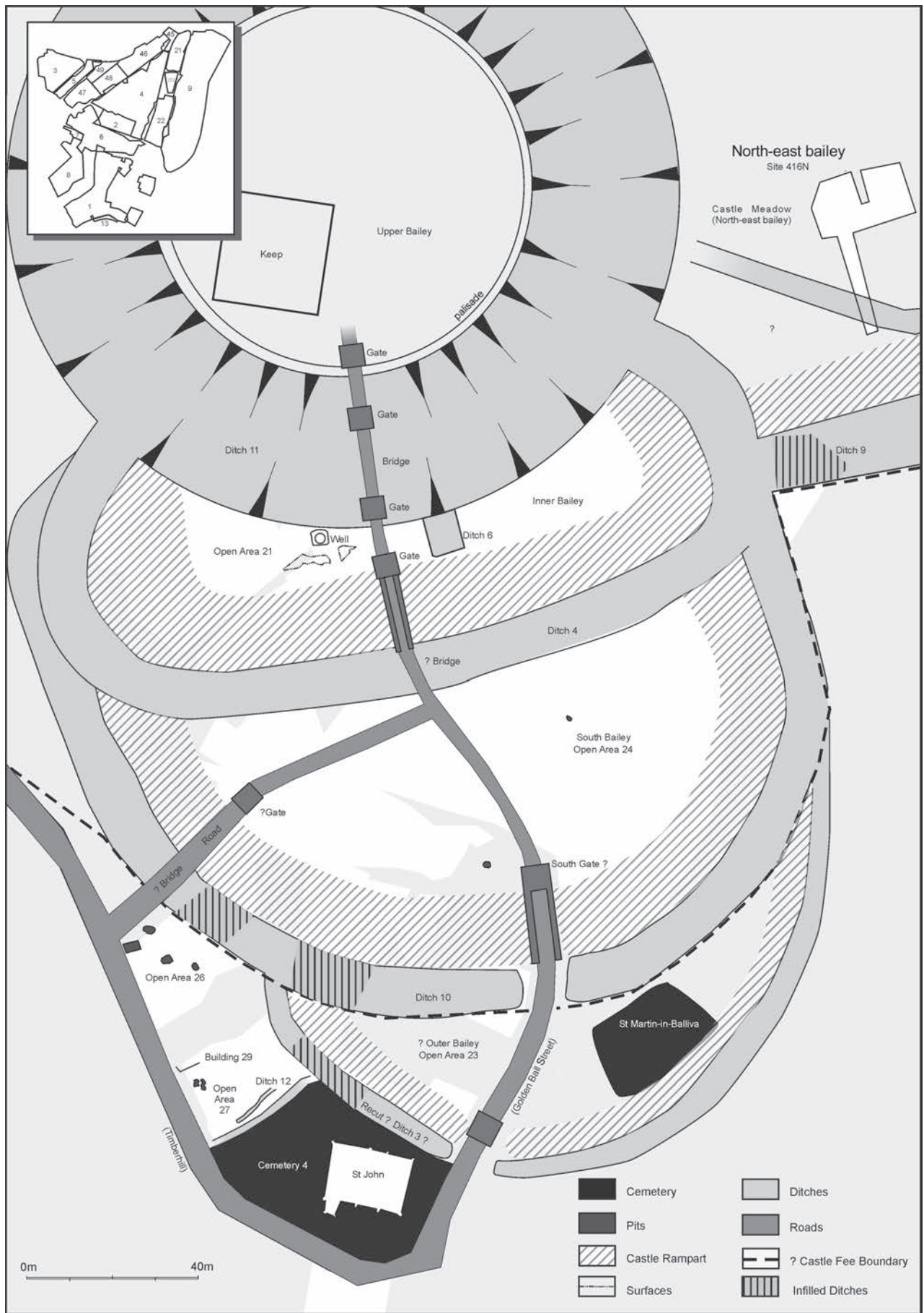


Figure 6.30 Period 3.2: Phase plan – Norman (12th century). Scale 1:1250

again. Early fills of this part of the ditch were of mostly silty sand and chalk, probably the results of erosion. To the east, another observation was made in a hand-dug slot (G9/30, S.9165, 92533). Again, about a metre depth of the ditch and its fills were recorded. The cut shows a stepped profile, with a vertical cut (c.0.55m deep), then a step about 0.95m wide, then another vertical drop recorded for c.0.55m. Fills were a succession of lenses of chalk with sand and silt; again presumably the result of erosion. Furthest to the west another section through a hand-dug slot recorded (S.9166, G9/31, 92521) a small amount of the vertical edge of the ditch. Fills included chalk and sand with lenses of loam.

Base

The base of the possible recut was revealed after machining. This had a full surviving width of c.7.50m, although was not bottomed, with a straight butt end to the west (T56, G9/9, 92546b, S.9168, Figs 6.28 and 6.29). Primary silting (92534) was overlain by dumps of building debris including limestone, mortar, burnt sand, chalk and clay (92541, 92535 and 92540), presumably deriving from building work associated with the castle. Subsequent fills indicate silting (92545, 92539, 92544, 92536, 92543 and 92542), followed by a layer of chalk (92538), perhaps the result of weathering of the sides.

Nearly 22.50m to the east, another section across the ditch shows a concave based cut dug into natural chalk, its base lying at 6.57m OD (92617, T56, S.9179, G9/7; the lowest excavated archaeological feature on the site, apart from the barbanic well). If the two observations were of the same ditch, they imply a drop in slope eastwards of 3.12m over the gap between the two sections (i.e. a gradient of about 1.70m). Possibly as much as half of the width of the ditch was recorded (measuring c.2.7m) the total suggested width at this depth being 5.50m. Fills consisted of mid to dark orange brown silt with frequent chalk flecks and moderate charcoal. A sample contained sprouted barley grains indicative of malting and brewing. This feature has been interpreted as part of this phase of the north-east bailey ditch on the basis of its spatial position, in the absence of stratigraphic relationships.

Southern edge

What may have been the southern edge of the ditch recut was recorded in several places apart from that described as 92546b above. To the east, cutting into early fills was further evidence of the possible recut (92613, S.9172, G9/11). Here, the south-eastern edge consisted of a near vertical cut recorded at around 9.32m OD. The fills were mixed chalk, loam and silt, probably the result of erosional processes. To the north, another observation (also 92613, S.9176, G9/12) was of a cut through natural chalk which was recorded at an upper level of c.8.86m OD, infilling consisting of mixed chalk, sands and clays. Environmental samples from both these observations indicate the presence of sprouted barley.

Two sections were recorded to the extreme east of the site (S.9177 and 9175), linked by a planned length of ditch (92585, G9/8), significantly observed as cutting into fills of an earlier phase of the ditch (Period 2.2, Chapter 5). In S.9177, the cut appeared to have a slightly convex edge and was filled with mixed sand, clay and loam with frequent chalk lumps. Part of the same feature was recorded at a lower level to the north (S.9175), in which the southern edge was recorded. This was again stepped in profile, the step being irregular (perhaps the result of posts or solution features). The fills contained a large proportion of chalk and clay with less silt. A sample taken from these fills again contained sprouted barley.

Small Finds

Finds included sawn antler (SF6706; Fig.6.45).

Pottery

The pottery from the various observations was similar and consisted of small sherds of early medieval wares (EMW, EMSW) and TTW (0.037kg). Two sherds of LMU ware give a suggested deposition date of early 12th-century (although fills of the initial cut apparently dated to the mid 12th century, see above). See Appendix 6.

Botanical Remains

by Peter Murphy

Samples from fills of 92617 (92579, BS1800 and 92616, BS1823) included charred, sprouted barley grains (*Hordeum* sp., barley), probably the charred residues from malt drying, and were fully analysed. These were similar to findings from adjacent ditch fills (G9/11 and 9/12) and are fully described in Table 6.14 and Chapter 6.IV. Three samples from 92613 (92594, BS1805, 92595 BS1806 and 92611, 1809) were fully analysed and provide further evidence for malt drying.

Period 3.2: Norman Fills of Castle Ditches and Contemporary Activity (12th century)

Summary

(Fig.6.30)

Documentary sources indicate that encroachment into the castle's outer earthworks began very early. The exact date at which it commenced remains unknown, although the practice was clearly well established by the early 13th century (see Chapter 7.I). Archaeological evidence confirms that refuse was being deposited into both the Fee boundary marker and south and north-east bailey ditches during the 12th century. The profile of the north-east bailey ditch appears to have flattened out as a result of such deposition and herbivore grazing was apparently taking place within it. Fourteen pits of this date were recorded. A few isolated examples lay in the south bailey and both pits and posts were inserted into the inner bailey 'courtyard'. Contemporary activity evident along the road frontage to the west of the site also included pitting which provides evidence for small-scale metalworking in the area. Use of the cemetery of St John at the Castle Gate (described in Period 1.4) continued and a new ditch was inserted to the north of the earlier boundary ditch.

The Motte

(Fig.6.31)

Ditch 11, Phase 2: fills

by Elizabeth Shepherd Popescu and Andy Shelley

A small area of the motte ditch fills was investigated during a watching brief to the west of the Castle Mall site (T100/16, S.118, Fig.6.31). This observation lay towards the southern edge of the ditch, although the ditch edge itself was not recorded. The lowest recorded fills appeared to be the result of weathering and erosion (12195 and 12194). No finds were recovered, although these deposits were sealed by fills of 13–14th-century date (Period 4.2).

Inner Bailey ?Courtyard

by Elizabeth Shepherd Popescu and Andy Shelley

(Fig.6.32)

Ditch 6, Phase 4: fills

The ditch located to the east of the possible courtyard at the base of the castle bridge continued to be infilled (46665, G46/22), compacted fills being recorded in sections along its length (46661, S.4612, Fig.5.22; 46673 and 46672, S.4613, Fig.5.23; 46686, S.4614). These were up to 0.50m thick and probably represent continued erosion of the sides combined with small amounts of refuse disposal.

Pottery

Pottery recovered (0.054g) consists of EMW body sherds and a TTW base, along with body sherds.

Open Area 21: features and deposits between the well and inner bailey rampart

Lying between the well shaft (described in Period 3.1) to the north and the postulated edge of the rampart of the inner bailey to the south, a sequence of deposits and features were recorded, indicating activity within

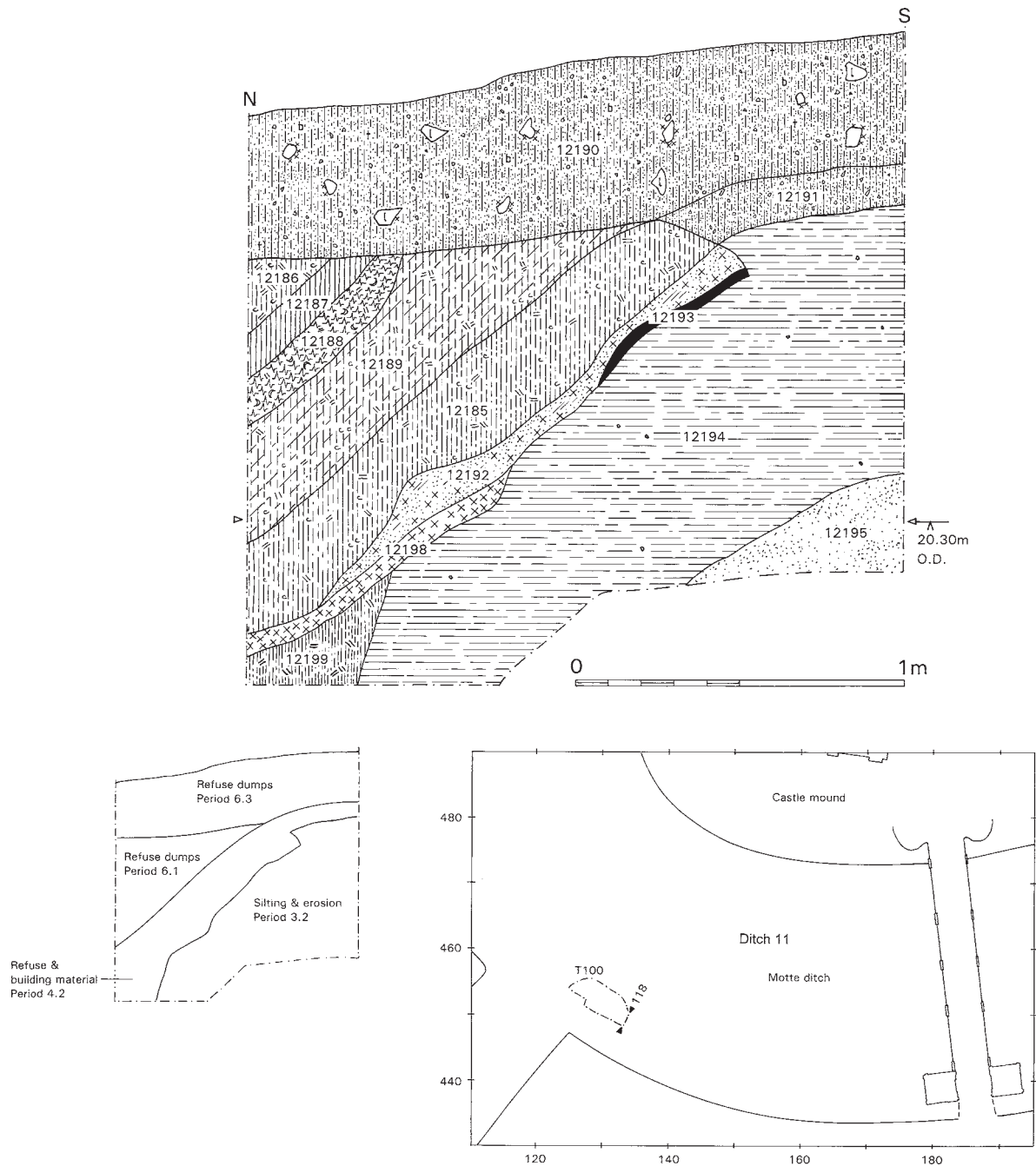


Figure 6.31 Period 3.2: North-west facing section across infilling of Ditch 11 (motte ditch) (T100). Scale 1:20

the courtyard area at the base of the surviving bridge (Fig.6.32). Many contained evidence for cess waste within their fills.

Cutting into an infilled gully (Period 3.1) at the rear of the rampart was a roughly rectangular pit (49219, G5/34). This may have been timber-lined, traces of a possible lining and one charred post surviving in the northern half. It survived, however, to a depth of only 0.13m; this shallowness is surprising as no truncation appears to have taken place. Its spatial position indicates that it may have been cut into the rear of the rampart, although it does not appear to have been a post-pit.

Just to the north-east, a post-pit (49244, G5/33) also cut into fills of the earlier gully. This pit had held two posts and was 0.29m deep. Immediately to the north-west

was another post-pit (49316, G5/31), also supporting two posts. This pit measured 0.60 by 0.70m and was 0.54m deep (base at 25.12m OD). Within the infill/packing sequence were two large post-holes (49309/49320 and 49138). The former contained a charred ring of timber, indicating a post measuring 0.26–0.30m. The location of these large post-pits at the rear of the rampart could suggest that they related it.

Further to the west was a series of posts (G5/36, 49232, 49240, 49234, 49229 and 49227) ranging in size from small (0.20 x 0.25 x 0.10m deep) to large (0.65 x 0.70 x 0.38m deep). Four were apparently aligned in a row running from north-west to south-east. This alignment is at variance with the position of surrounding features. The depths of the post-holes varied considerably

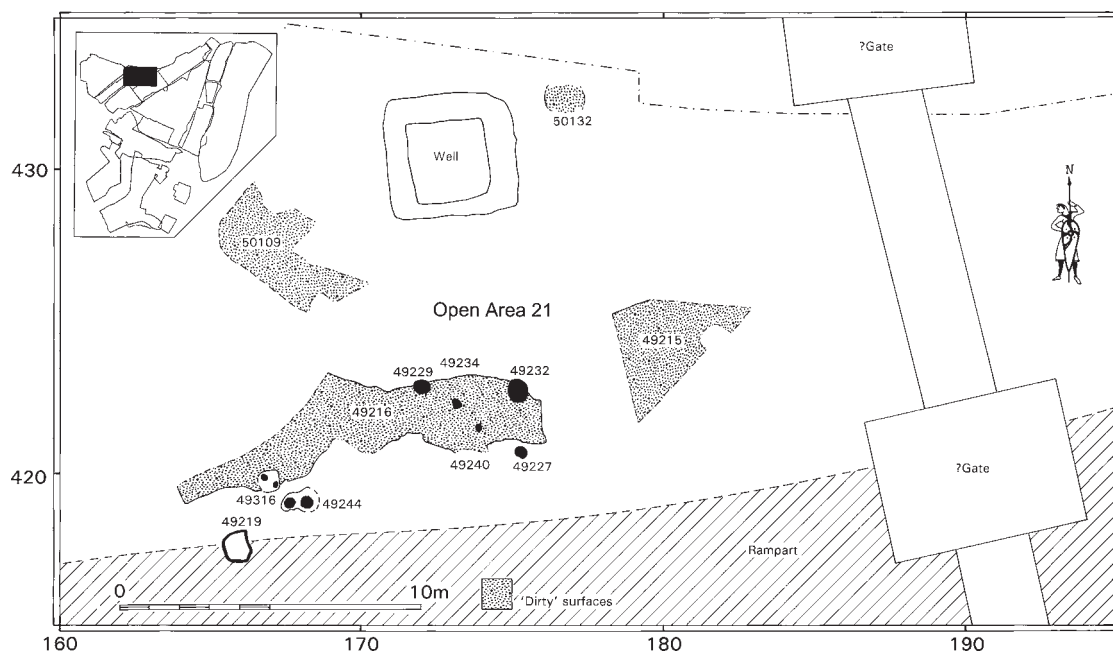


Figure 6.32 Period 3.2: Plan of inner bailey courtyard, Open Area 21 (Areas 5 & 49). Scale 1:250

and they may not have formed part of a single structure. The larger posts lay at either end, with the largest isolated from the rest to the north-east.

These posts were sealed by a possible occupation layer containing cess (G5/25, 50132/50109/49216/49215), although this may have accumulated around them. This deposit extended to the west of the well, covering a relatively large area, its southern extent presumably limited by the rampart. The evidence suggests a rough, dirty surface within the ?courtyard.

Small Finds

Finds from layer 49216 included an iron nail (SF6876).

Pottery

None of these pits produced ceramic assemblages of any size (see Appendix 6) and a total of 0.405kg of EMW, EMSW, Pingsdorf type ware, YTW and LMU was recovered. Infilling during the 12th century is suggested.

Botanical Remains

A sample from 49216 suggests that this layer was moderately cereal-rich. It was fully analysed and its contents are detailed in Table 6.14 and Chapter 6.IV.

The South Bailey

Ditch 10, Western Arm, Phase 2: primary silting and erosion
(Figs 6.20 and 6.24)

Castle Mall Site

Early infilling of the south bailey ditch was recorded in two machine trenches at the Castle Mall site. To the west of the site, an observation during a watching brief recorded part of a ditch which may have been part of the inner bailey or south bailey ditch (T58/19, Period 3.1). In Area 8, opposing sections show clean redeposited natural lying at the base of the ditch, indicating weathering of the sides. There was some suggestion of possible ditch cleaning in both sections, prior to further silt/erosion

deposits of redeposited natural. Small quantities of fragmented ceramics were recovered (deriving from samples), indicating a 12th-century date for deposition.

Watching Brief T58

In a watching brief to the west the lowest fill of what may have been either the south bailey ditch or the inner bailey ditch (Ditch 4) appeared to be the result of natural silting, banking up against the eastern edge of the ditch (T58/19, 12754, Fig.6.20). Infilling of this ditch with refuse apparently began in the 12th century (T58/20, S.182). A 1.50m thick refuse deposit was recorded (12755a), including c.5% animal bone. This waste presumably derived from the town to the west (*i.e.* the French Borough/Jewry).

Castle Mall, Area 8

In the east-facing sections recorded in a stepped machine-trench in Area 8 (G8/15, S.824, 821, 823 and 822, Fig.5.4) were two apparent 'phases'. The first was of fills of clean redeposited natural at the very base (80283, 80280, 80281 and 80282). The ditch (or this part of it) may have been cleaned out to be followed by a second series of fills of clean redeposited natural with very occasional charcoal (80277, 80279 and 80278). This may in fact have been part of a single process, with weathering and erosion combined with settling of the sides of the ditch. The ditch was now infilled to a depth of c.0.75m with most deposits apparently having come from the southern side.

Two similar 'phases' were recorded in the west-facing sections (S. 825, 826 and 827). Here primary silting along the base of the ditch (80337) was followed by weathering of the sides (80335 and 80336). Again, a possible cleaning/maintenance episode was identified, prior to the deposition of thick deposits of redeposited natural sand along the southern edge and base (80332, 80333 and 80334). These deposits were very clean with few finds, only a small amount of pottery being recovered. Higher up, on the second recorded step (80379) was further redeposited natural possibly cut into by the clearance process.

Castle Mall, Area 1

Further south, fills were also recorded in section in a stepped trench in Area 1 (G1/33), although the northern side of the ditch had been heavily disturbed. Erosion from the ditch sides had accumulated at the base and sides to a depth of c.1.25m from the base of the ditch. The first phase of fills (S.168, Fig.6.23) were of erosion deposits at the base (14155, 14153, 14152, 14151, 11435 and 11436). These deposits infilled the ditch to a depth c.1.25m from the recorded base. A second phase of infills was indicated by a sequence of sand/silt fills along the southern edge of the ditch which may have resulted from erosion of its sides. The lowest of these (S.153, not illustrated, 14150) may have been weathered natural (*i.e.* with the ditch cutting into it) or could have eroded/slumped

into the ditch. Above this were two similar deposits showing signs of root disturbance and iron-panning (14148 and 14149). Infilling of the ditch in later centuries is described in subsequent chapters.

Golden Ball Street

by Elizabeth Shepherd Popescu and David Whitmore

The primary fill of the section of ditch recorded at Golden Ball Street (GBS Group 50, Fig.6.24) consisted of naturally weathered sand, gravel and clay, with silty laminations (563,562, 561, 579 and 573), which had eroded into the ditch from the south. The first possible episode of recutting or cleaning out appeared to truncate the uppermost deposit, leaving the ditch infilled to an approximate depth of 0.55m.

Ditch 10, Phase 3: recut, weathering and initial refuse

by Elizabeth Shepherd Popescu and David Whitmore

At the Golden Ball Street site, the lowest ditch recut (583, GBS Group 53) had a wider concave profiled base than the original ditch cut, with its lowest point at 21.21m OD (Fig.6.24). Initial silt layers within it (572 and 571) probably reflect a period of 'puddling' of standing water on the base of the ditch soon after it was cleaned out. This was in turn overlain by a substantial deposit of weathered natural clay sand (565) that had slumped down the southern side of the ditch. This was the first in a series of sand and clay layers (496, 550, 552, 553, 567) that had eroded into the ditch from the south. These were divided by thick layers of dark greyish brown silty sands; probable refuse dumps that had been tipped down from the north edge of the ditch (504, 566, 569). A small patch of refuse (568) was also recorded.

Small Finds

Fills of the ditch recorded in T58 (fill 12754) contained worked antler (SF7358), an iron stud (SF7359) and a lava quern fragment (SF7444). At Golden Ball Street, fill 553 contained iron formless fragments or slag x 10 (GBS SF78), while fill 504 contained vitrified material, possibly metalworking debris (GBS SF80). Fill 569 contained a crucible.

Pottery

(Fig.6.41 on CD)

A total of 0.988kg of pottery was recovered, consisting of TTW, NEOT, EMW, EMSW, EMSSW, YTW, LMU and Andenne ware, indicating infilling during the 12th century, probably commencing in the late 11th to early 12th century. The assemblage is detailed by area in Appendix 6.

Botanical Remains

by Peter Murphy

Samples from the ditch in Area 8 (G8/15, 80333, BS715 and 80334, BS716; see Table 6.14 and Chapter 6.IV) contained very sparse assemblages of charred and mineral-replaced material. Only one sample was taken from fills in Area 1 (G1/33, 11435, BS270) and produced a small flot. It contained small fragments of charcoal and small numbers of poorly preserved charred cereals (*Hordeum* (barley), with some *Avena* (oat) and *Pisum* (pea)-type seeds and cotyledons). Charred ericaceous stems were noted, with a few shoots of *Calluna vulgaris* (ling or heather). There was very little mineral-replaced plant matter, providing no evidence for the disposal of sewage. Uncharred seeds of *Sambucus nigra* (elder) were common and fruitstones of *Rubus fruticosus* (bramble) were also present. Sporadic fish and small mammal bones were also found.

Ditch 10, Eastern Arm, Phase 2: infilling

Fills of what may have been the remnants of part of the eastern arm of the south bailey ditch in Area 9 (92338, G9/46, Period 3.1) consisted of sandy silts and chalk.

Pottery

by Irena Lentowicz

A total of 0.230kg of pottery came from fills of the possible ditch in Area 9 (pit 92338, G9/46). The material was retrieved entirely from samples and is subsequently fragmented. A small quantity of intrusive post-medieval pottery was included (two sherds). TTW was dominant, represented by three rims from jars (types AB1 and AB16 — two rims). Some of the TTW is noted as not fresh and may be residual. EMW and LMU ware are represented by body sherds only.

Open Area 24: pit

by Elizabeth Shepherd Popescu and Niall Donald

An isolated pit of irregular plan (22093, G22/153, Fig.6.30) lay in the eastern half of the south bailey. It had apparently been used as a cess pit. It was irregular in plan with a surviving depth of only 0.27m. Its fills included a series of dark grey organic silts, some of which indicated sewage disposal. Another circular cess pit (12991, T849/4) lay immediately to the west of the postulated position of the south bailey gate. Just to the south was an isolated length of slot (12951), 0.60m wide and running towards Area 6 (where it was not located).

Small Finds

Pit 12991 contained an iron awl of the type used for decorating leather (SF6440; Fig.6.45).

Pottery

A total of 0.117kg of pottery was recovered. Material from pit 22093 (0.067kg) included a Developed Stamford ware jug base which dates the pit to the mid 12th century. Pottery from other features includes TTW, EMW and LMU, indicating a general 12th-century infill date. See Appendix 6.

The ?Castle Fee Ditch

Ditch 3, Western Arm, Phases 5–7: weathering, refuse deposition and deliberate infilling (Fig.5.6 and 5.7)

At this time, the recut western part of the Fee ditch recorded at the Castle Mall site was infilled to a depth of c.1.20m, leaving the ditch open to a depth of at least 2.20m. Ditch fills at both Castle Mall and Golden Ball Street were notable for their absence of Grimston-type Glazed ware from the ceramic assemblage. The ditch terminus, however, appears to have been infilled to a much greater depth than the ditch recorded further west (to almost its full surviving depth). It is possible that this simply reflects the increased degree of erosion/infilling resulting from the geographical position of the terminus or is simply a mismatch in the phasing process.

Castle Mall Site, Phase 5: weathering, erosion and refuse

Infilling of 12th century date was recorded in the section of the ditch recorded in Area 1 and began with weathered natural sand (11228 and 11179, G1/54, S.158 and 162, Fig.5.6). The profile of fills to the south may suggest a cleaning episode. To the north (G1/55) above initial erosion deposits, was an organic fill (11177), indicating deliberate refuse disposal into the ditch, overlain by dark silt (11172).

Castle Mall Site, Phase 6: redeposited natural

Earlier fills were overlain by thick deposits of redeposited natural, coming from the south (G1/56), up to 0.80m thick. One possible interpretation is that these fills result from the deliberate pushing or collapse of a bank/rampart

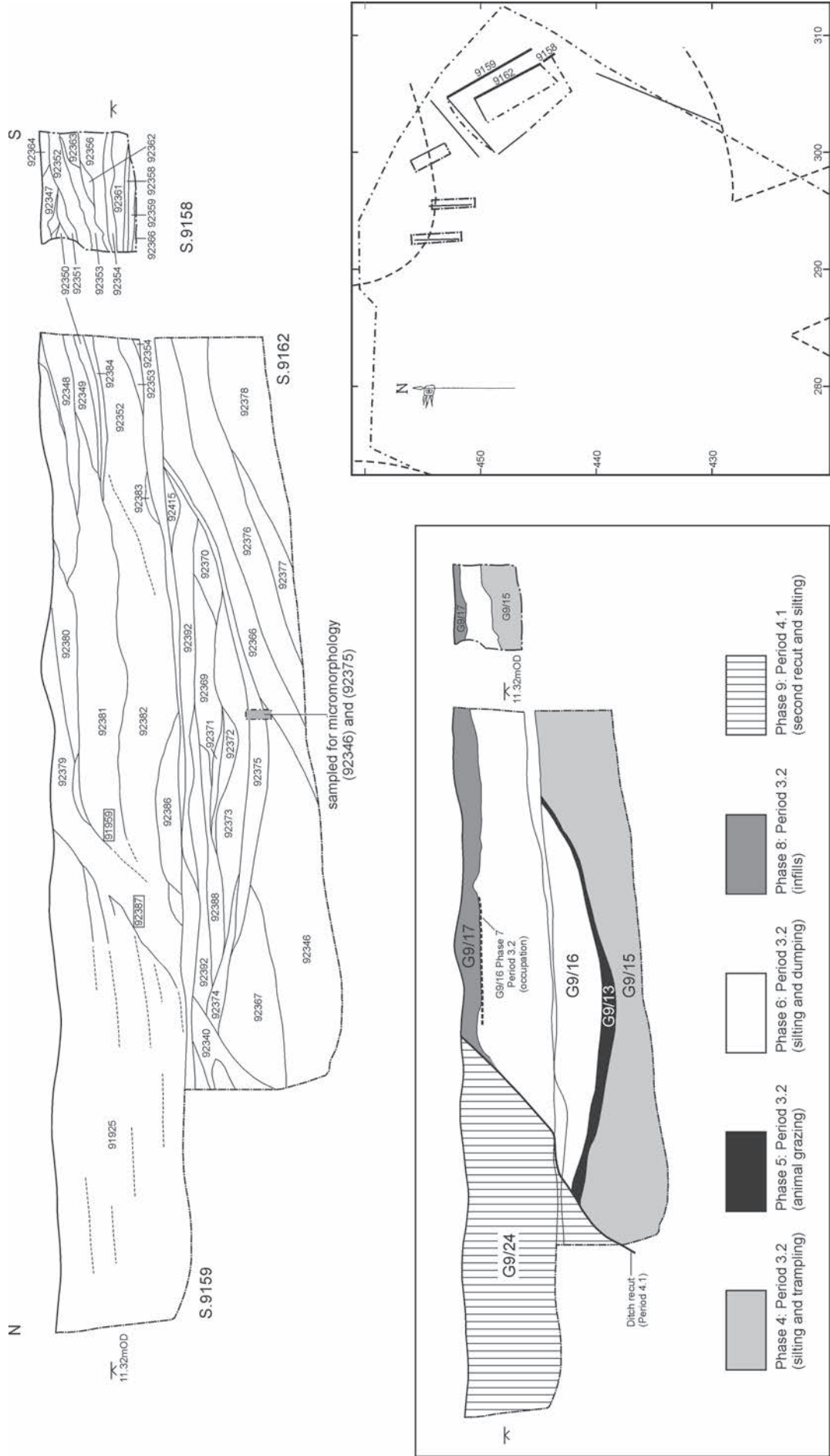


Figure 6.33 Period 3.2: Sections across Ditch 9, north-east bailey (S.9158, 9162 & 9169, Area 9). Scale 1:20

into the ditch, although the 12th-century date seems to preclude such an interpretation. To the north (11158, 11135, 11156 and 11169, S.158) were thick dumps of redeposited natural with some silt included, extending across the width of the ditch although much thicker to the south. To the south (11209, 11962, 11964, 11965 and 11225, S.162 and 141, Fig.5.6) were similar fills, again appearing to have been dumped from the south (and extending into S.142 and 143 although here mixed with grave fills from the cemetery of St John at the Castle Gate (see Period 1.4). Along the western wide of the ditch there is some uncertainty as to whether these deposits were actually contained within the ditch or were cut by it. It now appears that the deposits recorded here (S.142 and 143) actually filled a pre-existing feature.

Castle Mall Site, Phase 7: refuse disposal

There was a notable change in deposits above this point, after which the ditch had clearly been used for refuse disposal (G1/57), although ceramics still indicate a 12th-century date. Fills now consisted of relatively thin alternating refuse deposits and possibly natural silting episodes (11125, 11126, 11198, 11960, 11197, 11113, 11961, 11959, 11162, 11137, 11958, 11147, 11129, 11122 and 11112). These appear as a thick black band (Plates 6.32 and 6.33).

Golden Ball Street, Phases 5–7: deliberate infilling

by Elizabeth Shepherd Popescu and David Whitmore

The element of the ditch recut identified at the Golden Ball Street site had been deliberately infilled with a sequence of dumped refuse deposits (GBS Group 20, 450, 452, 454, 455, 483, 538, 539, 541, 556, 581) interspersed with layers of clean clay sands (451, 453, 540) that probably represent the backfilling of the ditch with rampart material. Many of these deposits appeared to have been tipped in from the eastern butt end with others running down from the northern edge. The extensive dumps of rampart material seen in the excavated segments further to the west were not present at the terminus; although it is possible that they appeared in the unexcavated southern half of the ditch. A notable quantity (7.244kg) of metal-working slag was recovered from the most extensive of the dumps of refuse (455).

Small Finds

Castle Mall Site

The assemblage of twenty-eight Small finds is summarised by fill in Table 6.2 (on CD). Items of note include an important copper alloy disc brooch with pseudo-coin motif, of possible 10th-century date (SF5454, Fig.4.67; see Blackburn Chapter 4.III). Other finds include an iron waisted strap end (SF5471, Fig.6.38) and a bone die (SF5506, Fig.6.46).

Golden Ball Street

Fill 450 contained iron artefact (GBS SF73); fill 451 contained lead spillage (GBS SF70); fill 454 contained ferrous metalworking debris (GBS SF87) and a bone spindle whorl (GBS SF115). Fill 455 contained a copper alloy S-shaped strip (GBS SF158) and bone box/casket mount (GBS SF232). Fill 538 contained lead spillage (GBS SF71) and iron artefact (GBS SF146).

Human bone

One ditch fill in Phase 6 contained human bone disturbed from Cemetery 4 (fill 11209 — including a small adult vertebrae and several bones from a child; these may represent the same individual as was recovered from a later fill G1/58 — fill 11147). Two fills in Phase 7 contained human bone (11147: adult and 11198: lower canine of child, c.9 years old), again presumably derived from the adjacent cemetery.

Pottery

by Irena Lentowicz and Richenda Goffin

(Fig.6.42)

A total of 4.294kg of pottery was recovered from these 12th-century fills and is detailed by site and phase in Appendix 6. Of note is the 3.808kg of pottery recovered from silting and refuse fills assigned to Phase 7 at Castle Mall (G1/57, Fig.6.42). Despite the presence of TTW (see Appendix 6) the later nature of the group was well attested by the abundance of EMW, transitional EMW/LMU and LMU vessels. A number of EMW jars and cooking pots were present and, although some smaller vessels were present (types J1a and J1b, six rims; Fig.6.42, nos 1–3), the majority of the larger pots are transitional EMW/LMU vessels (types J2a and J2b, 12 rims, Fig.6.42, nos.5–7). Other early medieval wares were represented by body sherds of EMSW, some of which were very abraded. LMU was the most common fabric recovered (c.74% of the whole assemblage) and much of it is noted as fresh. Cooking pots and jars were represented by rims (types J2b, J2c and J2g, Fig.6.42, nos 8–9) and bases. In addition, an unusual bowl rim with a carinated body and upright, decorated rim was also recorded (Fig.6.42, no.4). YTW, though accounting for only a small proportion of the assemblage (c.1%) included a jar rim which appears in profile to be ‘hammer-head’ type. Further research is required to investigate the slim possibility that the development of YTW ‘hammer-head’ rims began in East Norfolk. Fine wares were represented by a Stamford ware (Fabric B) jar and decorated body sherd, as well as small body sherds of imports Andenne-type ware and Pingsdorf-type ware. The base was distorted and may have been a second rather than a waster. This is a good assemblage of kitchen and table wares; probably refuse deposited in a convenient hole. The absence of GTGW and later LMU rim types (types J2i and J2j) indicates that this group is 12th-century.

Botanical Remains

by Peter Murphy and Alison Locker

Castle Mall, Phase 5

Samples from G1/55 fills (11172, BS155; 11177, BS157) produced negligible flots comprising only very small scraps of charcoal, a few cereal grains and uncharred *Sambucus nigra* (elder) seeds. These are uninterpretable.

Castle Mall, Phase 7

Environmental samples from fills later fills (G1/57: 11112, BS131 and 135; 11113, BS129; 11125, BS133; 11129, BS137; 11147, BS143; 11162, BS150; 11197, BS160; 11198, BS162) include moderate amounts of charcoal and small numbers of charred cereal grains and *Pisum*-type (Probably pea) cotyledons with uncharred *Sambucus nigra* (elder) seeds. They also produced macrofossils indicative of sewage: mineral concretions, mineral-replaced seeds including *Rubus fruticosus* (bramble) and impressions of mineral-replaced *Agrostemma testa* (corn-cockle), mineral-replaced fly puparia and abundant small fish bone and bone scraps. A total of 944 fish bones from G1/57 fills were examined and are detailed in Part III, Table 94.

The North-East Bailey (Castle Meadow)

by Elizabeth Shepherd Popescu and Niall Donald

(Figs 6.33 and 6.34)

A further stage of infills into the north-east bailey ditch consisted mostly of chalks, the interpretation of which is problematic (Fig. 6.33). They may have resulted from erosion, dumping or deliberate backfilling, or perhaps a mixture of all three. The accumulation, whatever its origin, appears to have been fairly rapid. Slightly later, the ditch appears to have stabilised, with the accumulation of muddy silts, providing evidence for animal grazing. Further dumps were followed by a second possible soil horizon, the base of the ditch having flattened out considerably.

Ditch 9, Phase 4: silting and trampling

A sequence of fills was recorded in section to the east of the site, the level at which it was observed suggesting that these were fills of the initial recut of the ditch (described in Period 3.1). The fills were recorded across four sections (S.9162 and 9158), comprising two machine

fold out

fold out

steps with small sections offset at 90° (S.9157 and 9163). The fills (9/15, 92342, 92343, 92346, 92354–59, 92361, 92363, 92366, 92367 and 92376–78) consisted of silty or sandy chalk. A micromorphological sample taken from one (92346) proved to be a dumped deposit containing burned clay, mollusc shell, probable human coprolite, bone and charcoal. Probable ashed cereal remains may have blown into the ditch (McPhail, Chapter 6.IV). These fills may equate with the same process demonstrated at a slightly lower level (Phase 3, G9/8, Period 3.1).

Ditch 9, Phase 5: animal grazing

Overlying the earlier fills described above was a wide, shallow interface (a minimum of 4.87m wide, 92414), which may have been the result of infill processes rather than a recut. A sequence of infills followed, generally silts with some sand and chalk (G9/13, S.9157, 92373–5). Micromorphological samples were taken from two fills (92375 and 92373, McPhail, Chapter 6.IV). A dark silt (92375) proved to be very rich in fine, charred organic matter, the upper fill (92373) providing evidence for the activity of earthworms. The samples suggest that the wet ditch may have dried out periodically; it can be assumed that it remained open and was generally undisturbed for a number of years, although silting could have been rapid. The upper part may indicate the effects of herbivore trampling, combined with sewage sludge.

Ditch 9, Phase 6: silting and dumping

Sealing earlier fills was a sequence of silts and dumps (G9/16, S.9161, 9162, 9158 and 9157; 92368–72, 92388, 92392, 92391, 92415, 92383, 92353, 92352, 92382, 92390, 92386, 92425, 92384, 92381, 92350, 92349, 92381 and 92351), most of which contained combinations of chalk, sand and silt, with an increasing clay content in upper deposits. These layers infilled the earlier hollow within the ditch. Further fills were recorded in four other sections (G9/18, S.9150–9153, 92265, 92267, 92269–82, 92299, 92301, 92302, 92312–21 and 92408–12). The lower deposits were thin bands of silts and sandy silts, slumping down into what may have been the same hollow as that recorded just to the north. Just to the west were thick dumps of chalk with some clay (S.9161, G9/20, 92400, 92398 and 92397), notably different to the adjacent thin silt fills apparent at about the same level elsewhere.

Additional fills to the west were recorded at a higher level (G9/23, Fig. 6.34, S.984, 985 and 994, 91242, 91243, 91251, 91261–63, 91271a, 91284, 91285, 91288, 91289, 91373–75, 91464, 91466, 92094, 92095, 92117 and 92335). These were of chalk with occasional thin layers of siltier material and the three recorded machine steps are linked by one fill (91242). Differences in level between these fills and those described above (c.12.30–13.60m OD here; others at c.11.50m OD) can be accounted for by the groundslope down towards the east.

Two possible post-holes (both labelled 91284, S.994) lay on the southern side of the cut. One was near vertical sided and flat based, and the other angled to the south. They were about 0.55–0.58m deep and 0.35–0.50m wide.

Ditch 9, Phase 7: occupation

A possible soil horizon within the ditch was recorded in several places (in each of the three phases of machining),

forming an interface between distinct phases of dumping. This line of dark silty material, between 2 and 8cm thick, may indicate a period of stabilisation within the ditch, such as the growth of vegetation (S.9150–9153, 92300, 4–8cm thick; S.9161, 92396; S.984, 985 and 994, 91260 and 91370). The apparent discrepancies in levels between the different observations can be accounted for by the fall in groundslope along the line of the ditch to the east.

To the north was a possible flat-based cut (G9/32, S.9165, 92515), dug into earlier fills (G9/31) containing what appeared to be a rammed chalk surface (90722), above which were dumps of chalk and sandy clay (92520, 90722, 92480, 92493 and 92494). Surrounding truncation means that no definitive interpretation of this surface can be made.

Ditch 9, Phase 8: infills

Overlying earlier fills assigned to Phase 6 was a further sequence of fills (G9/17, S.9159, 9157 and 9158; 92360, 92348, 92385, 92406, 92365, 92347, 92364, 92389, 92380 and 92379). These consisted of layers of mid to light brown loam lying about 4m from the possible top of the ditch. Similar fills were recorded to the south-west (9/21, S.9161, 92394 and 92395) where they overlay the earlier possible soil horizon (Phase 7). Adjacent to these (G9/22, S.9150–9153) were thin lenses and layers of predominantly silts with varying amounts of sand, clay, loam and chalk. To the west were layers of silty chalk and silty clay (G9/25, S.984 and 985, 91264 and 91369).

Further fills were observed to the south-east (G9/34, S.978, 979 and 984; 91440, 91441, 91449 and 91560) and were eventually cut through from the west by the barbican ditch (Ditch 13, Period 4.2, Chapter 7).

Small Finds

Fills assigned to Phase 6 (G9/16) contained an iron clench bolt (SF6573). Those in Phase 8 (G9/34) contained a nail (SF6470).

Pottery

A total of 0.193kg of pottery was recovered from samples and is detailed by phase in Appendix 6. Fabrics comprise TTW, EMW, EMSW, LMU and the forms indicate infilling during the 12th century.

City Activity: The Durnedale (later Berstrete/Timberhill) Frontage

(Fig. 6.35–6.37)

Twelfth-century activity was recorded along the road frontage to the south-west of the site (now Timberhill). An area of pitting lay between the street to the west and the castle defences to the north and east, probably lying at the rear of properties fronting onto the street. These properties may have been precursors to those shown in the late 13th/early 14th-century tenement map of the area (Figs 7.2 and 7.3). The pits would have lain in the first or second property block to the north-west. They lay about 6m from the southern edge of the south bailey ditch (Ditch 10) and only about 2m from the southern edge of the ?Fee ditch (Ditch 3), which may have been infilled along this stretch by the late 11th/early 12th century. The pits had survived extensive modern truncation in this area by virtue of their extreme depth, although the apparent lack of substantial lining is somewhat surprising, given that they were cut through unstable natural sand.

Open Area 26: pits

Two small to medium sized refuse pits were recorded during a watching brief (T118/2, S.194 and 194, Fig.6.35). These were apparently refuse/cess pits and contained mid 12th-century pottery. The earliest (12208) may originally have been circular in plan and was recorded in section to a depth of 1m. The infill sequence comprised numerous alternating bands of silt and redeposited natural. These layers of sand and clay may have been thrown into the pit to seal earlier fills. At the top of the pit was a refuse deposit (S.194, 12244) at the top of the infill sequence, suggesting a change in the nature of use of the pit. Cutting into this pit was an oval pit, 'funnel'-shaped in profile (12209) lying in the far north-eastern corner of the trench (S.193). Augering suggested a depth of c.1m. Redeposited natural lay along the western edge of the pit, which may indicate weathering of the sides and a possible clay lining was recorded. A sequence of narrow bands of fills followed, before the deposition of a mixed refuse/cess deposit, containing frequent charcoal and large fragments of TTW pottery. At the top of the sequence were mixed deposits including clean sand, possibly indicating the disuse of the pit.

Just to the south-west was a very large, deep pit (12201, T118/3), probably originally rectangular in plan. It survived to 3.5m east-to-west and 1m north-to-south (running into the section to the west and south). It was straight-sided with a suggested depth through augering of c.2.10m. This feature was interpreted on site as a possible sunken-floored building, such an interpretation being attractive given the proximity to the road to the west, a yard area perhaps lying behind the building. Its depth, however, and the presence of cess within it indicate that it may have been a large latrine pit.

Two pits were excavated just to the south-east in the southern part of Area 8 (G8/21), with a possible original depth of up to 4m. They lay just to the south of the projected line of the ?Fee ditch, this stretch of which would have been substantially infilled by this date. Neither of the pits were bottomed and both had been truncated by modern cellars. The larger of the two lay to the west (80004). It was augered, indicating a surviving depth of 0.90m at which point stone was hit, the full depth therefore remaining uncertain. The top of the south bailey ditch to the north (described in Period 3.1) lay at around 26.00m OD, surface levels suggesting that the pit may have been truncated by as much as 3m (*i.e.* with an original depth of c.4m). The ground slope would have been upwards towards the south at this point, indicating that truncation may have been even more severe. The pit was sub-rectangular in plan and its earliest recorded fills may have formed a packing behind a lining comprised of dark grey clay silt. This possible lining followed the western edge of the pit and may originally have been formed of bracken or other plant material (about 1cm thick) or this effect may simply have been the result of shrunken organic pit fill. Above was a fill of charcoal-rich silt, confined to the western and south-western sides of the pit. This had not apparently been burnt *in situ*. Finds indicate the disposal of domestic waste. The uppermost recorded fill lay immediately beneath a 20th-century floor. This deposit was mixed and may well have been the result of deliberate backfilling.

The second pit (80002) was also sub-rectangular. It was excavated to a depth of 0.96m but was not bottomed

or augered. The same degree of truncation discussed above would apply to this feature. The lowest observed fill was of redeposited natural sand, probably the effect of digging an unlined pit into unstable geology. A lower fill contained fragments of plant material. A similar deposit lay above, although the plant matter here was not as clearly layered. Above this was a deposit composed mainly of plant fibre, fairly decayed but with some indications of inter-weaving suggestive perhaps of rush matting. Alternatively, this effect may have been the result of compression over a long period. The uppermost fills also contained plant matter, possibly representing continued use.

Small Finds

Finds from pit 80004 included intrusive modern nailed binding (SF6458) and six pieces of paper clip rivet (SF1061). Finds from pit 80002 included three scraps of tabby weave, with two larger scraps: the earliest piece of surviving textile from the site (SF6405), an iron rove from a clench bolt (SF6181) and a nail (SF6449).

Pottery

(Fig.6.43 on CD)

A total of 1.313kg of pottery was recovered, comprising EMSW, YTW, Pingsdorf type ware, LMU and an unidentified fabric (see Appendix 6). Infilling during the 12th century is indicated. Pottery from pit 12209 is illustrated in Fig.6.43 (on CD).

Botanical Remains

by Peter Murphy

Both pits in Area 8 contained domestic waste, although the content of the environmental samples suggests that they were also used as cess pits (80001, BS769, 8003, BS761B, 80008, BS768; 80009, BS767; 80010, BS762; 80012, BS782B, 80015, BS783A). Some samples contained a large component of mineral concretions, mineral-replaced plant material, arthropods and fish bones. Samples also contained charcoal, charred *Pisum* (?pea) seeds and *Hordeum* grains (barley) and uncharred *Sambucus nigra* seeds (elder). Other food remains include bramble, sloe and apple. Four of the samples from pit 80002 were fully analysed (see Table 6.14 and Chapter 6.IV).

?Building 29: post

Three large post-pits may have formed the corner of a structure adjacent to the road to the west (Fig.6.36). Their fills contained small amounts of 12th-century pottery and the features were cut by a late 14th–15th-century pit. This structure overlay Building 17 described in Period 1.4, Chapter 4. Cutting into the northern edge of an earlier structural slot was a rectangular post-hole (10112), 0.14m deep with a rounded base. Above this was a feature (10110) which may have related to the subsequent removal of the post. Just to the south was a rectangular post-pit (10139/10141), 0.17m deep. This pit had been partially filled prior to the insertion of a blunt-ended post. To the north-east was an irregular pit (10179) with large pebbles placed at its base, possibly serving as a post-pad.

Small Finds

The packing in post-hole 10139/10141 contained an iron hinge pivot and a horseshoe (both SF5133); the post-pipe contained an iron nail (SF5068).

Pottery

Only 0.015kg of pottery (LMU and YTW) was recovered. Although undiagnostic, the fabrics recovered suggest a 12th-century date.

Open Area 27: pits

An area of small square/rectangular pits and posts (G1/144) lay just to the south of the structure described

above and may have lain in a broadly contemporary yard area (Fig.6.36). Fills contained finds of 12th century date, although some of the fills are not suggestive of refuse disposal as primary function. The proximity of the edge of the road to the west (between 4 and 10m away) may suggest that there was no room for a building between the yard and the road. The tenement plot (from 1297 to the early 14th century, Fig.7.3) shows a subdivision of the plot here into two small plots on the Berstrete frontage with two small plots lying on either side of a larger, T-shaped property. These pits could have lain at the northernmost end of these subdivisions or earlier properties in a similar position. Pitting in this part of the site continued into the later medieval and late medieval/transitional periods.

A small post-hole (10844) was cut into by a roughly square pit (10789), flat-based and 0.63m deep. Its fill consisted of compacted bands of sand, stone and loam, not indicative of the use of the pit for refuse disposal. This may in fact have been a large post-pit. This pit was overlain by a linear slot with rounded ends (10763), reflecting the alignment of an earlier beamslot (Building 17), the fills of which it cut into. It was 0.17m deep and was flat-based. To the south was a small, square flat-based pit or post-hole (10845), while to the south-east was a square post (10948) aligned with post 10844. Just to the east of this was a larger post-hole containing a decayed post (10918). It is possible that all four posts were contemporary. This last post was cut to the south by another pit (10476), rectangular and flat-based (0.30m deep). To the north-east was another rectangular pit (10931), with two indentations at its base possibly indicating the position of posts.

This odd group of square/rectangular pits has been isolated from overlying features, both because of the possibly early date range and because of the unusual fills. The finds present, which include twenty-four nails, suggest the disposal of domestic and possibly metal-working waste.

Small Finds

Pit 10789 contained frequent nails (SF5328: shanks (x 3) and SF5410: nails (x 5), shanks (x 3)). Pit 10763 contained a copper alloy stud (SF5267), nail shank (SF5264), horseshoe nail and shank (SF5299). Pit 10476 contained iron nails (SF5197 and SF5238). Pit 10931 contained an iron nail and seven shanks (SF5463).

Pottery

A total of 0.402kg of pottery was recovered from these features and comprises TTW, EMW, EMSSW, YTW, Stamford ware (Fabric B) and LMU. Infilling during the 12th century is suggested (see Appendix 6).

Plant Macrofossils

Plant macrofossils from slot 10763 (BS75), pit 10789 (BS77) and pit 10931 (BS102) are detailed in Table 6.14 (see Chapter 4.IV).

Ditch 12: cut and fills (Fig.6.37)

A small ditch, butt-ended to the west (G1/50, Fig.6.37), ran to the north of the boundary ditch of Cemetery 4 (Ditch 2, Period 1.4). This may have served as another boundary feature, although it lay very close to the earlier boundary ditch. Another possibility is that the cemetery had been extended northwards; burials did gradually encroach into fills of the cemetery boundary ditch. No graves, however, were found this far north. If the two ditches were indeed contemporary, only a narrow triangle of land would have

been left between them, due to the presence of the Fee boundary ditch to the east (Ditch 3).

The ditch was recorded in two slots over a length of c.10m (10564). It was c.0.50m deep and c.1m wide, with a flat base and steep sides. The ditch ran eastwards (10517), cutting through the fills of an earlier ditch (Ditch 1, Period 1.4). Its fills (G1/51) are of uncertain origin, although large 'boulders' found at the base could have been placed to aid drainage. Fills contained frequent charcoal and flint, while finds indicate the deposition of domestic waste. Ceramics suggest a 12th-century date.

Small Finds

Finds included a bone pin or pen (SF5632).

Pottery

A total of 0.461kg of pottery was recovered, comprising TTW, EMW, EMSW, EMSSW, Stamford ware (Fabric B) and LMU. Contemporary material may be restricted to LMU body sherds and a frilled Pingsdorf-type ware base. A 12th-century infill date is suggested. See Appendix 6.

III. FINDS

Introduction

A limited assemblage of 131 Small Finds was retrieved from Period 3 deposits at Castle Mall (1.2% of the total site assemblage), with a further seven objects coming from ditch fills at the Golden Ball Street site.

Dress Accessories and Personal Possessions

Dress Fittings

Copper alloy brooch (Fig.4.69)

The only significant item amongst the small group of thirteen copper alloy objects recovered from Period 3 deposits was a disc brooch with pseudo-coin motif of probable Anglo-Saxon date (SF5454). It was found residually in a 12th-century fill of the Fee ditch (G1/57,

Period	Small Finds (no. objects)	Pottery (Qty)	CBM (Qty)
Period 3.1	38	1,001	190
Period 3.2	93	1,659	161
Total	131	2,660	351

Table 6.3 Selected Period 3 finds by sub-period at Castle Mall

Period	Small Finds (no. objects)	Pottery (Qty)	CBM (Qty)
Period 3.1	0	3	0
Period 3.2	7	186	12 (min.)
Total	7	189	12 (min.)

Table 6.4 Selected Period 3 finds by sub-period at Golden Ball Street

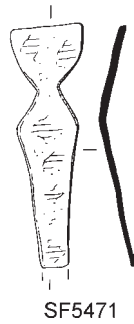


Figure 6.38 Iron ?strap-end (SF5471). Scale 1:2

Period 3.2) and is described by Blackburn in Chapter 4.III.

Iron buckles

by Quita Mould

Fragments from a buckle frame (SF5490.01, not illustrated) were found in mixed silting and refuse dumps within the Castle Fee ditch.

Belt Fittings

by Quita Mould
(Fig.6.38)

Iron ?strap-end

A shouldered plate, possibly from a strap end (SF5471) occurred in a 12th-century ditch fill.

SF5471 Strap end tapering waisted strip fitting with angular shoulder, likely to be a decorative strap terminal. L: 68mm, max: W: 20mm
11209, fill of ?Fee ditch 11036, Period 3.2, G1/56

Personal Possessions

Bone pin/pen

by Julia Huddle

The Castle Mall site yielded a total of forty bird bones which had been cut at one end, generally on one side, with one or more cuts at an oblique angle forming a 'point'. These objects may have served as pins or pens. The earliest example came from a ditch to the north of the cemetery of St John (Ditch 12, Period 3.2, G1/51, SF5632, not illustrated), where it may be intrusive. Most of the other examples were recovered from 15th-century fills of the barbican well (Chapter 9.III), where further discussion and interpretation is given.

Textiles

by Elizabeth Crowfoot, with Penelope Walton Rogers

A tiny amount of textile was recovered from a pit to the west of the site, on the Timberhill frontage. This consisted of three tiny scraps of damaged open weave (SF6405, not illustrated; pit 80008, G8/21, Period 3.2) and was of undyed flax or hemp, in tabby weave.

Furnishings and Household Equipment

Pottery

by Irena Lentowicz
(Figs 6.39–6.43)

Introduction and quantification

A small quantity of pottery was recovered from contexts assigned to this period, only 2660 sherds weighing 15.602kg; this accounted for only 1.6% of the total assemblage. A further 0.750kg was recovered from the Golden Ball Street site and is excluded from the following analysis. Late Saxon and early medieval wares continued to dominate the material recovered. The early medieval wares were clearly contemporary, although Late Saxon wares were more problematic. TTW accounted for nearly a fifth of the assemblage and NEOT for 7%. Although TTW continued to be produced into the 12th century, some of this material was undoubtedly residual and the relevant proportion was difficult to calculate (or even estimate) accurately. Early medieval wares accounted for 34.1% of the period assemblage. The usual fabrics were present including EMW, EMSW, EMSSW and YTW, as well as fine wares such as Stamford ware (Fabric B) and Pingsdorf-type ware.

What characterised this period was the increased dominance of medieval fabrics, especially kitchen ware LMU supplemented by small quantities of non-local coarse wares, for example Shelly wares, and fine wares including continental Andenne-type ware. The other factor was the introduction towards the end of the 12th century of very small quantities of locally produced glazed wares from Grimston, and regional wares such as developed Stamford ware (Fabric C), Hedingham-type ware and unprovenanced non-local wares. A small quantity of LMT fabrics and other intrusive later pottery was also recorded.

Fabrics and forms

Thetford-type ware

As mentioned above, some of the TTW recovered was residual. However, the industry did continue to produce pottery into the early 12th century and so at least some of the fabric recovered must have been contemporary; indeed, some of the pottery was recorded as fresh during cataloguing. Only 0.8 % of all TTW was recovered from this period and in contrast with the preceding phases, only thirty-two rims were recorded (compared to 2275 in Period 1 and 525 in Period 2), c. 0.1% of the total number of TTW rims.

As expected, rims from jars and cooking pots were most common, with storage jars and 'ginger jars' also well represented. In addition a lamp rim and a more unusual vessel were also present (the function of the latter could not be established). Analysis of the jar/cooking pot rims provided little additional information, although it appeared that 11th-century types were more common with seven of the eighteen recorded jar rims attributed to 11th-century rim forms.

St Neots-type ware

Other Late Saxon wares included NEOT. This made up 7% of the period assemblage, by far the largest propor-

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	3	0.012	0.1	0.1
TTW	520	3.096	19.5	19.8
NEOT	82	1.423	3.0	9.1
Stamford ware (Fabric A)	2	0.008	0.1	0.1
Pingsdorf-type ware	13	0.265	0.5	1.8
EMW	794	3.026	29.8	19.4
EMSW	73	0.863	2.8	5.9
EMSSW	25	0.115	0.9	0.7
YTW	134	0.984	5.2	6.7
Stamford ware (Fabric B)	14	0.059	0.5	0.4
LMU	927	4.757	34.8	30.5
East Cambs Shelly ware	3	0.139	0.1	0.9
Non-local Medieval Shelly ware	1	0.006	<0.1	<0.1
Grimston Glazed ware	3	0.022	0.1	0.1
Developed Stamford ware (Fabric C)	4	0.050	0.2	0.3
Hedingham-type ware	3	0.004	0.1	<0.1
Non-local Glazed wares	2	0.041	0.1	0.3
Andenne-type ware	10	0.013	0.4	0.1
Misc. import	1	0.012	<0.1	0.1
Intrusive	38	0.582	1.4	3.7
Unidentified	8	0.125	0.3	0.8
Total	2,660	15.602		

Table 6.5 Total quantity and weight of Period 3 pottery by fabric

tion this fabric represented in one particular period. Much of the material came from three bowls: one was deep with an inturned rim, and the other two deep bowls with squared rims. Although these vessels may have been contemporary with their associated deposits (since production of undeveloped St Neots-type ware continued until c.1150), they are more likely to be residual: these long-lived vessels may have been produced between the late 9th century and the mid 12th century.

Early medieval wares

Early medieval wares accounted for 34.1% of the period assemblage. Most of this was made up of EMW, which accounted for 20.5% of the period assemblage. Only 10.6% of the EMW recovered from the site came from this period, a decrease compared with Period 2 from which c.41% of all EMW was recovered. This indicated that although still contemporary, the *floruit* of the fabric had already passed.

The number of EMW rims did not drop as dramatically as TTW; eighty-five rims were recorded accounting for 21.1% of all EMW rims. Again, most of the rims were from jars and cooking pots, with smaller vessels (type J1 — sixty-seven rims) more common than medium sized ones (type J2 — seven rims), and two larger type J3 rims introduced. Rims continued to be simple upright, everted or coming to a point (types J1a — thirty-eight rims, J1b — twenty-seven rims and J2c — six rims). Other rim types were represented by single examples (types J1c, J1l and J2a). ‘Ginger jars’ were the only other vessel represented by rim, and slightly everted rims (type G2 — six rims) were more common than plain rims (type G1 — two rims).

Other early medieval local coarse wares were also well represented. EMSW accounted for 5.9% of the period assemblage. However, the number of rims recovered was much reduced with only four jar rims and three storage jar rims recorded. EMSSW was represented by body sherds only. The quantity of YTW recovered increased and formed 6.7% of the assemblage. Almost 30% of all YTW recovered comes from this period. Ten rims were recorded and jars and cooking pots were more common. Along with rim types Ya (one rim), Yb (four rims) and Yc (one rim) recorded in Period 2, the range of rim types expanded to include a rim with an inverted hammer-head profile (type Yd), along with an unclassified rim. In addition, a bowl with a rounded profile and squared rim was recorded along with a probable curfew.

Fine wares and imports

Fine wares were again represented by sherds from Pingsdorf-type ware and Stamford ware (Fabric B) vessels. These were joined by other medieval fine wares including local, regional and continental imports which represented in this period by only a few sherds (see below). Continental vessels continued to be represented by sherds of Andenne-type ware and Pingsdorf-type ware.

Medieval wares

Medieval fabrics made their first real impression on the ceramic assemblage during this period and accounted for 32.3% of the period assemblage. Unglazed coarse kitchen wares represented the vast proportion of this and LMU made up 30.6% of the period assemblage, and almost all (c.94%) of the medieval assemblage from this period.

LMU appeared as a small intrusive element in Period 1, while transitional sherds are recovered from Period 2 and formed a larger, albeit small, part of the assemblage as a contemporary element. Almost 12% of all LMU recovered from the site came from Period 3.

Only sixty-two LMU rims were recorded from this period, the majority of which came from Period 3.2. Jars and cooking pots made up the largest proportion of all vessel forms represented by rims (87.7% of all LMU rims recorded came from these vessels), and were the major vessel form represented by rims in this period. Two bowl rims were also recorded, though these were not allocated to a type.

Of the sixty jar and cooking pot rims recorded, only two jars with upright rims were recorded, one from a small and the other from a medium-sized vessel (types J1a and J2a). The majority of jars and cooking pots had simple everted rims (type J2b — thirty two examples), with a smaller number of rims coming to a point (type J2c — fourteen examples) with a further three coming from larger vessels (type J3c).

Apart from a single sherd of Medieval Shelly ware, probably from a cooking pot, all other medieval wares recovered from this period were table wares. These included sherds from local as well as regional and continental sources (noted above). Local jugs from Grimston make their first appearance in the late 12th century, and these are supplemented by small quantities of regional wares such as Ely coarseware, Hedingham-type ware and Developed Stamford ware (Fabric C). Although no diagnostic sherds were recorded, these sherds probably came from jugs.

Stratigraphic distribution

Assemblages are detailed by group in Chapter 6.II and Appendix 6, where details of illustrated items can also be found.

Period 3.1

(Figs 6.39 on CD; Fig.6.40)

Just under half of the period assemblage was recovered from contexts assigned to the major alterations to the castle defences associated with the construction of the masonry keep and contemporary activity; 1001 sherds weighing 7.268kg, 46.6% of the period assemblage. Although TTW remained the dominant single fabric, and other Late Saxon wares were also well represented, it was during this period that early medieval fabrics came to dominate the assemblage and medieval wares also began to make an impact.

Period 3.2

(Fig.6.42; Figs 6.41 and 6.43 on CD)

Over half of the period assemblage came from early fills of castle ditches and contemporary 12th-century activity, 1659 sherds of pottery weighing 8.334kg (53.4% of the period assemblage). What was immediately apparent was that TTW no longer formed a dominant part of the assemblage, only 9.2%, and while some of this may have been contemporary, it was in generally considered to be residual. Other Late Saxon fabrics were also considered residual. Early medieval wares were much more common, making up for 25.2% of the period assemblage. EMW was most common, EMSW provided a large proportion and YTW was also a significant element, supplemented

<i>Vessel type</i>	<i>Periods 1 and 2</i>	<i>Period 3.1</i>	<i>Period 3.2</i>	<i>Total</i>
Jar/cooking pot	5	3	57	60
Bowl	3	-	2	2
Jug	2	-	-	

Table 6.6 Number of LMU rims by vessel form

by a small quantity of EMSSW and fine ware Stamford ware (Fabric B). However, it was medieval pottery which had begun to dominate and characterise this period by accounting for over half of the assemblage. LMU was the dominant fabric supplemented by small quantities of glazed wares from Grimston and other regional wares.

Discussion and conclusions

by Richenda Goffin

The pottery from Period 3 made up only 1.6% by weight of the total Castle Mall assemblage and most was recovered from features relating to the substantial alterations to the defences of the Castle during the period *c.*1094 to late 12th century. Ceramic deposits of 12th-century date were identified within the ?Castle Fee boundary marker and both the south and north-east bailey ditches, and in a series of pits along the frontage of the road to the south-west (now Timberhill). Much of the pottery was fragmentary and consisted of small sherds and this, combined with the generally small size of individual assemblages, constrained opportunities for comparisons between groups.

The overall pattern of the pottery assemblage for this period broadly conforms to the ceramic profiles recorded from many other Norwich sites for the late 11th–12th-century. Thetford-type wares were still in production, although it is likely that much of the material deposited into Period 3 features is by this time residual. A total of 520 fragments of TTW, weighing 3.096kg was recovered from Period 3 deposits, making up a total of 19.8% by weight of the period assemblage. Norwich Thetford-type wares were probably still being made at kiln sites such as 5, Lobster Lane near Pottergate during this period (Jennings 1983, 85; see Chapter 13 for discussion). Although the absolute dating of the Lobster Lane kiln has not been satisfactorily established, the wares are stylistically of a later, possibly 12th-century date. The pottery evidence from this kiln site shows that the forms being produced were changing to become closer in appearance to the hand-made early medieval wares which were in circulation during the 11th and 12th centuries. Cooking vessels for example, were more globular in shape, with sagging rather than flat bases. Their rims were also evolving, with the emergence of everted tapered and rounded shapes approaching the simple flared types so typical of early medieval wares (Jennings 1983, 87).

During Period 3, early medieval wares at the Castle Mall made up a greater proportion of the overall assemblage than in previous phases, particularly in the case of EMW and EMSW. These fabrics were supplemented by increasing quantities of the other main coarseware found in Norwich, LMU ware, which replaced EMW by the end of the 12th century. In addition, shell-tempered fabrics such as YTW ware, EMSSW and East Cambridgeshire Shelly ware were present in small quantities. Very little Grimston Glazed ware was present, dating from the late 12th century, although some Developed Stamford ware

and Hedingham-type ware were recorded. Imports were limited to Pingsdorf and Andenne-type wares. Imported wares from a range of features spanning the Norman to post-medieval periods in the north-east bailey included small quantities of Pingsdorf-type ware, Paffrath wares, Andenne-type wares and some sherds of Rouen ware (Site 416N; Ayers 1985, 40).

One of the most striking features of any comparison between the Period 3.1 and Period 3.2 assemblages at Castle Mall is the changing nature of the major ceramic

elements which are captured in these two phases. In Period 3.1 TTW still forms a substantial component, although much may be residual (32.4% by weight). St Neots-type ware is also present in some quantity, although some of it is also likely to be residual. EMW and EMSW make up over a quarter of the assemblage, with YTW comprising 11.5% by weight of the overall pottery. The fully medieval fabric of LMU plays only a minor part in the Period 3.1 pottery group (1.9%). However, the picture for Period 3.2 is significantly different. The quantity of TTW is dramati-

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	2	0.007	0.1	0.1
TTW	317	2.357	31.7	32.4
NEOT	62	0.877	6.2	12.1
Pingsdorf-type ware	8	0.187	0.8	2.8
EMW	392	1.678	39.2	23.1
EMSW	43	0.517	4.5	7.8
EMSSW	5	0.026	0.5	0.4
YTW	95	0.760	10.1	11.5
LMU	29	0.136	2.9	1.9
East Cambs Shelly ware	1	0.133	0.1	2.0
Non-local Medieval Shelly ware	1	0.006	0.1	0.1
Grimston Glazed ware	1	0.012	0.1	0.2
Developed Stamford ware (Fabric C)	3	0.003	0.3	<0.1
Hedingham-type ware	3	0.004	0.3	<0.1
Andenne-type ware	7	0.010	0.7	0.1
Misc. import	1	0.012	0.1	0.1
Intrusive	29	0.535	2.9	7.4
Unidentified	1	0.003	<0.1	<0.1
Total	1,001	7.268		

Table 6.7 Total quantity and weight of Period 3.1 pottery by fabric

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	1	0.005	<0.1	<0.1
TTW	203	0.739	12.2	8.8
NEOT	20	0.546	1.2	6.5
Stamford ware (Fabric A)	1	0.003	<0.1	<0.1
Pingsdorf-type ware	5	0.078	0.3	0.9
EMW	402	1.348	24.2	16.2
EMSW	30	0.346	1.8	4.1
EMSSW	20	0.089	1.2	1.0
YTW	39	0.224	2.3	2.7
Stamford ware (Fabric B)	14	0.059	0.8	0.7
LMU	898	4.621	54.1	55.4
East Cambs Shelly ware	2	0.006	0.1	<0.1
Grimston Glazed ware	2	0.010	0.1	0.1
Developed Stamford ware (Fabric C)	1	0.047	<0.1	0.5
Non-local Glazed wares	2	0.041	0.1	<0.1
Andenne-type ware	3	0.003	0.2	<0.1
Intrusive	9	0.047	0.5	0.5
Unidentified	7	0.122	0.4	1.4
Total	1,659	8.334		

Table 6.8 Total quantity and weight of Period 3.2 pottery by fabric

ically reduced (8.8%), along with NEOT. EMSW and EMW remain in similar but slightly smaller quantities, and the amount of YTW wares is substantially reduced to 2.7% of the assemblage. The most dramatic change is the increase in the quantity of LMU, which now comprises over half the assemblage (55.7% by weight). Only three sherds of Grimston Glazed ware were recovered. Small quantities of non-local glazed wares and imports are present in both assemblages.

Pottery was also recovered from the dumped deposits forming the rampart of the south bailey (see Lentowicz, Chapter 6.II). Although containing residual material, the dating of the pottery is of the 11th to early 12th century in date. Diagnostic forms include TTW and EMW 'ginger jars', and local coarsewares with simple everted or upright rims. This pottery can be compared with material of a similar date recovered from a number of post-Conquest ditches within the north-east bailey (Site 416N; Ayers 1985, 21; see further comments in Chapter 6.V). The ceramics consisted mainly of TTW and EMW cooking vessels with simple everted rims, while pottery from the later fill of a pit which cut through the top of a Late Saxon well comprised a range of TTW forms including jars, storage vessels and lamps, but also a number of EMW jars, and 'ginger jars', with small quantities of EMSW, Stamford ware and Pingsdorf ware (Ayers 1985, 39). This group is similar to the range of pottery recovered from the fills of Ditches 7 and 8 recorded at Castle Mall which formed part of a defensive complex guarding a bridge landing within the south bailey. Although only a relatively small and fragmented group of 12th-century pottery came from fills of the south bailey ditch itself (Ditch 10), a more substantial 12th-century assemblage of kitchen and table ware was recovered from the southern part of the Castle Fee ditch (Ditch 3, Phase 7) in Period 3.2 (see Lentowicz, Chapter 3.II and Fig.6.42). Within this group, which included some notable individual vessels and forms, LMU was the most common fabric (74% of the assemblage) and early medieval wares here included transitional EMW/LMU vessels.

The small quantity of pottery recovered from the infilling of the initial phase of the outermost north-east bailey ditch recorded at Castle Mall (Ditch 9, Phase 2, Period 3.1) included a fragment of a stamped EMW 'ginger jar' (Fig.6.40, no.2) and a fragment of EMSW storage vessel with thumbled applied strip around the rim (Fig 6.40, no.3). In addition a single fragment of a Developed Stamford ware jug with applied thumbled strip was present, indicating a deposition date of post-1150. Fills of the third phase of the ditch, which was recut in Period 3.1, contained little diagnostic pottery apart from two fragments of LMU. This was also the pattern for the subsequent fills and activities within the ditch (Phases 4–8, in Period 3.2) which included evidence for animal grazing. The pottery from these fills included residual wares and fragments of LMU with other possible contemporaneous ware such as EMW and EMSW.

In a local context, the Period 3 assemblage can be compared with the Period 2 (12th-century) ceramic group from the excavations at Greyfriars (Lentowicz, in Emery 2007). Here TTW still made up a much higher proportion of the overall pottery, 54.2% by weight of the Period 2 assemblage. Only 16 fragments of NEOT were identified in the Period 2 assemblage at Greyfriars (0.2% by weight

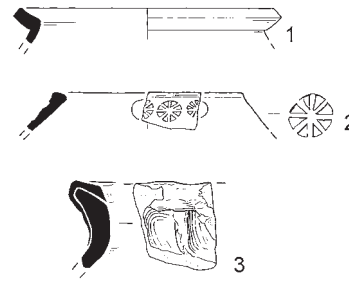


Figure 6.40 Pottery from fills of north-east bailey ditch, Ditch 9 (G9/2). Scale 1:4

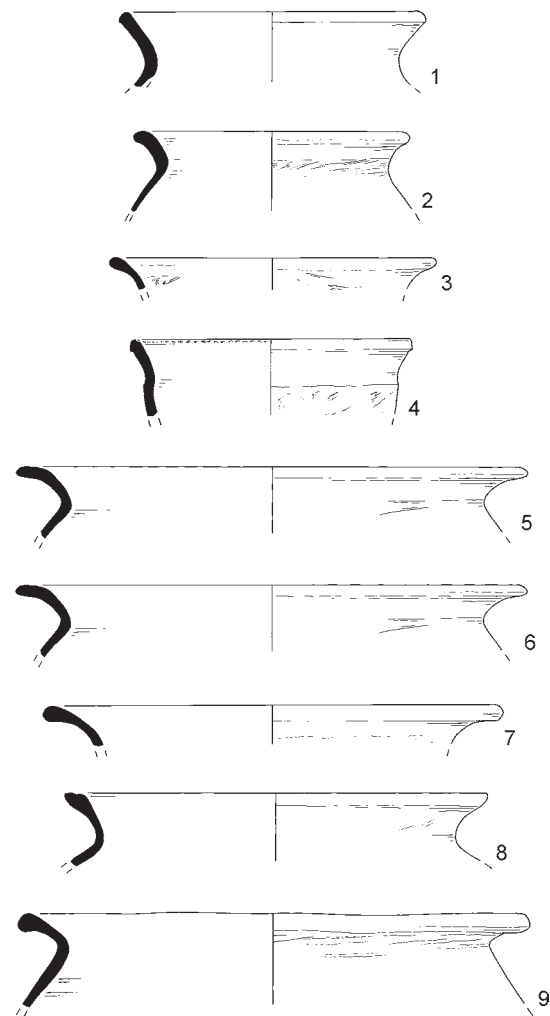


Figure 6.42 Pottery from refuse disposal into the Castle Fee ditch, Ditch 3 (G1/57). Scale 1:4

of the Period 2 assemblage), compared to 520 fragments making up 19.8% by weight of the Period 3 pottery from Castle Mall. EMW and LMU wares are also less frequent in 12th-century deposits at Greyfriars than at the Castle Mall (6.4%, and 13.5% respectively). There was less of a discrepancy with the proportions of Pingsdorf-type ware (1.9%), YTW (4.2%), and GTGW (0.7% by weight). The high proportion of Thetford-type wares from Greyfriars may be partially due to the intense pit-making activity during Period 2, and consequent movement and redepo-

sition of much earlier pottery. Only twenty-nine pits were assigned to Period 3 at Castle Mall.

The castle-related ceramic assemblages at Hen Domen have been noted in Chapter 5.III. The pottery from Norman deposits at Castle Acre proved to be dominated by four main ceramic types: early medieval wares (77%), THETG ware (16%), TTW (3%) and Stamford ware (1%) (Milligan in Coad and Streeten 1982, 226). At Castle Rising in West Norfolk, only selected groups of pottery have been published and the earliest dates to the 13th century (see Chapter 7.III).

In conclusion, as with Period 2 at Castle Mall, during Period 3 there was nothing amongst the pottery to demonstrate the presence of a royal castle and, again, the assemblage was largely utilitarian in character. This pattern appears to be reflected at other Norman castle sites, particularly in groups from the outer baileys. At Castle Acre, for example, an unexpectedly limited quantity of imports was also noted, given the status of the site as a country house later converted to a castle keep (Milligan in Coad and Streeten 1982, 227). At Norwich, the findings from both the south bailey (at Castle Mall and Golden Ball Street) and the north-east bailey or Castle Meadow (Site 416N) attest to the low levels of Continental imports in use within the outer baileys of the castle. This probably confirms the suggested use of the baileys to house elements of the garrison, the 'Men of the Fee' and associated ancillary buildings, probably including kitchens, a bakehouse and brewery.

Illustration Catalogue

Period 3.1

Fig. 6.39 on CD: Road through south bailey rampart (G7/9)
no.1 Residual NEOT bowl, with in-turned rim, refuse dump 70025

Fig. 6.40: Fills of north-east bailey ditch, Ditch 9 (G9/2)
no.1 TTW, jar with lid-seated rim with parallel sides (type AB11), fill 92597
no.2 TTW, 'ginger jar' with slightly everted rim (type G2) and stamped decoration, fill 92597
no.3 EMSW, storage jar with applied clay at rim and tapering sides (type AG4), fill 92597

Period 3.2

Fig. 6.41 on CD: First phase of infilling of south bailey ditch, Ditch 10 (G8/15)
no.1 EMW, jar with everted rim (type J2b), fill 80333
no.2 EMW/LMU, bowl with thumbled rim (type B2), fill 80333

Fig. 6.42: Refuse disposal into the Castle Fee ditch, Ditch 3 (G1/57)
no.1 EMW, small jar with upright rim (type J1a), fill 11126
no.2 EMW, small jar with everted rim (type J1b), fill 11126
no.3 EMW small jar with everted rim (type J1b), fill 11126
no.4 LMU, bowl with carinated body and decorated rim, fill 11126
no.5 EMW/LMU, jar with everted rim (type J2b), fill 11126
no.6 EMW/LMU, jar with everted rim (type J2b), fill 11126
no.7 EMW/LMU, jar with everted rim (type J2b), fill 11126
no.8 LMU, jar with everted rim coming to a point (type J2c), fill 11126
no.9 LMU, jar with rounded rim (type J2g), fill 11126

Fig. 6.43 on CD: Pit 12209 on Timberhill frontage (GT118/2)
no.1 NEOT, bowl, fill 12272
no.2 EMSW, multi-handled jar rim (type AE2), fill 12272 (SA213)
no.3 YTW, cooking pot rim, fill 12272
no.4 LMU, jar with everted rim coming to a point (type J2c), fill 12272

Fittings

Copper alloy box/casket mount

by Alison Goodall
(Fig. 6.44, Plate 6.34)

An unusual object (SF5765) is probably part of a box or casket mount and may date to the 11th or 12th century (John Cherry, Andrew Rogerson and Sue Margeson, pers. comm.). It was found residually in a post-medieval fill of the barbican ditch (Ditch 13). The animal-head terminal on the Castle Mall mount may be compared to that found on a curved cast strip, from a 12th/13th-century context at Magdalen Street/Cowgate, Norwich (Margeson 1993, 77 fig. 41, no. 460) where the comparison is made to stylised animal heads on cast binding strips also recovered from Norwich and dated to the early medieval period (Margeson 1993, 77 fig. 41, nos 473 and 474).

SF5765 Mount. Object with perforated crescent-shaped plate and moulded stem which is probably incomplete. On the reverse of the stem are engraved transverse and oblique lines. The crescent plate is decorated with a double engraved border with a raised line between, decorated with punched dots. The whole enclosing an area decorated in shallow relief and is pierced by a countersunk oval, which is slightly off-centre. The stem is decorated with a stylised animal head above three moulded



Plate 6.34 Copper alloy box or casket mount (SF5765) of probable 11th- or 12th-century date

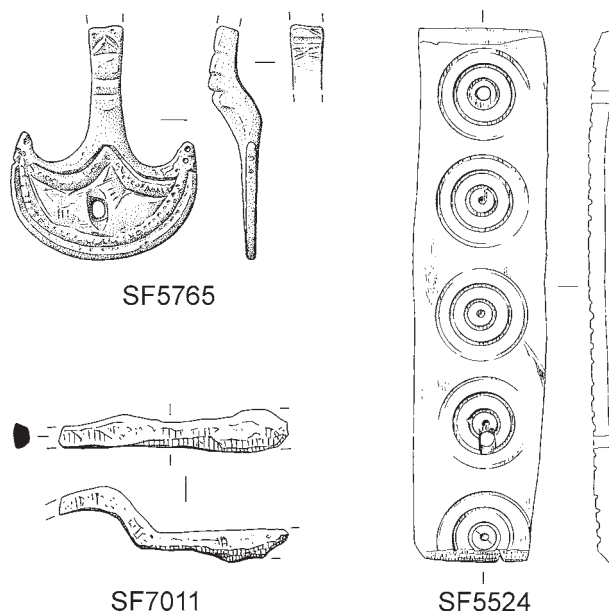


Figure 6.44 Copper alloy box/casket mount (SF5765). Bone casket fitting (SF5524). Iron door bolt (SF7011). Scale 1:1, ironwork at 1:2

ridges. The reverse of the crescent-shaped part is flat, but the stem curves first backwards then forwards, preventing the object lying flat on a surface.

40427, fill of barbican ditch, Period 6.2, G2/33

Copper alloy strip

by Alison Goodall

Although the strip fragment (GBS SF158, not illustrated) recovered from fills of the ?Castle Fee ditch at Golden Ball Street has no evidence of gilding and there are no pin holes along its length, it may perhaps be related to the gilt strips found in 12th- and 13th-century contexts on castle and manorial sites (*cf.* SF6852 found residually in the barbican well at Castle Mall; Chapter 9.III).

GBS SF158 Strip. Fragment of strip, D-sectioned for most of its length but flattened at one end. The other end is bent. Not illustrated. 455, backfill of Fee Ditch, Period 3.2, G20

Bone ?casket mounts

by Julia Huddle

(Fig.6.44)

Two bone strips were recovered from Period 3 deposits, one with incised dot-in-circle (SF5524) and the other plain (SF5489, not illustrated). Both came from fills of the ?Fee ditch (Ditch 3, Period 3.2). A similar example was recovered, again from Period 3.2 fills of the ?Fee ditch, at Golden Ball Street (SF232, not illustrated). This incomplete example was decorated with incised ring and dots and has two iron stained rivet holes, one at each broken end.

Decorated box or casket mounts made of split animal rib or antler are well known from Late Saxon and early medieval contexts (another example was recovered from a Late Saxon deposit and is described in Chapter 4, SF1083). Though they are rarely found still attached to the wooden boxes (usually the wood has decayed), they occasionally retain their iron rivets or bone pegs. The decoration often takes the form of compass drawn motifs as seen on the Castle Mall and Golden Ball Street pieces although other more elaborate open-work decoration can be seen, for example, on a fragment of an oak casket from Coppergate (Waterman 1959, 86–7) and a mount from Castle Acre (Margeson 1982, 246–8 fig. 46 no. 19).

SF5524 Bone strip with incised dot-in-circle decoration; two iron stained rivet holes, one at either end. L: 70mm. Large mammal rib.

11209, fill of ditch 11036, Period 3.2, G1/56

Miscellaneous fitting

by Quita Mould

An iron ring with its arms twisted together recovered from a layer associated with the construction of the well shaft (50117, G5/20, Period 3.1) probably served as a large collar ferrule (SF5663, D: 54mm, not illustrated).

Buildings

Architectural Stone

by Stephen Heywood

A total of sixty-six pieces of architectural stone from the Castle Mall site were examined, of which 24 are of 12th century date (none are illustrated). The predominance of Caen stone suggests that it was the principal freestone used at the castle, unlike Norwich cathedral which uses roughly equal amounts of Caen and Barnack stones. A single 12th-century dressing of Barnack stone was found unstratified in Area 48 (SF7452).

Fourteen fragments were found residually in two fills of the barbican well (fills 50320 and 50134) suggesting the demolition or dismantling of Norman masonry during the 15th century (see Period 5.2, Chapter 9). Most are indeterminate dressings, although they include two door dressings (SF7451.01 and 7451.09) and a voussoir (SF7451.05). The latter produces a radius of approximately 550mm assuming that the arch was semi-circular. This makes a span of 1100mm (3ft 7in) which gives the impression of a wide doorway.

Four other fragments of 12th-century worked stone were found in Area 45 (SF7453, Period 4.2) and Area 46, where three examples came from Norman fills of ditch 46666 (Ditch 6, Period 3.1; SF6805, SF6703 (not illustrated) and SF6640) The Norman fragments recovered are consistent with demolition of a gatehouse or well superstructure with ashlar dressings.

To this grouping, two other 12th-century fragments may be added, neither of which were Small Found (one from 10265, Period 6.1 and the other from a fill of south bailey ditch 11325, Period 4.2). These are both Caen stone dressings. Another fragment (SF7447) of probable Norman date is a conical piece with a squared end for which no direct parallel has yet been found. It may have acted as a finial (*cf.* another example noted in Chapter 5.III).

SF6640 Architectural stone. Tooling marks on all faces. two of the faces are smoother with finer diagonal tooling marks. One of these faces has a roughly incised small triangle, possibly a masons' mark. Other faces roughly chiselled. Not illustrated. 46654, fill of ditch 46666, Period 3.1, G46/19

SF7447 Worked stone ?architectural fragment. conical column of limestone with a sub-rectangular top, which tapers slightly at the top. diagonal tooling marks on one face of this rectangular 'top' ?finial. Not illustrated.

80186, fill of pit 80188, Period 6.2, G8/29

Structural Ironwork

by Quita Mould

An iron hinge pivot (SF5133, not illustrated) was found which, along with a strap hinge, was used to hang a shutter, door or gate. A nailed binding (SF6458, not illustrated) from a pit south of the bailey appears to be modern contamination. A clench bolt (SF5754, not illustrated) and the roves from two others, apparently unused, were found along with 33 flat-headed nails and 41 nail shanks.

Door and Window Fittings, Glass and Cames

by David King and Quita Mould

(Figs 6.44 and 9.29)

An important piece of painted 12th-century glass (SF7259), which may have a direct association with the

castle, was recovered residually in fills of the barbican well and is detailed in Chapter 9.III. A piece of window glass was found intrusively in a fill of the ?Fee ditch (fill 11126, SF5460, G1/57, Period 3.2), along with a piece of Knight's type B lead came (SF5501, not illustrated; King 1987, fig.35). The latter was a section of halved medieval lead came 35mm long, the flange being 4mm wide.

A small door bolt (SF7011) from the construction cut for the well shaft at the foot of the castle bridge was probably used to secure a cupboard door (*cf.* Winchester; Biddle 1990, fig. 304, 3516).

SF7011 Door bolt rectangular-sectioned bolt with cranked head with pointed tip.
50319, fill of construction cut for well 50108, Period 3.1, Group 5/22

Ceramic Building Materials

by Irena Lentowicz, with Richard Kemp (identification)
A small assemblage of 351 fragments of CBM weighing 3.798kg was recovered from contexts assigned to this period, less than 1% of the total material. Fired clay was still a dominant part of the assemblage, with residual Roman material forming a large proportion. Intrusive medieval brick and tile was present.

Period 3.1

Over 65% of this small period assemblage came from this sub-period, 190 fragments weighing 2.487kg (65.4%). Most of the miscellaneous material consisted of mortar or plaster fragments, some of which may be associated with contemporary building works at the castle. Fired clay/daub Fabric 129 was again more common than Fabric 136. As already noted, the few pieces of medieval CBM included here were intrusive.

Much of the CBM recovered here was associated with construction of the south bailey rampart, 1.138kg 45.7% of the sub-period assemblage, although the majority of this is likely to have been disturbed from earlier buildings. The group was dominated by daub Fabrics 129 and 136, with a small quantity of Roman brick and tile. Intrusive type EB3 and EB7 brick fragments were present in several contexts. A relatively large assemblage came from the possible timber gatehouse associated with the road (G7/10, 0.655kg) and included daub/fired clay Fabric 136 and daub Fabric 129, as well as Roman tile and brick fragments. Intrusive material included brick type EB3 and a fragment of floor tile type FT126. An insignificant quantity of CBM was recovered from early fills of the castle ditches.

Period 3.2

A smaller proportion of the period assemblage came from this sub-period, 161 fragments weighing 1.311kg (34.5%). Residual Roman material made up 42% of this and two fragments of intrusive late brick were also recovered. Much of the miscellaneous material consisted of mortar fragments. Fired clay fabrics continued to occur (9%), although Fabric 136 was now more common than Fabric 129, and Fabric 300 was also present. Three roof tile fabrics were recorded, made up almost entirely (by weight) of RT100 and its variant type RT103. The two early brick fabrics present (EB2 and EB3) were intrusive.

Much of this small fragmentary sub-period assemblage came from ditches (1.182kg, 90.1%), although generally in such small quantities as to be insignificant. Most of the material from the ?Castle Fee ditch (Ditch 3) was residual Roman fragments, only one fill producing a sizeable assemblage of fired clay Fabrics 136 and 129 as well as an intrusive early brick fragment type EB2 (G1/55, 0.038kg; 1/56, 0.036kg and 1/57, 0.566kg). Fills of the south bailey ditch (Ditch 10) included daub Fabric 136 and intrusive roof tile types RT100 and 200 (G8/15, 0.038kg; G9/46 part, 0.041kg; T58/19, 0.020kg). Fills of the south bailey ditch at Golden Ball Street (GBS Groups 50 and 53) contained fired clay and medieval brick (1.558kg). The remaining material at Castle Mall came from pits, some of which contained only intrusive medieval roof tile.

Discussion

A small assemblage of ceramic building material was recovered from Period 3, less than 1% of the total assemblage. As in previous periods, the material in contemporary use was fired clay and daub; clay remained the most common building material in the city until *c.*1500 (as at Alms Lane; Atkin 1985a, 245). No 'great' bricks such as those known from Essex and Suffolk during the 12th century are yet known from Norwich (Drury 1993, 164). The first recorded use of

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	46	0.533	14
Roman	40	0.914	24
Fired clay	214	1.298	34.1
Fabric 200	9	0.050	1.3
Medieval roof tile	27	0.329	8.6
Medieval brick	11	0.405	10.6
Post medieval	3	0.064	1.6
Modern	1	0.205	5.3
Total	351	3.798	

Table 6.9 Total number of fragments and weight of CBM at Castle Mall by Fabric in Period 3

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	24	0.286	11.4
Roman	7	0.355	14.2
Fabric 129	111	0.727	29.2
Fabric 136	28	0.438	17.6
Fabric 200	9	0.050	2
Medieval roof tile	1	0.025	1
Medieval brick	8	0.350	14
Post-medieval	1	0.051	2
Modern	1	0.205	8.2
Total	190	2.487	

Table 6.10 Total number of fragments and weight of CBM at Castle Mall by fabric in Period 3.1

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	22	0.247	18.8
Roman	33	0.559	42.6
Fabric 129	17	0.040	3
Fabric 136	27	0.082	6.2
Fabric 300	31	0.011	0.8
RT100/RT103	11	0.276	21
?RT200	15	0.028	2.1
EB2	2	0.050	3.8
EB3	1	0.005	0.3
Post-medieval	2	0.013	0.9
Total	161	1.311	

Table 6.11 Total number of fragments and weight of CBM at Castle Mall by fabric in Period 3.2

what was probably Flemish-type brick in the city is in the construction of the castle's curtain wall in 1268–9 (see Tillyard, Chapter 7.1). Roof tile first appears in mid to late 12th-century contexts elsewhere in East Anglia (as at Orford Castle, Suffolk, *c.*1165–75; Drury and Norton 1985) and King's Lynn, *c.*1200 (Richmond *et al* 1982, 122). In Norwich, however, it appears to have been introduced during the 13th century, although many buildings undoubtedly continued to be thatched. Further comments are given in Chapter 13.

Occupations, Industry and Crafts

Metalworking

Introduction

With the Norman Conquest, metalworking crafts and industries became more specialised and there was a change in the scale of production. Extraction and smelting was increasingly a rural occupation and metalworking in towns tended to be linked to the fabrication of objects. The construction and occupation of Norwich's new masonry castle (and its contemporary cathedral) would undoubtedly have increased the local demand for the manufacture of a wide range of ferrous and non-ferrous objects and would have engendered a requirement for the on-site repair and maintenance of these objects. At the castle, the necessary range would undoubtedly have included building and furniture fittings, domestic utensils, horse equipment, armour and weaponry. It is perhaps surprising, therefore, that a relatively small assemblage of metalworking waste (2.040kg; 1.5% of the total site assemblage) was recovered from deposits assigned to Period 3. Of this, 1.145kg (56%) came from Period 3.1 and 0.895kg (44%) from Period 3.2.

Chronological and spatial distribution of metalworking debris

by Irena Lentowicz, Justine Bayley (identification) and Elizabeth Shepherd Popescu (Golden Ball Street)

Period 3.1

The majority of the metalworking debris allocated to this sub-period came from redeposited dumps or infilling of pre-existent features and it is unclear whether these were evidence of primary craft/industrial activity or the redeposition of earlier material. Hearth bottom, attached hearth lining and smithing slag were all recovered from fills of the crescentic Ditches 7 and 8 (G2/3). Copper alloy spillage of leaded bronze (see Mortimer below) and hearth lining came from the south bailey rampart (G8/19), while the metallurgy of the road that cut through it contained iron pan (G7/9), with smithing slag coming from deposits associated with its abandonment (G8/20). A hearth bottom was also recovered from contexts relating to a possible timber-framed gate (G7/10).

Period 3.2

Castle Mall Site

Metalworking waste continued to be recovered from the fills of the castle ditches and, as with the material from Period 3.1, it is unclear whether this represents contemporary activity or residual deposition. Smithing slag came from Ditch 6 within the small courtyard at the foot of the castle bridge (G46/22), while hearth bottom, cinder and copper alloy prills were recovered from the western arm of the ?Fee ditch (Ditch 3; G1/55 and 1/57). Unidentified metalworking debris and cinder were retrieved from refuse dumping into the north-east bailey ditch (Ditch 9; G9/13, 9/30 and 9/34) and hearth bottom came from the possible south bailey ditch terminal (G9/46).

Similar material was also recovered from contemporary occupation along the Berstrete/Timberhill street frontage. In Open Area 26 a number of pits probably lay to the rear of properties fronting the street and two of these contained metalworking debris (G8/21). The waste from pit 80004 included fuel ash slag, hearth bottom and crucible, as well as fired clay which contained copper, lead and tin (see below). In Open Area 27 a small area of posts and pits to the south of Building 25 also included metalworking waste (G1/144): pit 10771 contained smithing slag and iron pan. Further metalworking debris was recovered from the 12th-century ditch to the north of St John's Cemetery (Cemetery 4; Ditch 12, G1/50).

Golden Ball Street Site

The largest group of metalworking slags from this site (7.244kg; 71%) came from a 12th-century fill of the ?Castle Fee ditch (context 455, GBS Group 20, Ditch 2, Period 3.2). The second largest group came from upper fills of the same ditch (GBS Group 26, Period 4.1, 0.906kg). A crucible fragment came from a fill of the south bailey ditch (569, GBS Group 53).

XRF analysis

by Catherine Mortimer

Copper alloy spillage (or an object, SF1067, not illustrated) from layer 80208 which formed part of the south bailey rampart (G8/19, Period 3.1) proved to be a leaded bronze. Fired clay from pit 80004 (G8/21, Period 3.2) gave relatively strong signals of copper, lead and tin.

Ferrous and non-ferrous scrap

by Quita Mould (ferrous), Alison Goodall (copper alloy) and Elizabeth Shepherd Popescu (Golden Ball Street)

A small piece of iron sheet from the south bailey rampart had radio-opaque specks present in the encrustation indicative of close proximity to metalworking (SF5442, not illustrated, layer 11060, G1/17, Period 3.1). Two similar fragments were the only other items of ironwork which may be associated with metalworking. Five fragments of narrow copper alloy strip came from slot 10763 (G1/144, Open Area 27, not illustrated). A small group of leadworking and ferrous waste (x 3) came from fills of the ?Fee ditch at the Golden Ball Street site.

Discussion and conclusions

by Elizabeth Shepherd Popescu

There are no direct Norfolk parallels for urban castle-related metalworking assemblages in the early part of the 12th century, as Norwich was the only royal castle in Norfolk and Suffolk until the construction of Orford a century after Norwich Castle's original construction. At Thetford, excavations associated with activity at the 12th-century Red Castle produced only a small quantity of iron slag and hearth lining (Andrews 1995, 98). Although a wide range of ferrous and non-ferrous objects was recovered during excavations at Castle Acre Castle, the limited evidence for on-site metalworking appears to have comprised only lead casting waste and offcuts (A.R. Goodall 1982b, 240, fig.45), some of which may relate to the robbing of roofing materials (Coad and Streeten 1982, 195).

At Castle Mall, there was relatively little archaeological evidence for metalworking during the 12th century, which may indicate that the castle's metalworkers (including farriers *etc.*) were located elsewhere within the two large baileys. Some of the material recovered (specifically from the south bailey rampart and associated road) was probably residual, although debris from ditch fills and pits may represent the miscellany of debris from contemporary craft/'industrial' activity. The use of

slag as road metalling is common from the Roman period onwards, as it provided a compact and resilient surface. Medieval parallels can be found at Gloucester, London and Worcester (Schofield and Vince 1994, 104).

In Period 3.2 small-scale metalworking may have been undertaken in the vicinity of newly established properties along Berstrete/Timberhill where a number of pits, probably lying to the rear of buildings, contained evidence for both ferrous and non-ferrous working.

Stoneworking

The discovery of a small group of both worked and unworked Caen stone and flint fragments alongside other building debris within fills of Ditch 6 within the ?inner bailey may indicate stoneworking in the immediate vicinity (see Chapter 6.II, Period 3.1). Patches of mortar were also found in the surrounding area. This evidence probably relates to the construction of masonry elements of the castle such as the adjacent well superstructure and gatehouse (see Heywood above).

Textile Working

by Julia Huddle

A hemispherical bone spindle whorl (SF115, not illustrated) came from a fill of the ?Fee ditch (Ditch 3, Period 3.2) at the Golden Ball Street site.

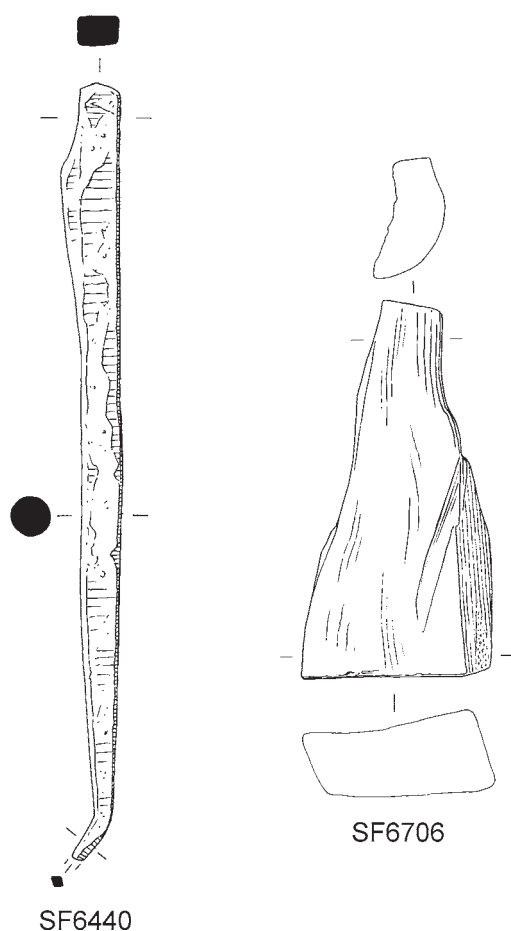


Figure 6.45 Iron leatherworking tool (SF6440), Scale 1:2. Boneworking waste (SF6706), Scale 1:1

Leatherworking

Iron tool

by Quita Mould

(Fig.6.45)

An iron tool, recovered from a pit in the south bailey (SF6440) has a curved tip and is a modelling tool used to decorate leather, the background being pressed down with the tool when the leather is damp to leave the design in relief.

SF6440 Iron tool. Long round-sectioned stem tapering to a curved point from a slight shoulder remains of a rectangular-sectioned tang present. L: 207mm, max W: 15mm.

12990, fill of cess pit 12991, Period 3.2, GT8/4

Antlerworking

by Julia Huddle

(Fig.6.45)

Only three pieces of antlerworking waste (out of a total of 75 examples) came from deposits assigned to Period 3. One was recovered from early fills of the south bailey ditch (Ditch 10, SF7358, not illustrated, ditch cut 12756, Period 3.2) and is an incomplete sawn segment of antler tine. The other example (SF6706) came from fills of the north-east bailey (Castle Meadow) ditch (Ditch 9). As discussed elsewhere (see Chapters 4.III) such waste is generally thought to result from comb manufacture during the Late Saxon period, and there is a strong possibility that some of the antlerworking debris recovered from later periods may be residual.

SF6706 Sawn antler. Section of antler sawn at the junction of beam and tine towards the crown. The crown has been sawn and split axially. Saw trace measures 2mm.

92532, fill of ditch 92549, Period 3.1, G9/30

Bone- and Hornworking

by Julia Huddle

A single piece of boneworking waste was recovered from Period 3.1 (SF5831, not illustrated, context 70047) and is a sawn off articular end of a red deer proximal metatarsal. A single bone object from the site was identified as being made from a caprine or a roe deer metatarsal shaft (SF6218, see Chapter 4.III) and, although it is possible that some of the bone objects that have not been identified to species may be deer bones, it is interesting to note the apparent lack of use of post-cranial deer bones as a raw material. Only five horncores were recovered from Period 3 deposits (cattle x3; sheep/goat x2).

Querns

by David Buckley

Two fragments of lavastone querns were recovered from Period 3 deposits, including one example with broken faces and adhering mortar suggesting possible reuse as building material (SF6641, not illustrated). This came from the fills of a ditch within the inner bailey (Ditch 6, Period 3.1) which were notable for the inclusion of building material waste (see above) and may suggest building activity in the area. The second fragment (SF7444, not illustrated) came from fills of the south bailey ditch (Ditch 10, Period 3.2).

Diversions

Games and Pastimes

Bone die

by Julia Huddle

(Fig.6.46)

A bone die was retrieved from fills of the ?Fee ditch. Previous examples of asymmetrical dice with similar numbering in Norwich come from medieval contexts on Botolph Street and Pottergate (Margeson 1993, 217, fig. 164, nos 1769–70) and a 13th-century deposit at Greyfriars (Huddle, in Emery 2007). Castle Mall SF5506 is from a 12th-century context which is rather early. MacGregor suggests this numbering system was used within the medieval period from the 13th century onwards, as opposed to the convention where the values are arranged so that the opposite faces add up to seven (MacGregor 1985, 131–2). As is often the case with these asymmetric dice, the Castle Mall die is ‘loaded’: that is to say that the higher numbers appear on the broader faces which are more easily thrown.

SF5506 Die. Asymmetric bone die, each unit is represented by a ring-and-dot, arranged with units one opposite two, three opposite four and five opposite six.
11125, fill of ?Fee ditch 11036, Period 3.2, G1/57

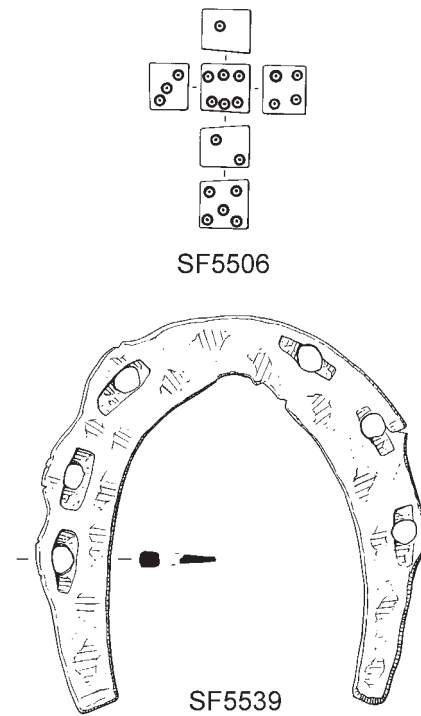


Figure 6.46 Bone die (SF5506), Scale 1:1. Iron horseshoe (SF5539), Scale 1:2

Taxa	Hand collected	SRS	BS	Total
Cattle (<i>Bos taurus</i>)	71.5	4	6	81.5
Sheep/goat (<i>Ovis/Capra</i>)	42.5	6	13.5	62
<i>sheep (Ovis aries)</i>	(12)	(1)	(4)	(17)
<i>goat (Capra hircus)</i>	(+)	-	-	(+)
Pig (<i>Sus domesticus</i>)	34.5	7	4.5	46
Equid (<i>Equus</i> sp.)	6	1	-	7
Dog (<i>Canis familiaris</i>)	7.5	1	-	8.5
Cat (<i>Felis catus</i>)	3	0.5	1	4.5
Red deer (<i>Cervus elaphus</i>)	+	-	-	+
Badger (<i>Meles meles</i>)	-	-	1	1
Rat (<i>Rattus</i> sp.)	-	1	-	1
House mouse (<i>Mus musculus</i>)	-	-	1	1
Domestic fowl (<i>Gallus gallus</i>)	6	1	7	14
Goose (<i>Anser anser</i>)	4	-	-	4
Duck (<i>Anas</i> sp.)	1	-	-	1
Teal/Garganey (<i>Anas crecca/querquedula</i>)	-	-	1	1
Small corvid	-	1	-	1
Passeriform	1	-	-	1
Total	177	22.5	35	234.5

Sheep/Goat also includes the specimens identified to species. Cases where only ‘non-countable’ bones were present are denoted by a ‘+’. Pig metapodii and ruminant half distal metapodii have been divided by two, while carnivore and lagomorph metapodii have been divided by four. Due to the difficulty in distinguishing between upper and lower incisors in equids and upper and lower canines in carnivores, all have been recorded and then divided by two.

Table 6.12 Numbers of mammal, bird and amphibian bones and teeth in Period 3 by collection category (NISP)

Horse Equipment

by Quita Mould
(Fig.6.46)

Iron horseshoes and horseshoe nails

The remains of seven horseshoes were recovered from Period 3 deposits, including two near complete examples (SF5339 and SF5803, latter not illustrated). Five of the horseshoes from Period 3.1 were of Clark's type 2A with countersunk round nail holes and a wavy edge. The example from Period 3.2 was too small a fragment to classify.

A total of eleven fiddlekey horseshoe nails were found, eight of which came from Period 3.2. Most of the latter came from fills of the Castle Fee ditch and one remained within its horseshoe.

SF5339 Horseshoe complete with wavy edge, narrow web with straight-ended heel, three countersunk holes with round nail holes within in each branch, type 2A. L: 100mm, W: 97mm, Web W: 21mm
20021, fill of ditch 20041, Period 3.1, G2/3

IV. ZOOLOGICAL, BOTANICAL AND MICROMORPHOLOGICAL EVIDENCE

Mammal and Bird Bone

by Umberto Albarella, Mark Beech and Jacqui Mulville

Assemblage Summary

A total assemblage of 177 mammal, bird and amphibian bones and teeth (NISP) was hand collected from Period 3 deposits at the Castle Mall site, with an additional 22.5 bones from Site Riddled Samples (SRS) and 35 from Bulk Samples (BS). A further 18 bones and teeth (NISP) were identified at the Golden Ball Street site. The range of taxa recorded at Castle Mall is indicated in Table 6.12. Full details of the mammal and avian bone assemblages from both sites are given in Part III.

This was the only period from which no partial animal skeletons were recovered. Of note amongst the small assemblage was a badger mandible which was recovered from a post-hole possibly forming part of a postern gate (70047, post-hole 70048, Group 7/9, Period 3.1; Part III, Plate 40). This may attest to the occasional hunting of this animal, probably for its fur.

Fish Bone

by Alison Locker

A slightly larger sample of fish bone was recovered from Period 3 than the preceding period (see Table 6.13) and at least some appears to be associated with city waste rather than directly with the castle. (Material from fills of the ?Castle Fee ditch is indicated in Part III, Table 94.) A similar number and range of species was identified (26) and the majority of the fish were from Period 3.2. Herring is numerically dominant again in the Bulk Sieved sample (excluding rays and other elasmobranchs) at 67.4%. Cod and large gadids are second at 24.4% with plaice, flounder and indeterminate small flatfishes at 6.0%. This is an increase for the latter group, more numerous

than eel at 4.3%; whiting is 2.8% and haddock 1.5%. Mackerel has decreased to 1%. Other species are below 1% including sea bream, scad and gurnard, familiar fish but in low numbers in all periods. Ling was also present in this phase, in the hand collected material. The rise in small flatfishes (plaice and flounder) could reflect the consumption of traditionally cheap fish recovered from shoreline trapping by townspeople, contrasting with the earlier castle debris of Period 2.

The quantities of herring and the gadids as food portions showed herring at 23% and a decrease in cod from the preceding period to 71%. Haddock is 4% and whiting 2%, while ling scarcely registers. The gadids are the prime fish eaten in quantity and though cod is still by far the most important, haddock and whiting show some increase as does herring from the preceding period.

Only three estimates of cod total length from this sample; 75, 100 and 105cm, within earlier ranges but too few for further comment. As a NISP percentage of all bony fish, herring and the gadids are 85.7% of the bulk sieved sample.

Plant Macrofossils, Molluscs and Invertebrates

by Peter Murphy, with Mark Robinson

As in the previous period, no high status deposits were evident amongst the Period 3 botanical assemblage. Contexts analysed included fills of the north-east and south bailey ditches (Ditches 9 and 10), as well as pitting along the road frontage to the south-west of the castle.

Period 3.1

Five samples from fills of a recut of the north-east bailey ditch (Ditch 9, Phase 3, G9/7, 9/11 and 9/12) included relatively large and interpretable assemblages of macrofossils and were selected for analysis (Table 6.14 on CD, BS1800, 1823, 1805 and 1809). They were dominated by grains of barley (*Hordeum* sp), most of which had germinated prior to charring. Germinated oat (*Avena*) grains were also present and, in one sample, a few germinated grains of rye (*Secale*). Loose 'sprouts' (plumule and primary root fragments) from disintegrated sprouted grains were common in BS1800. Other charred plant macrofossils were sparse, comprising small numbers of 'weed' seeds, scraps of hazel nutshell (*Corylus avellana*), ericaceous stem fragments, and macrofossils of a few wetland plants including nutlets of *Cladium mariscus* (saw-sedge). Uncharred macrofossils comprised durable propagules of elder (*Sambucus nigra*) and henbane (*Hyoscyamus niger*). Shells of land molluscs were principally of open-country taxa, presumably representing a resident fauna in the ditch.

The charred plant material is interpreted as malt, accidentally charred due to inefficient temperature control during drying prior to mashing and brewing. The samples are comparable to many from Periods 1 and 2, though samples of charred malt from these earlier periods were dominated by oats, with a relatively minor component of barley. This evidence is discussed further in Chapter 13.

Period 3.2

Samples from a pit group on the Berstrete/Timberhill frontage in Open Area 27 (Area 1, G1/144, Table 6.14

<i>Taxa</i>	<i>Hand collected</i>	<i>SRS</i>	<i>BS</i>	<i>Total</i>
Elasmobranch	0	0	6	6
Ray	0	0	2	2
Roker	0	0	6	6
Eel	0	0	60	60
Conger eel	0	1	0	1
Herring	0	5	944	949
Salmonid	0	1	2	3
Smelt	0	0	2	2
Pike	0	3	32	35
Roach	0	1	3	4
Cyprinid	0	1	11	12
Cod	22	102	96	220
Large Gadid	16	11	91	118
Small Gadid	0	0	13	13
Haddock	1	10	11	22
Whiting	0	7	32	39
Ling	4	0	0	4
Gurnard	0	0	7	7
Scad	0	0	2	2
Sea Bream	0	1	0	1
Thin Lipped Grey Mullet	0	1	1	2
Mackerel	0	3	11	14
Turbot	0	0	2	2
Plaice	1	2	3	6
Plaice/Flounder	0	16	59	75
Flatfish	0	0	3	3
Total	44	165	1,399	1,608

Only material identified to species and/or family level is indicated. Indeterminate fragments including fins and rays were not quantified, though all potentially identifiable material was recorded.

Table 6.13 Numbers of identified fish bones from Period 3 by collection category (see Part III Tables 81–83)

on CD, BS75, 77 and 102) were dominated by charred barley grains, with comparatively few contaminants. The grains in these samples were not sprouted. The significance of this material is unclear.

Two pits in Open Area 26 (Area 8, G8/21, Table 6.14 on CD, BS766–769) produced samples with a high proportion of mineral-replaced macrofossils. The economic plants identified comprised *Avena* sp (oats), *Pisum sativum* (pea), *Vicia cf sativa* (?cultivated vetch), *Malus sylvestris* (apple), *Prunus spinosa* (sloe), *Rubus fruticosus* (bramble) and *Sambucus nigra* (elder). Phosphatic concretions were common and these showed impressions of testa of *Agrostemma githago* (corn-cockle). Mineral-replaced fruits, seeds and fragments of other cornfield weeds were also present, probably representing contaminants of whole-grain foods.

Other mineral-replaced macrofossils comprised wetland plants, mosses, monocotyledonous stem fragments, indeterminate epidermal fragments, wood, textile and arthropods, which were identified by M. Robinson. He comments that 80011 contained a few undecayed insect fragments in addition to mineral-replaced remains. These included a couple of examples of *Bruchus rufimanus*, the bean beetle. It is often a pest of stored beans, but is unable to spread amongst dried beans because the

eggs are only laid on the young developing pod (Metcalf *et al* 1962, 935–7). The calcium phosphate-replaced invertebrates from fills 80009 and 80011 were typical latrine assemblages with *Thoracochaeta zosteriae* from both samples. The samples were undoubtedly from a latrine pit. It is notable that wild taxa predominate, and ‘exotic’ imported crops (*e.g.* grapes, figs) were absent, which may suggest deposition of faeces by low-status individuals.

A final sample was analysed from a dirty surface (49216, BS1487) surrounding the well shaft at the foot of the bridge. This proved to be moderately cereal rich.

Micromorphology

by Richard MacPhail

Two thin sections from fills of the north-east bailey ditch (Ditch 9) were analysed (MacPhail 1992, AML 73/92). A field interpretation (made in October 1990) suggested that the deposit related to the fill of a wide ditch and had probably been open for a number of years rather than weeks or months. Two undisturbed soil thin section samples were taken from the 0.50m long monolith (143G). These were samples: A) (0.06–0.14m) to examine the upper

chalky dump (92373, Phase 5, G9/13, Period 3.2) and the upper part of the dark silt (92375, Phase 5, G9/13, Period 3.2); and B) (0.18–0.26m) to investigate the basal chalky dump (92346, Phase 4, G9/15, Period 3.2) and the lower part of the dark silt (92375). Samples were air-dried, impregnated with crystic resin and then manufactured into thin sections at Stirling University (Murphy 1986). These were described according to Bullock *et al* (1985) and interpreted using the guidelines of Courty *et al* (1989). A full soil micromorphological description is included as an appendix in MacPhail 1992 along with illustrations of the samples: a brief summary of findings appears below.

Analysis indicated that the ditch, which was apparently cut into dumped chalky deposits, was initially affected by refuse disposal of midden material which was partially water-sorted. Subsequently, the ditch became wet and slowly silted up with silt-size quartz and fine chalky colloids. Mixed with this was probable wind-blown waste from fires and local cereal processing. Often, the ditch may have dried out into a mud which occasionally permitted biological activity to homogenise any sedimentary layering. Relic earthworm burrows have become foci for the downward movement of iron and manganese amorphous organic matter staining. The wet nature of the ditch, however, caused the sediment to continue to be slaked, forming a compact massive (non-structured) deposit, with few pores. It may be assumed that the ditch remained open and was generally undisturbed for a number of years, although silting could have been rapid.

The upper part of the ditch fill is heterogeneous and, as there are no evident signs of dumping and the coarse material inclusions are far too large to be windblown, another mechanism to introduce this material must be sought. Some mixing is undoubtedly from earthworms, although again their burrows often show that they were active in mud, because of the way they are associated with textural features. Post-burial earthworm activity also disrupts textural features, such as crusts. These, the inclusion of coarse material and some of the organic staining, however, may be due to herbivore trampling (Beckman and Smith 1974; Courty *et al* 1991). In addition, some of the pale yellow amorphous staining could relate to a sewage input into the ditch. It is also a possibility that the significant phosphatisation (calcium phosphate), which occurs just beneath the dark silt in the chalky deposits (calcareous regime), relates to the through-drainage of manure/sewage. Unfortunately, not enough is known about the formation of ultra violet light fluorescent (calcium ?) phosphates from human sewage sludge. Cess pits usually produce thick amorphous pale yellowish brown coatings and this kind of material is present in the Norwich sample.

In conclusion, the wetness of the ditch allowed calcareous silts, rich in charred organic matter, to accumulate. Sedimentation was initiated by the dumping and partial water-sorting of a thin midden deposit. Silting under wet conditions ensued over a number of years, during which time local anthropogenic activities introduced locally windblown fine charred organic matter. Some sewage sludge may also have been introduced into the ditch and the upper part of the deposit may have been trampled by herbivores, further contaminating the sediment with liquid waste. The top of the deposit was earthworm

worked at times, even though the ditch fill was still sometimes wet. Probable initial shallow burial of the dark silt also permitted short-lived earthworm and rooting activity to penetrate the upper part of the fill.

V. DISCUSSION

The Norman Castle

(Figs 6.47–6.50, Plates 6.35–6.36)

The building or re-building of English castles in stone began within a generation of the Norman Conquest (Brown 1966/9, 87). The construction of Norwich Castle's magnificent new donjon can be viewed within the context of 'endowing the city with the monumental trappings of a major governmental centre' (Heslop 1994, 7), reflecting the administrative, mercantile and ecclesiastical status that has been outlined in Chapter 6.1. As at Norwich, many existing Norman mottes were later enlarged, in many cases to provide additional support for a masonry donjon or additional accommodation (examples are known at Hastings, Durham, Aldingham, Rayleigh, Goltho and Chalgrave, Bedfordshire; Kenyon 1990, 11). Such works could only take place once the political situation was relatively settled and more time was available for construction work (see Chapter 12, 'The Stone Castle'). The necessary infrastructure was complex, including the availability of a wide range of workmen and the importation of raw materials. The stone for both Norwich's cathedral and the castle was quarried in Normandy (Caen stone) and Northamptonshire (Barnack) and was brought into the city via the River Wensum along a purpose-built canal at Pulls Ferry (Ayers 1990, 223–224).

Construction of the new masonry elements of the castle entailed far more than just the extension of the motte and construction of the mound. New evidence from the Castle Mall and Golden Ball Street excavations relates to the stone bridge and a series of gates, as well as a defended well at the foot of the new bridge (the existence of which was previously unknown). The ditchwork itself was reshaped and enlarged (Plates 6.35–6.36). A new south bailey ditch was inserted, the earlier, smaller ditch further south (demarcating the limit of the Fee boundary) perhaps being recut to form a hornwork around the south gate. The north-east bailey's outermost ditch was also recut, its infilling providing evidence for the presence of livestock, a brewery and possibly a lime kiln in the vicinity.

Illustrated discussion of the wider context of the construction of the great new tower and its associated defences is given in Chapter 12.

The Enlarged Motte

(Figs 6.5 and 6.49; Plates 6.3–6.4, 6.7)

The proliferation of large mottes in East Anglia has been noted (Pounds 1990, 19 and fig. 1.6) and the phenomenon is explored further in Chapter 12, 'The Motte'. Motte construction would have required little skilled labour, although their inner complexities are often belied by the present external appearance as recent work at Norwich demonstrates (Wallis in prep.).

Current understanding of the complexities of motte construction and their relationship to superstructures has recently been summarised (King 1991, 47 ff). The stratification apparent in the motte depicted in the Bayeux tapestry (Plate 6.3) is reflected in the known stratification of the Norwich motte. Photographs taken during construction of the Museum rotunda in the late 1960s (Plate 6.4) show steep tip lines at $c.45^\circ$ within the mound construction, relating to the infilling of the central part of the extended mound. Horizontal deposits forming the south-eastern part of the Norwich mound were recorded in 1910–11 (see below; Tench 1910), contrasting with the angled deposits recorded to the west. These layers consist of loam, marl, gravel and chalk, the latter lying towards the top of the sequence in both cases suggesting upcast from the base of the surrounding ditch which was dug into the natural chalk. In both cases, these excavations indicate that this part of the motte overlay earlier activity (see Chapter 14 and below). Similarly layered mottes have been recorded at Launceston (Saunders 1964, 65–66), York (Addyman and Priestley 1977, 124), Castle Hill, Derbyshire and Great Driffield, Yorkshire (Kenyon 1990, 11). At Southampton, the motte was constructed of layers of gravel and clay-stiffened gravel (Aberg 1975, 176–180).

The apparent tipping of motte makeup inwards towards the centre of mounds is known at many castle sites, relating to the initial construction of a ring bank (thrown up from the encircling ditch), which was subsequently infilled and then heightened (Higham and Barker 1992, 154): a chalk ‘bank’ appears to have been utilised at Norwich to demarcate and retain the extended new mound (Wallis in prep.; see Fig. 6.48). In some instances, motte sides may have needed consolidation to maintain a steep slope and some were clad with clay, wooden shuttering or stone. The angle of slope of the Norwich motte, at around 40° , would have been difficult to maintain as it was dug through unconsolidated material, although many mottes were apparently unconsolidated, resulting from the heaping up of earth from their surrounding ditches (Pounds 1990, 17).

Rye suggested that the construction of Norwich’s masonry donjon would have been considerably later than the construction of the motte as its ‘enormous weight would have necessarily caused extensive settlements’ (Rye 1921, 8). Indeed, it might be anticipated that a substantial stone structure would have been too heavy for a man-made motte (Kenyon 1990, 39). Although new stone towers were built on such mottes elsewhere this was generally contingent on the raw materials used and/or the use of a solid natural outcrop (e.g. Okehampton; Higham 1977, 29). The layered Norwich mound consists of sand, hoggin and chalk with lesser quantities of gravel (Wallis in prep.). The decision to build such a massive structure upon it ‘smacks of a devil-may-care hubris which seems to have been typical of King William Rufus’ (Heslop 1994, 8) and the early cracking of the building’s north-east corner bears testimony to its early failure. A dramatic example of similar failure occurred at Athlone castle in Co. Westmeath in the early 13th century when the stone tower collapsed killing nine men (Hillaby 1985, 220).

Mottes were probably constructed with forced labour and no evidence for payment is known (Kenyon 1990, 18). It has previously been estimated that the construction of Norwich Castle’s extended motte would have

taken more than a staggering 24,000 working days (over 65 working years; Pounds 1990, 19, fig. 1.6) which, for say two hundred men would have meant one hundred and twenty days. New evidence drawn from both the Castle Mall and Castle Mound excavations indicates a reworking of this figure in relation to the enlargement of the initial motte to create a second motte in $c.17,397$ man days ($c.87$ days for a team of 200 men), with a total of $c.22,421$ man days to construct both mottes. The full calculations used to achieve these figures are detailed in Chapter 12, ‘Motte Construction’, where caveats are noted.

Construction of the motte would have required labour not only to provide the aggregate, but also to move it to the final location. This may have been by hand-barrow or basket. Although a motte already existed at Norwich, it was considerably lower with a smaller surface area (Fig. 6.49). The new motte had an original summit diameter of approximately 0.9ha ($c.2.3$ acres), making it the largest motte in terms of surface area in England (King 1991, 43). It was extended to the north and east from its earlier form, the previous motte lying beneath the existing donjon. The eastern slope of the motte is less steep and overlay a turfline 11ft (3.35m) below (Tench 1910). No evidence for a timber palisade or early wall around the perimeter of the Norwich motte has been recorded (the first wall around its summit being documented in 1268–9⁷; see Chapter 7.1).

The discrepancy between recently recorded levels and those recorded previously (see Chapter 6.1) suggests that the upper metre or so of the surviving mound may in fact be of later date. The measurements imply in the region of $c.7.5$ m (24.55ft) of made ground forming the artificial part of the mound (this is reduced to $c.6.3$ m if the recent calculations of the top of the original motte given below are considered). This is somewhat less than the estimate of $c.10$ m (33ft) made by Harmer given in 1888 (Tingey 1901, 151, fn.1). Recent archaeological work at the top of the motte has suggested that its original surface lies about 2m below its present level (*i.e.* at between 30.00 and 30.95m OD; Penn 1999a). The evidence suggests that the southern edge of the top of the motte would have stood over 13.5m ($c.41$ ft) above the base of the motte ditch. Tench’s work behind the Shirehall Chambers to the east indicates that the base of the motte ditch here lay at $c.11.27$ m OD (Tench 1910), implying a total height from the base of the ditch to the top of motte of $c.19.75$ m. Various measurements for the height of the motte have been published, ranging from 40ft ($c.12$ m; Green 1966, 1); to 33ft ($c.10$ m; Pevsner 1988, 256; after Harmer). These discrepancies may be in part accounted for by the natural drop down to the west, east and north. To the north-east, for example, the top of the motte would have lain up to $c.17$ m above the sloping surface of the north-east bailey (at $c.14$ m OD; Ayers 1985, fig. 18). To the south, the contemporary surface of the courtyard at the base of the bridge lay at 25.40m OD, indicating a total of $c.5.5$ m of made ground in the opposing southern part of the motte (see Fig. 6.49).

The surrounding ditch was presumably enlarged at the same time as the motte, providing aggregate for the new works. Archaeological evidence indicates that the base of the new ditch lies more than 4m below the present day footpath which runs beneath the bridge (the base of the bridge footing lies at $c.17.35$ m OD). The level at the base



Figure 6.47 Reconstruction of the Norman (12th century) castle, viewed from the south-west. The new masonry keep lies on its enlarged motte, with revised ditchwork and additional masonry structures added to the defences of the south bailey. The western stretch of the Castle Fee boundary may by this date have been demarcated by boundary posts or a palisade. The Norman French Borough lies in the foreground, on the western side of the Great Cockey stream.

recorded by Tench (noted above) appears to be about 6m below the level of the base of the bridge footing and the reasons for the large discrepancy in recorded levels are unclear. The surviving southern limit of the ditch to the south of the motte lies some distance to the north of its original line, reflecting centuries of infilling. To the west, north and later the east, the ditch was encroached upon in later centuries and is now supplanted by a modern road.

The King's Bridge

(Figs 6.8 and 6.9; Plates 6.6, 6.9–6.11 and 6.35–36)

Although access to the earlier motte associated with the timber tower may have been made via a flying bridge (see Chapter 5), such features may have disappeared by the time at which great stone towers began to be constructed (King 1991, 57). Earlier bridges in some castles, including Norwich, were replaced in stone. A gate on the bridge may have begun as life as a timber structure (similar to that at Lewes).

Norwich Castle's stone bridge — the 'King's Bridge' — was first documented when it was repaired in 1172–3, invasion from France being threatened (Tillyard, Chapter 6.I). Despite the pessimism of the antiquarians, archaeological excavation has proved that the c.40m long Norman bridge remains substantially intact beneath refacing. Evidence comes from a series of trial excavations forming part of the Castle Mall project, a small trial hole undertaken by the City Council in 1968 and, on the top of the bridge, by the NAU⁸ in 1992 (Site 872N; Shelley 1992 and 1996) and 1993 (Site 874N; Forrest 1993). The bridge, originally entirely faced in Caen stone, consisted of a southern abutment, central arch and northern abutment. The arch was spanned by timbers set into puttlog holes, originally carrying a timber surface. The recorded puttlogs suggest that the timbers were spaced at intervals of 2.3m (7ft). The northern abutment contains an infilled void, probably a counterweight pit for a drawbridge. The bridge fabric was constructed in shuttered lifts above banded footings, with each abutment forming a 'box' that was gradually infilled with layers of sand, interleaved with ash and mortar. Excavations within the southern part of the top of the bridge revealed a gravelled medieval road surface with overlying trample (Plate 6.10). Woodward's statement in the 19th century that the whole of the interior section of the bridge had been removed (see Chapter 6.I) would seem to relate to the central section of the bridge.

Excavations adjacent to the bridge footings at the Castle Mall site indicate that it was founded over 4m below the present day base of the motte ditch (Fig.6.8). A series of nine chamfered plinths was recorded, these and the exposed original bridge facing being dressed in Caen stone (Plate 6.11).

In its original form, the underside of the arch would have stood over 11m above the base of the contemporary motte ditch (Fig.6.8). In 1796, the figure given for the height of the arch above the ditch was 23ft 7½ inches (c.7.16m) although 'of course it was formerly much more, from the fosse having been at various times the receptacle for filth and rubbish' (Wilkins 1796, 149). The arch, which 'is exceeded by very few in England' (Browne 1785, 14), has a span of about 41ft (12.5m) diameter (Rye 1926, 130; Wilkins has 40ft 3 inches 1796, 148) and the bridge was surmounted by stone parapets. Antiquarian observations and illustrations attest to the

presence of a stone gate on the bridge, although this may have been a 13th-century addition (Plates 6.2 and 6.6.A; see Chapter 7.V). The bridge was subsequently refaced with flint and brick, with limestone dressings (Plate 6.6 shows work in progress in the 1820s).

The only other surviving medieval bridge in Norwich is Bishop Bridge, which crosses the River Wensum to the east of the cathedral. This fortified bridge, with limestone ashlar dressings, is documented from the mid 13th century (Jervoise 1932, 121–2).

Gates Associated with the Bridge

(Plates 6.2 and 6.6)

Substantial alterations to the castle bridge were made in the 13th century, perhaps linked to the enlargement of the barbican defences, with the addition of gatehouses at its top and centre. The upper end of the bridge may once have been defended by a Norman gate, of which no trace survives. Kirkpatrick, writing in the early 18th century, noted that the bridge was 'enclosed with a high wall on each side and on the midst of it was the gate vaulted over and with a lofty and strong tower upon it' (Kirkpatrick 1845, 241). The ruins of this second gate, depicted by Kirkpatrick in the 1720s (Plate 6.B), Corbridge in c.1727 and Buck in c.1738 (Plate 6.2), were 'taken away when the bridge was repaired' (Browne 1785, 14). The gate is shown as having had interior arcading. The fact that this arcading was 'pointed' (Plate 6.2) has been taken to suggest that it was later than the Norman period (Beecheno 1888, 25; see further discussion in Chapter 7.V).

A third gate may have lain at the base of the bridge, subsequently replaced by Soane's two small surviving gatehouses in 1811 (see Chapter 11). Limited archaeological evidence for the presence of such a gate was recorded at Castle Mall, in the form of masonry encountered during piling (Fig.6.6). A fourth gatehouse may not have formed part of the bridgework, lying further to the south within a courtyard on the northern edge of the inner (later barbican) ditch (see below).

Inner Bailey

A second bridge ?

No remains of a bridge across the inner ditch (Ditch 4; later the barbican, Ditch 13) were located during the recent excavations, although, at the anticipated position of the southern bridge landing was a series of pits containing evidence for redeposited 'floor' remnants such as compacted chalk and pebbles. These could have served as post-packing for large post settings, or were perhaps remnants of road surfacing. Pottery suggested a late 11th to early 12th century date (Period 3.1).

The width of the postulated ditch at this date is unknown. The bridge over the ditch, had it existed, may have been inserted or renewed at the same time as the other masonry elements were added to the castle. As noted in Chapter 6.I the antiquarian observations purporting to relate to the presence of a masonry bridge may relate to the recorded fragments of gatehouse (below). The presence of at least a timber bridge seems probable, although there is no archaeological evidence for it (for summaries of medieval castle and other timber bridges see Rigold 1973, 1975 and 1976; plus additions to the corpus given in Kenyon 1990, 83ff).

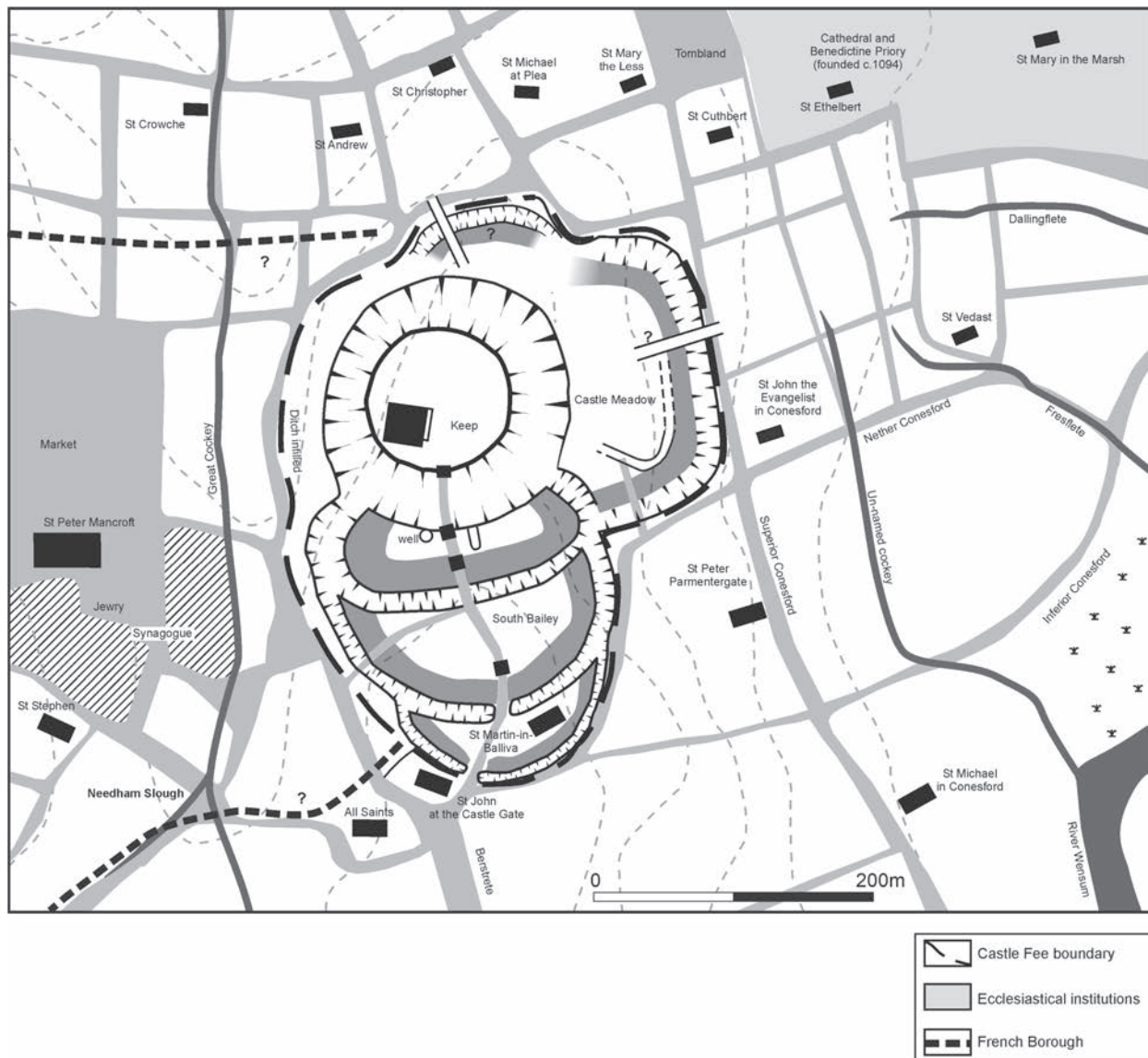


Figure 6.48 The development of the Norman castle within its urban setting. Scale 1:1250

Courtyard

(Figs 6.4, 6.12, 6.30 and 6.32)

Substantial changes took place within the small courtyard at the foot of Norwich's castle bridge at this time. An earlier ditch to the west (Ditch 5, Period 2.2) may have been infilled with its own rampart. The area was then developed with the insertion of masonry gatehouses and a well. An earlier ditch to the east of the castle approach road, also within the inner bailey, may have been recut into a substantial feature with an estimated original width of *c.* 7m and depth of between 3 and nearly 5m (Ditch 6). An associated bank may have lain to the east, given the proximity of the castle approach to the west. The area enclosed in this eastern part would have measured about 12m east-to-west by 15m north-to-south.

Early fills of the courtyard ditch contained evidence for stoneworking in the vicinity. Thick fills containing burnt building material were deposited into the ditch, perhaps later in the 12th century and the ditch may eventually have become overgrown with vegetation. It is perhaps suspicious that its remnants appear to have been left open until the late medieval period (Period 5.1), when

fills again included substantial amounts of building waste including mortar, flints and limestone fragments, perhaps derived from robbing of the upper part of the adjacent well shaft (see further discussion in Chapter 8).

The issue of access between the two parts of the inner bailey is problematic, as the recut ditch would appear to have cut off access into the eastern section (see earlier discussion in Chapter 5.V). There is also no evidence to suggest an access point between this area and the north-east bailey (see Fig.6.48). The requirement for additional defence on this side of the inner bailey is unclear, given that the area was already defended by the ?rampart and ditch of the inner bailey, as well as the defences of the north-east bailey further east. It is possible that the intention was to provide strong defences around the new well in the western half of the inner bailey. This explanation, however, is rather weak and no additional defences appear to have been provided in the admittedly limited space to the west of the well. Further comments on defended wells are given below.

Gatehouse

(Figs 6.9–6.10; Plates 6.12–6.17)

Most surviving castle gates are of the twin-towered type attributable to the 13th to 14th centuries, although earlier examples are known, often consisting of a single mural tower pierced by an entrance passage (Brown 1984, 235). The earliest known gatetower survives at Exeter and was constructed in 1068 (Brown 1977, 63 and plate 24; Blaylock and Higham 1990, 37–39). Square late 11th- to 12th-century examples exist at Castle Acre, Norfolk, Lincoln Castle and Richard's Castle, Herefordshire (Kenyon 1990, 61). There are numerous examples of the reworking of castle gates from timber to stone, many of the latter being reworked subsequently.

At Norwich, the Castle Mall excavations revealed twelve large fragments of a gatehouse of probable 12th-century construction which collapsed or were demolished into a quarry on the northern side of the barbican ditch in the early 18th century (Figs 6.9–6.10; see Chapter 10). A timber forerunner of this gate (Period 2.2, Chapter 5), may have lain slightly to the east of its masonry replacement. The earlier gate formed the entrance to an enclosure formed by two ditches (Ditches 5 and 6, above), the westernmost of which had been infilled in the early 12th century (see Period 2.2, Chapter 5). This infilling may have been related to a realignment of the southern castle approach, which had previously employed two dog-leg turns, although such a realignment would have entailed alterations to the bank (*cf.* Figs 5.18 and 6.4).

The surviving fragments of flint and mortar masonry, constructed in lifts, indicate a gate opening of *c.*2.6m wide, with walls *c.*2m thick, making it of comparable dimensions to the outer arch of the gate of the country house and later donjon at Castle Acre (Coad and Streeten 1982, 164 and figs 9 and 14). The Norwich fragments suggest walls about 6.30m long north-to-south, standing to *c.*8.40m high. Part of a buttress survived, within which three hinge points were set in lead, two of which retained their pins and limestone facings. A few other areas of limestone (Caen) facing including quoins survived, although most had been robbed. A single piece of Barnack was present. Tooling marks indicate a date in the range *c.*1070–1150. No evidence to indicate the use of a portcullis was found, nor any suggestion of an attached guardhouse. The gatehouse may have been single or double-storied. The Exeter gate is two storied and stands to a height of *c.*15m (Blaylock and Higham 1990, fig.9).

At Norwich, the gate formed the entrance to the courtyard or enclosure described above at the foot of the bridge, within which a substantial well was placed. It may have lain at the rear of a rampart, through which integral retaining walls may have run: the interpretation illustrated in Fig.6.4 is endorsed by Kirkpatrick's observation that the ends of the walls of the bridge originally continued through the rampart (1845, 244). The remnants correspond relatively well to those recorded in Buck's engraving of 1738 (Plate 6.2). Here two 'pillars' are depicted, parallel to each other and offset to the east of the base of the bridge. These may have lain on the northern or southern side of the barbican ditch (the drawing's perspective and possible use of artistic licence making this uncertain; interpretation as the remains of the medieval Shirehall has also been postulated). The position of the masonry, part of which directly underlay a Victorian

road, tallies with antiquarian observations in the vicinity (Chapter 6.I).

Defended well

(Figs 6.12–6.16; Plates 6.18–6.22)

One of the most significant findings of the Castle Mall excavation was the discovery of a substantial well just to the west of the foot of the castle bridge, providing a supplementary source of water to the other well within the donjon itself. Castles with wells within the great tower and in a bailey are common: 'this not only made for more convenient domestic arrangements, but it was also a wise military precaution, for if a besieging force took the bailey the garrison in the keep would have access to an all-important source of water' (Kenyon 1990, 157). The majority of castles where the water supply is known were provided with wells; of the castles known to have had wells, some 24% were provided with two or more (Ruckley 1990, 23). A survey of the position of known castle wells suggests that most (over 80% of a total of 249) were within the inner defences (*op.cit.*, 23). Of those not placed on mottes 90 (36%) were within an inner ward not enclosed within a curtain wall tower and 22 (9%) were within an outer ward, not enclosed within a curtain wall tower (*op.cit.*, 24, fig.1). The Norwich example is immediately reminiscent of the barbican well at Launceston castle (Saunders 1977, 130, fig.48).

Consideration of local topography, geology and climate has recently been stressed as a major factor in the siting of castles (Ruckley 1990, 14–16). Climatic changes between the 13th and 17th centuries must also be considered in relation to, for example, the water table. The location of any well was obviously dependent on the local geology and water supply. The layout of baileys with their ancillary buildings was not standardised in relation to the position of the well (Ruckley 1990, 23). Fluctuations in the size of the garrison could be enormous and large quantities of water would have been required on occasion (see below). Water would have been essential for cooking, watering horses and fire prevention.

The sinking of a deep well was a costly task and it is perhaps curious that no mention either of the construction or repairs to the well(s) is made in the documentary record for Norwich Castle. Building accounts from Rochester castle in Kent show 'small but frequent expenditures on repairs to the well and on renewing the bucket and rope' (Pounds 1990, 191). The only reference to rope at Norwich was made in 1172–3, with no direct connection with a well suggested. On occasion, water might be piped to other parts of the castle. At Launceston, a well was constructed within its own enclosed yard (Kenyon 1990, 160), although the water supply was clearly designed to serve the donjon, with the source of water for the bailey remaining to be found. It would appear probable that the Norwich well would have been constructed at the same time as the new masonry tower. The few sherds of pottery recovered from fills of the construction cut are broadly of 11th-century date and may be residual. Above the infilled construction cut were deposits and features of 12th-century date (Period 3.2). The superstructure of the well-head was apparently robbed in the late medieval/transitional period (Period 5.1, Chapter 8.II), with a large and important sequence of refuse dumps and craft waste deposited into the open shaft in the latter part of the 15th century (Period 5.2, Chapter 9). Although long forgotten,

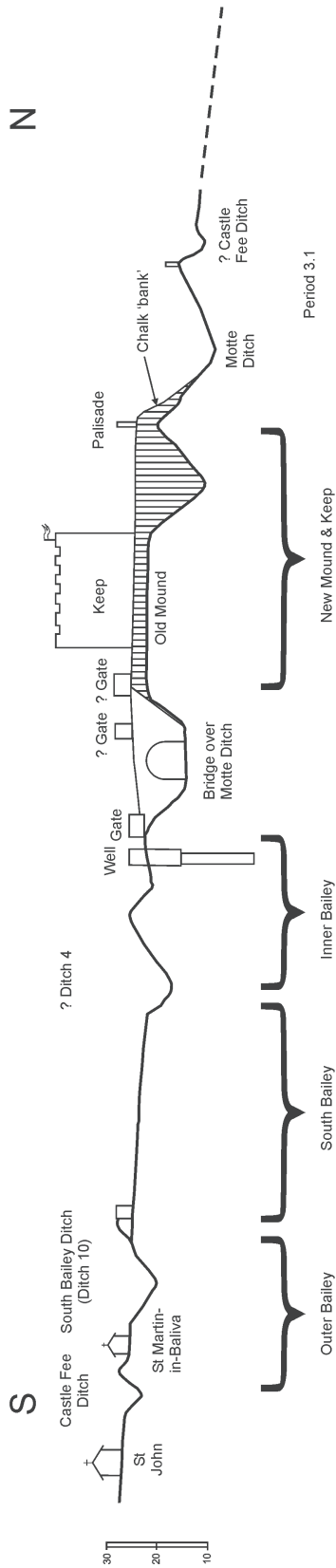
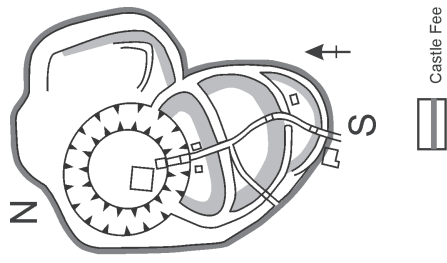


Figure 6.49 Schematic cross-section of the motte and south bailey defences. Not to scale

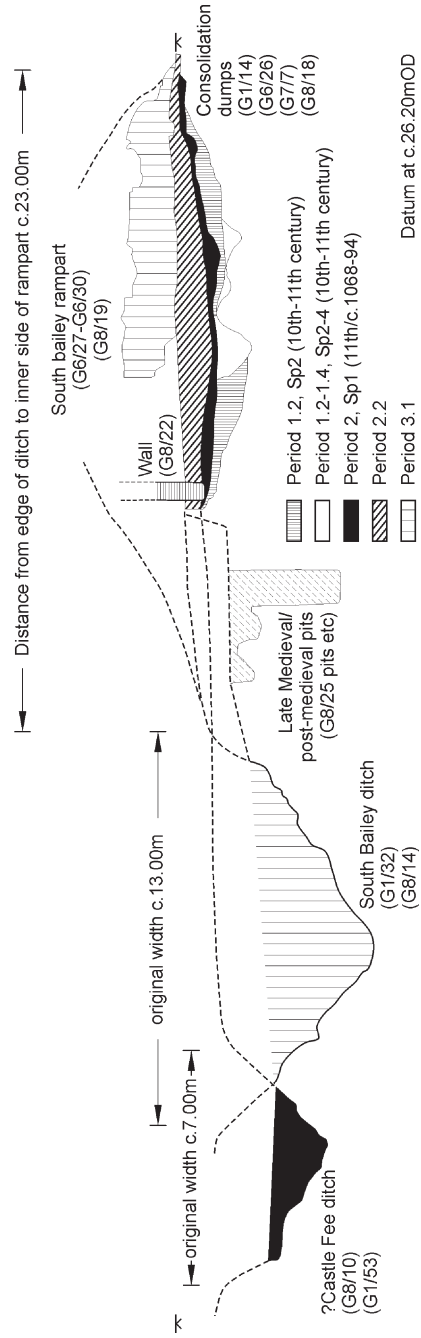


Figure 6.50 Detailed schematic section across the south bailey defences in Areas 1, 6 & 8. Not to scale



Plate 6.35 A model of the defences as they may have appeared in the 12th to mid 13th centuries (by model-maker James Main). Although outdated and sadly lacking the surrounding city due to financial constraints, the model provides a vivid indication of the sheer scale of Norwich castle's earthworks.

its presence and related subsidence led to numerous resurfacings in this area of the later Cattle Market and car park.

The well lay within the small inner bailey or courtyard at the foot of the motte bridge, within a large construction cut (Figs 6.12 and 6.15). There was no evidence to indicate that the adjacent gatehouse and well formed an integral structure, although this remains a possibility. At Tote Copse Castle, Aldingbourne, constructional details of well sinking were described using details from the excavated well within the donjon (Brewster and Brewster 1969, 176–7 and fig.21), although a different approach was adopted at Norwich. Here, the sinking of the well entailed the excavation of a large, funnel-shaped construction cut (square in plan), dug northwards so as to remove the outer side of the motte ditch. Within the cut, the lowest lift of the masonry shaft (about 3m high) resting on a timber frame or 'curb' may have been sunk into a pre-excavated shaft in the usual manner of medieval well sinking. A lump of masonry was added to the northern side of the Norwich well lining at the level of the top of the first lift. This may have been in part the disposal of excess building material from the first lift, additionally providing an area of hard-standing for construction of the second and subsequent lifts and perhaps forming the base for shuttering/braces. It may also have provided additional support on the side of the shaft most vulnerable to instability due to the proximity of the motte ditch to the north. The construction cut, the base of which lay at the base of natural sands and gravels, may have been progressively infilled as the shaft rose in height. Once the square shaft (nearly 10m deep) was in position and the construction cut backfilled, a circular well was dug into the natural chalk.

It has been noted that 'the cross-section of the shaft was often determined by the nature of the rock. Where the rock was easily worked, as in ... chalk, the shaft is usually oval or round' (Ruckley 1990, 20). The Norwich masonry shaft was supported by a timber 'curb', the

timbers having rotted away. Several other castle wells still retain such features, including Colchester and Newcastle-upon-Tyne where the curb was lead sheathed (*op.cit.*, 19). The technique of resting a masonry construction on timber may have prevented subsidence and/or create a level platform above which stonework could begin. The timber framing of masonry foundations for stability and strength, often in complex form, is well-attested in Norman castles as well as earlier and later structures (Wilcox 1981, 21ff).

The Norwich well was archaeologically excavated to a depth of over 18m and was sampled by augering for a further 11m; making its total depth nearly 30m (98ft). Although Norwich Castle's bailey well was substantial, England's deepest castle wells at Montgomery (65m+; 213ft) and Beeston (111.55m; 366ft) were considerably deeper (Ruckley 1990, 17). Wells of similar scale to that at Norwich are known at Edinburgh castle's Fore Well (27.7m, 91ft) and within the great tower at Newcastle-upon-Tyne (30.2m, 99ft; *op.cit.* 19).

Two internal timber frameworks were represented within the Norwich well masonry by putlog holes, one forming an access ladder and the other presumably acting as constructional scaffolding. Similar putlogs holes are visible in the steining of the well at Dover Castle's donjon (Ruckley 1990, 20). Access would have been required both during construction and for subsequent maintenance and at Orford castle 'hand and toe holds were cut into the stone lining of the shaft' (*ibid.*). Medieval wells were often maintained on an annual basis; during the early 14th century, at Odiham castle, a man was hired for six days for this purpose (*ibid.*).

The timbers set within the Norwich well (apart from those forming the access ladder) probably served the dual function of providing building platforms and structural support during construction. Such reinforcement is familiar in other Norman structures. Corner-bracing and intramural timbers to hold masonry constructions four-square during the settling period are found at

Threave Castle and Lewes Priory (Wilcox 1981, 33). Examples from Norman castles include internal timbers strengthening vulnerable lengths of walling at Castle Acre, Norfolk and Richmond, Yorkshire and there are numerous examples of internal timberwork within donjons and associated structures (Wilcox 1981, 12ff). At St Ethelbert's Gate (1090s), leading into Norwich cathedral close, intramural timbers support floor joists (Wilcox 1981, 6).

The nature of the external well-head at Castle Mall is unknown as it was robbed in the late medieval/transitional period (see above). A total of two dozen pieces of worked stone of 12th-century date were recovered from the site, the prevalence of Caen stone suggesting that it was the favoured material (only one piece of Barnack being recovered). A notable concentration of worked stone and associated debris was recovered from fills of a ditch at the southern end of the castle bridge. This material may have originated from the construction of the well and gatehouse lying just to the west, or from repairs to them. Architectural fragments found residually in fills of the well itself indicate the nature of the Norman superstructure above it. Although most are indeterminate dressings, they include two door dressings and a voussoir. The latter produces a radius of approximately 0.55m assuming that the arch was semi-circular, indicating a span of 1.10m (3ft 7in) and suggesting a wide doorway (Heywood, Chapter 6.III).

The well would probably have been covered by a wooden hinged panel, although no evidence was found for this. Water would have been drawn up using a wooden bucket on a winding mechanism, probably using a man- or donkey-powered treadmill or wheel. It is interesting to note the presence of sewage waste in deposits surrounding the Norwich well-head (Period 3.2) which could suggest the use of an animal-powered mechanism. Well buckets have been recovered from Castell-y-Bere (Kenyon 1990, 159, fig.8.5), Duffield and Taunton. Examination of such stave-built buckets suggests an average capacity of 3.5 gallons (13.24 litres), weighing 45lbs (20.4kg; Ruckley 1990, 22). It has been estimated that a single man 'would require a gallon of water a day for drinking and cooking purposes, rising to 5 gallons a day in standing camps, and a horse would require a gaily minimum of 10 gallons' (*ibid.*, quoting from 1914 British Army regulations). Providing the requisite water supply for large garrisons, such as the 318 Flemings quartered in the baileys in 1174, would have required a vast daily withdrawal of water; c.1,590 gallons per day for the men alone (c.454 buckets).

Additional water supply may have come from the well(s) in the great tower and possibly rain water tanks or cisterns (although no evidence for these has been excavated). A series of gullies within the north-east bailey were recorded in 1979 (Ayers 1985) and were interpreted as possibly forming drainage ditches leading into water tanks. In times of peace, Norwich's Cockey stream to the west of the castle may also have been used as a water supply although it probably became polluted with waste, both from the French Borough and Jewry and perhaps from the castle itself. Access towards the stream may have been via a postern gate (see below). There has been much debate as to whether Norwich Castle's ditches were wet or dry, with the Cockey stream perhaps being diverted into them (further discussion of this issue is

given in Chapter 12, 'Wet or Dry Ditches'). Examples of castle-related water towers built into the banks of streams are known. At Kildrummy Castle, for example, such a water tower was linked to the castle by a covered way (Ruckley 1990, 22).

The South Bailey

Excavations at both Castle Mall and Golden Ball Street have done much to elucidate the sequence and position of the castle earthworks and, in particular, the defences of the south bailey. The presence of this bailey was long recognised by antiquarians, although the fact of 'the site being mostly covered with buildings &c. it cannot be traced so as to mark out its form with the same precision as the inner [motte] and middle [inner bailey/barbican] vallums' (Wilkins 1796, 149). It is now evident that previous plans of the Norman south bailey ditch placed it considerably further north than its actual position (Wilkins 1796; Woodward 1847; Harrod 1857, 133; Green 1966; Carter *et al* 1974, fig.7; Campbell 1975, maps 2 and 3; see Fig.12.5), an inevitable error resulting from placing too much reliance on the position of later buildings and roads to demonstrate the position of earthworks. For example, Campbell's map uses the inner side of the buildings that appear on Hochstetter's 1789 map to define the outer edge of the ditch, when in fact the buildings were positioned above the ditch, the curving line to its north reflecting rather the position of the rampart running along the inside of the ditch.

The 1974 plan shows an isolated observation of ditch fill⁹ which was in fact an observation of the bank (Wilson and Hurst 1964). It was originally believed that this was a counterscarp rampart, although the bank is now known to have been set along the inner side of the ditch (comparison of Carter *et al*'s postulated line of the ditch and the 60N siting giving some indication of the error inherent in the 1974 drawing). Several observations supposedly along the line of the ditch were made in the 1930s (Carter *et al* 1974, fig.7), although the new evidence clearly demonstrates that most of these relate rather to fills of the barbican ditch, or of the two early hornwork ditches within the south bailey (Ditches 7 and 8, Chapter 5).

Somewhat ironically, it is the early antiquarian plans showing the defences of the castle as a series of concentric ditches (Wilkins 1796; Woodward 1847; Fig.12.5.A and B) that provide a more accurate representation of this particular stretch of ditchwork, unreflected in the later urban topography.

The south bailey ditch and its inner rampart may have been added to the defences of Norwich Castle during the reconstruction of the donjon in stone. Finds dates are consistent with construction in the late 11th to early 12th century, with basal fills attributable to the effects of erosion dating to the 12th century. The ditch was of the broadly V-shaped profile so common at castle sites and new evidence from the Golden Ball Street demonstrates that the castle approach road was led into the defences across a causeway, rather than a bridge as previously supposed (see Chapter 6.1). A metalled road leading westwards through the rampart via a timber ?gate may have been constructed at the same time (see 'Access' below). Within the redefined bailey, the earlier double ditches were infilled, perhaps in association with a realignment of the route leading towards the motte. Only

two cess pits attributable to the 12th century were found within the confines of the bailey (see 'Pits' below).

New ditchwork

(Figs 6.18 and 6.25; Plates 6.23–6.26)

The south bailey ditch cut through fills of the earlier ?Fee ditch (Period 2, Chapter 5) which had silted up and/or been partially backfilled with its own rampart. The southern part of the latter, however, may have been recut to form a new hornwork around the newly installed masonry south gate (see below). The new ditch (Ditch 10) would originally have been about 14m wide by 5.5m deep, forming an enclosure inside the associated rampart of approximately 6,533m² (c.1.6 acres; see Table 12.2). To the west of the castle, the line of the ditch is uncertain due to the proliferation of ditchwork in the area. It may have run directly from north-to-south (reflected in the line of the later barbican ditch) or it may have swung eastwards towards the motte ditch, with most of its fill being removed by the later barbican ditch. To the east, the junction of the ditch with the later barbican ditch was very tentatively suggested. Analysis of borehole evidence in this area suggests that the ditch probably ran further east than the modern road pattern suggests, a situation confirmed by the position of the ditch terminus recorded at Golden Ball Street and watching brief evidence (Fig.6.25). The possible nature of the junction between the three (or more) ditches in this area is considered further in Chapter 12, along with consideration of the man-power and time necessary to construct the new defences.

Rampart

(Figs 4.5, 6.26 and 6.50; Plates 6.27–6.29)

The surviving part of the south bailey rampart recorded at Castle Mall lay about 11m to the north of the contemporary ditch and survived to about 2m in height. The extent of the rampart southwards is uncertain and there may originally have been a berm between the bank and ditch, or as is more likely in defensive terms, the rampart may have been contiguous with the ditch's northern edge (Fig.6.50). In either case, the surviving rampart had been considerably truncated. It was formed from dumps largely consisting of redeposited natural presumably upcast from the associated ditch. Although recorded over a distance of 8.50m north-to-south in Area 6, the surviving width in Area 8 was up to 10m. The exact position of the inner limit of the rampart is unknown, although it must have lain between 18 and 23m to the north of the ditch (suggesting an approximate width of 20m). The extent of the main area of survival to the north-west corresponds with the extent of buildings shown on the 1880s Ordnance Survey map (Plate 11.6).

Both the front and back of the rampart had been quarried away, leaving core material (Plate 6.27). This core consisted of fairly evenly layered deposits, perhaps incorporating a turf base (*cf.* the bailey rampart at Launceston Castle; Saunders 1970, 90–91 and fig.27). Thin layers of darker material within the sequence may indicate pauses in construction (*i.e.* vegetation/trample), with occasional traces of burning. Limited evidence for a timber framework within the bank indicates a combination of posts and beams, perhaps anchored by the weight of the core on cross-members. Some of the posts may have been angled to provide greater support. Similar constructions

are known at many castle excavations (*cf.* Therfield and Tamworth; Kenyon 1990 figs 1.16 and 1.17). Despite the 12th-century references to sophisticated timberworks at Norwich including *breteshes* (probably wooden lookout towers), palisades and rampart walks (or *garillum*; *cf.* King 1991, 55 and fig.6.3), the archaeological evidence is insufficient to confirm their presence or define their character.

Clearly, construction of the Norwich rampart was not a simple, unified action, but began with ground consolidation and levelling. The placing of posts/pits and the development of apparent soil horizons/exposed surfaces within the sequence suggest that it may have taken some time to construct the rampart to its full height. The bank was probably initially built from upcast along its whole length, perhaps supplemented by natural deposits quarried from elsewhere. Evidence for burning and a concentration of posts towards the north indicate activity on the inner side of the rampart.

The Castle Fee Boundary

(Figs 6.1, 6.47, 6.48 and 12.5)

The southern part of the early Norman ?Fee ditch may have been recut in the late 11th or early 12th century, to form a hornwork around the south gate of the castle (*cf.* Fig.6.4 and Campbell 1975, maps 2 and 3; Fig.12.5.G). The suggested hornwork would have enclosed an area of about 0.5ha (1.3 acres). To the east of the castle approach road, the eastern arm of the ditch (which has not been archaeologically recorded) may have remained in its original form as a larger enclosure accommodating the church and cemetery of St Martin-in-Balliva. Although first documented in the mid 13th century, this church may have been pre-Conquest in origin (see Chapter 4).

The ?recut ditch had a stepped profile and surviving dimensions of between 7.00 and 8.50m wide and c.3.40m deep, having been recorded over a length of 25m (Figs 5.5 and 5.7). Posts or steps were inserted at the terminus adjacent to the castle approach road. Basal fills within the ?recut consisted of the effects of weathering and erosion, with the early inclusion of refuse. Twelfth-century refuse disposal (including sewage waste) was evident, at the end of which the ditch would still have been open to a depth of at least 2.2m. The ceramic assemblage within the ditch is noteworthy, providing a good group of 12th-century kitchen and table wares (Lentowicz, Chapters 6.II and 6.III). Although the ditch remained substantially open (except at its terminus), deposition at this date would seem to imply that the ditch was not being rigorously maintained. The hornwork does appear, however, to have survived as a functional earthwork until the end of the 13th century and was only completely infilled in the late 14th to 15th century (Chapter 8). Its line influenced the development of the medieval and later tenement pattern in this area (see Chapters 7–11).

The implied infilling of the stretch of the ditch to the west of the castle may indicate an early physical constriction of the Fee, although later documentary evidence indicates that it maintained the same administrative boundary along this stretch. The reconstruction suggested in Fig.6.47 reflects this rather curious arrangement, leaving a narrow strip of land excluded from the reworked defences. The removal of the earlier defensive boundary along this section (which may only have been utilised in the very early years of the castle) may relate

to the presence of the French Borough to the west. The boundary may later have been demarcated by plaques set on posts or a palisade (see Chapter 7) and a similar arrangement is possible during the 12th century. As is discussed in the subsequent chapter, later documentary evidence indicates that the southern line of the Fee boundary—if correctly identified—moved northwards to reflect the position of the south bailey ditch.

The reference to the events of 1174 noted in Chapter 6.I is of note in relation to the comment that the Men of the Fee *entered* the castle, implying that the outer part of the Fee was perhaps not considered part of the castle proper, or that the word ‘castle’ was used to refer to the donjon (see further discussion in Chapter 5.V, ‘The Castle Fee’).

The North-East Bailey (Castle Meadow)

(Fig. 6.28)

The historical background to this bailey, forming a defended meadow, has been given in Chapter 5.I. Its earthworks may also have been remodelled during construction works associated with the stone castle. Recutting of the outer ditch recorded at Castle Mall (Ditch 9) suggests a slight northwards shift. This reworking followed the infilling of the initial cut, a sherd of pottery from which indicates a mid 12th-century date, perhaps indicating an association with the documented events of the 1170s (see Chapter 6.I).

The recut may have been in excess of 14m wide and just over 9m deep. It had a square butt end to the west, similar to the butt ends of the two ditches recorded at Golden Ball Street. Subsequent infills into the ditch (Period 3.2) consisted generally of chalks, which may have been the result of erosion, dumping or deliberate backfilling, or perhaps a mixture of all three. The deposition, whatever its origin, appears to have been fairly rapid. Slightly later, the ditch stabilised with the accumulation of muddy silts and midden-type deposits (including sewage sludge) and evidence for herbivore grazing (MacPhail, Chapter 6.IV). Further dumps were followed by a second possible soil horizon, the base of the ditch having flattened out considerably. The grazing of livestock within the ditches confirms the use of the bailey as a meadow at this time. Many ditch fills contained sprouted barley and may indicate the presence of a brewhouse in the vicinity.

Access

(Figs 6.21, 6.27, 6.47 and 6.48; Plates 6.30 and 6.31)

?Postern gate to west

Most early castles had a ‘secondary point of exit, free from observations and control by the town ... commonly known as the postern, and its chief protection lay in its narrowness and difficulty of access’ (Pounds 1990, 214). These posterns or ‘sallyports’ were often small gates which ‘could allow a garrison to leave the castle to make a surprise attack on a besieging force, or permit men or goods to enter the castle without having to lower the drawbridge and raise the portcullis of the main gatehouse’ (Kenyon 1990, 71). Such entrances were well used during times of siege and many were simply narrow doorways through a curtain wall, as at Bolingbrooke (Pounds 1990, 52).

At the Castle Mall site, a metalled road leading through the south bailey rampart to the west was recorded

in two places stretching over a distance of *c.* 13.5m from south-west to north-east, with an estimated width of *c.* 5m. Successive repairs and resurfacing were recorded, before the road was finally abandoned. Finds from abandonment and refuse deposits above the road include a residual Cnut penny (1030–1036; Davies, Chapter 6.III) and three horseshoes, all of post-Conquest type. Ceramic fabrics and forms suggest a late 11th- to 12th-century date for the use and disuse of the road. Later dumps were noted to be similar to the rampart (including an area of puddingstone blocks) and may indicate that the road was blocked or for some reason raised to a higher level which did not survive. A road in this position could imply an access route to the French Borough (although its position also fits well with the later medieval tenement plan of the area; see Chapter 7).

A possible timber gate was tentatively identified at the surviving north-eastern end of the road, perhaps forming a postern gate on the inner side of the rampart (Fig. 6.21). The proposed structure measured *c.* 5.5m by *c.* 6.00m and comprised a series of large, roughly circular posts and slots. Three butt-ended slots may have been a later addition, two of which had posts set at their south-western ends, using flint, chalk or iron pan as post pads. Although the evidence is slight, these features may have formed a small gate, lying on the inner side of the south bailey rampart. The gap between the two sets of posts was about 2.5m, similar to examples elsewhere. A timber gatehouse in an early phase at Cae Castell, Rumney, was *c.* 1.5m wide (Lightfoot 1981, 61; 1983, 1–7), while Launceston castle’s south gate was about 4m wide. The Castle Mall example was easily wide enough to allow the passage of a rider on horseback as well as perhaps a small waggon. A timber arched gate is implied, presumably linking to a timber palisade encircling the bailey. The gate may have led onto a drawbridge across the south bailey ditch. The Cae Castell gate was subsequently blocked with clay and rubble when it was replaced by a stone gatehouse in a different location (Kenyon 1990, 26 and fig. 1.14). The apparently short-lived nature of the Castle Mall example may suggest a similar development here.

The south gate and the southern approach

The recent excavations provided no definitive evidence for the location of either the castle’s documented south gate or the approach road. The hypothesised position of the gate (lying outside the excavated area) tallies with earlier suggestions that it lay at the northern end of Golden Ball Street (*cf.* Hotblack’s 1909 plan; see Chapter 6.I and Fig. 6.3). It may have lain on the inner side of the rampart, which was perhaps retained by integral walls. Mortared flint rubble of medieval appearance was noted in the north-eastern corner of the Golden Ball Street Site, although this may not have been *in situ* and, if castle-related, could have derived either from a gate set further north or from a rampart-retaining wall.

The only evidence for possible road surface remnants from the recent excavations came from a series of pits at the foot of the bridge across the inner bailey ditch (see above). It now appears that the curving route of the southern castle approach noted by antiquarians (see Chapter 6.I) may owe its origin to the reuse of a pre-Conquest route and/or to the defensive dog-leg implied in the initial stage of the defences. A slight straightening of its course within the south bailey at the time of the

reworking of the defences in stone is possible, reflecting the general strengthening of the defences which reduced the need for a convoluted approach within the bailey itself (see further discussion in Chapter 12).

?North Gate

The possible existence of a gate or gates leading into the city from the north-east bailey has been outlined in Chapter 5.V. With the construction of the cathedral, the requirement for easy access to the north/north-east may have been the driving force behind the construction and/or elaboration of any pre-existing north gate (see also note in Chapter 12, 'Approach Roads, Gates and Bridges').

Bailey Usage

(Figs 6.4, 6.30 and 13.12)

Buildings and raw materials

No direct archaeological evidence for castle-related buildings of this date was found during the Castle Mall excavations, despite the fact that the south bailey would have contained stables, workshops, stores, a bakery and brewery. The presence of such buildings was, however, indirectly implied by some of the artefacts and ecofacts recovered. Late medieval fills of the well, for example, contained what may in part have been evidence of clearance of military and other items from a ?castle storeroom (see Chapter 9). The south bailey may also have contained higher status buildings such as the Great Hall (documented as repaired in the 13th century; *cf.* the example within the lower ward at Castle Acre, Coad and Streeten 1982, fig.3), although this may have been within the donjon itself or on top of the mound (*cf.* Drury 2000b). A new gaol was constructed at Norwich Castle in 1183–4, although its location is not stated; it may have lain at the top of the motte or within the south bailey.

Of particular note amongst the assemblage of building materials is a fragment of painted ?12th-century glass with a serrated leaf design from late medieval fills of the well at the foot of the castle bridge (SF7259, Fig.9.29; King, Chapter 9.III). This fragment may have a direct association with the great tower and/or one of the other prestigious buildings within the castle enclave. Its suggested date would make it the only surviving 12th-century glass painting from Norwich. King suggests that the construction of the cathedral and other stone buildings makes it probable that the related craft would have been present in Norwich at this time.

Other building materials include architectural stonework relating substantially to gatehouses associated with the bridge and/or to the adjacent well superstructure. Caen stone predominates, although a few fragments of Barnack were found. Worked stone recovered from later fills of the well indicates the demolition in the late medieval period of a wide Norman arch/doorway (Heywood, Chapter 6.III; see 'Gate' above and comments on stoneworking below). A single possible Norman finial was also recovered.

The inclusion of building waste (mortar, limestone and burnt sand) within fills of the north-east bailey ditch recut implies building works in the vicinity. A lime kiln is documented in the latter part of the 12th century and may have been sited nearby, although the presence of the lime on sherds of pottery from this ditch may imply the use of ceramic vessels for water heating. Earlier sites recorded

in the north-east bailey both reported quarry pits for the extraction of chalk or lime as the initial activity (Sites 150N and 416N; Atkin 2002a; Ayers 1985).

The lack of evidence for 12th-century masonry structures indicates that most of the buildings within the outer baileys were still constructed in wood, daub and thatch. The small group of ceramic building material recovered is dominated by fired clay and daub (much of which may have been residual), with other types such as great bricks and roof tile not being known in Norwich until the 13th century (Lentowicz, Chapter 6.III). Structural ironwork includes a hinge pivot for a door, shutter or gate, a small door bolt, a few clench bolts and the ubiquitous timber nails.

Craft and other activities

Evidence for craft activities within the south bailey is less strong than in the immediately post-Conquest period (see Chapter 5.V), although a few fragments of worked and sawn antler may suggest that antlerworking continued. A leatherworking tool came from a cess pit and horse equipment included several horseshoes (six of Norman type), horseshoe nails and a horse bit link.

Although an increase in the quantity of metalworking waste might be anticipated at this period, in association with the construction and maintenance of the new castle structures and ancillary buildings, such evidence was not forthcoming in the archaeological record (Shepherd Popescu *et al.*, Chapter 6.III). Small quantities of both ferrous and non-ferrous metalworking waste were recovered. A relatively large group of slags came from a 12th- to early 13th-century fill of the ?Fee ditch recorded at the Golden Ball Street site. It appears, however, that the castle's metalworkers (including farriers) were not situated within the area excavated. Small-scale working may also have been carried out along the road frontage to the south-west of the site.

In situ stoneworking (raw materials, chippings and worked blocks, one of the latter with a triangular mason's mark) was evident within the courtyard at the foot of the castle bridge. Further, if more limited evidence, came from fills of the north-east bailey ditch (noted above).

During provisioning of the castle when attack threatened in 1172/3 (Chapter 6.I) supplies purchased included wheat with querns for grinding it. Only two fragments of querns, however, were recovered from 12th-century deposits, of which one had apparently been reused as building material. The continued presence of a brew-house near or within the north-east bailey (postulated in Chapter 5) is attested by relatively high quantities of charred plant material, probably relating to malt drying. The documentary record confirms the importation of grain to the castle; in 1175, for example, barley and a large quantity of oats were purchased, supplementing any crops produced within the Castle Meadow.

Pastimes were apparent in the form of a bone die from fills of the possible recut of the ?Fee ditch. A Nine Men's Morris or Merrel's board of probable 12th-century origin came from fills of the well (SF7450, Fig.9.41; Huddle, Chapter 9.III) and is the second example to have been found at Norwich Castle (see Site 429N, Chapter 2). A lone badger mandible could suggest hunting for fur (Albarella *et al.*, Chapter 6.IV and Part III).

Further comments on life in the Norman castle can be found in Chapter 12.VIII.

<i>Period</i>	<i>Indeterminate</i>	<i>Latrine</i>	<i>Industrial</i>	<i>Quarry</i>	<i>Refuse</i>	<i>Storage</i>	<i>Fire</i>	<i>Well</i>	<i>Total</i>
3.1	13	0	0	1	0	0	0	1	15
3.2	11	1	0	2	0	0	0	0	14
Total	24	1	0	3	0	0	0	1	29

Table 6.15 Period 3 pit types

<i>Lining type</i>	<i>Period 3.1</i>	<i>Period 3.2</i>	<i>Total</i>
timber	0	1	1
cobble	0	0	0
wattle	0	0	0
clay	2	0	2
masonry	1	0	1
Total	3	1	4

Table 6.16 Period 3 pit linings

Pitting and refuse disposal (Figs.6.4 and 6.30)

Pits

A total of twenty-nine pits was assigned to this period, of which only four were recorded as lined, including the masonry well shaft. The following tables include only two pits within the castle precinct, the remainder lying to the south-west along the street frontage, relating perhaps to the early development of tenements here (see below). Both pits within the south bailey had been used to dispose of cess.

Ditch fills

Infilling of Norwich's new and recut castle ditches appears to have begun fairly rapidly, probably in part as a direct result of the geographical setting of Norwich Castle within an urban context. The construction of a city ditch in the mid 12th-century may also have been a contributory factor, with the ditches perhaps only being maintained or reworked in times of trouble.

Twelfth-century refuse deposition into the castle ditches took various forms, some of which have already been discussed (*e.g.* ?brewery waste, building materials, human and animal sewage). Of note amongst the ditch fills attributable to this period are those within a ditch to west of the site (Ditch 4; demarcating either the Fee boundary, ?inner bailey or south bailey) which contained thick silt dumps (up to 1.5m thick) of which a significant proportion (about 5%) was animal bone. This waste may have been deposited into the ditch from the west, perhaps from the French Borough/Jewry. The north-east bailey ditch appears to have been infilled to such an extent that its base flattened out, allowing both animal grazing and the development of soil horizons. These attest to the documented use of the bailey as a meadow and suggest that the ditch's defensive role may have been considerably reduced.

Indications of Status?

Few artefacts attributable to this period gave particular indications of status (see also Chapter 12, 'Castle Life' and Chapter 13, 'Status'). The pottery assemblage indi-

cates a limited number of Continental imports and the introduction of glazed wares, although the assemblage is not noticeably different to other Norwich sites (Goffin, Chapter 6.III). Evidence for the use of boxes, caskets or chests includes a gilt binding of a type known at Goltho and Castle Acre, a possible mount of unusual form (with a stylised animal head terminal) and two bone mounts (one decorated).

This was the only period from which no articulated animal skeletons were recovered, a circumstance that may have more to do with the lack of pitting attributable to the period than any particular enforcement of cleanliness within the castle. The fish remains recovered from 12th-century contexts appear, however, to reflect the early use of the ditches as a repository for food waste, coming either from the garrison/Men of the Fee or from the townspeople. An increase in the number of flatfishes (plaice and flounder) may indicate an increased consumption of traditionally cheap fish caught by shore-line trapping (Locker, Chapter 6.IV).

The Norman City

(Figs 6.1, 6.47 and 6.48)

Development of Street Pattern

The street pattern immediately surrounding the castle (Figs 6.1, 6.47 and 6.48) remained substantially the same as in the previous period, with the possible addition of a western access route via a postern gate across the south bailey defences (detailed above). The implications for the position of this route in relation to the 'Way to the County Court' documented from the late 13th century are considered in the following chapter.

The imposition of the cathedral considerably altered the street pattern to the north-east of the castle, cutting off many previously existing routes in the area (Ayers 1996, 64-68 and fig.10; Wallis 2006). Just to the south a new east-to-west route recorded at the Greyfriars site (Emery 2007) was inserted in the 12th century, allowing any gate on this side of the castle's north-east bailey more direct access towards the river.

Tenements

Archaeological evidence for development around the fringes of Norwich Castle during the 12th century is extremely sparse, consisting of limited evidence of infilling within the small block of land between the new castle ?postern and the cemetery of St John at the Castle Gate (Figs 6.47 and 6.48). The features recorded may relate to forerunners of the properties plotted from documentary evidence from the late 13th century onwards (Chapter 7). Two large post-in-trench buildings (Buildings 17 and 18) possibly serving as granaries, remain of uncertain date and may even be attributable to the Norman period

(see Chapter 4). Post-dating these was a single structure (Building 29) comprising three large post-pits which may have formed the corner of a building.

Pitting was recorded just outside the castle precinct, along the road frontage to the south-west (Durnedale/Berstrete, now Timberhill; Open Areas 26 and 27). These features lay between the road and castle defences to the north and east, possibly lying at the rear of properties fronting the street. Some lay close to the former ?Fee boundary marker which may already have been infilled along this stretch. Included in the group were several cess pits. Two adjacent pits contained evidence for the disposal of plant waste, perhaps rushes or bracken, which could have derived from flooring material (Murphy, Chapter 6.IV). Wild taxa predominated and the absence of 'exotic' imported crops may suggest the deposition of faeces by low-status individuals. Examples of the bean beetle (*Bruchus rufimanus*) may indicate the nearby presence of stored beans (Robinson, Chapter 6.IV).

Churches and Cemeteries

As noted in the introductory section to this chapter, many churches were constructed in Norwich and its environs during the late 11th and 12th centuries (Fig 6.1). These include several along the arterial routes of Ber Street and King Street, including St Peter Parmentergate which was inserted within the land block created between the south-eastern limits of the castle, Superior Conesford (now King Street) to the east and the postulated continuation of Inferior Conesford (Mountergate) to the south (Fig.6.48).

The church of St John at the Castle Gate continued in use, and comments on the possible post-Conquest setting of the leper and other burials within it are given in Chapter 4.VI. This cemetery was now demarcated to the north-east by the postulated hornwork around the castle's south gate, with part of its earlier boundary ditch remaining in use. A small ditch with a butt-end to the west (Ditch 12, Period 3.2) was inserted during the 12th century to the north of the boundary of St John's cemetery. The reasons for its insertion remain unclear; there is no evidence that burials were made in the intervening ground between the two ditches.

Confined within the possible new hornwork, on the eastern side of the castle approach (Fig.6.47), St Martin-in-Balliva may have continued in the service of

the garrison and the Men of the Fee, providing a burial ground for the castle's prisoners.

Conclusions

By the end of the period of reconstruction in stone and associated remodelling of ditchwork, Norwich Castle was a formidable fortification with a place amongst the first rank of English castles. Discussion of the East Anglian and wider Norman context of Norwich Castle appears in Chapter 12, along with further consideration of labour and materials and the castle's social and symbolic meaning. The new white donjon — with its possible Norman French sobriquet 'Blancheffleur' [Blancheffleur or White Flower] — would no doubt have awed the indigenous population; the motte itself may well have been clad in chalk, either deliberately or as a result of upcast from ditch digging.

The recent excavations have not only succeeded in clarifying the displacement of the castle's earthwork defences, demonstrating an unexpected complexity, but have in addition provided new evidence for the presence of masonry features. This period sees the castle and its defences at apogee. Although in the next chapter some of the defences were replaced in stone and the great barbican ditch added, from this point onwards the footprint of the defences of the castle began to contract.

Endnotes

1. A subdivision of a county, having its own court.
2. The rights gained are detailed in Campbell 1975, 9.
3. Although references imply its presence in the Westwick and the remainder of any course is unknown (Campbell 1975, 10).
4. Written between 1174 and 1221 according to Beecheno 1888, 14.
5. Henry II had built Orford between 1166 and 1173 at a cost of £1500.
6. The internal faces of the shaft were sketched above 22.80m OD by measuring down from the top of the shaft (S.321). This results from the fact that the shaft was machined out to a level of between 22.50 and 22.90m OD, having been hosed down by the local Fire Brigade (Plate 1.13). The section of shaft between 22.80 and its base was scaffolded inside and accurately recorded. Although the vertical levels of the upper putlogs indicated below are correct, their horizontal position may not be accurate.
7. This wall provides the earliest known date for the use of medieval brick in Norwich.
8. This intermittent work sought the origin of a water leak causing damage to the bridge fabric.
9. Labelled as Site 99N on Carter *et al* 1974 fig.7 but actually Site 60N.

7. Castle and City Before c.1345

‘Willelmus le espenser du Chastele cepit Wilhelmus de Brok et proiecit eum in profundo de gayole’ [William, steward of the Castle, seized William de Brok and threw him into the basement of the gaol]

1287–8; Hudson 1892, 11

‘there was much of the walls standing ... on the west and north sides of the hill, in the memory of ancient men; and I remember, when a boy, to have seen many of the large bricks scattered about on the outside of the hill; and, AD 1721, I saw the foundation of the wall very fair at the north-east corner, when a large new way was made there’

J. Kirkpatrick 1845, *History of the Religious Orders and Communities of the Hospitals and Castle of Norwich ... Written about the year 1725*, 241

I. ARCHAEOLOGICAL, HISTORICAL AND DOCUMENTARY BACKGROUND

Norwich Before c.1345

(Fig.7.1)

England was invaded by Prince Louis of France in 1216 and many castles in the south-east, including Cambridge, Norwich and Oxford, were captured by him. Norwich was plundered and the castle remained in the hands of Roger Bigod until 1224 when it was surrendered to the young king Henry III. It has long been suggested that Norwich’s barbican ditch and defended gateway were improved at this time. The actions of the Dauphin are held responsible for similar alterations to the defences of other castles including Oxford (Hassall 1976).

A city ditch was referred to in 1235, with a new ditch constructed in the mid 13th century. According to a source of about 1272, Norwich’s citizens gained a licence to build this in 1252–3 (Campbell 1975, 11). Its course, accompanied by nine timber gates, may have been similar to that followed by the later stone walls. The latter were eventually constructed around those parts of Norwich not protected by the river (Fig.7.1). Activity was not continuous but was sparked off in 1294 and rekindled on several later occasions by fear of French invasions. The initial grant of murage for constructing the stone walls was made in 1297, the southern part of the circuit probably being completed first (Campbell 1975, 11). Construction was a lengthy task; the walls were not finally completed until 1344. By 1343 the towers were complete and the gates were armed with espringolds and outside crossbows. The circuit included over forty towers and twelve gates. Excavated portions of the ditch outside the walls measured over 60ft (18m) wide by up to 27ft (8m) deep (Campbell 1975, 11).

The intramural area was larger than that of medieval London and Southwark and included substantial areas of open ground, including agricultural land, meadows, gardens and orchards. Nearly sixty parish churches lay within the defended area and large ecclesiastical enclosures were made. The Dominicans (Blackfriars) and Franciscans (Greyfriars) arrived in the city in 1226,

followed by the Carmelites (Whitefriars) in c.1256 and the by the end of the 13th century (Campbell 1975, 11). Both the Franciscans (Greyfriars) and Augustinians (or Austin Friars) founded their precincts along King Street, where Hildebrond’s Hospital was established in 1216.

By 1288, the city had been divided into four leets (Conesford, Mancroft, Wymer (Westwick) and *Ultra Aquam* or ‘Over the Water’ (Hudson 1896a, map IV; Campbell 1975, 12). Each leet was further subdivided into sub-leets, consisting of a parish or parishes. Four of these sub-leets met at the castle (St Andrew, North Conesford, Berstrete and St Peter Mancroft; Kelly 1983, 17, fig.4) and are considered further in Chapter 14, ‘Urban Boundaries’.

Norwich’s markets and commercial waterfront thrived. As well as the large market to the west of the castle, different areas were given over to markets for livestock and other commodities including textiles and leather goods, metalwork and fish (Campbell 1975, 14). Property deeds provide evidence for sixty-eight services and trades in the city between 1285 and 1311 (Kelly 1983, 16).

The Norwich Jewry survived until the late 13th century and several references linking Norwich Castle with Jews are noted in Chapter 6.I and below.

The growth of Norwich’s records from the late 13th century onwards permits the estimation of the population. Current estimates lie at around 30,000 on the eve of the Black Death, which reached Norwich in 1349 (Ayers 1994a, 63). The city’s large population, most of which was apparently housed in relatively poor conditions, would have produced large quantities of domestic and craft waste, some of which was dumped into the castle ditches. Night soil was traded as a commodity; in 1277–8 and 1298–9, for example, the Great Plumstead estate paid for muck from Norwich (Ayers 1994a, 69).

Prior to 1345, the jurisdiction of the city ended at a way or road around the edge of the Castle Fee, with the exception of the area to the north of St John de Berstrete which remained demarcated by a ditch (and/or possibly boundary posts bearing the royal arms). ‘Although a considerable amount of money had been spent on the Castle in the previous [*i.e.* the 13th] century, a curtain wall for the mound and elaborate entrance defences having

<i>Date</i>	<i>Event</i>
1216	Norwich plundered and the castle captured by Louis, Dauphin of France
1221 and 1235	Henry III may have stayed at the castle (although it was in the hands of Roger Bigod until 1224)
1224	Roger Bigod surrendered castle to Henry III
1235	Reference to city ditch
1252–3	New ditch constructed around the city
1254–75	First reference to <i>Ecclesia Sancti Martini de Ball'ia</i> (the Church of St Martin-in-Balliva)
1266	Disinherited barons including Roger Bigod rebelled against Henry III. Norwich sacked by the Disinherited. Castle kept fully guarded and was repaired after the sacking
1268–9	Completion of replacement of timber palisade at top of motte with a wall and towers
1271	Shirehouse present in the south bailey
1273	Roger Bigod restored as Constable
1277	Edward I visited Norfolk and Suffolk inspecting his castles
1278, 1285 and 1289	Edward I in Norfolk
1284	Orford castle (Suffolk) completed
1297–1344	Construction of the city walls
1300	Roger Bigod conspired against the king again, temporarily losing the post of Constable and Bungay castle
1327, 1341 and 1344	Edward III in Norwich
1345	Castle baileys sold to the city by Edward III

Table 7.1 Key events: 13th century to c.1345

been built, [by the 14th century] it seems to have come to be regarded by the Crown as a military white elephant' (Campbell 1975, 12). During the late 13th and early 14th century, 'the municipal authorities were anxious to get control of pieces of unused ground ... which in principle belonged to the Crown' (Campbell 1975, 12). An example of this occurred at Norwich in 1345, as is detailed in the following chapter.

The Castle Before c.1345

by Margot Tillyard and Elizabeth Shepherd Popescu

Introduction

Many castles in England were updated during the early 13th century in accordance with new ideas of defence and bailey ditches were often recut. Alterations to mottes often, as at Norwich, entailed the addition of a wall and towers around their circumference: recent study which emphasises the social functions of donjons suggests that the real military strength of a castle may always have lain in its ramparts, walls and gates. In Norwich's case, construction of this new wall followed the disturbances caused by the Disinherited barons. The wooden palisade around the inner bailey, which was repeatedly being blown down, was rebuilt in stone and brick with new towers added. The southern approach to Norwich Castle was strengthened with two new towers at the top of the castle bridge, a massive recut of an earlier ditch now forming a barbican around the base of the bridge. Outside the barbican ditch, on the highest ground of the south bailey was a building for the use of the Shire Court.

Although throughout the later 13th to early 14th centuries Norwich Castle donjon was maintained as a stronghold, the nature of warfare was changing. Attacks on castles were met by counter-attack from a garrison ranged along a perimeter wall. Sieges became rare and

battles were generally fought between armies in the field. For Norwich Castle this meant that, while the donjon and the buildings of the inner bailey were maintained as a fortress, administrative centre and prison, the importance of the outer baileys diminished, especially so when on completion of its walls in 1344 the whole city became defensible. Occasional royal visits to Norwich Castle continued; by Henry II, King John and Henry III and other royal officials.

The events of 1272 illustrate the castle's role on a local level. In the course of a serious dispute between citizens and prior's men, the monastery and cathedral were burnt, along with St Ethelbert's church and the nearby Priory gate. Many were murdered on both sides. The king immediately dispatched justices who were to be lodged in the castle by his order and followed himself shortly after. He stayed for six weeks (either at the castle or the priory) while those chiefly guilty were tried and executed. The city was governed by the king's commissioners for much of the next three years.

By 1300 Norwich Castle no longer held its unique position. Orford castle had been finished by 1173 and between 1284 and 1298 Edward I rebuilt Cambridge at a cost of £2,600 (Colvin 1963, I, 233; II, 584). A list of 1287 of payments to Constables shows that Norwich was by now in the middle rank of castles (Pounds 1990, 88). While the Constables of the Tower of London and the castles of Chester, Bristol and Windsor were paid more, and York and Cambridge less, Norwich was grouped with Nottingham, Oxford, Bamburgh, Corfe and Winchester (among others) (Pounds 1990, 88).

Encroachment by the townspeople into Norwich Castle's precinct began, initially illegally. From 1345, however, the city was free to lease or sell unusable land around the perimeter of the Fee, a process which was completed in 1397. Much of the castle ditches and baileys survived as open space and were used for livestock grazing throughout the medieval period and beyond.

Military Functions

The 1216 capture of the castle and the Disinherited (1260s)

There were rebellions of barons both after Magna Carta and after King John's death. Norwich Castle was aban-

doned in 1216 to their champion, Louis (the son of the French king) and his followers. Once again, the city was systematically plundered. However, Louis was bribed with £7,000 to resign his claim and a safe conduct from the castle negotiated for his men, with all their stores (Rye 1921, 21). The young king Henry III only gradually

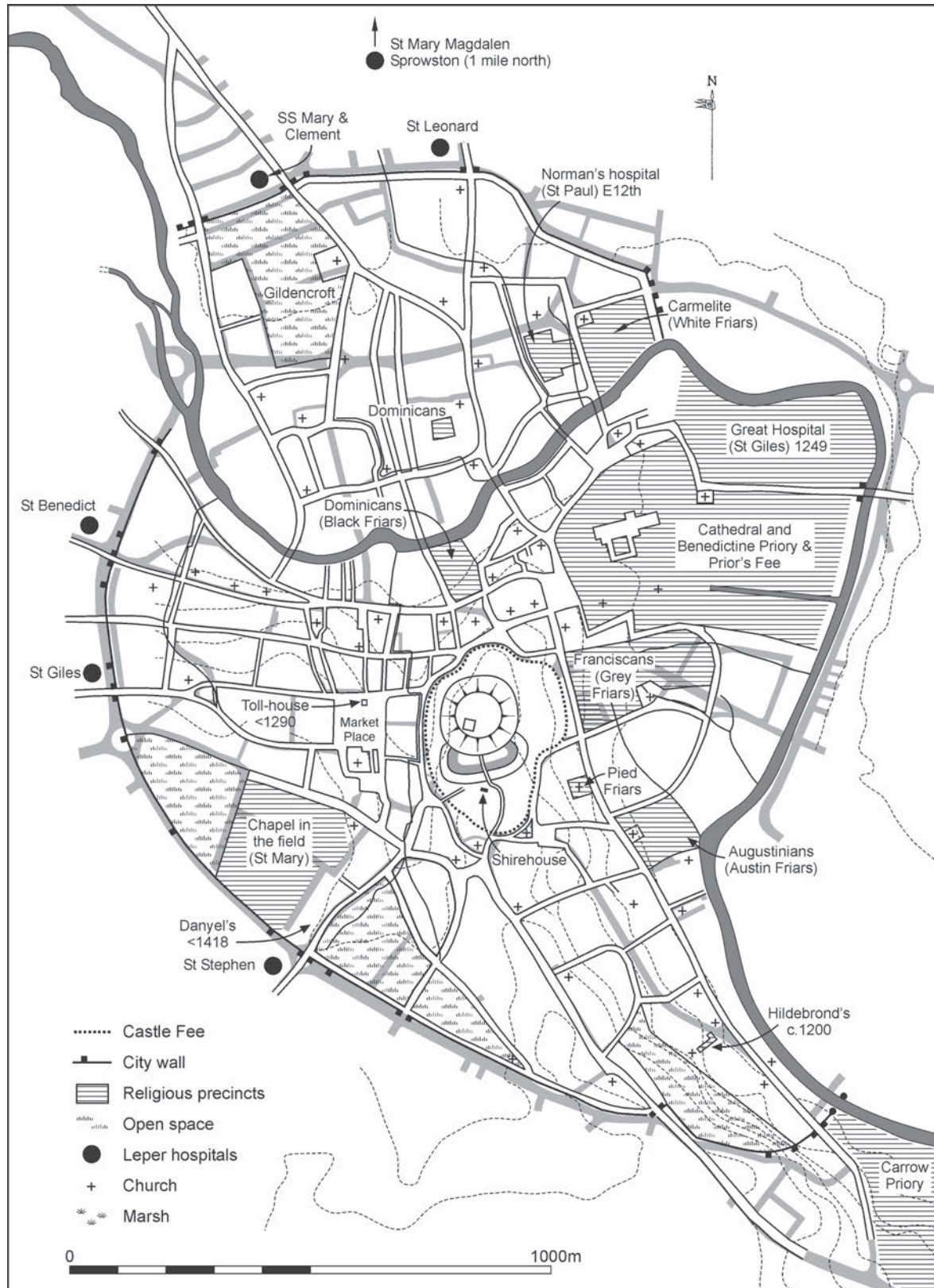


Figure 7.1 Map of pre-1345 Norwich. Scale 1:12500

assumed full legal authority but by 1224, Roger Bigod had surrendered Norwich Castle to him.

Somehow, the Bigod family always seemed to recover favour after the treasons of its members. In 1266, the last occasion on which Norwich Castle was threatened with military action, Roger Bigod was one of the barons led by Simon de Montford against Henry III and was appointed by them Constable of Norwich Castle. After Simon's defeat, his supporters were deprived of their lands and, though redemption terms were agreed in October, many of them remained dissatisfied. They became known as 'the Disinherited'. In the middle of December, a party of them and their followers, who had a stronghold in the Isle of Ely and had no doubt exhausted the food in that district, marched to Norwich. They overcame the resistance of the citizens, sacked and burned buildings and took a large number of prisoners for ransom. Plunder said to have been worth 20,000 marks and to have filled one hundred and forty carts, was removed to Ely (*Annal. Monast.* iv, 193–4; Gransden 1964, 37). On the strength of this, the Ely party marched to London the following spring and joining other forces there held that city, with the exception of the Tower, for two months. Once again, peace was eventually achieved by negotiation. Norwich Castle appears not to have been involved in the events of 1266, but it was kept fully guarded throughout and the sheriff was rewarded by Henry III with 100 marks for his abnormal responsibilities and expenses (*Cal. Lib. Rolls*, 1267–72, 19). The castle buildings were repaired and the wooden palisade around the top of the motte was rebuilt in stone by 1268–9 and the intervening towers roofed with lead (see below).

Roger Bigod was restored as Constable in 1273 after losing the position for his part in the Barons' war of 1266. He was the last member of his family to conspire against the king. Discovered so doing in 1300 he was forced to resign his post along with his own castle of Bungay and his office of hereditary royal marshal. All these were restored to him soon after, but only for life and when he died they all reverted to the Crown.

The barbican ditch (Fig.12.5)

Although King John (1199–1216) spent relatively little on his castles, ditchwork at five of them was undertaken during his reign (Colvin 1963, 79, 668). There is no specific documentary evidence for alterations to Norwich castle's ditches at this time, although in 1215 the king requested the men of Norwich to assist the constable in fortifying the castle against the barons (Colvin 1963, 754; *Rot. Litt. Pat.*, 135). The city bailiffs contributed £50 11s 2½d towards this work, while further monies were provided by the men of Yarmouth (*Rot.Litt.Claus* i, 254 and 596). Either at this time or later (see Chapter 7.V), the fortification was provided with a barbican, taking the form of a massive ditch which remained a visible earthwork until the landscaping of the post-medieval period. After the barbican ditch had been dug, the outer ditches would no longer have been needed as protection for the bridge and may have been allowed to fall into disrepair.

Antiquarian observations of the barbican ditch have been summarised in Chapter 2, while more general comments appear in Chapter 12. Details of the archaeological discoveries at Castle Mall, including the infilling of the ditch from the 14th to the 18th centuries, are given

in Chapters 7–10. In summary, the earliest antiquarians (Wilkins 1796; Woodward 1847) showed a barbican outside the south gate of the castle, forming an outerwork to three concentric ditches (their 'middle vallum' effectively equating with part of the actual barbican ditch; Fig.12.5.A and B). Later interpretations (Harrod 1857, 133; Hudson 1896a) depict an undivided south bailey (Fig.12.5.C and D). Beecheno while accepting Harrod's broad map of the two baileys, insisted on the presence of another ditch (*i.e.* the barbican) on the basis of comments by both Kirkpatrick and Nevyll. The latter's eye-witness account in the 16th century described the donjon as fenced 'with a wall, vallum, and double ditch. Of which he girt the one to the hill at its roots on every side, the other he has led before the gate and bridge, that winding in the form of a semi-circle, and brought almost to the diameter of the inner ditch, it very nearly joined on both sides with its horn' (Beecheno's 1908 translation of Nevyll 1575, 5–6). Kirkpatrick also noted the existence of this 'second ditch' (1845, 243). There remained some issue, however, over its exact location (see Beecheno MS 1908, 10 and further discussion in Chapter 7.V). Beecheno anticipated the presence of a masonry barbican, based on several observations of masonry in the vicinity (1888, 3, 13). More recent maps based both on observations of the ditch made in the 1930s and antiquarian observations show a narrow barbican immediately to the south of the motte bridge (Green 1966; Carter *et al* 1974, fig.7; Campbell 1975, maps 2 and 3; Green 1990, fig.2; Fig.12.5.E–G). Part of the ditch was exposed in the 1970s (Site 150N), where it was believed to be an element of the south bailey ditch (Carter *et al* 1974, 66ff).

Castle maintenance and repairs

Stone costing 40s was bought in 1204 and the following year £50 was spent on the castle and its houses (*Pipe Roll 7 John*, 241–2). Timber was obtained from neighbouring landowners (*Rot de Oblatis et Finibus*¹ (*Rec Comm*), 242). In 1223–4 £27 10s 0d was spent on unspecified works (*Rye* 1921, 15; *Pipe Roll 7 Henry III*, rot.6) and ten years later 'castle work' costs amounted to 50 marks. In June 1228, the city bailiffs were ordered to release stone and lime, the property of the king held by them, for the repair of the castle (*Cal. Close Rolls*, 1227–1231, 59). There were lime kilns on the west side of King Street, near the later south gate of the city. *Garioll* may refer to the repair of lookout towers in 1254 (*Cal. Lib. Rolls*, 1251–60, 187: to repair the 'garioll' and palisade). In 1257 and 1267 the sheriff was ordered to repair the 'houses' and buildings (*Cal. Lib. Rolls*, 1251–1260, 348; 1260–1267, 265). These would have included the stables, workshops, stores, bakery and brewery that would have lain within the defended area. The Sheriff was ordered to repair the 'hall of the Tower' in 1252 (*Cal. Lib. Rolls*, 1251–1260, 71).

The donjon

An urgent order was despatched in 1269 for 40lbs of lead for the donjon roof (*Cal. Lib. Rolls*, 1267–72, 102). Repairs amounting to £50 were accounted for in 1270–71 (*National Archives E372/115*). Major work was undertaken between June 1286 and August 1288 when in addition to repairs and improvements to the donjon, the hall was rebuilt at a joint cost of £600 17s 0d.. *In construccione nove aule infra turrim eiusd. castri de novo*

faciende et in reparatone emendatone eid. turris [on the building from new of a hall in the keep of the same castle and for the repair of the same keep] (National Archives E372/145).

Fifteen oaks for the works came from the estates of the bishopric, in the king's hands in 1288 during an interregnum (Cal. Close Rolls, 1279–1288, 515). There was an argument about payment for some of the other timber used as the supplier was forced to petition the Exchequer for a settlement in 1290 (Rot. Parl. I, 62 and 198). An inquisition followed (which no doubt took place in the Shirehouse). It was attested by William of Beccles that the sheriff, William of Rothynges, had bought from his yard at Shotesham £19 worth of timber, part for building works at the castle and part for himself, and he had paid for none if it. These were the details: for the castle twenty-four tree trunks (*arbores*) at £6 and 62 other items at £7 10s, which were taken there, along with forty-two tree trunks which the sheriff had taken to his own house at 'Walsham' (National Archives E143/4). Another contractor, Paul de Pagrave, had to seek satisfaction (Inquisition 12 January 1290; National Archives E143/1) and the masons who had worked there also petitioned for arrears of wages (Rye 1921, 15). It is possible that excess wood had been bought as in 1304 the sheriff was ordered to sell surplus stocks, which were deteriorating in his store.

The bridge

In 1267 after the action of the Disinherited, the bridge was among the items the Sheriff was ordered to repair (Cal. Lib. Rolls, 1260–1267, 265). In 1328 the order for repairs costing up to 50 marks included 'broken bridges' (Cal. Close Rolls, 1327–30, 329). This seems to indicate a second bridge, but when, after two seasons of work, the sheriff presented his account the reference is to one bridge only: *in reparatioe et emendat pontis cu. brettach. eiusdem ...* £32 19s [on the repair of the bridge and of its brattices] (Pipe Roll 1329–30; National Archives E372/174). A bretesh or brattice was made of wood. It could be a parapet or shutters built into battlements, a temporary palisaded enclosure or a wooden tower for a temporary defence (Colvin 1963, 118).

The curtain wall and towers

As noted above, during the 13th century the palisade was repaired many times, mainly following wind damage (*e.g.* in 1254; Cal. Lib. Rolls, 1251–1260, 187). In 1268–9 the replacement of the wooden palisade round the edge of the motte with a stone wall was completed: *Et in muro incepto circa castrum Norwic perficiend d. ix li xiii d* (*i.e.* £509 1s 1d) [on finishing off the wall around Norwich Castle which was already under construction, £509 1s 1d] (Pipe Roll 1268–9; National Archives E372/113). Kirkpatrick, in whose time part of the wall on the south side and part of the tower there still stood, states that the materials used were brick and stone, though whether the stone was flint or ashlar he does not say (Kirkpatrick 1845, 240–241). He observed that the bricks were exceptionally large. They may have been comparable to those made by Cistercians for their Priory at Little Coggeshall in the early 13th century which were two inches thick, seven inches wide and between fourteen and eighteen inches long. Similar large bricks are present in 13th-

century webbing of Norwich Guildhall (Brian Ayers, pers. comm.).

Kirkpatrick also describes the demolition of much of the wall which was 'thrown down by engines into the ditch, in the time of the great rebellion [*i.e.* the Civil war], when they made the platform ... on the east side of the hill. But there was much of the walls standing afterwards on the west and north sides of the hill, in the memory of ancient men; and I remember, when a boy, to have seen many of the large bricks scattered about on the outside of the hill; and, AD 1721, I saw the foundation of the wall very fair at the north-east corner, when a large new way was made there' (Kirkpatrick 1845, 241). The foundations were again exposed in 1807 when the iron palisading was installed (Woodward 1847, 12).

At intervals along the Norwich Castle wall were stone towers, which were roofed with lead. The Pipe Roll of 1268–9 continues *Et per IIII carratis plumbi empt ad turellas cast. pdti. inde cooperiendas et cariag. eiusd. castrum xl li.* [for the purchase of 4 loads of lead for the roofs of the turrets of the said castle, and for their transportation there, £40] (Pipe Roll 1268–9; National Archives E372/113). Carriage represented a high proportion of the cost of lead. In this case it may have been bought at Lynn where there was an important market for Derbyshire lead which had arrived by sea (Raistrick and Jennings 1965, 24). One of the towers needed 30 marks spent on it in 1311 and towers were included in the list of repairs necessary in 1331 (Cal. Close Rolls, 1330–1333, 185: walls turrets, gates and bridges).

One of the towers may have been part of the prison. In 1310 a coroner testified that contrary to a prisoner's assertion, the place of his confinement had been a room next to the tower of St Michael in the castle (Hanawalt 1976, 39).

The wall and its towers is depicted in 16th-century views such as Day's view of Norwich. Wilkins suggested on comparison with the city walls that the wall may have had a parapet with crenellations, flights of steps at convenient intervals and merlons (the solid part of an embattled parapet between two embrasures) pierced with œillets (Wilkins 1796, 147).

The Great Hall and other buildings

Rebuilding of the Great Hall was undertaken in 1286–8 during the reign of Edward I at a cost of over £600 (Pipe Roll 28, Edward I, rot.11d; Cal Close Rolls, 1279–88, 515) and it has been suggested that the fact that so large a sum was spent may suggest that this was an independent structure lying in the south bailey, rather than within the donjon (Faulkner 1971, 1). Although the translated reference (given above) does imply that the hall was within the donjon, it has recently been suggested that tower or 'keep' in this instance may be taken to mean the area on top of the motte and that an aisled hall was built attached to the north side of the donjon itself at this time (Drury 2000b, sheet 5). Such a structure is clearly illustrated in an early 18th-century sketch by Kirkpatrick (Plate 10.2.A).

General repairs to the buildings and breteshes (as well as to the bridge) were ordered in 1267 (Cal. Lib. Rolls, 1260–1267, 265). Two years later the account for *diversis operat. cast. Norwici* [various works at Norwich Castle] amounted to £73 15s (National Archives E372/114). Every few years repairs to the 'houses' in the castle were

authorised to the value of £10 or £20, for instance in 1315, 1318, 1324 and 1327 (Rye 1921, 16; Cal. Close Rolls, 1323–7, 56; Cal. Close Rolls, 1327–30, 155). The sheriff accounted for £40 spent in 1331–2 *per reperat. et emendat. cuiusdam dom. ultra portam Castr. Norwic. et alior. Edificior. in eod. Castro* [for the repair of a certain building outside the gate of Norwich Castle and of other buildings there] (National Archives E372/176). This ‘building outside the gate’ is not identified. It could have been the Shirehouse, though this had been rebuilt in 1325–6 and lay inside the gate.

Castle gate

An order for the repair of the gate was issued in 1331 (Cal. Close Rolls; see above), although exactly which of the gates this referred to is uncertain.

Chapel

There was a chapel, which Kirkpatrick places behind the donjon, like the one at Castle Rising. It was dedicated to St Nicholas, and was a free chapel whose chaplain sang for the souls of kings and was paid directly by them. He had a stipend of 50s in 1268–9 (Pipe Roll 53, Henry III; National Archives E372/113) and 1271–2. He was not empowered to marry Castle Fee tenants or to register wills. The tenants were buried in their respective parish churchyards, while those dying in the castle, including prisoners, were buried at St Martin at Bale (Kirkpatrick 1845, 298–9).

The garrison

The garrison was only assembled when necessary. For instance in January and February 1267, after the sacking of Norwich by the Disinherited, mounted sergeants-at-arms, with crossbowmen and archers were kept on duty at the castle (Cal. Lib. Rolls, 1267–72, 17). At first they numbered thirty-six but were gradually reduced to fifteen.

Some of the arms used by troops garrisoned at the castle are specified in instructions received when invasion threatened in the summer of 1264. The Sheriff was to have ready the best men, mounted and on foot, with lances, bows and arrows, crossbows and axes and no excuse of harvest or any other household matter was to be accepted. These are virtually the same arms as those depicted in use by the Normans on the Bayeux tapestry of c.1100, with the exception of the mace, shortly to be superseded. The axe was apparently an English weapon.

Whenever unrest or invasion threatened, a sheriff received instructions to provision his castle. The king’s treasury would recompense him at the end of the year, adding the replacement cost of items used during the hostilities and deducting the value of surplus goods sold off.

Administrative Functions

The Castle Fee

The Castle Fee continued to exert its influence over the medieval and later administration of this part of Norwich, with rent lists later being known as the Castle Fee rents (from 1397 to 1626; see below). These documents form the basis for the properties detailed throughout this volume, much of the information being mapped by Beecheno (MS 1908). Four bronze roundels which may

have served as Fee boundary markers (Fig.12.9, Plate 12.1) were recovered from the western side of Castle Street in 1964, each decorated with the Arms of England — 1198–1340 (Green 1965, 163–164; Site 29N). Recent study indicates a probable date of manufacture in the late 13th or early 14th century (Shepherd Popescu *et al.*, 2004). Further comments on the demarcation of the Fee at this period are given in Chapter 7.V.

The gaol

In 1219–20 gaols were built, or rebuilt, at Norwich and Ipswich (Kirkpatrick 1845, 253): *in operatione gaiole de Norewiz* £8 3s 4d (Pipe Roll 4 Henry III, 45). Repairs had been necessary almost every year: amounts recorded include 40s in 1197, 100s in 1205, 3s in 1209, 41s 6d in 1210, 12s in 1212, 3s 11d in 1214. The new building was damaged by fire and repaired in 1236–7.

When a Welsh monk murdered the Prior of Thetford in 1248, Henry III ordered him to be delivered in chains to the donjon of Norwich and to be thrown headlong into the darkness of the lowest depths (Paris 1883, 32). In common with all ordinary prisoners, he would have had to pay for his own food or starve.

There was probably a prison in part of the undercroft of the donjon. In 1287–8 *Willelmus le espenser du Chastele cepit Wilhelmus de Brok et proiecit eum in profundo de gayole* [William, steward of the Castle, seized William de Brok and threw him into the basement of the gaol] (Hudson 1892, 11). In 1310 a prisoner alleged that he had been forced to incriminate another by torture, beating and starvation in the lowest room of the gaol. Another attested that for a whole winter he was imprisoned in the castle tower, exposed to the elements (Hanawalt 1976, 28, 39).

Royal hostages would have had superior quarters. Among these were Patrick of Polleworth, captured at the fall of Stirling Castle in 1307 and several Welsh notables captured in Edward I’s wars (in which many Norfolk knights took part). One of them was still in Norwich Castle after forty-eight years. Sheriffs claimed allowances for their keepers and their robes, linen and shoe leather (Cal. Close Rolls, 1318–23, 65).

Prisoners were supported by their families. A record survives of the permission given for one to receive essential supplies ‘from his own lands’ in 1331 (Rye 1921).

The prison was a source of income for a sheriff. When in 1315 the Bishop was granted permission for a prison for offenders from his town of Lynn, the sheriff objected that he would thereby lose the 14d demanded on the admission of every Lynn felon to Norwich castle. As a result the Bishop had to pay the sheriff 4s per annum in compensation (Cal. Chart. Rolls, 1300–1326, 284).

The Shirehouse²

Shire meetings (moots) had been held twice yearly since the 10th century, during which notices and instructions from the King were delivered to the shire. Many of the traditional meeting places continued to be used after the Conquest. After 1075, the sheriff rather than the earl was in control of administering justice, having control of the shire court. Most shire courts, as at Norwich, eventually moved into castles or their precincts. Two documentary references exist to the shire court of Norfolk in the 12th century, which was held in a monastery (probably the cathedral priory). The number of meetings increased to

monthly and, by the 12–13th century, virtually all had moved indoors. In some places, a separate building was constructed, often within the bounds of the castle. Examples of shire houses within castles are numerous and include Wallingford (probable), Winchester (where the shire house was built in the outer bailey), Dorchester (probable), Exeter and Northampton. A timber building was constructed for the shire court in the barbican of Cambridge castle during the 14th century.

In 1271, Henry III allocated £10 for two buildings in which to hold the county courts, one at Norwich and one at Ipswich (Cal. Lib. Rolls, 1267–72, 178). Lack of space on top of the Norwich motte or a desire to keep members of the public out may have been the reason for choosing a site in the south bailey. Space was restricted by the enormous barbican ditch and its approaches.

The Norwich Shirehouse may already have been present in 1240 or earlier (Beecheno suggested a date of 1220, proposing that it was constructed at the same time as the gaol; 1888, 18). In 1289, the city bailiffs complained that hearings of crown cases in city courts were delaying their own processes, whereupon it was decreed that such cases should be conducted nowhere but in the Shirehouse. In 1325–6 an inquiry found that expenses of £62 19s on repairs to the Shirehouse were justified (Colvin 1963, 755). The following year there was another undertaking given to the City bailiffs that the king's business would take place in the Shirehouse and not elsewhere in the city (Cal. Pat. Rolls, 1324–7, 215; Cal. Close Rolls, 1323–7, 444–445). The court Rolls, for Suffolk were also kept at Norwich castle. From the 13th century, the sheriff's financial and legal role declined and, by the 14th century, the shire meetings had diminished in importance. They still had a role, however, in the election of knights.

The Norwich Shirehouse was placed within the south bailey and is described as lying on a mound to the west of the castle approach. Maps show the building lying in the inner edge of the 'castle ditch' (*i.e.* the south bailey) taking no account of a rampart. Hochstetter's references to the 'castle ditches' may be misleading as the south bailey ditch had been infilled/encroached upon by this date and the term may be generic. The later 'Castle Hill' refers approximately to the area of the *Curia Commitatus* (or Shirehouse) at the top of the old Cattle Market (on the north-west side of Bell Avenue; Sandred and Lindström 1989, 23). The Shirehouse could be approached from a lane which roughly followed the line of present Orford Street. The hill later became known as 'Garter Hill' although Kirkpatrick's assertion that this related to the 'warping of garters there' (Kirkpatrick 1845, 312) is now rejected in favour of a derivation from the Old English 'Gallowstree' (Sandred and Lindström 1989, 23). The hill is known to have been a venue for public hangings. There has been some debate over the location of the Shirehouse Gap which was documented from 1375 (Sandred and Lindström 1989, 24). Kirkpatrick equated it with Golden Ball Street (Kirkpatrick 1889, 12), although Beecheno (MS 1908) and Campbell (1975, maps 2 and 3) placed it further east. In the latter interpretation, it would have connected Beaumont's Hill with the castle hill.

'I cannot agree with Harrod that the ruins shown in the foreground of Buck's view (1738) are the ruins of the Shirehouse Surely if so considerable a fragment of the old *Shirehouse* had remained in Kirkpatrick's time, he would have said so' (Beecheno MS 1908, 22–23).

Kirkpatrick himself noted: 'I have been informed by one Mrs Burrows, an aged woman, and old inhabitant of St John's Timberhill parish, that, when she was a girl, there was part of an old stone house standing on the said Garter-hill ... near the Golden Ball Lane, viz., almost upon that spot of ground on which the cistern was built a few years ago (but stood not long) for the water-works, but it was nearer to the said lane' (Kirkpatrick 1845, 312). Both this witness and others remembered the windows of the building, interpreted as the Shirehouse, having been barred.

Three of the cases heard by the king's justices in 1249/50 concerned the defences of the castle. Edmund Kike and William of Hapesburgh were said to have encroached in the king's land and Odo of Beccles on the king's ditches (see further details below). William of Hapesburgh held a property opposite the bottom of Timberhill, at the southern end of the Jewry.

Residential Functions

Henry II (1154–1189) spent at most five nights at Norwich Castle and King John at most ten (Pounds 1990, 84). Henry III may have stayed at the castle in 1221 and 1235, but in the later part of his reign he preferred what must have been the greater comfort of the priory. Temporary lodgings were provided in the castle for royal officials such as justices in eyre and others (Cal. Pat. Rolls, 1266–72, 708). For instance, when instructed to prepare the castle with men and provisions against possible invasion in 1264, the sheriff was also to allow the king's Justiciar and his men to go freely in and out (Cal. Pat. Rolls, 1258–1266, 361).

Although the hall of the donjon was rebuilt in the 1280s the castle was no longer used as a royal residence by the latter half of the 14th century.

Edward I progressed through Suffolk and Norfolk with an army in 1277 inspecting his castles. He spent Easter at Norwich, returning to London by sea. He was in the city again the following year for the reconsecration of the cathedral. In 1285 he spent all Lent in Norfolk and in 1289 went on a pilgrimage to Walsingham. It is not known whether or not he stayed in the castle on the last three occasions.

Edward III was in Norwich early in 1327, when, afraid that his rebellious queen and her supporters would land from France, he ordered an array and muster. Although Edward III came to Norwich at least four times during his reign, he may always have stayed at the Priory. His visit in 1341 was to attend a programme of jousts. This was the only event of its kind held in the country because such activities, as well as highly dangerous for the participants, had come to be seen as potential threats to the Crown. The Norwich 'justing-acre' was on open land near the city walls in St Augustine's parish.

The City Before c. 1345

(Figs 7.2–7.3 and 7.37)

Streets and Lanes

From this period onwards comes plentiful evidence for the naming of the streets, lanes and paths around and leading into Norwich Castle ditches. Those with specific relevance to the current research are detailed below and

located on Fig.7.37 (refer to Fig.1.2 for modern street names).

1. *Durnedale (Timberhill)*

This name refers to the stretch of road (now Timberhill) which runs just to the east of the Great Cockey, leading downhill from St John's church towards the stream valley (and what is now Orford Hill; Sandred and Lindström 1989, 147–148). It appears that it was once considered part of Berstrete (see Fig.7.3). The origin of the name Durnedale has been explained as the Old English (Angl) **derne**, (Wsax) **dierne** meaning 'hidden secret', with the addition of the Old English **dæl** or Old Norse (?) **dalr**, Old Danish **dal** meaning 'valley', *i.e.* the hidden, secret, hidden or overgrown dale' (Campbell 1975, 25). **Durne** is not, however, the spelling to be expected in East Anglia and the origin remains obscure (Sandred and Lindström 1989, 147). The first use of this road name was in 1325 and it continued to be mentioned well into the 18th century. It was also known throughout the medieval period as Old Swynemarket Hill (from 1299 to 1454), but not as Timbermarket or Timberhill until 1507 (see Chapter 8.1).

2. *Sadelgate (White Lion Lane/Street)*

This road formed a focus during the medieval period for the manufacture of saddles, bits, bridles and spurs. Variations of the name Sadelgate occur throughout the 13th and 14th centuries, when it was also known as 'Le Lorimers³ Row' and 'Le Sporiere Row' (Sandred and Lindström 1989, 153). References to Sel(l)aria were made between 1285 and 1307, the name deriving from *sellarius* ('saddler')/*sellaria* ('saddlers' quarter').

3. *Swynemarket (Orford Hill)*

Norwich's swinemarket moved from All Saints Green to what is now Orford Hill in the late 13th century. It retained the name throughout the 14th and 15th centuries, being known as Sygars Hill in the 16th century and the Hog Market from the mid 17th to early 18th century (Sandred and Lindström 1989, 122).

4. *Cockey Lane (Back of the Inns/Castle Street)*

Part of this lane, now lost, ran along the upper course of the Great Cockey stream between Surrey Street and All Saints Green (Sandred and Lindström 1989, 98). Further north, the lane was referred to as variations of Cokeylane from 1340 to 1670. The lane followed, at least in part, the diverted route of the stream.

5. *Hosiergate/Cutlerrowe (London Street)*

References to this road begin in the early 13th century with references to Hosyergate (a hosier being a maker of stockings). These continued until the middle of the 14th century, when the hosiers had been replaced by the cutlers (Sandred and Lindström 1989, 116; see Chapter 8). References to Cutlerrowe continued into the 17th century, with other parts of the lane being used by goldsmiths and latteners.⁴ Part of the lane continued the *Aurifabria* 'the goldsmiths' row' which led into the lane from the Market Place.

6. *Road between Cutlerrowe and Conesford (Blue Boar Lane/Bank Plain)*

The stretch of road which ran between the eastern end of Cutlerrowe and Superior Conesford (King Street) is not named in contemporary documents, simply being known as the 'King's Way' during the 15th century (Beecheno MS 1908, map C).

7. *Superior Conesford (King Street)*

The part of King Street adjacent to the castle's north-east bailey (the road having been first referred to in the mid 12th century) continued to be referred to with variations of the name Conesford throughout the 13th and 14th centuries (Sandred and Lindström 1989, 114).

8. *Road between Conesford (King Street) and the castle approach (Golden Ball Street/Cattle Market Street)*

No name is known for this stretch of road until the late 17th century (when it was Beaumont's Lane). That a road was in existence in broadly this position from earlier times is indicated by documentary evidence which refers to the 'King's way' or the 'common way' (Beecheno MS 1908, map F and G).

9. *Toftes Lane/Cockerel Lane (Stepping Lane)*

This lane connected the un-named road (later Cattle Market Street) with Conesford (King Street). Both names are personal names, *Cockerel* perhaps indicating an origin with French merchants (Sandred and Lindström 1989, 143).

10. *Southern castle approach (Golden Ball Street)*

This lane was often referred to as leading to the Shirehouse, its present name being 17th-century in origin. Hudson believed that the original road leading northwards to the castle equated with Berningham Stile, although this identification has now been refuted. Beecheno placed the Stile to the north of the castle (see below; Beecheno MS 1908). Kirkpatrick suggested that this stretch of the road was the Shirehouse Gap (see above). This was in fact the next way across the ditch to the east, *i.e.* to the north of the Golden Ball Public House.

In addition to the routes described above, a number of lanes and paths led into the castle ditches from an early date.

11. *In vico Curia/Common Way to County Court (Orford Street)*

This route led from the south-eastern corner of Orford Hill towards the Shirehouse in the south bailey. References to a way in this position began in the late 13th century.

12. *Way into the ditches (Le Casteldyk Lane, York Alley)*

In 1285 a route from Sadelgate (now White Lion Street) to the Shirehouseyard existed, presumably skirting to the south of the barbican ditch and leading into the south bailey (?along the line of York Alley as depicted on the 1880s OS map).

13. *Gropecuntlane (Opie Street)*

This lane which led from Cutlerrowe into the north-east bailey was referred to as Gropecuntlane in the early 14th century, with references to the *Turpis Vicus* in the 14th to 15th centuries (Sandred and Lindström 1989, 122). The

fold out

fold out

<i>Parish</i>	<i>Location</i>	<i>Property</i>	<i>Owner/occupant</i>	<i>Abbutals</i>	<i>Comments</i>
St Andrew (Block V)	St Andrew's Steps	three shops	shoemaker/tanner		Gropecunte lane ran between Blackfriars and the castle
St Michael at Plea (Block VI)		shop	turner/spooner/apothecary harper/apothecary	castle ditch	
		three shops	smith/baker	castle ditches	
		two shops	smith/baker (Prior of Wymondham)	road	
		message * and shop	tailor	shop in front/road	
		message and shop	cutler/painter	road	
		message	bellfounder/girdler?	road	
		message	hatter/armurer	road	
		message	bellfounder/glasswright	road	
		message	parchmentmaker	road	
		four shops	wax chandler	road	
St Cuthbert (Block VII)		message	parchmentmaker/Verrer	road	
		two shops	luminer woolman/luminer	road (on corner)	
St Peter Parmentergate (Block VIII) (formerly St John the Evangelist in Conesford)		message		road	Church of St John in Conesford lay on the east side of the present King Street. Also included here were two anchorages, one opposite road to Redwell, one in part of the former churchyard.
		tenement	needler/garden of Friars Minor	road	
		message	needler, goldsmith	road	
		message	needler, goldsmith	road	
		message with new innkeeper	merchant	road	former churchyard
St Peter Parmentergate	Road leading to Norwich castle north (1302) (later Pump Street)	solar			
		land/later message land		road road	

<i>Parish</i>	<i>Location</i>	<i>Property</i>	<i>Owner/occupant</i>	<i>Abbutals</i>	<i>Comments</i>
St Martin at Bale (Block I)	Unnamed road north, part facing west into Fee, southern part facing churchyard	land		road	Last three or four properties facing triangle of St Martin at Bale outside Fee.
		messuage	merchant		
		tenement/land	cordwainer		
		land	bellfounder		
		land	needler/chandler spicer		
		messuage	bellyeter/ hornwork		
		messuage	bellyeter/ weyte		
		land with house			
		cottage (on corner)			
		messuage	bursar/needler		
messuage	bellyeter				
messuage		cottage near south-west corner			
cemetery of St Martin		needler/barber (perhaps the property of the Prior and Convent of Holy Trinity occupied by William Gerard in 1310)		northern abuttal the King's land	
messuage		murager (perhaps the property of the Prior, Convent of Holy Trinity, occupied by William Gerard in 1308)			There was a former lane (gone by 1289) which ran along the SW of parish boundary behind the properties there.
two shops with garden/house		painter (another property to the east housed another painter)			
house		painter			
messuage	(facing west onto Golden Ball Street)	bellowsmaker/hen monger			
messuage/land	(Shirehouseyard to north, Golden Ball Lane east)	merchant			
land	Ditch of Shirehouse to the north	spicer/merchant		in Castle Fee (later Property (g))	
land	Way to Shirehouseyard	Jew/goldsmith, spicer (?) merchant			
	Blew Bell block	?William of Hapesburgh's encroachment of 1249		(later Castle Fee Properties 52-55)	

<i>Parish</i>	<i>Location</i>	<i>Property</i>	<i>Owner/occupant</i>	<i>Abbutals</i>	<i>Comments</i>
St Peter Mancroft (Block III)	Road leading from Saddlegate to Shirehouseyard north and east	a piece of open land, later described as a messuage.	acquired by a poulterer in 1285	with Cokeye to the west	Further south road is called 'Swynemarket'. It seems to have all been open land here with three cottages at the southern end.
	Common lane leading to Cokeye from Saddlegate (1289) St Peter Mancroft	a single large messuage land with houses NW corner and cockey N	merchant/girdler/armourer armourer/saddler and lorimers on Saddlegate.		
	Lane called Cokeye east, Lane called Welleyard** south (St Peter Mancroft)	part messuage	goldsmith		All shops here were to the west
		messuage and shops west and south land with houses	goldsmith		
		land with shop etc.	tawyer/shops on market		
		two messuages	shop on market		
		messuage	shops on market/tawyer		
		messuage with orchard	shops on market/hirdler/drapeer		
		messuage in close	shoemaker		
		land with walls to west, south and east	tawyer/spicer		
	messuage with shops and an entry	tawyer/goldsmith			
	Enormous property	furber/shoemaker/goldsmith		Hosiergate to north, 'Coquey' to east (SPM)	
	messuage	barber/goldsmith			many shops north
	messuage				
St Andrew (Block V)	The Cockey kicks to the east before passing to Hosiergate and turning west	messuage	shoemaker/fanner		
		messuage	cutler		
	Rackeyslane (Swan Lane)	several shops/messuage	shoemaker/goldsmith		
		messuage			
		messuage	swordmaker		
	messuage	swordmaker			
	messuage	apothecary			
	corner property				
	messuage with buildings, houses and shops	tawyer/shoemaker		1310 castle ditch to south	
	'Tenement on Castle Fee'			1335 no southern abuttal	

* 'Messuage' in this table equates to a messuage and buildings, using the legal definition of a messuage as 'a dwelling house with outbuildings and land assigned to its use' (Concise Oxford Dictionary 1995).

** This refers to Wellhouse Yard (now lost). It formed a passage running from the east side of the market place to the ancient Saddlegate Well, just north of present White Lion Street. It crossed the Cockey Stream. Saddlers workshops were present here in 1318 (Sandred and Lindström 1989, 150).

Table 7.2 Occupations, where stated, of owners or occupiers of city properties surrounding the Castle Fee in 1285 to 1341 (going round the castle clockwise, beginning at St Andrew's Steps): refer to Fig. 7.2 for location of parishes

coarse name was common in medieval England, although this form was suppressed by Hudson.

14. *Berningham's Stile (King's Arms Lane)*

The lane was later known as King's Arms Lane from the public house on the western corner, but was originally called Berningham's Stile, the word here probably meaning a sloping lane. It ran from the eastern end of Cutlerrowe into the Castle Meadow (Beecheno MS 1908, map), although Hudson identified it with Golden Ball Street. References began in the mid 14th century and the name may relate to a surname (Sandred and Lindström 1989, 113). It is possible that this route was established after the 1345 handover of the baileys.

15. *Way into the ditches (Market Street/Holkham Lane)*

Berningham's Stile may have run southwards across the north-east bailey, around the eastern end of the barbican to emerge onto the un-named road (later Cattle Market Street). This way leading into the castle ditches may have existed as *que ibm versus Castrum* [the 'King's way which goes towards the Castle'] by 1301–02 (Beecheno MS 1908, 57). It appears in Castle Fee tenement records from the late 14th century (Beecheno MS 1908, map E) (Chapter 8.I).

The Great Cockey

by Margot Tillyard

To the west of the castle in the parish of St Peter Mancroft, south of Sadelgate (White Lion Street) the City's jurisdiction stretched across the Great Cockey to the Swynemarket at the bottom of Durnedale (Berstrete/Timberhill). In 1333 after disposing of the main part of his property to the west, Geoffrey of Bungay left his children Stephen and Alice a piece of land with trees and houses built on it and all the rents which he had acquired from William But, situated between the Cockey and the place called 'Swynemarket' (NRO 1a Roll 13 m 5). At this time much of the rest of this strip seems still to have been gardens, though on the eastern frontage of Geoffrey of Bungay's property there were four cottages by 1337 and three others further south.

The property to the north, bounded on the north and the east by 'the road from Sadelgate to the Shirehouseyard', was open land in 1285. It was sold that year with permission for buildings both on the land 'and above the Cockey on the west, according to a deed previously obtained from the Community as long as the flow of the Cockey were not impeded' (NRO Case 1a Roll 1 m 1).

To the north of Sadelgate there is no evidence of the Cockey between the houses, so it must have been culverted before 1285. It reappears a little further north, when it has turned east in a diversion which may have occurred in the 13th century or later (see Chapter 7.V). A path ran beside it here continuing west past the Saddlery well to emerge at the market place. After running east for a short distance the Cockey turned north again forming the boundary of the Castle Fee until meeting Hosiergate (also called 'Cutlerrowe' and 'Latonerowe', later London Street). A path which had begun at the corner of Sadelgate ran beside it. From this point Hosiergate represents the edge of the Castle Fee. The Cockey flowed westwards a short way before finally turning north again down to the river.

Tenement Development and Properties within the Castle Fee

by Margot Tillyard

Introduction

(Figs 7.2–7.3, Plate 7.1)

Norwich's medieval tenement pattern, much of which survived until the mid 20th century, was established in the 13th century, often reusing earlier boundaries. By the early 14th century, the castle's earthworks were no longer being maintained and encroachment into the castle precinct was of long-standing. Tenement boundaries began to be extended across the former Fee limit. 'From ancient time', in Blomefield's phrase, Sheriffs of Norfolk had permitted development on the banks of the outer ditches of the baileys. When this first occurred is not known, but when in 1221 the Dean of Norwich claimed jurisdiction over tenants of the Castle Fee an enquiry found that such tenants had anciently paid tithes and been buried at their respective parish churches (Blomefield 1806, II, 125). Had they all been living in the bailey on top of the motte they would have used St Martin at Bale in which parish the Castle Hill was, or was deemed to be, situated.

Included throughout this publication, in summary form in Chapters 7–11 and in detail in Part IV, is an account of the development up to the early 17th century and occasionally later of those properties which were in the seven parishes that met at the castle (Table 1.6 and Fig.7.2). It is based on a reworking of Beecheno's 1908 study *Notes on the Ditches of Norwich Castle* and owes an enormous debt to that work (Plate 7.1). The tenancies were subject to a fixed annual charge known later as the Castle Fee rents. After the city bought the outer baileys from the Crown in 1345 these rents were collected by the City Chamberlain. Eight rent lists are found in their accounts, the first of 1397 (in a copy in the Domesday Book) and the last of 1626, and they have been substantiated by the use of property deeds, wills, leases and court records (fully detailed in Part IV). An assessment of Castle Fee tenants in 1332 is detailed in Part IV, Chapter 2.III.

The earliest record of a property changing hands is dated 1255 when two Jews either sold or let a messuage to an arbalister whose neighbour was a knifsmith (see below). It was in St Peter Mancroft, part of the first property on the 1397 rent list (Fig.7.2, Property 2). Beecheno believed that all the land along what is now London Street (after it bends to follow the line of the ditch) was built on or occupied by 1370. A sale of 'buildings, houses and shops' here is dated 1310. Numerous others follow from about 1380 and from these and the rent lists a plan can be made and a history of each property drawn up. It is a record of *ownership*. In most cases the owner's domicile is unknown. Multiple holdings were common and became more so. So did multiple occupancy. Elizabeth Rutledge found an average increasing from seven to eleven people per property in the leet of Mancroft between 1300 and 1340 (Rutledge 1995, 12). The trades practised on any one site become largely a matter of guesswork. Nevertheless, summaries of known trades for each of the parishes can be constructed.

Fig.7.2 shows approximate positions of all the properties as they existed in the late 14th century, while Fig.7.3 shows in detail those in the parishes of St John and St

Martin-in-Balliva to the west of Golden Ball Street between 1285 and 1341 (City Properties a–h). Few measurements have been found. The length of street-frontages varies between 12 and 110 feet and depth of properties between 14 and 160 feet. Castle Fee properties have been numbered according to the first rent list (the first 55), with additional numbers given in the order in which the grants made appear in the Domesday Book, totalling 71 properties (for the purposes of this study, these have been organised into ‘Blocks’ by parish). All topographical features have been noted and a check-list of these made. In the detailed lists for each property Castle Fee rents are indicated (see Chapters 8–10 and Part IV) and references are given for other material used. Castle Fee Properties 38–51 and much of City Properties a–h were investigated by the archaeological work at Castle Mall and Golden Ball Street.

Topographical Features from Property Deeds 1285–1341

The sloping land in the parish of St Martin-in-Balliva above St Peter Parmentergate churchyard seems all to have been gardens. There were messuages with buildings opposite the east end of St Martin’s churchyard (Table

7.2). Behind the houses opposite the south side of St Martin’s churchyard there had at one time been a lane which probably followed the parish boundary (Fig.7.37). It seems to have been disused before 1289 and may also have marked the limit of the Castle Fee at an early date (see further comments on its correlation with castle ditchwork in Chapter 7.V). The north-western side of the triangular shape of the block on which the church of St Martin stood broadly indicates the line of the south bailey ditch. As has been noted, both St Martin’s and St John’s churches are described as ‘at the Castle Gate’ in early deeds.

A piece of land notably ‘in the bailey before the gate of the Castle’ was given to Holy Trinity Priory (NRO DCN 40/2 n.d.). It abutted land belonging to the Almoner on both sides and had belonged to Swetyn the servant of the recluse of St John of Berstrete. This cannot be placed. It may be the same property *ad portus Castri* [at the Castle gate] from which the Almoner received 4d in 1325–6.

Another property in St Martin at Bale was known as *terra Molle* [soft land]⁵. The Cellarer received 9d from this in 1295 and 1303. The tenants were John Balle followed by William Gerard. These men were both associated with a property to the south of St Martin’s church.

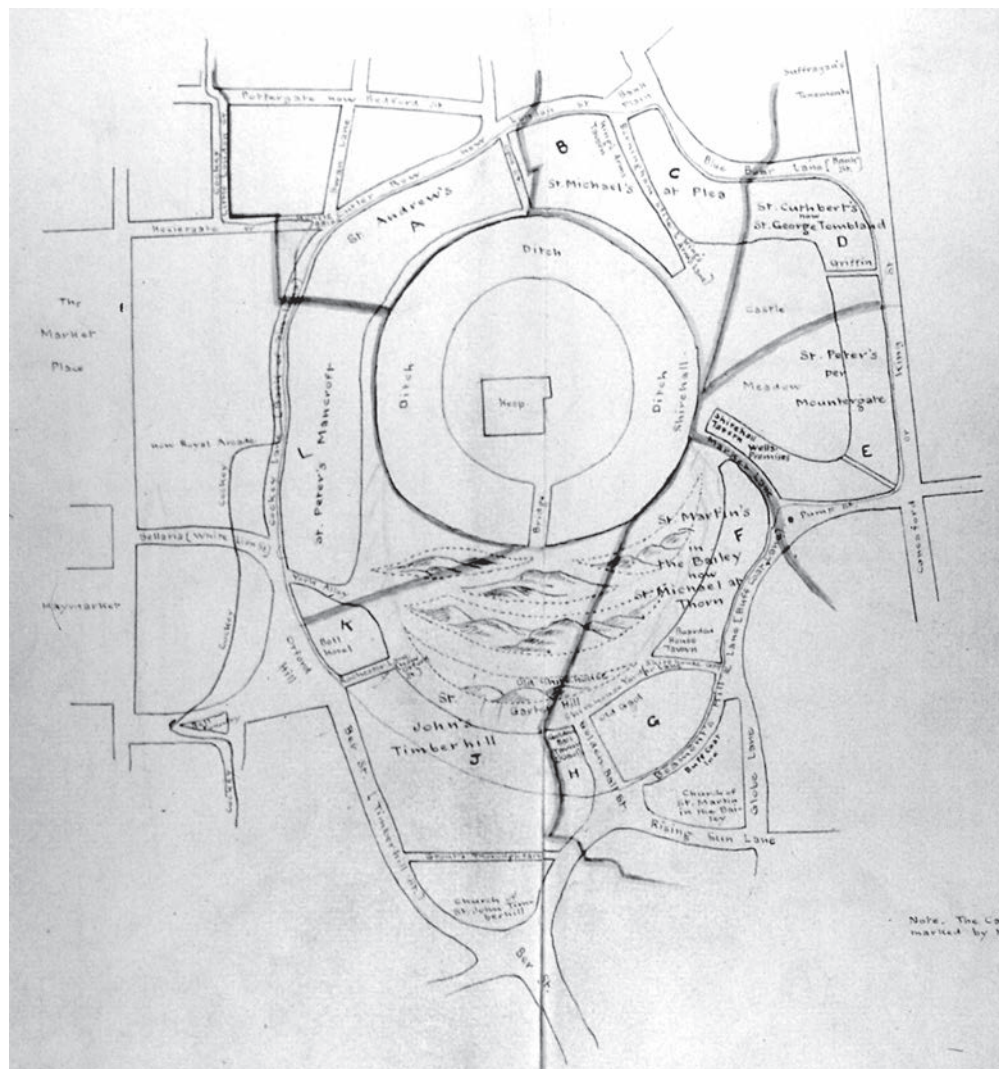


Plate 7.1 Beecheno’s unpublished map of the Castle Fee (1908). The lettered blocks relate to the property diagrams presented in his manuscript.

William Gerard held others in the area, including one on the corner west of the churchyard.

Properties in the Castle Fee and in the City's Jurisdiction

(Fig.7.2)

Many encroachments into and purchases of parts of the Fee are documented throughout from the mid 13th and 14th centuries. Excepted from the grant to the city in 1345 was the Shirehouse which was situated to the west of the path between the later Golden Ball Lane and the barbican ditch. Its position may be determined from the abutments of properties in St John's parish to the south. These are recorded in the enrolments of Norwich property transactions, a long series of which survive from 1285. Reconstructions of patterns of property ownership in the areas bordering the Castle Fee have been drawn up for the period up to 1341 (Table 7.2 and Fig.7.2). Some properties or part-properties in St John's and a few in other parishes, while being described as within the Castle Fee, are nevertheless enrolled as if they were in the jurisdiction of the city in this period. This is an anomaly which remains unexplained.

Block I: St Martin-in-Balliva

No documentary evidence for the tenements here (Castle Fee Properties 38–46) has been traced for the period before 1345, although comments about the gardens and messuages on the opposite side of the road, outside the Fee, are noted below (see Table 7.2). Developments of the Fee properties after 1345 are detailed in Chapters 8–11 and more fully in Part IV.

Block II: St John de Berstrete (Timberhill) and St Martin-in-Balliva

(Fig.7.3)

As has been mentioned, before 1345, the jurisdiction of the city ended at a route running around the edge of the Castle Fee with the exception of the area to the north of St John de Berstrete (Timberhill) Church. The northern parts of properties there, including the north-east corner which was in St Martin at Bale parish, were described as within the Castle Fee (Properties 48–51) and their northern abutments given either as the Shirehouse yard or the ditch of the Shirehouse yard. Outside the Fee, six city properties fronted west onto Berstrete (Properties a–f), while two others (Properties g and h) fronted the lane leading towards the castle (later Golden Ball Street; Fig.7.3).

Properties (a) and 51

The westernmost property of this block was bounded on the west by the way to the Shirehouse yard (later Orford Street) and to the south by the King's Way (Durnedale/Berstrete, later Timberhill). This corner property had belonged to a Jew, 'Meyr', possibly the poet who survived the expulsions of 1290 and wrote a poem about them (Lipman 1967, 149). Itinerant Justices granted his property to an English goldsmith, Robert of St Edmund, in 1285–6. He exchanged it ten years later for a messuage in Upper Newport (later Bethel Street) belonging to William Bateman, son of Adam le Especer, when it was described as a messuage with buildings together with all the adjacent land in the Castle Fee.

Properties (b) and 49

Bateman also acquired from Robert the next property to the east, which was described as 'land' in 1286 and 1281, though this does not necessarily mean that it was unbuilt-on. It abutted north on Robert's land in the Castle Fee. Bateman kept a row of five shops on the Berstrete frontage when he sold the messuage to a merchant Richard Bonyngton in 1305. The messuage was 'in the liberty of the City and in the Castle

Fee' and was subject to city landgable of ½d and rent to the king of 15½d.

In 1304 an encroachment William Bateman had made on Castle Fee land had resulted in an inquisition. This established that he had built on one piece of land there measuring 80 x 20ft and occupied two empty plots 'of the ruined ditches of the Castle' each 100 x 8ft (Beecheno MS 1908). He was granted a lease of the three plots for 12d per annum payable to the sheriff. The additional 3½d mentioned when he sold it the next year may represent a fourth plot. Bateman sold Bonyngton the former Jew's property and the five shops in 1310. Bonyngton still held the property to the north, now described as a garden.

Properties 47 and 48

East of these two properties was another which faced north onto the Shirehouseyard (Property 48, Fig.7.3). It occupied the north-east corner of the block and was part of the parish of St Martin at Bale. It was in the Castle Fee, but was enrolled with city properties. Its south-east corner was a separate tenement (Property 47). Abuttal evidence indicates that it may all have been undeveloped land at this time.

Properties (g) and (h)

The area to the south of this was in St John Berstrete parish and all held by the de Kirkeby family. First there was a long strip of land 160 x 14ft, then a plot, which in 1290 was described as 'land', then a third piece of land measuring 108 x 64ft. This was split into two parts by 1333. Between the western boundary of the de Kirkeby properties and Berstrete were several smaller messuages (Properties c–f).

Cemetery Encroachment

In the south west corner of St John's churchyard was a cottage held of the Priory of Holy Trinity which one glover (Walter de Castra) devised to another (John de Newbrid) in 1294.

Block III: St John Timberhill and Peter Mancroft

The encroachment on King's Land of which William of Hapesburgh was accused in 1249–50 may have been at the south-western edge of the Swynemarket (*i.e.* Properties 52–55). In 1249 he had leased from the Prior and Convent of Holy Trinity the southernmost property in the Jewry, which faced the market to the west and the castle to the east. The Cockey is not mentioned but probably ran across the property from south to north, near but not at the edge of the Castle Fee (NRO/DCN 40/5,32).

Block IV: St Peter Mancroft

As noted above, Stephen le Jouvene l'Arbalester agreed in 1255 to pay 6d per annum to two Jews for a piece of land in St Peter Mancroft parish. It faced west onto Sadelgate and south onto the public way leading to the bailey. To the east was the king's ditch and to the north the messuage of William the Knifsmith (Lipman 1967, 136). It was in the Castle Fee and immediately north of the later York Alley (Block IV, Property 1/2).

In 1344–5 John son of William of Colton bought a rent of 12d per year due from a part messuage in St Peter Mancroft in the Castle Fee (Property 2). It was sold by a lorymer (a maker of the metal parts of harness), and among the witnesses was a second lorymer and another member of the Colton family. From later deeds it is known that the Coltons owned both properties facing West to Sadelgate but in the Castle Fee and the rent charge may have derived from one of them (NRO DCN/45/33/56).

Blocks V and VI: St Andrew and St Michael at Plea

The City Court enrolled the sale of two properties in St Andrew's parish which were in the Castle Fee. One with buildings, houses and shops was sold by a tawyer, or leatherdresser, to a shoemaker in 1310. It had once belonged to William of Rackheythe, a shoemaker, who had a property in what later became Swan Lane. At this

period it was known as Rackheyes Lane. The second transaction, enrolled in 1335, was the sale of rent from a tenement which also abutted north on what became called London Street. The neighbouring property to the west was held by John le Sopere le Hatter who owned a messuage on the north side of the street.

In 1305 Robert Benedicite was granted an empty plot in the Castle Fee which Beecheno placed on the boundary between St Andrew and St Michael at Plea (Blocks V and VI). It measured 172 x 30ft and owed rent to the sheriff of 3/4d per annum. By 1344 this, then said to measure 160 x 30ft had passed without licence via Robert's son Robert to Robert de la Pole (perhaps a member of the Hull brickmaking family). He was fined 10s but was allowed to remain in possession at the same rent (Cal. Close Rolls, 1301–7, 343).

John Athol 'armurer' was said in 1345 to have 'usurped and inhabited' part of 'le Castildich'. He held a large property at the end of the north side of what is now London Street in the parish of St Michael at Plea. The encroachment could have been opposite this (Property 19; see Part IV).

In 1287 Miriella, widow of Gopcelin Godale acknowledged receipt of, *inter alia*, rents on the Castle Fee and two shops. No parish is mentioned, but her daughter Matilda with her husband, sold two shops on St Michael at Plea which were on the north side of the present London Street, six years later. The rents could have been opposite or the rents and the shops could have been together on the Fee.

Block VII: St Cuthbert

The parish of St Cuthbert was added to that of St Mary in the Marsh after the 1272 riot (see above). The north-east corner of the Castle Meadow was in this parish. Here were six messuages, one facing north, one north and east and the remainder facing east opposite the Greyfriars monastery on Conesford (present King Street). They have been numbered 24–29. Additional leases of land behind Properties 24 and 25 have been given the numbers 64 and 65. Beecheno traced their history from the mid 14th century to their acquisition by John Underwood, the Suffragan Bishop of Calcedon from 1513 onwards. Together with others north of the present Bank Street outside the Fee, they were known as the Suffragan's tenements, a name they retained when they became the property of the city. Evidence for occupation of these premises from before 1345, when the city acquired the baileys, is scanty. John of Wytton and John of Swaffham, living opposite the Friars Minors, were amerced at the Leet Court of 1289 because they were not in tithing (registered in a group of ten). The Friars successfully made excuses for the former, so he had probably served them in some way (Hudson and Tingey 1906, 364). There is an assessment of 1332 (see Part IV, Chapter 2.III) naming seventeen inhabitants of the Castle Fee, one of whom may be connected with Property 25. In 1332 a rent of 4s 4d changed hands, probably for Property 29 and in 1343 a parchmentmaker sold a rent from a messuage 'near the Castle Fee' with the road to the east, probably Property 27.

Block VIII: St Peter Parmentergate

The properties numbered 30–37 by Beecheno were in the parish of St Peter Parmentergate. There were four on the west side of Conesford (King Street) opposite the Greyfriars or Franciscan monastery. Property 34 was on

the corner of Conesford and the common way from there to the castle (later Pump Street, finally Cattle Market Street) and in part backing onto the ditch of the Castle Meadow. The next (Property 35) also faced south, but also west onto a common way leading into the Castle Ditches (later Holkham Lane). North of this, Property 36 faced west and, round a bend in the road, Property 37 faced south, both with a northern frontage onto the Castle Meadow.

St Peter Parmentergate was a very large parish extending mainly along both sides of Conesford south of the Rose Lane junction. It also incorporated the land of the former church of St John the Evangelist which had stood on the north-east corner of the present Rose Lane/King Street crossroads. The earliest surviving property deed for this area is dated 1292 and refers to a messuage with a new solar on the corner. It was run as a tavern by William de Sessuns (he also had caused an affray at the house of a nearby woman three years before, Hudson and Tingey 1910, 357). North of this was Simon the Needler's messuage, which by 1301 had passed to John the Goldsmith (Roll 4.1d).

Godfrey le Belleyetere (probably working c.1220) and Ralph le Belleyetere (working c.1260) were at adjacent Properties 30 and 31 on the eastern edge of the Castle Meadow. Cattermole suggests that these, along with adjacent painter, glasswrights and latoners, may indicate a concentration of ecclesiastical craftsmen (Cattermole 1990, 143).

Though its precise location is unknown, the shameful event of 1264 must have occurred in this area. The jurors of the parishes of St Peter Parmentergate, St Martin-in-Balliva (at Bale) and St Michael Conesford (soon to be absorbed into the site of the Austin Friars' monastery) swore on oath that:

'William the Arbalister of the Castle threatened to set fire to John le Lindraper's house and likewise John of Rendlesham and Thomas the steward of the Castle, with these others, namely Henry Punel, Simon le Longe and William Bonehay, and that William the Arbalister set fire to the gate between the houses of the said John le Lindraper and John of Belaugh as a result of which the house of the said John of Belaugh burned down in the night of June 10th 1264; and that the said William emerged from the house of Robert Smith, locksmith and returned there after the said crime. They say that the same men stole the clappers from the bells of St Peter Parmentergate church and cut the bell ropes of the churches of St Vedast and St Cuthbert so that no-one came to put out the fire ...'

(translation of Leet Court record printed in Hudson and Tingey 1906, 206).

This illustrates the tension which must have existed between the citizens and the Castle; also how local inhabitants were jointly responsible for preventing crimes and bringing perpetrators to court. The absence of any mention of the church of St John the Evangelist, situated as it was on Conesford between St Peter Parmentergate and St Cuthbert may indicate that it was already out of use by 1264. That setting fire to the gateway of one house burned down the house next door shows how closely built up the street frontage was.

Craft and Industry at the Edge of the Castle Fee

by Margot Tillyard, with Elizabeth Shepherd Popescu
Unfortunately, there can be no complete picture of the trades pursued on the edge of the Castle Fee because there is no certainty that the property owners, even where their trade is given, actually lived in them. Stated occupations for the properties surrounding the Castle Fee (*i.e.* those outside it) in the period 1285–1341 are given in the following table, which can be read alongside Fig.7.2.

Some of the traders found in the period 1285–1341 are concentrated in groups. For instance in the area of St Michael at Plea and St Cuthbert were several parchment makers. One grouping of tanners, skimmers and tawyers (leatherdressers), who required large amounts of water, was to be found along the Great Cockey stream to the west of the castle (Kelly 1983, 22). The most numerous group were the metalworkers, the smiths, lorimers, needlers, swordmakers and armourers who were to be found to the west and north of the castle, although smithing was concentrated to the north of the city presumably for reasons of safety (Kelly 1983, 31). A particular concentration occurred along Sadelgate. Associated with them were the girdlers, saddlers, shethers and bursers. Sadelgate (now White Lion Street, Fig.7.2) was first documented in 1246 and was known as ‘Le Lorimers Rowe’ in 1322 and ‘Le Sporier Row’ in 1320.

There was a surprising number of bell-founders (see also Chapters 8 and 9). Cattermole (1987) noted two almost certainly on the west side of Conesford (St Peter Parmentergate) and one in the north east corner of the later London Street (William le Belleyster in St Michael at Plea). He mentions one in the parish of St Martin at Bale (Alan Poche), and property deeds reveal two others, one owning two messuages with buildings facing west onto the churchyard, and another probably north of the same churchyard. They probably also made cooking pots and other domestic utensils (Blair and Ramsey 1991, 93 ff).

During the medieval period, the butchers lived for the most part in Berstrete (modern Ber Street and what is now Timberhill). Skimmers were most numerous in the Berstrete sub-leet, with saddlers common both here and in St Peter Mancroft. ‘One reason for this localisation would undoubtedly have been to limit the offensive effects of their trade to a specific area, but an important reason could also be that Ber Street lies between the point of entry for cattle into the city at Carrow and their point of sale in the market’ (Kelly 1983, 26). Cattle were fattened on the marshes outside the city. It has been suggested that the dedication of a church along Ber Street to St Bartholomew (connected with the butchering trade) suggests a continuation of the activity from an earlier period. This activity was to continue here into the 20th century. Secondary occupations, such as most of the city’s glovers and chandlers, were also concentrated in the Berstrete sub-leet (Kelly 1983, 28–29 and 30), including one glover who bought part of the cemetery of St John de Berstrete in 1297. This fact probably links to the proximity of the butchers along Berstrete who would have provided skins and animal fat.

The reconstructions of property ownership surrounding the Castle Fee in *c.*1300 give the following trades (all outside the Castle Fee) related to butchery and leatherworking:

1. St Martin at Bale parish: hornworker (opposite east end of church), shoemakers, pouchmaker (north of church), another shoemaker, saddler (south of church)
2. Ber Street: candlemaker, bellowsmaker
3. St John Timberhill block: glover (next to churchyard), skinner
4. St Michael at Plea parish: parchmentmakers, candlemaker (south of Queen Street)
5. St Andrew’s parish: tanner, shoemakers (Swan Lane area) and, exceptionally on the Castle Fee, a tawyer (leatherworker) who owned shops which he sold to a shoemaker. Three shops owned by a shoemaker (east of St Andrew’s Hill) and next door a spooner and a spindler (possibly the same man). There are a great many other cutlers in the Castle Street, London Street and Opie Street block. Leatherworkers were also numerous: shoemakers, purse or bag makers, sheathers and a bookbinder. There was also a candlemaker (tallow).

Members of other trades immediately surrounding the Fee were fewer and they were not grouped in any one area. Connected with the clothing trade were skimmers and shoemakers, a tailor and a woolman. The building trades were represented only by one reeder and one mason. Of the food trades there were spicers or apothecaries, one baker and two poulterers. There were several goldsmiths, a cooper, a hornworker, a spooner and a spindlemaker and the list is completed by a ‘weyte’ (wait — either a watchman or a minstrel), a harper, two glasswrights and several painters. The latter would have painted saddles and furniture as well as hangings and images (Harvey 1975, 163).

Parishes, Churches and Cemeteries

(Fig.7.2)

By this period, seven parishes met at Norwich castle: St John de Berstrete to the south, St Peter Mancroft to the west, St Andrew and St Michael at Plea to the north, St Cuthbert, St Peter Parmentergate and St Martin-in-Balliva to the east (Fig.7.2). Those directly associated with the excavated site are St John at the Castle Gate/de Berstrete (later Timberhill) and St Martin-in-Balliva, the boundaries of which bear little relationship to known topographical features. The church of St Christopher (1190–1200) to the north of the castle burnt down in reign of Henry III (1216–1272) and the parish was united to St Andrew’s and St Michael at Plea. The parish had disappeared by 1286.

St John at the Castle Gate/de Berstrete (later St John the Baptist, Timberhill)

The north-western boundary of the parish of St John’s was formed by a line running from the western side of the southern end of the castle bridge to Swinemarket Hill (Orford Hill). To the north it was bounded by the motte ditch, returning south-westwards to a point north of the church, leaving a strip of land facing the castle approach (Golden Ball Street) in the parish of St Martin-in-Balliva.

Blomefield notes the existence of several documents listing this church as St John *ad montem* [at the hill] (Blomefield 1806, II, 126), although most of the references at this period are to St John de Berstrete (Sandred

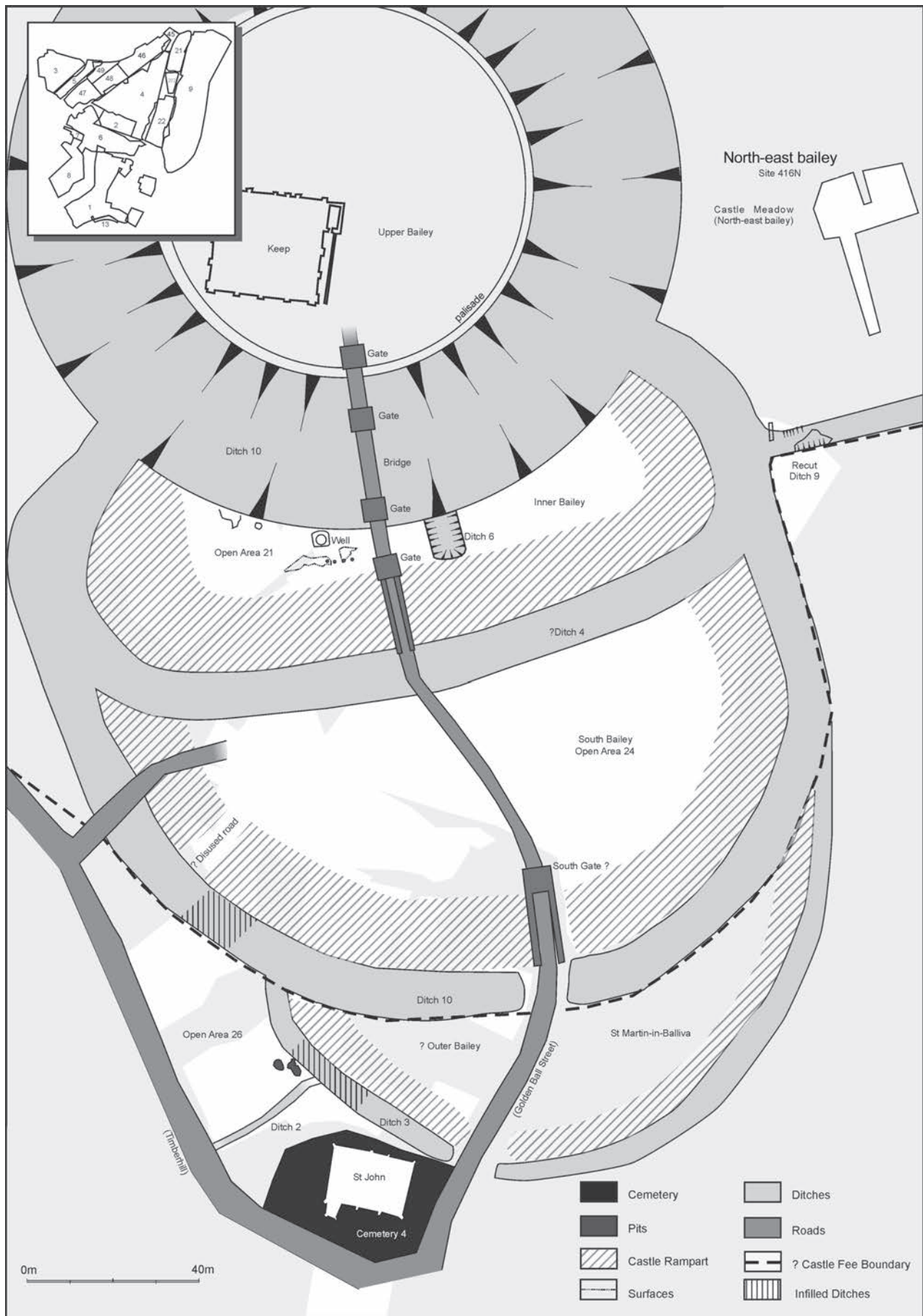


Figure 7.4 Period 4.1: Phase plan – medieval (late 12th to 13th century). Scale 1:1250

and Lindström 1989, 42). Appropriation of this church to the priory infirmary is confirmed by the earliest surviving obediatory roll of Norwich Cathedral Priory (1313) when £2 10s 0d was paid (Cattermole 1985, 26).

There are few published details relating to the church during the 13th to mid 14th centuries, although limited evidence comes from antiquarians. The only parish priest listed for the period is Sir Roger in 1303 (Blomefield 1806, II, 128). In the same year, Blomefield mentions John de Weston who ‘had a grant of the Jews lands forfeited here, and Roger Beamand, merchant, and Beatrix his wife, released a message to the prior and convent’ (Blomefield 1806, II, 129). Blomefield also mentions that ‘anciently there was a Recluse dwelt in a little Cell joining to the north side of the steeple, but it was down before the Dissolution’ (1806, II, 128). In the *Liber Cartarum et Placitorum* — a document which may be attributable to the mid 12th to early 13th century — is an example of the differential treatment of those within the jurisdiction of the Fee: ‘if an inquest had to be taken, in consequence of a trespass done by a tenant of the fee to a citizen, or *vice versa*, it was held in the churchyard of St John Timberhill, before the sheriff, or Constable, and the Bailiffs’ (Beecheno 1888, 15; Kirkpatrick 1845, 301–302).

St Martin-in-Balliva

The church of St Martin-in-Balliva (*Ecclesia Sancti Martini de Ball'ia*; also known as St Martin-in-the-Bailey, St Martin at Bale, St Martin at the Castle Gate) was first documented in 1254–75 (Lunt 1926) although was probably in existence earlier (see Chapters 4.VI and 5.V). Considerable variations of spelling are apparent within the documentary record and references to the ‘bailiwick’ (area of castle jurisdiction) have been suggested as indicating that the church did not necessarily lie within the bailey (Beecheno MS 1908, 19; Sandred and Lindström 1989, 22). Blomefield stated that by the mid 18th century

the church ‘stood on the triangular piece of ground lying on the right hand of the entrance into the Golden-ball Lane; at the north end of which stood the gate of the castle entering the outer vallum or trench, the principal entrance into the barbican’ (Blomefield 1806, II, 121). Recent archaeological and documentary work, however, suggests that the church did indeed lie enclosed within the castle’s outermost ditch (the Fee boundary marker, later perhaps forming a hornwork around the south gate). Those who died at the castle or were executed there were buried in this cemetery until the church was deconsecrated and demolished in 1562. At that time the parish was combined with that of St Michael at Thorn (Sandred and Lindström 1989, 45).

Blomefield noted that one of the names of this church was of St Martin’s Priory ‘because there was an ancient Priory or Fraternity of Friars dwelling in a house situated in this churchyard, till they were obliged to join one of the four principal orders’: these friars eventually joined the White Friars or Carmelites⁶ (Blomefield 1806, II, 121). A cross stood on one side of the churchyard, Blomefield placing it to the south and describing it as St Martin’s Cross (Blomefield 1806, II, 122).

II. ARCHAEOLOGICAL SEQUENCE

Period 4.1: Medieval (late 12th to 13th century)

Summary (Fig.7.4)

Infilling of the castle ditches with refuse continued; within the southern part of the ?Fee ditch during the late 12th to 13th centuries and within the south bailey ditch in the early 13th century. The outermost north-east bailey

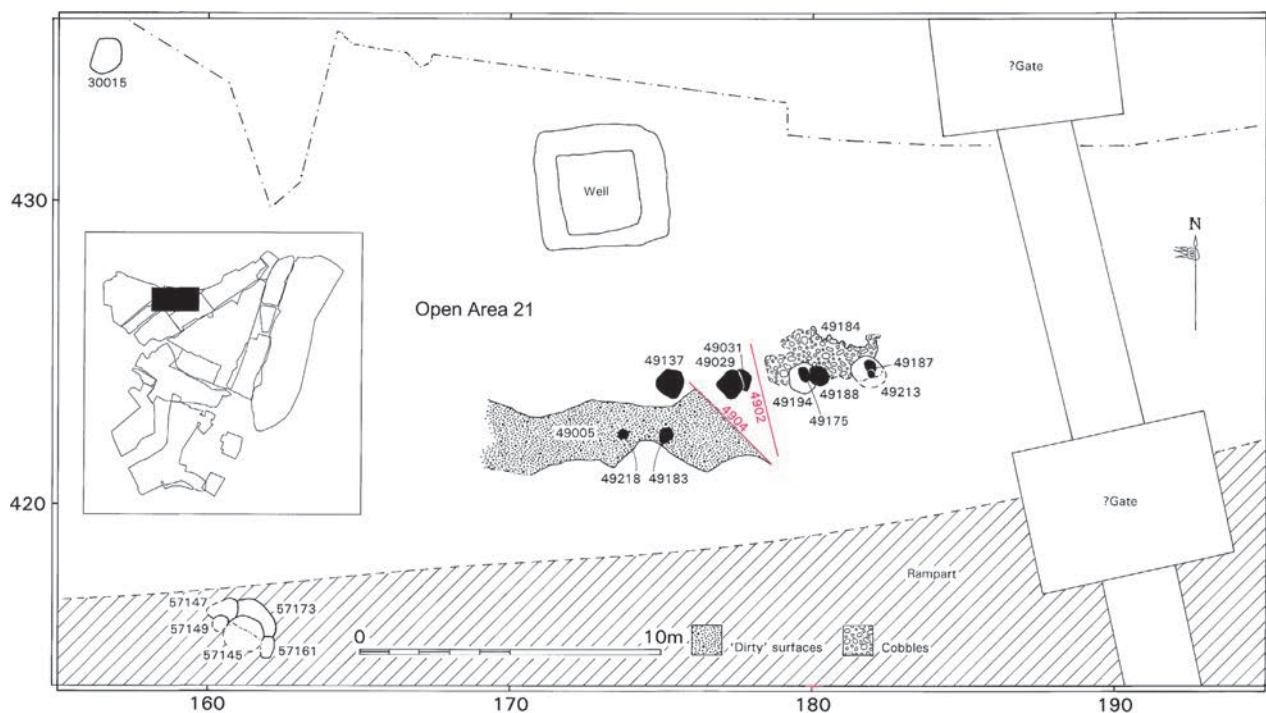


Figure 7.5 Period 4.1: Plan of inner courtyard, Open Area 21 (Area 49). Scale 1:250

ditch/Fee boundary marker was recut and infilled, with a sequence of pits and post-built structures used within its confines. A total of 32 pits dating to this sub-period were recorded, both within and outside the castle area. Surfaces around the well in the courtyard at the base of the castle bridge were renewed. The cemetery of St John at the Castle Gate (*de Berstrete*) remained in use to the south, while a few pits were recorded on the Timberhill street frontage.

Inner Bailey Courtyard

Open Area 21, surfaces, posts and pits

by Elizabeth Shepherd Popescu and Andy Shelley (Fig.7.5)

A cobbled surface (49184, G49/37) lay to the south of the well at the base of the castle bridge (Fig.7.5). It consisted of chalk (30%) and cobbles (60%) bedded into a mixed deposit. The surface only survived to the east, the surrounding area having been truncated during later landscaping. It had an upper level of 26.03m OD and directly overlaid earlier surfaces (Period 3.2). Three layers, each of which had a cassy character, appeared to lie within a shallow depression within the underlying surface (49004, 49006 and 49005). These ran along the rear of the postulated rampart to the inner bailey ditch which lay c.3m to the south.

A line of four large post-pits (two of which were subsequently replaced) ran along the southern limit of the cobbles, separating them from the cassy layers. The pits were up to a metre in diameter, supporting posts about 0.50m in diameter, and were spaced c.2.20m apart, in an east-to-west line. All were eventually removed rather than being allowed to decay *in situ* but these large posts appear to have remained in position for some time (their eventual removal is detailed in Period 5.1). The easternmost (49213) underlay the cobbles, although the post it supported (post-pipe 49187) was apparently in place while the cobbles were laid around it. This pit was 0.56m deep. The second post-pit to the west (49194, post-pipe 49175) cut into the cobbled surface and was 0.43m deep. Cutting into the fill of the post-pit was a second, shallow post-pit (49188, 0.12m deep), perhaps placed to support the existing post. The third post just to the west (49031) was slightly smaller and 0.47m deep. It was replaced by another, larger post-pit (49029) with a depth of 0.72. In its south-western corner was a square cut for a post (0.50 by 0.50m). The final large post-pit at the western end of the line (49137) was 0.22m deep, with no surviving post-pipe. Two smaller post-holes lay to the south-west relating to the cassy area (49183 and 49218).

Cutting into earlier deposits at the tail of the postulated rampart was a series of intercutting features, including pits/post-pits and post-holes (G47/50 and G47/51; 57173, 57161, 57145, 57147 and 57149). Another small pit (G3/5, 30015) lay immediately to the south of the motte ditch. It survived to 0.49m deep. Just to the west lay a series of shallow, intercutting pits (G3/6, Fig.7.4), a maximum of 0.75m deep.

Small Finds

Pit 30015 contained two iron nails (one from a horseshoe) and the branch of a type 3 horseshoe (SF5560). Pit 57173 contained a gilded dress buckle of late 13th- to mid 14th-century date (SF1117; Fig.7.24).

Pottery

A total of 0.369kg of pottery was recovered, much of which was made up of residual earlier fabrics, while the contemporary fabrics present were often represented by single sherds of LMU, YTW and GTGW. A date of late 12th- to 14th-century is suggested. See Appendix 6.

The South Bailey

Ditch 10, Phase 4: refuse disposal and weathering (Fig.5.4)

Following the accumulation of erosion deposits and a small amount of refuse at the base of the south bailey ditch (Period 3.2, Chapter 6.II), a sequence of refuse fills indicates deposition over a relatively long period (G8/16, Fig.5.4). This waste had apparently been tipped into the ditch from the south (*i.e.* from the city) reflecting the use of the convenient ditch for general refuse disposal. Fairly large amounts of fish and mammal bone were present and samples indicate the inclusion of sewage. Ceramics from many fills are homogeneous; cross-context joins and the freshness of the pottery suggesting that this was an undisturbed medieval assemblage. After the deposition of these early 13th-century fills, the part of the ditch recorded in Area 8 was full to a depth of nearly 3m from the base. Fills in Area 1 appear slightly later (having a ?mid 13–14th-century ceramic date range) and are described in Period 4.2.

Detailed description

A possible cleaning episode was recorded in the east-facing sections across the ditch in Area 8 (S.824, 821, 823 and 822, Fig.5.4). Above this line was a layer of grey silt, quite unlike the earlier fills of redeposited natural (described in Period 3.2). This was followed by a thick deposit of organic matter (80274) providing the first indication of refuse disposal into the ditch. This fill lay along the northern side and most of the base. Along the southern edge was a sequence of thin deposits of gravel, presumably washed into the ditch (80328, 80329, 80325, 80324, 80326 and 80327).

Towards the centre and north were varied deposits (80624, 80262, 80260 and 80261) which included fish bone and may be indicative of dumping over a fairly long period, coming mainly from the southern side of the ditch. Another possible cleaning episode was tentatively identified above this, overlain by another sequence of refuse-type deposits, again appearing to have come mainly from the south (80267, 80323, 80266, 80265, 80268 and 80322). These deposits were often reddish-brown and organic in nature and included fish bone and rotted timber, frequent charcoal and some shell. Later fills were more mixed and less organic (80253, 80254, 80221, 80222, 80251, 80252, 80250, 80224, 80220, 80242, 80247, 80245, 80246, 80243, 80244, 80248 and 80249), with some natural silting/erosion fills in the centre and along the northern edge (80225).

In the west-facing set of sections, above earlier erosion fills, was similar refuse including ash, fish bone and organic matter with frequent charcoal. Above were thinner, mixed deposits. The uppermost recorded section shows weathering of the ditch sides and the earthwork's top edge proved difficult to distinguish, having been heavily eroded.

Small Finds

Finds from these ditch fills included two iron nails (SF6352 and 6456), a bone tubular object, possibly a needlecase of Late Saxon type (SF5855; Fig.4.105) and a copper alloy chain that probably dates to the early 13th century (SF5916; Fig.7.25).

Pottery

by Irena Lentowicz (Fig.7.26)

Cross-context joins were present and the medieval pottery from a number of the larger contexts was fresh (G8/16; 1.642kg; Fig.7.26). This indicates primary deposition with little disturbance of the medieval assemblage, while the earlier residual material was probably redeposited from elsewhere. The fact that pottery was largely collected from samples of the ditch fills is reflected in the low average sherd size. The assemblages from the east- and west-facing sections appeared to be different. The residual element in the east-facing sections was made up

almost entirely of EMW, while the west-facing sections included TTW (including a jar rim (type AB7; Fig.7.26, no. 10)) as well as EMW and other early medieval wares. Medieval pottery, however, accounted for the larger proportion in both sections, mostly represented by LMU with smaller quantities of YTW and GTGW. A Rhenish-type ware jar rim was also recorded, while the small quantity of LMT recovered represented an intrusive element. Only body sherds were recovered from the east-facing section, and the diagnostic sherds from the west-facing.

LMU was the most common ware present, with small quantities of smooth and pimply variants in addition to the standard fabric. The majority of the rims present came from jars and cooking pots; while a small number of smaller vessels (types J1a and J1b — three rims; Fig.7.26, no. 1 and 12) were present, larger vessels with plain rims (types J2a, J2b and J2c; Fig.7.26, nos 1–5, 13 and 14) were more dominant (ten rims). In addition, later ‘hammer-head’ rims were also noted, from two bowls (Fig.7.26, nos 8 and 9) and a jar (Fig.7.26, no.7), as well as a jar with an internally pulled rim (type J2h; Fig.7.26, no.3). Other unglazed pottery was represented by small sherds of YTW; no forms were identified but the sherds probably came from jars/cooking pots.

Though an LMU jug rim was also recorded (Fig.7.26, no.6), table wares were represented by glazed wares including GTGW and Sible Hedingham-type ware jug rims. The GTGW jug has a flattened, square-section rim (Fig.7.26, no. 15), while the Sible Hedingham-type vessel is straight-sided jug with a flattened rim pulled to a point (Fig.7.26, no. 10).

Although two later 13–14th-century vessels with ‘hammer-head’ rims (type J2j) were present, the majority of the assemblage consisted of earlier, plainer rims, specifically types J2a and J2b. Sible Hedingham-type wares tend to be recovered from early 13th-century contexts in Thetford (Dallas 1984, 124); unfortunately it is not yet possible to determine whether this is so in Norwich. However, it would seem to indicate that the dating of this group could be earlier 13th-century.

Botanical Remains

by Peter Murphy

Seven samples were taken from these fills and produced small flots including charcoal, small numbers of charred *Hordeum* (barley), *Avena* (oat) and *Triticum* (wheat) grains, occasional charred weed seeds (*Rumex* (dock) and *Poaceae* (grass) and mineral-replaced material. Two samples including concentrations of phosphatic concretions, mineral replaced plant macrofossils and arthropods — and often abundant small fish bones — probably representing sewage deposition were extracted for full analysis (80247, BS897 and 80264, BS892) and are described further in Chapter 7.IV and Table 7.18. Fish bone is detailed by Locker in Chapter 7.IV and Part III, 95. Animal bone included a partial cat skeleton (from fill 80268; Albarella *et al*, Chapter 7.IV and Part III).

The Castle Fee Boundary

Ditch 3, Phase 8: backfilling
(Fig.5.6, Plates 6.32 and 6.33)

Castle Mall, Phase 8: mixed backfills

The bulk of infilling of the ?Fee ditch in Area 1 (Period 3.1, Chapter 6.II) appears to have taken place in the late 12th to 13th centuries. Whereas previous fills of redeposited natural and refuse (Period 3.2) were relatively small-scale, perhaps partly as a result of continued ditch maintenance, subsequent fills (G1/58) formed a thick dump substantially infilling the ditch (to 2.80m from the base, *i.e.* leaving about 0.60m at the top open). The bulk of these fills were of redeposited natural, with the occasional disposal of domestic refuse/ash. Generally, these suggest a process of deliberate infilling/side collapse rather than use of the ditch as a convenient rubbish tip (Plates 6.32 and 6.33). This interpretation is reflected in the low level of finds recovered: relatively large numbers of finds had been recovered from earlier fills (although this is probably due in part to the excavation strategy). One fill contained human bone, presumably derived from the Berstrete cemetery (Cemetery 4). The implication of these fills is that, by the end of the 13th century, the ditch

had been substantially infilled. Deposits and features overlying ditch fills in the far eastern part of Area 1 (often relating to metalworking) were of late 14th- to 15th-century date. A bell-founding pit(s) takes no account of the presence of the ditch, lying above the southern side of it.

Detailed description

To the north (S.144 and 145), mixed fills were recorded along the northern side and centre of the ditch, generally consisting of clean redeposited natural. To the south was a very thick sequence of dumps, individually fairly thin, concentrated at the centre and to the east of the ditch (S.162, 139, 141 and 140, Fig.5.6, 11110, 11954–57, 11973–80, 11982–11992, 11994 and 11995). These may have derived in part from the associated rampart to the north. Between these two observations was a sequence of refuse dumps (including ash and burnt pebbles) at a similar level (S.163 and 167). Although the sequence of fills here was quite different from elsewhere along the ditch its level suggests a probable equation in terms of date of deposition.

A series of sections through sand and clay, followed by mixed dumps, were recorded in the eastern part of Area 1 in August 1989, before it was realised that these were in fact upper ditch fills or the base of an associated rampart (S.113–119).

Pottery

A small quantity of pottery was recovered from these ditch fills (G1/58, 0.093g) consisting of residual TTW and EMW. Medieval wares are represented by LMU, GTGW and non-local Red Glazed ware. The presence of GTGW dates these fills to the late 12th to 13th century. See Appendix 6.

Golden Ball Street Phase 8: final backfilling and levelling

by Elizabeth Shepherd Popescu and David Whitmore

Filling the shallow depression that represented all that remained of the ditch terminus was a layer sandy layer (365, 449, Fig.5.7) extending beyond the confines of the ditch northwards (GBS Group 26). This had probably accumulated against the rampart. A layer of clean clay sand above (364) may represent rampart levelling, or upcast from the digging of one of the large extraction pits quarried into the remnants of the rampart. Again, this deposit did not extend north of the presumed position of the rampart, suggesting that it was still extant as a boundary.

Small Finds

Fill 364 contained iron artefacts (SF84 and SF86) and ferrous metalworking debris (SF81 and SF85). Fill 365 contained an iron artefact (SF74).

Pottery

A total of 0.231kg of pottery was recovered, consisting of residual Late Saxon and early medieval wares, along with LMU and GRCW, the latter having a date range of 11th- to mid 13th-century.

The North-East Bailey (Castle Meadow)

by Elizabeth Shepherd Popescu and Niall Donald
(Figs 7.6–7.9, Plates 7.2–7.4)

Ditch 9, Phase 9: second recut and silting

A second recut of the north-east bailey ditch was presumably necessitated by the fact that the ditch had become extensively infilled. The recut, which lay along the northern side of the earlier ditch (Phase 3, Period 3.1, Chapter 6, Figs 5.32 and 7.6), had a concave, almost flat base and fairly steep sides, with a shallower gradient to the south. An approximate depth of just over 5m is indicated, although taking the effects of the natural gradient into account, it was probably originally deeper. The

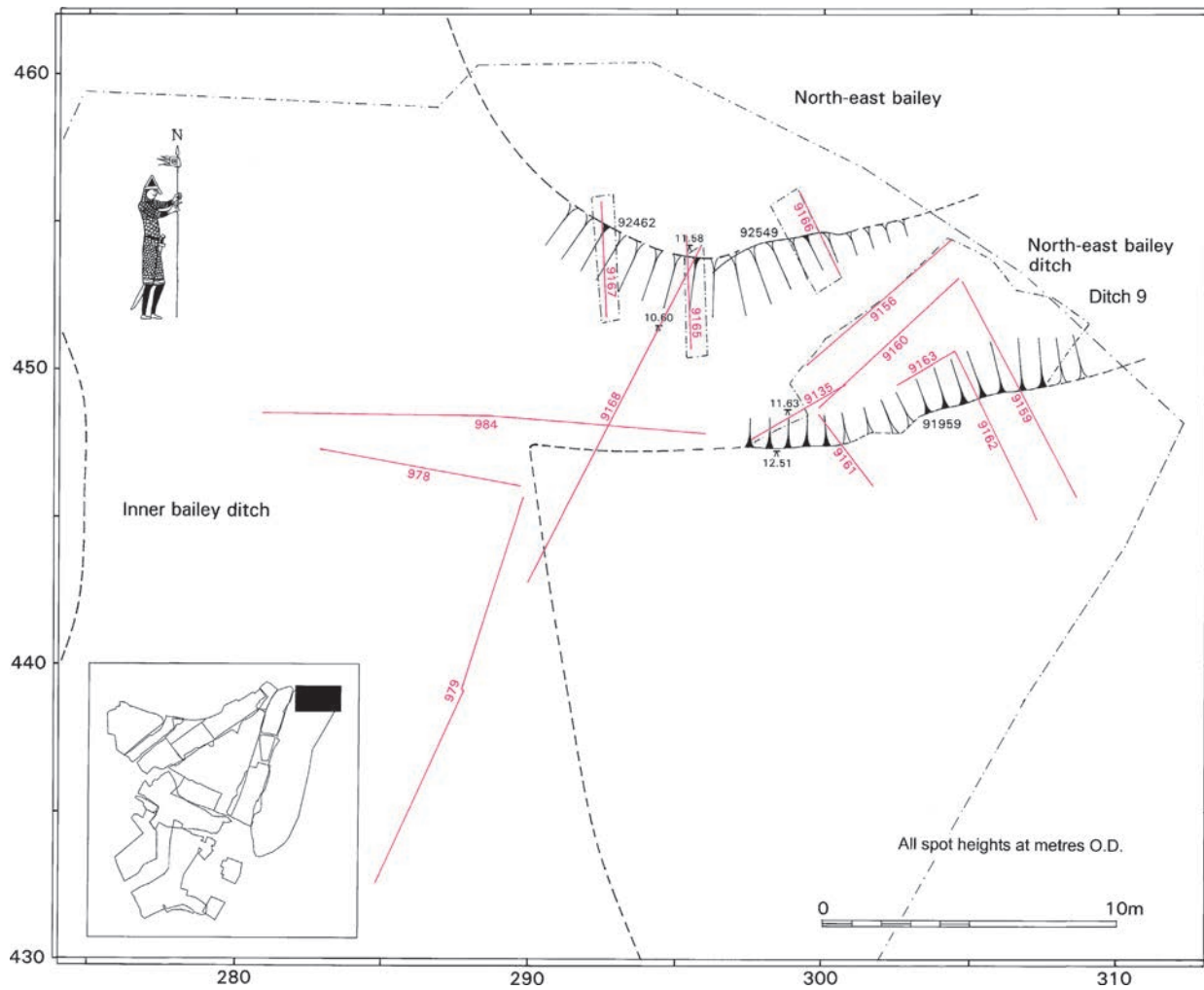


Figure 7.6 Period 4.1: Plan of Ditch 9 (outer north-east bailey) (Area 9). Scale 1:250



Plate 7.2 Working shot during excavation of the outermost defences of the north-east bailey (Castle Meadow), looking east (Ditch 9, Area 9)



Plate 7.4 Excavation of features and deposits within outermost north-east bailey ditch (Ditch 9, Area 9, Period 4.1)

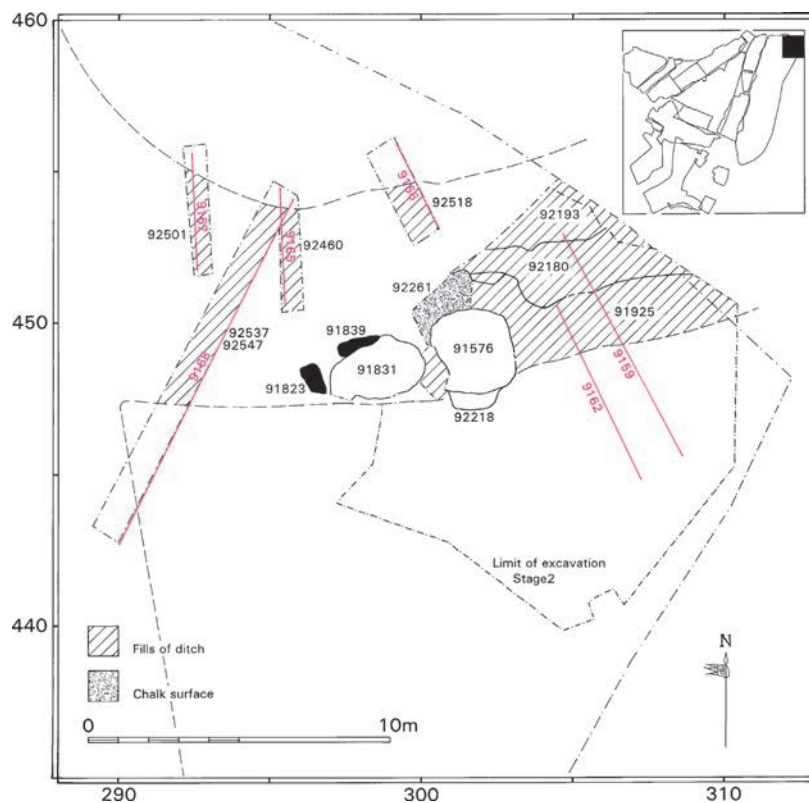


Figure 7.7 Period 4.1: Plan of activities within Ditch 9 (outer north-east bailey), phases 9 & 10a (Area 9). Scale 1:250

width of the recut would have been about 8m or more, depending on the extent of truncation. It is unknown how far this recut may have extended around the north-east bailey. Unlike earlier versions of the ditch, there was no evidence that this recut had stepped or revetted sides. Its infilling was notable for the apparent rapidity with which it occurred, as well as the consistency of its fills.

Detailed description

A sequence of dumps combining silt and chalk (91236, 91254, 91265, 91255, 91266, 91252 and 91253, S.994 and 9101, G9/26) may have formed fills of the first or the second recut. It is possible that, when the ditch was recut for the second time, this material was dumped into the hollow left by the partially backfilled earlier cut.

The second recut and its fills were recorded during different phases of machining at the northern end of Area 9 (G9/24, S.978, 979, 984, 9156, 9159, 9135, 9160, 9161, 9162 and 9163, Fig.7.6). The second phase of machining revealed the south-eastern side of the ditch in plan (91959=92462), while the others showed parts of its profile and infills in section only.

To the west, the base of the cut was recorded in a long section (S.9168, G9/29) during the fourth phase of machining. This section clearly demonstrates the relative positions of the base of this and the second recut, although their junction was removed by the insertion of a later pit (G9/35, see below and Fig.7.7). The second recut was dug into natural chalk at its base, which was slightly concave, almost flat-based (Fig.5.32). The basal fills were presumably the result of erosional processes (92537, 92549, 92537a and 92457).

Sections provide evidence for straight sides (G9/24, S.9159 and 9162, Fig.7.7), sloping at slightly more than 45° from the horizontal. Other observations of the cut were too limited to allow conclusions to be drawn. Infills were predominantly of silt with some sand and clay, representing erosion into the open ditch (91925, 92393, 92387, 92399, 92345, 92344, 92340, 92139, 92341, 92339, 91462, 91959, 91467 and 91463). One fill (91925) was extremely deep — between 1 and 2m thick. This suggests that the ditch was infilled rapidly, with no obvious cleaning having been undertaken.

The cut and its fills were also recorded to the north (S.9165 and 9167, G9/28). The cut profile in one section (S.9167, Fig.7.7) shows a steep, convex cut, becoming shallower and concave further down. In the other section, the cut is steep sided. Fills were mixed, representing erosion and rapid silting (92451–66, 92471–73, 92499–92506, 92519, 92522, 92848 and 92849; Fig.7.7).

To the east, the cut was again observed (92518, S.9166, G9/33, Fig.7.7). This had a steep edge, slightly less steep towards the top as if weathered. Mixed fills were again recorded (135 fills were recorded in all, those illustrated in section being 92484, 92485, 92482, 92486–91, Fig.7.7 and those in plan 92193, 92180 and 92261, Fig.7.7). One (92261) appeared to be a patch of chalk surface which was cut into by contemporary pitting (see below).

Small Finds

Finds from G9/24 fills included numerous silver strips, perhaps originally part of a ?chain (SF1104), a ceramic crucible (SF6543), a padlock bolt (SF1105; Fig.7.32) and a copper alloy rove (SF1103).

Pottery

(Fig.7.27 on CD)

A total of 0.775kg of pottery was recovered including residual Late Saxon and early medieval wares as well as LMU, non-local medieval ware and an imported jar. A general 12th-century date is suggested. See Appendix 6.

Ditch 9, Phase 10: occupation and pits

Overlying earlier fills of the north-east bailey ditch (Phase 9 above) was a small area of occupation deposits, pitting and possible structures (G9/35, Fig.7.7). These were revealed in the first phase of machining of the area and their discovery lead to a subsequent extension of the area by further machining. Due to the constrained area that could be examined in plan (a step of the main area of machining through the barbican ditch fills and an extra strip 3–5m wide running off this to the north-east) the nature and extent of these activities is difficult to define

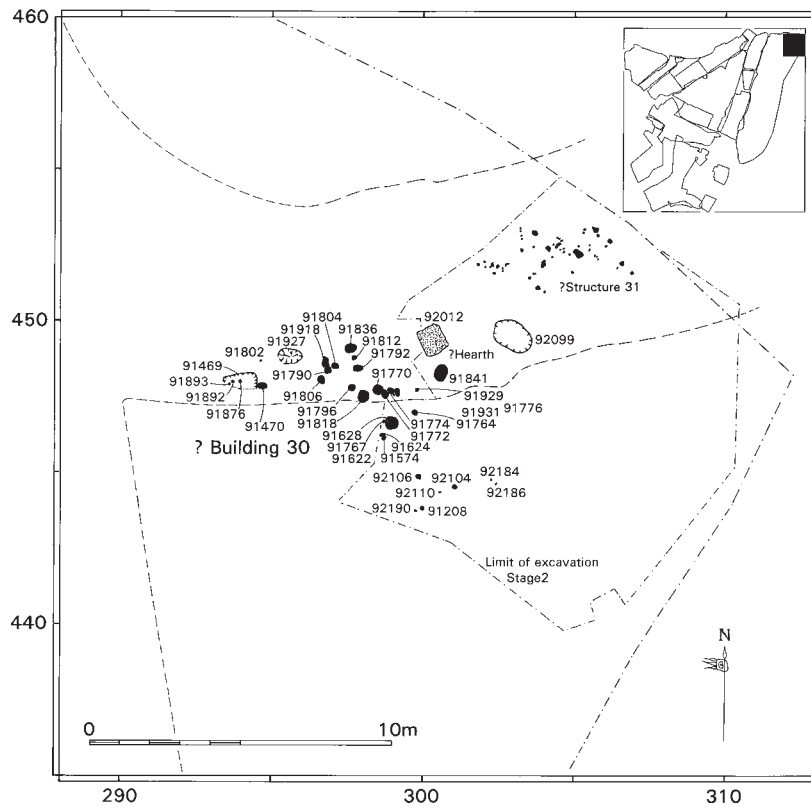


Figure 7.8 Period 4.1: Plan of activities within Ditch 9 (outer north-east bailey), including Buildings 30 & 31 (phase 10b). Scale 1:250

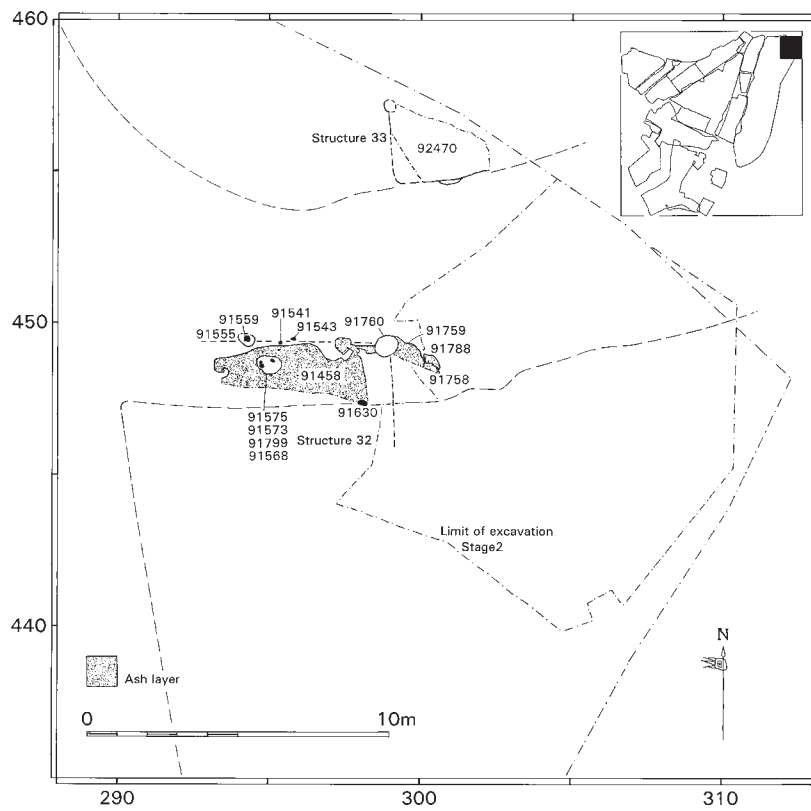


Figure 7.9 Period 4.1: Plan of activities within Ditch 9 (outer north-east bailey), including Buildings 32 & 33 (phase 10c). Scale 1:250

with certainty. A layer of ash, which overlay a series of pits and post-holes, was cut into by further post-holes. Subsequently, the area was sealed by a sequence of dumps (G9/36, Period 4.2) which were identified on site by Dr Richard McPhail as buried ground surfaces. These predated excavation or recutting of the barbican ditch (also Period 4.2). The location of these pits and possible structures within the ditch at this early date is unexpected, implying a lack of military significance to the feature.

Phase 10a: pitting

The earliest recorded feature in this sequence was a large pit (92402, not illustrated, S.9156, 9135 and 9160). It had fairly shallow and irregular sides, sloping to the south-west. This pit remained unexcavated but was filled with redeposited natural.

Two slot-like features were recorded to the west, which could perhaps have formed the corner of a structure. The westernmost (91823) was aligned north-west to south-east and was 1m long by 0.64m wide and 0.12m deep. This was filled with any ashy layer with frequent charcoal flecks and small fragments still in twig form. The second slot to the north-west ran roughly east-to-west (91839) and was flat-based, surviving to 1.20m long, 0.55m wide and 0.32m deep. The upper part appeared to have been infilled with slumped surrounding deposits. Cutting into this slot was a sub-oval pit (91831) which survived to about 0.50m deep.

Immediately to the east was another pit (92218). This was probably originally sub-square in plan with rounded corners and a flat base, 0.31m deep. Its organic fill appears to indicate a function as a cess pit. Cutting into it to the north, as well as into an earlier chalk surface was a large square cess pit (91576), also recorded in section (S.9154 9155, 9135, 9148 and 9149). This was flat-based with a linear slot in the northern part, integral with the pit. It was c.0.80m deep and its fills may have been deliberately capped by redeposited natural sand, clay and chalk.

Phase 10b: post- and stake-holes (?Buildings 30 and 31)

A series of post- and stake-holes followed, some of which cut into the fills of the earlier pits, with others cutting into earlier ditch fills (G9/24). A total of 35 such features was recorded (annotated on Fig.7.8), ranging from small stake-holes to large post-holes. Several of the posts appeared to have been burnt *in situ*, while others had rotted away. It appears likely that these posts and stakes may have formed a structure (Building 30) within the ditch, which had become sufficiently infilled to provide a fairly level surface. The spatial position of the features suggests that they may represent the north-western corner of a building/structure (perhaps an animal pen?), the corner being respected by a subsequent layer of ash (see below) which may have accumulated around the posts. Many features had been replaced and in some cases, small stake-holes had been replaced by larger posts. Plate 7.4 shows two lines of post-holes appearing to form a corner. Other features recorded just to the north-east may suggest the presence of another structure (Building 31). Between the two lay a possible hearth (92012) and a small pit (92099).

Phase 10c: ash layer and post-holes (?Buildings 32 and 33)

Sealing many of the post- and stake-holes (although possibly accumulating around some of them) was a layer of mottled ashy silt (91458=91759; Fig.7.9). Two separate deposits are represented (S.984), the lower one consisting of powdery red material, probably highly burnt and the second layer of dark grey black charcoal, ash and silt. These deposits may indicate the destruction of a building/structure by fire, prior to the construction of another building on top. To the east were two small patches of burnt ash and chalk (91788 and 91758), apparently scorched. Cutting into the ash layer was another series of post- and stake-holes (Building 32) forming a line running east-to-west, possibly replacing the earlier structural line in a similar position. Some of the posts were represented by voids, the timbers having rotted away and one contained organic plant matter.

To the north was another possible structure (Building 33, 92470), square or rectangular in plan and flat based with vertical sides (S.9166). A single post had been set along its western edge (92467). The feature survived to about 3m by 3m by c.0.40m deep and was on a similar alignment to the post-hole structure to the south. Numerous fills were recorded. Fills/surfaces within the feature included clay and chalk, other fills showing traces of burning *in situ*. It is possible that this was a sunken-featured building with a sequence of floor surfaces or a pit with a timber framework.

Small Finds

Finds from the pits and post-holes included intrusive clay pipe. Small Finds were an iron nail (SF6382 from pit 91576), copper alloy medieval plate (SF1101 from fill 91458), copper alloy wire (SF1102 from post-hole 91818), iron clench bolt (SF6399 from layer 91765) and a possible iron spur arm (SF6628 from pit 92470).

Pottery

Much of the pottery recovered from these features came from samples and residual fabrics were present (Phase 10, G9/35; 2.152kg). The assemblage is detailed by Phase in Appendix 6. Pottery from Phase 10a includes LMU with 13–14th-century rim types, as well as GTGW. Other glazed wares were represented by two sherds from a single vessel of East Norfolk Glazed ware; this fabric is not commonly found in Norwich. Continental imports were represented by the rim and handle from a highly distinctive Blue-Grey ware ladle. Some pit fills date to the 12–13th or 13th century (see Appendix 6). Not surprisingly the pottery from Building 30 (Phase 10b) was fragmentary as much came from samples taken from stake- and post-holes. Fabrics from associated pits include GTGW and LMU, indicating 12–13th, 13th or 13–14th-century infill dates (see Appendix 6). Pottery from Phase 10c again consists of GTGW and LMU, dating to the 13–14th century.

The City: Properties Fronting Berstrete (later Timberhill)

Open Area 28: pits

Five pits (10546, 10545, 10544, 10882 and 10851) and a post-hole (10863; not illustrated separately, Fig.7.4) lay close to the junction of the postulated recut of the Fee ditch (Ditch 3) and cemetery boundary ditch (Ditch 2). They had been heavily truncated and had a maximum depth of c.0.70m. They may have originally lain in a yard at the rear of a medieval property (e.g. Property d, Fig.7.3).

Small Finds

Pit 10546 contained a copper alloy strip (SF5343). Pit 10545 contained a fragment of lava quern (SF5130). A nail (SF5138) was retrieved from pit 10544.

Pottery

A small quantity (0.262kg) of pottery was recovered from the four pits and included a small amount of residual earlier material. Most was LMU, including a small quantity of a pimply variant. Infill dates range from late 12th- to 14th-century (see Appendix 6).

Period 4.2: Medieval (13th century to c.1345)

Summary

(Fig.7.10)

Alterations to the castle defences during the 13th century included the addition of drum towers at the top of the bridge and a curtain wall around the top of the motte (documented in 1268–69). The last major additions to the castle's earthworks were also made during this century, with a massive recutting of an earlier ditch to form a barbican. This was preceded by the levelling of the outermost north-east bailey ditch. Developments within the barbican include several pits and a possible post-built structure. In the south bailey, infilling of the surrounding ditch continued and quarrying began along its northern edge. A ditch within the western part of the bailey may relate to the Shirehouse which was constructed here in or before 1271. Encroachment into the cemetery of St John de Berstrete (Cemetery 4) began in the late 13th century, its presence being indicated by the location of

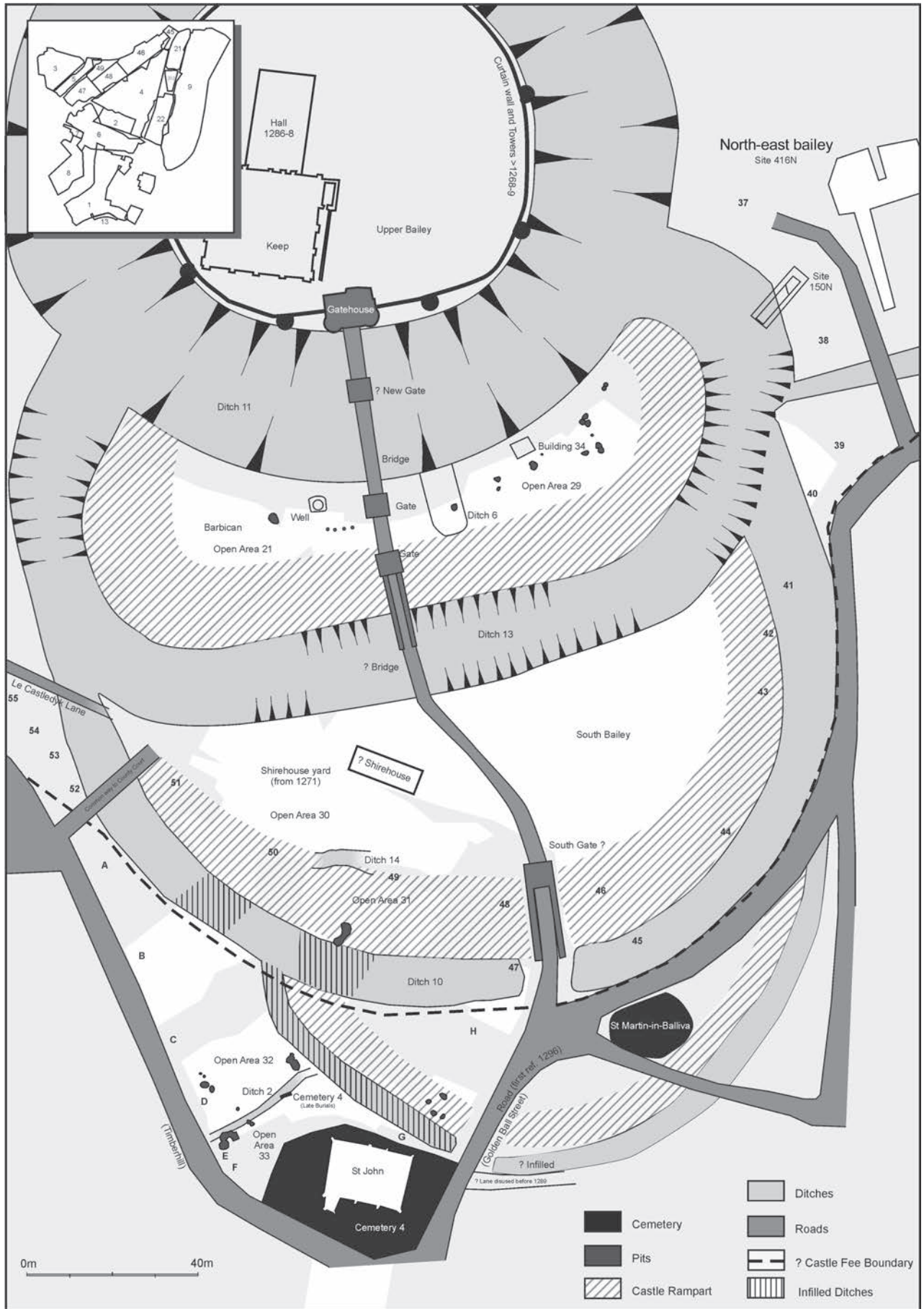


Figure 7.10 Period 4.2: Phase plan – medieval (13th century to c.1345), showing Castle Fee and city properties. Scale 1:1250

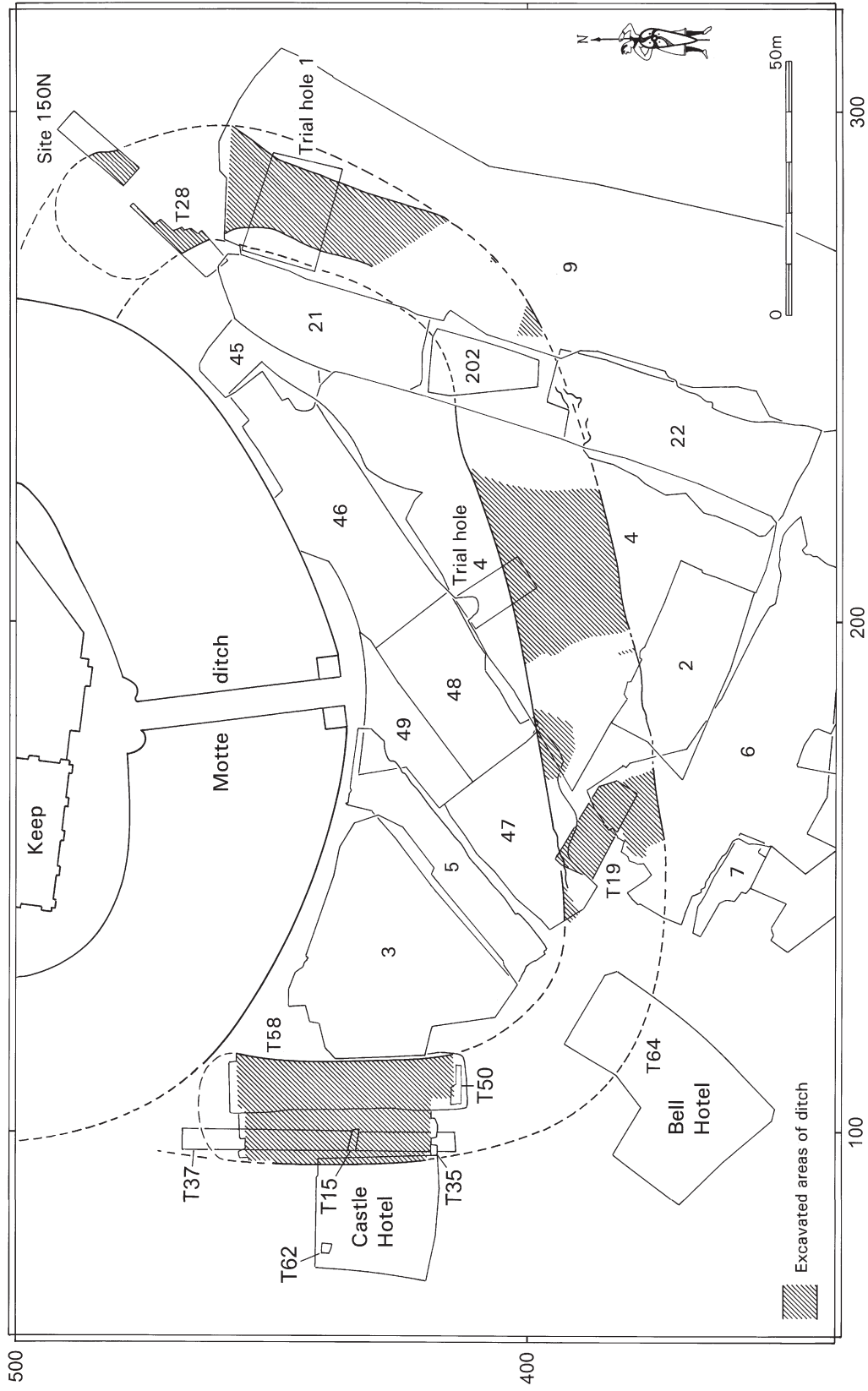


Figure 7.11 Period 4.2: Plan of Ditch 13 (barbican), including observations at Site 150N. Scale 1:1250

refuse pits, the cemetery boundary ditch being substantially infilled with refuse in the early 14th century. Four graves were dug into these late fills. Pitting continued along the Durnedale (Timberhill) road frontage. Forty-two pits were recorded in all at the Castle Mall site, with a further six at Golden Ball Street.

Curtain Wall Around the Top of the Motte

At the top of the mound, beneath the existing perimeter railings, a 1m³ box was excavated (T36, Fig.1.5), from which the new services are accessed. It was envisaged that this trench might reveal evidence for the medieval curtain wall running around the top of the motte. After the removal of 19th-century makeup dumps and destruction debris, a substantial 19th-century flint, brick and mortar feature was uncovered (12504). The masonry continued to a depth of over 1m, where excavation ceased. It is likely that this formed part of the Victorian wall running along the mound edge. The trench was later extended to join a water tap situated to the north-east of the top of the castle bridge. Part of the trench bottomed out on a red brick vaulted feature, overlain by flint and mortar. Some of the brickwork became dislodged and proved to be the ceiling of one of the castle dungeons. The trench was subsequently realigned.

The Motte Ditch

Ditch 11, Phase 3: refuse disposal

by Elixabeth Shepherd Popescu and Andy Shelley (Fig.6.31)

Deposits within the motte ditch were recorded in a watching brief (T100/15, Fig.6.31), where it met the western return of the barbican ditch. They comprised waste deposits; thin layers containing mortar, interleaved with charcoal-rich layers (12199, 12198, 12193, 12192, 12185 and 12191). The uppermost of these (which was directly overlain by post-medieval fills) contained medieval pottery.

Pottery

A small quantity of pottery (0.037kg) was recovered from these fills, including LMU and GTGW which date this group to the 13–14th century. See Appendix 6.

The North-East Bailey (Castle Meadow)

A thick sequence of dumps into the outermost north-east bailey ditch recorded at the junction of the inner, south and north-east bailey ditches in Area 9 may have served to infill the previous hollow (these were recorded as rampart dumps on site). The north-east bailey ditch would have virtually disappeared, except for a slight dip in the ground surface. The dumps were cut through by the large barbican ditch (Ditch 13 below). Material generated by the cutting of the barbican ditch could have been used to infill the earlier ditch, building up the edge of the new ditch at this point. There are several possible interpretations of these developments which are detailed further in Chapter 7.V and Chapter 12.

Ditch 9, Phase 11: disuse

by Elizabeth Shepherd Popescu and Niall Donald (Figs 6.29, 6.34 and 7.18–7.19)

The sequence of dumps was recorded in a series of sections facing either west or south (G9/36). The chalk content apparent in many fills may indicate upcast from



Plate 7.5 South-facing profile of the base of the barbican ditch (Ditch 13) recorded in T58 beneath modern Castle Meadow



Plate 7.7 Excavation across fills of the barbican ditch, showing possible path surfaces in the foreground and elements of the collapsed gatehouse towards the top of the infill sequence. Looking north-west (Area 4)

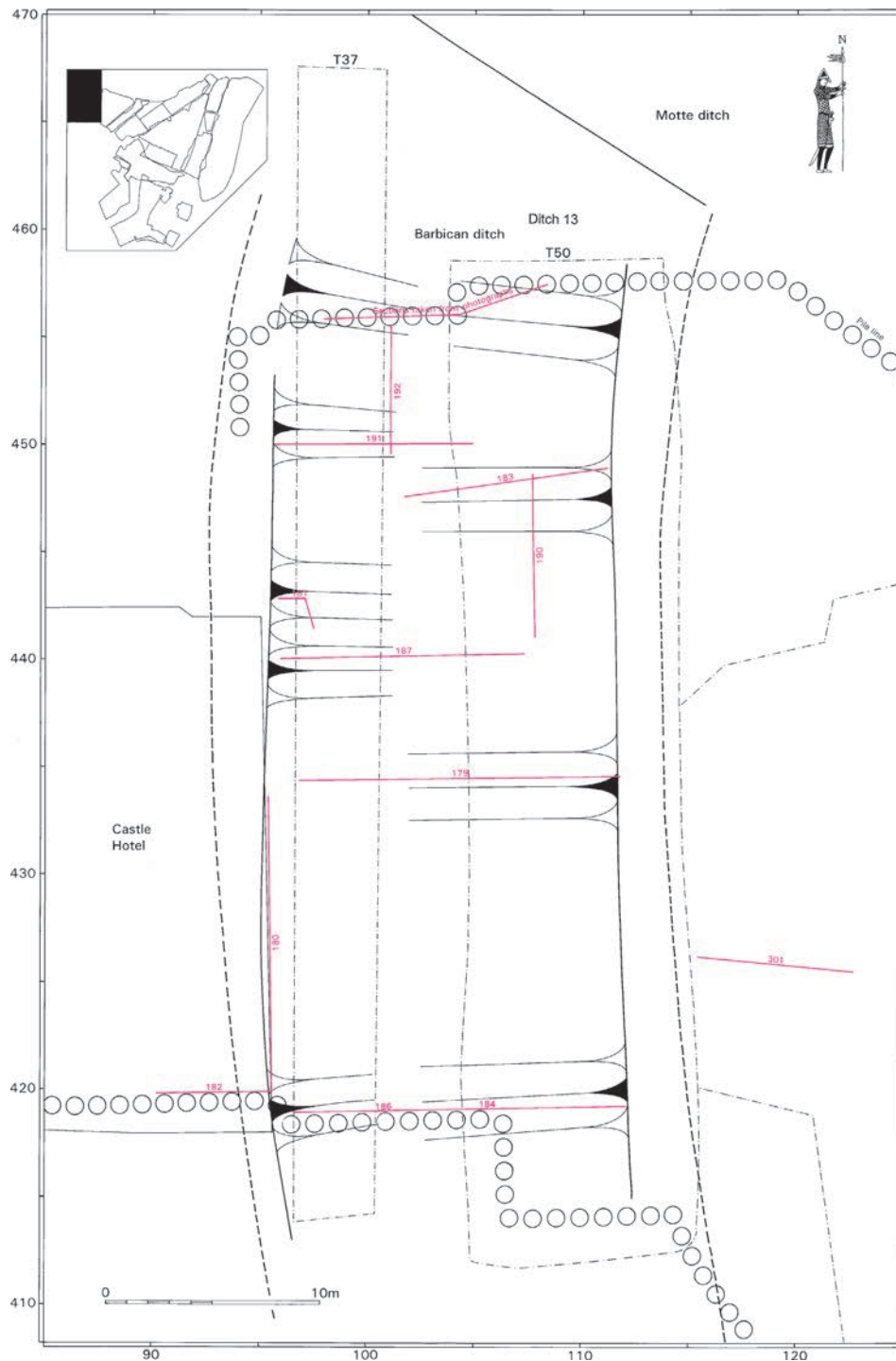


Figure 7.12 Period 4.2: Plan of Ditch 13 (barbican), recorded in watching briefs to the west of the site (T37, T50 & T58). Scale 1:300

the base of the new barbican ditch. It is probable that deposition of these dumps took place over a relatively short space of time, although there may have been pauses in the activity. Two pits were recorded within the sequence. Further considerations of timescale are given in Chapter 7.V.

The processes at work within the sequence of deposits recorded in the south-facing sections were clearly complex (S.978, 984, 992, 993, 997–999, 9108, 9109, 9116–9118, 9176, 9121 and 9122, Fig.6.34). A pit was recorded in

S.999 (91425), apparently within the dumping sequence. The highest point of the ground surface lay at c.15.60m OD, the overall depth of fills accumulating being c.2m. The lower sequence directly sealed activities described earlier (Phases 10a–c, Period 4.1). The dumps comprised either silty or sand, sometimes mixed with chalk or organic matter, or redeposited natural clay, chalk or loam (e.g. 91298, 91423, 91457, 91456, 91580, 91457, 91502, 91500, 91499, 91579). Two possible soil horizons were recorded within this sequence (91501 and 91496).

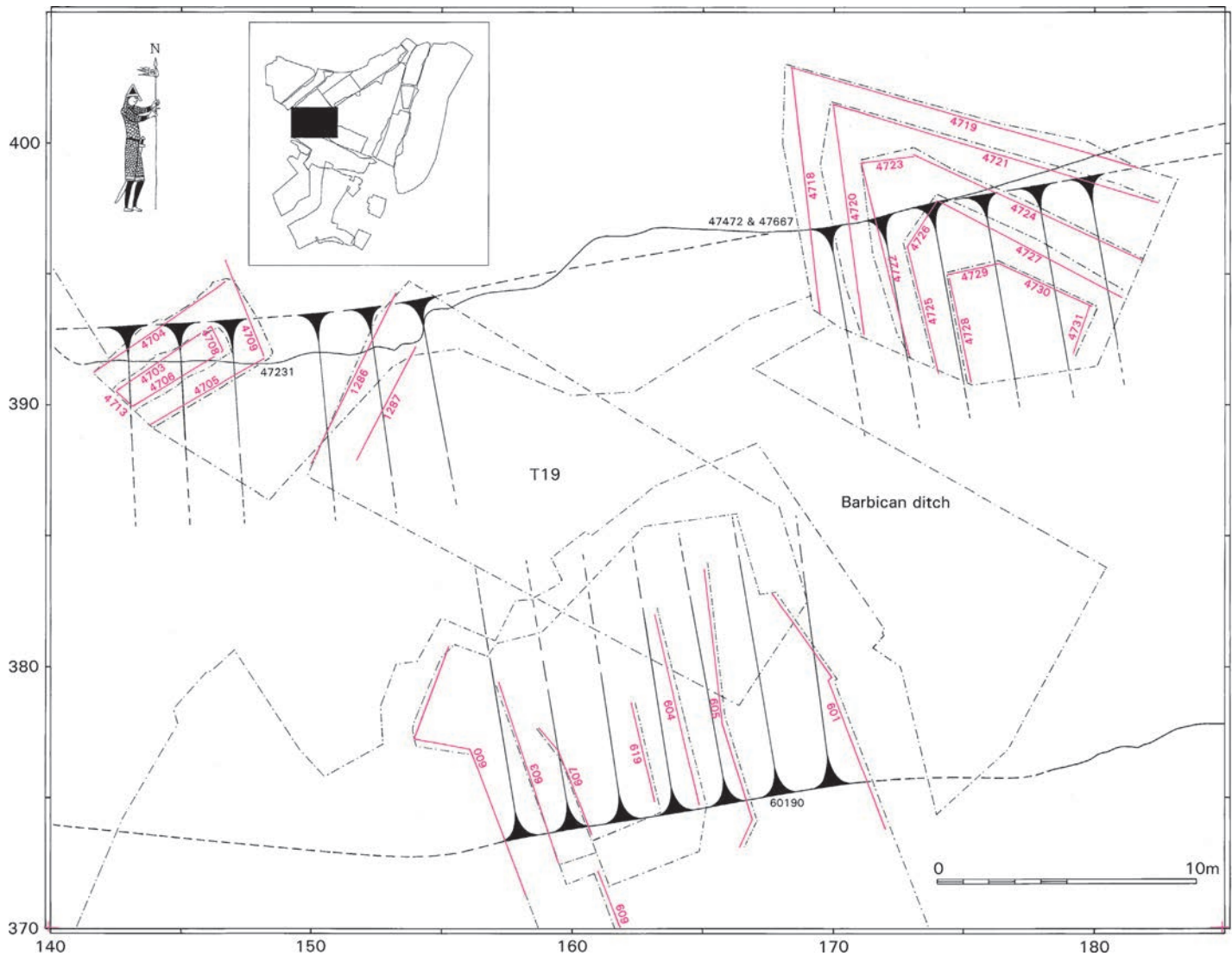


Figure 7.13 Period 4.2: Plan of machine trenches through Ditch 13 (barbican) (Areas 6, 47 & T19). Scale 1:250

Fills recorded in the west-facing sections were again notably chalky, although there was no evidence here for soil horizons (S.985, 994, 9101, 9111, 9119 and 9120). Upper fills were generally thicker (e.g. 92060) and some were darker and more silty in character (e.g. 91434). The uppermost fills here were at c.15.70m OD (S.9111). A pit recorded in S.9101 (91233) may have been dug during the dumping sequence or may have been of post-medieval date.

Small Finds

Finds from these dumps included an iron strip (SF6393 from 91499), lead sheet (SF1098 from 91457), copper alloy mount or stud (SF6418 from 91494) and iron nails (SF6409 from 91234). Finds from pit 91425 include copper alloy strips (SF6261) and a copper alloy pin with a spiral wound head (SF6377). Pit 91233 contained a decorative copper alloy and leather belt fitting of probable 12th- to 13th-century date (SF1088) and iron nails (SF6481).

Pottery

Deposits associated with the disuse of the north-east bailey ditch (G9/36) produced less than 0.5kg of pottery (0.454kg), much of which was residual. Medieval pottery was represented by LMU including a jar rim (type J2j) and glazed wares mostly by GTGW, and also non-local glazed ware as well as first instance of Aardenburg-type ware recorded

from the site. Products from Aardenburg generally occur in 13–14th-century contexts in Norwich. The dating of group as whole is based on the Aardenburg-type ware sherd, as well as a few small sherds of LMT. The general date range of LMT begins in the late 14th century, although these could be very early examples or intrusive and a mid 14th-century date is probably not too specious. A general late 12–14th-century date is suggested for the whole group of fills. See Appendix 6.

The Barbican and its Defences

Ditch 13, Phases 1–2: cut and early fills

by Elizabeth Shepherd Popescu, Andy Shelley and Niall Donald
(Figs 7.11–7.19, Plates 7.5–7.12)

The barbican ditch, recutting and obliterating an earlier ditch in the same position, was recorded over much of its length on the Castle Mall site (Fig.7.11). The northwards return of this ditch to the east of the castle may have been recorded in a small excavation in 1973 (Site 150N), although this was originally interpreted as part of the south bailey ditch. If this were indeed part of the barbican ditch, it would imply that the ditch was slightly wider here than elsewhere along its length. Alternatively,

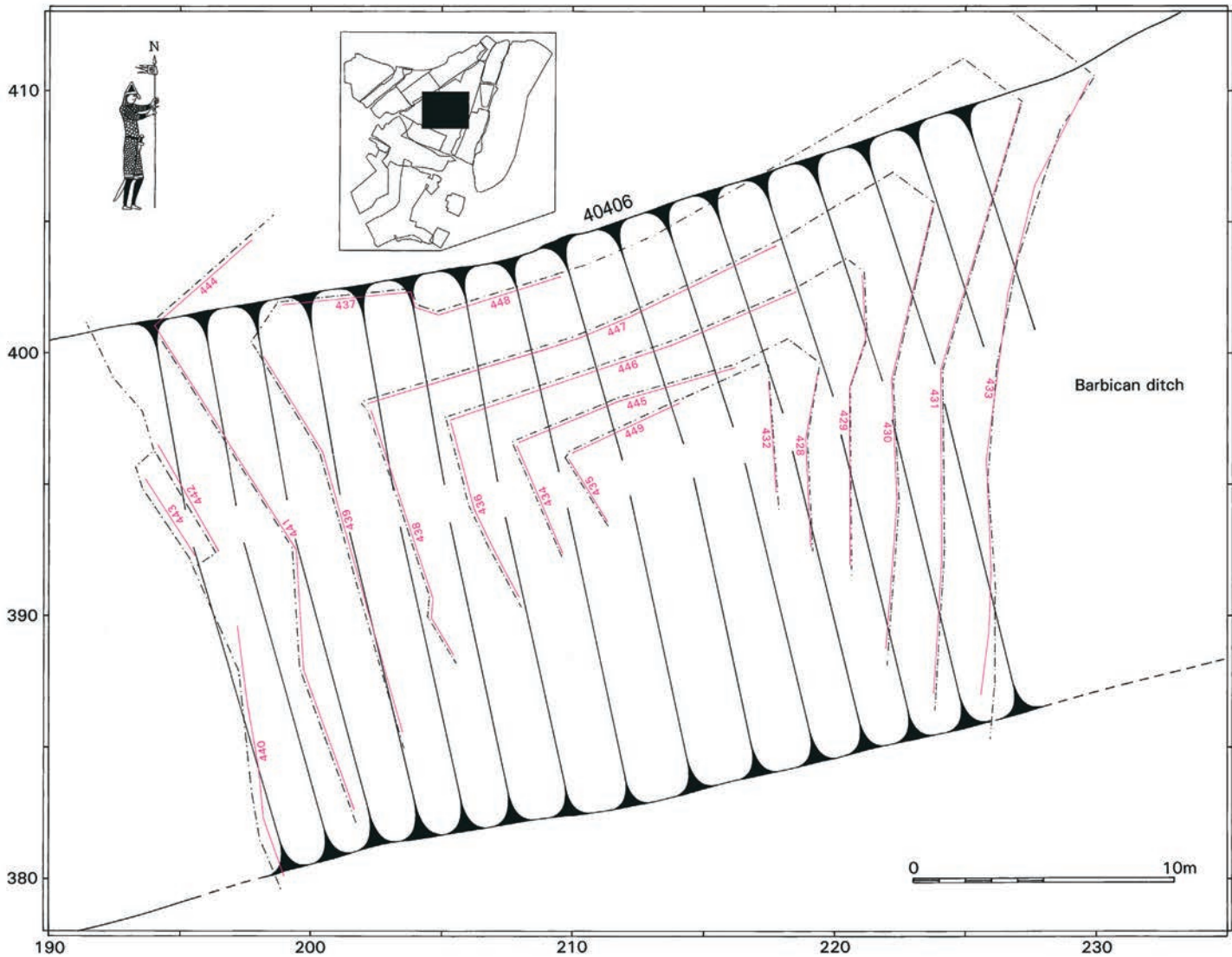


Figure 7.14 Period 4.2: Plan of machine trenches through Ditch 13 (barbican) (Area 4). Scale 1:250

the observation may imply the presence of more than one ditch beneath present day Rose Avenue. Further discussion of these possibilities is given in Chapter 12, together with numerous other observations and antiquarian references to the ditch.

The barbican ditch may have been effectively a recut of an earlier ditch in the same position (see Chapters 5 and 6). The north-east bailey feature was clearly substantially infilled by the time the barbican ditch was cut, at some point during the 13th century (although perhaps not as early as 1216 as has previously been suggested). Further discussion of the relationship and layout of these ditches is given in Chapters 7.V and 12.

The earth-moving required to construct the massive barbican ditch is uncertain, given the possible presence of the earlier ditch. Presumably, much of the spoil removed would have gone to construct the associated rampart. Infilling of the ditch where it was recorded to the east (in Area 9) appears to have been a continuous process with no indication of recutting or cleaning. This silting may have continued into the early post-medieval period,

at which time the ditch would still have been about 5–6m deep. From the 15th or 16th centuries, refuse was being deposited along with the silting process (see Chapter 8). The final disuse of the ditch took place between 1789 and 1862 in association with the construction of the Cattle Market (Chapters 10 and 11), raising the ground level to the east of the barbican ditch and adding up to a metre of fill to the ditch itself.

Further discussion of the impact of the ditch on the development of tenements and road alignments, as well as the processes of infilling, is given in Chapter 12. Most of the refuse fills of the ditch date to the 16th, 17th and 18th centuries, although rubbish could have continued to accumulate until the demise of the ditch in the 1862 Cattle Market redevelopment.

The ditch cut

To the west, beneath modern Castle Meadow, the ditch had a V-shaped profile with a flattened base (Fig.6.20). The base here lay at 11.40m OD and the top at 21.70m OD, giving a surviving depth of 10.30m. The original

width of the ditch had been obscured by truncation but, if extrapolated to the same height as the top to the east, would have been about 27m. The width of the ditch as recorded in Areas 6 and 47 was 21.50m although the base was not reached in either of these observations. In Area 4, the ditch was at least 23.30m wide, with a surviving depth of 8.47m (the base lying at 17.28m OD). To the east (in Area 9), the base was recorded at 10.16m OD, with a surviving depth of 9.09m and a minimum width of 17m. At the point at which the ditch cut into fills of the outermost north-east bailey ditch, it was 5.50m deep. These figures demonstrate how the ditch cut across natural contours at the end of the Ber Street spur. In order to maintain an average depth of between 8.50 and 10.30m, the level at the base varied by just over 7m.

The ditch sides may have been angled differently in relation to the material through which they were cut. The eastern and western arms of the ditch cut through more chalk than the part to the south (which cut through sand and gravel) and the sides were steeper reflecting the stability of the chalk. The eastern arm was angled at between 40 and 60°, the southern between 35 and 40° and the western between 43 and 46°.

The most detailed observations at Castle Mall were made in Areas 4 and 9, where stepped trenches were placed from the surviving top to the base of the ditch. The observations are described below by area from west to east. Watching brief locations are plotted on Fig.1.5.

Castle Meadow (Watching Briefs T15, T35, T37, T50, T58 and T62)

Perhaps the best profile across the ditch was recorded beneath the present-day road named Castle Meadow (confusingly to the west of the castle, whereas the medieval Castle Meadow lay to the east). Here, the ditch edges did not appear to have been greatly disturbed by later activity such as quarrying and the infilling process appears to have been relatively swift and simple (Fig.6.20). The surviving ditch ran between Area 3 and the Castle Hotel, where the ditch swung northwards towards the motte (Fig.7.12). Development plans meant that the road could not be fully closed to traffic and that archaeological excavation was impossible. However, the placement of a bridge (effectively forming a platform to carry the existing road over two levels of the shopping precinct) was progressively undermined so that a series of decks could be constructed. During this excavation, the ditch and its fills were recorded (Plate 7.5). A composite of the recorded sections (S.301, 184, 186 and 1293 and sketches) shows V-shaped profile, with a flat/concave base (c.2.00m wide). The base level recorded was 11.40m, the upper level being 21.70m OD, giving an overall depth in this observation of c.10.30m. The eastern edge was angled less steeply towards the top, where there was some indication that the edge of the ditch may have been disturbed (S.301).

Most of the observations made during the watching briefs were of the base or eastern edge of the ditch, although S.181 recorded part of



Plate 7.8 Basal fills of early to mid 14th century date within the barbican ditch (Area 4, S.432)

the western side. This section indicates an increase in the level of slope of this edge. Another section (S.191) lay further north and recorded deposits revealed when the lowest deck of the Castle Mall development was excavated (below about 13.90m OD). A north-to-south running section (S.192) met the northern pileline wall, where further a further ditch profile and its fills were photographed.

The ditch appears to have curved slightly eastwards at its northern end towards the motte. Basal levels indicate that it ran uphill to the north, contradicting the natural ground slope. This may indicate the presence of a causeway just to the north of the observed area, with the ditch butt-ending in a similar way to the ?Fee and south bailey ditches. Such a causeway would have been sited on a line from the base of the castle bridge to present-day White Lion Street and thence to the French Borough to the west of the castle precinct. There is, however, no firm evidence for the presence of such a causeway, although a bridge over the ditch in this position would not be unexpected. An alternative interpretation is that for an unknown reason the ditch simply rose in level. Further discussion of the relationship between the three ditches recorded in this area is given in Chapter 12.

Castle Hotel (T15)

Two trenches were excavated by the contractor during clearance of soil around piles. Modern makeup deposits for the overlying road were recorded, as well as a sequence of horizontal dumps (at levels between 19.30 and 18.50m OD).

Castle Meadow (T35)

In September 1990, sub-contractors machine-excavated nine ground inspection holes for piling of the retaining wall for the new development. A sequence of sections were recorded in two trenches (S.1293–1296). Following removal of the tarmac surface, the machine hit concrete representing the 20th-century tramway that had run along the line of Castle Meadow. Beneath this, horizontal deposits were exposed, notably similar to fills of the barbican ditch that were excavated in Areas 4 and 9. The two trenches were then extended to the west. The southern extension (S.1296) contained horizontally banded fills. The northern extension (S.1295) had been heavily disturbed by the insertion of a modern drain and lamp posts. Four ground inspection pits for piling were then inserted, during which the tramway was again found to overlay ditch fills.

Castle Meadow (T37)

The surface of the modern road was removed over an area of about 4 x 50m to a maximum depth of 1m, in connection a clearance of services in advance of piling. The depth of the trench was not great enough to reveal any archaeology and the edge of the barbican ditch was not visible.

Castle Meadow (T50)

Work adjacent to Castle Meadow consisted of the excavation of a line of four pile holes and two trenches, one at the northern end of the pileline and the other at the southern end, both running east-to-west. Initial excavation involved the creation of four inspection pits less than 0.75m deep, one for each pile. At this point, the only archaeological deposits consisted of soil containing only modern material with possibly redeposited pottery. The pile holes were then excavated using a piling auger 1.8m in diameter. This process was continued until natural chalk was struck and continued to an unspecified depth. Later, two inspection trenches for the piling of the retaining wall were dug to the north and south of the area. Two sections were drawn (S.1291 and 1292) the former recording modern makeup dumps and the latter upper fills of the ditch. From the profile constructed from the depths at which chalk was recorded, the observations indicate the original depth to which the barbican ditch was cut.

Castle Meadow (T58)

A series of interconnecting trenches were machined by the contractors in order to construct formwork supports for the eastern side of the deck of the 'bridge' which now carries Castle Meadow over the top of the Castle Mall development. The bases of these trenches were at two distinct levels: along the north and south ends and connecting the western row of supporting piles at approximately 18.50m OD; those along the eastern side and transversely between the two central piles at c.19.00m OD. At the northern end, the trenches were barely below the existing road surface. The deeper trenches, however, together with the shallower ones at the southern end, allowed the recording of a series of sections.

Castle Hotel (T62)

Two test holes, dug largely by machine, were placed close to buildings adjoining the Castle Hotel to ascertain the depth of both foundations and natural chalk. The northern trench was just over 3m deep from the concrete slab (presumably equating with the floor level of the hotel). Sketch sections were drawn, access not being possible due to the absence of shoring. A brick wall may have been the external wall of the hotel cellar and overlay a layer of flints bonded in concrete or mortar, which may have served as footings or been part of an earlier structure. Below this was over a metre of disturbed deposit, similar in appearance to the upper fills of the barbican ditch observed elsewhere on the site, although with no indication of tip lines. The absence of the latter could suggest that this was a levelling dump and, indeed, subsequent plotting suggests that this hole lay too far to the west to have picked up fills of the barbican ditch. The base of the trench cut into natural sand overlying chalk.

The southern test hole was dug through thick modern layers above a concrete slab at the level of the cellar floor (c.14.30m OD). Beneath this was natural sand overlying chalk. This indicates that, again, the southern part of the hotel did not overlie ditch fills.

Bell Hotel (T64)

The south-western return of the barbican ditch lies beneath the Bell Hotel. Here a number of small watching briefs and borehole surveys (including T64 and 314N) were conducted within the standing building, although they proved inconclusive, other than proving the existence of made ground. In February 1991, dynamic probe tests were carried out inside the Hotel. The results suggest that the northern part of the building lies over 4–6m of made ground, while the southern half overlies 1–3m of made ground — presumably indicating fills of the barbican ditch. In August 1991, a series of five pile proving holes were dug and two wells were encountered. Deposits were similar to upper fills of the barbican ditch recorded elsewhere on the site.

Area 47

The northern edge of the ditch was recorded in two places in Area 47 (Figs 7.11 and 7.13). To the west (47231, G47/34, S.4703–06, 4708, 4709 and 4913) the identification of the ditch edge was greatly hampered by later quarrying activity. To the east (G47/44) the ditch was investigated in a small, triangular machine trench with five steps (47472 and 47667). Here, the ditch was again cut by later quarrying activity (G48/3, Period 6) and the edge of the ditch itself was only recorded for a short extent in the east-facing series of sections. The recorded fills at this upper level were of later medieval and post-medieval date.

Bell Avenue (T19)

Late fills of the barbican ditch (T19/39 and 40, S.1286 and 1287, Period 6.2 and 6.3) were recorded during this watching brief during which a rectangular trench was cut east-to-west across Bell Avenue (to the north-west of Area 6). The edges of the ditch were not encountered during this observation (Figs 7.11 and 7.13).

Area 6

The southern edge of the ditch was recorded across Area 6, where a machine trench was placed through its fills (60190, Figs 7.11 and 7.13, Plate 7.6). The ditch edge sloped at a roughly 45° angle (the post-medieval fills are described in Period 6, Chapter 10). The top of the cut lay at around 24.90m OD and had been subjected to truncation during the construction of air raid shelters. The line of the ditch was not recorded in plan, the edge having been reconstructed from evidence drawn in section.

Area 48

The northern edge here had been completely removed by subsequent post-medieval quarrying. The extreme downward slope of recorded deposits indicates the underlying presence of the ditch.

Area 2

The line of the ditch was recorded in plan running across the northern end of Area 2 (Fig.7.11).

Trial Hole 4

Trial Hole 4 was located over the boundary between the northern edge of the barbican ditch and a post-medieval quarry (Fig.7.11). The trench, which measured 14.5 by 7m, located two fragments of a rampart gatehouse (see Period 3.1, Chapter 6.II and 6.3, Chapter 10.II) and the north-eastern edge of the quarry which had caused its collapse.

Area 4

A stepped machine trench was recorded in section across the full width of the ditch in Area 4, with seven machine steps to the west, six to the east and five to the north (adjacent to the previous investigations in Trial Trench 4, Plate 7.7). The trench covered an area of c.40m east-to-west by over 20m north-to-south (Fig.7.14).

The ditch had a shallow V-shaped profile (40406, Figs 7.15 and 7.16), the very base being flat/slightly concave over a distance of c.1.60m (Plate 7.8). The exact original profile remains uncertain due to probable erosion of the sides, which, as they survived were fairly gently sloping. It is possible that the original ditch may have had a stepped profile, perhaps incorporating timber revetments, although there was no archaeological evidence for this suggestion.

In the east-facing sections (Fig.7.15), the base of the ditch lay at 17.28m OD, with its surviving top at 24.83m OD, giving a surviving depth of c.7.55m. Features recorded along the southern edge of the ditch were recorded as having cut into natural deposits at a level of 25.48m OD, indicating that this depth should be adjusted to c.8.20m. The width of the ditch is difficult to establish, since both the northern and southern edges had been disturbed by later activity. The suggested width at this point would have been about 20–22m. In the west-facing sections (Fig.7.16), which provide the better profile, the base was recorded at 17.50m OD, the flat/concave base extending over 1.10m. The northern edge sloped at about 30° from the horizontal.

Areas 22 and 202

The northern and southern edges of the ditch were recorded in Areas 22 (22545, G22/161) and 202 (20214, G202/161). Here the unexcavated ditch fills were planned in order to help define the line and width of the ditch (Fig.7.11).

Trial Hole 1

Trial Hole 1 was located within the line of the barbican ditch, in what was later the northern end of Area 9 (Fig.7.11). It measured 20.5 by 14m and was excavated to a depth of 7m (Plate 1.10). The ditch fills investigated proved to be post-medieval in date (Period 6, Chapter 10). The area examined by trial work was later subsumed within the machine-cut stepped excavation through the ditch.

Area 9

The first phase of machining in the eastern part of the site was designed to investigate the barbican ditch (91295=91880=92851=91872=91842). The profile of the cut itself is fragmentary, being drawn largely from the stepped sections placed through it (Fig.7.17 and 7.18, Plates 7.9 and 7.10). A single profile was drawn, created by following the line of the ditch edge down the steps (S.976, Plate 7.11). The ditch was roughly V-shaped; although its base was again concave (Plate 7.12). The western edge of the ditch, where it would have been topped by a rampart (see below), had a gradient slightly steeper than 1:2. The eastern side appears to have been even steeper (as recorded in the south facing sections during the first phase of machining). The base of the ditch lay at 10.16m OD (S.968), with its highest surviving point being at 18.42–18.63m OD on the eastern side (S.9128) and 19.06m OD to the west. This gives a surviving depth of 8.26–9.09m. The extent to which the ditch depth was reduced during Cattle Market truncation (Period 6) is uncertain, although the accumulation of material and presence of features on its eastern side suggest that it may have had little impact. The greatest degree of Cattle Market truncation lay further to the south.

The surviving ditch was at its shallowest along its eastern edge, at the point at which it cut through fills of the north-east bailey ditch. Here, the top of the ditch was recorded at 15.60m OD, indicating a depth of only 5.50m. The width of the ditch in this area is difficult to calculate, due to the problems of defining its exact upper limit (often obscured by slumping) on a line across the ditch. The minimum suggested width is 17m, taken from the highest recorded points in the south-facing sections. In plan, the ditch width was recorded at 17.40m, a higher level than the information recorded in section.

Rose Avenue (T28)

The construction of a road entrance to the Castle Mall car park provided the opportunity for excavation of part of the barbican ditch to the north-east of the site (T28), north of Area 21 (Fig.7.11). A large machine trench was cut across the corner of former Rose Avenue, measuring 5.5m wide by 22m long and excavated to a depth of 3.5m below ground level (the sides being stepped or battered). A ditch edge (12604, T28/177 part) was recorded, probably forming the inner edge of the barbican. Late fills were recorded, although the tip lines are misleading as the section was recorded at an angle to the edge of the ditch. The observation aids the identification of the western edge of the ditch as it returned northwards towards the motte. No profile, however, was recorded.

fold out

fold out

fold out

fold out

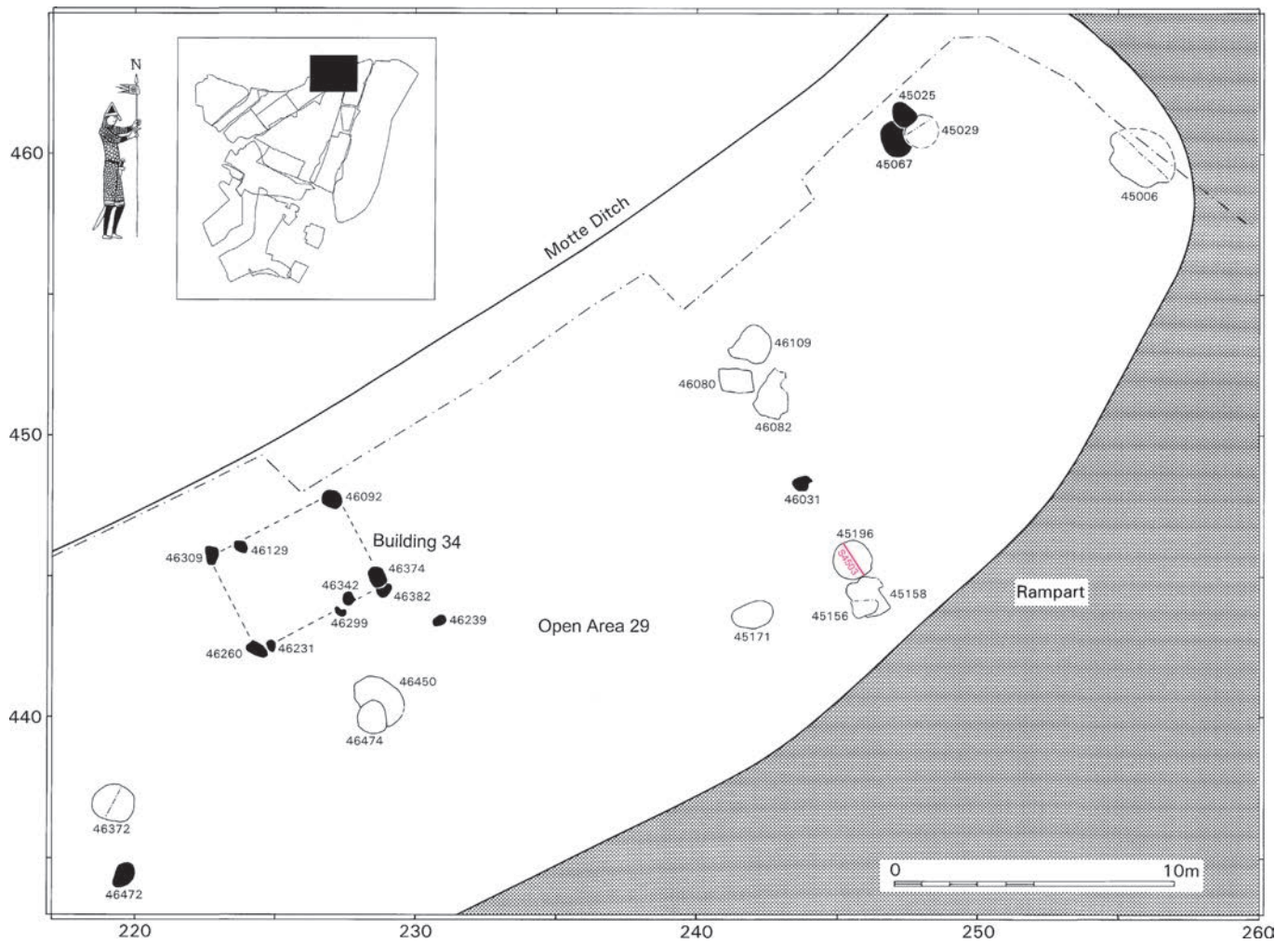


Figure 7.19 Period 4.2: Plan of Building 34 and Open Area 29 (Areas 45 & 46). Scale 1:250

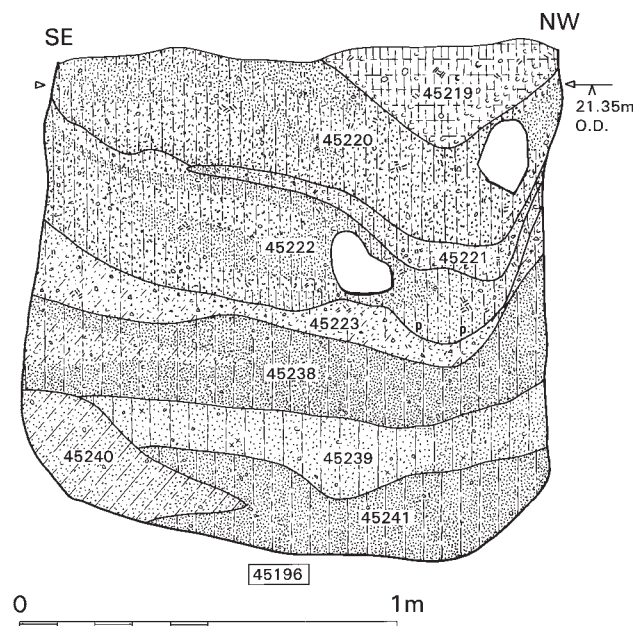


Figure 7.20 Period 4.2: South-east facing section across pit 45196, Open Area 29 (S.4503, Area 45). Scale 1:20

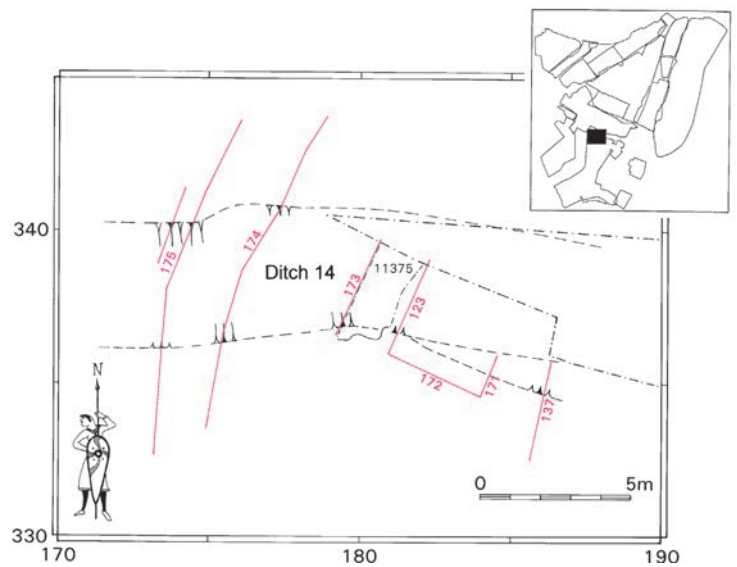


Figure 7.21 Period 4.2: Plan of Ditch 14 (?Shirehouse) (Area 1). Scale 1:250

Shirehall Car Park (Site 150N)

Archaeological excavation near the Shirehall in the 1970s was restricted to a small trench in the south-west corner of the car park (Fig.7.11). This recorded part of what was interpreted as the south bailey ditch (but was probably the barbican ditch), cutting into a number of Late Saxon or Norman ?quarries. The ditch ran north-to-south across the trench, with estimated dimensions of over 20m wide by 5m deep (Roberts 1974, 69). Adjacent and running parallel to it was a gully, originally interpreted as a marking out feature but subsequently suggested as a drainage ditch similar to those recorded elsewhere in the north-east bailey (Atkin 2002a, 39). Fills of the major ditch are detailed below and in later chapters.

Early ditch fills: silting and erosion

Early fills of the barbican ditch, dating to the early to mid 14th century, consisted mainly of the effects of weathering and erosion.

Castle Meadow

Infilling along the base and sides of the ditch was recorded in the watching brief to the west (T58/24, S.181, 184 and 179). Two fills were recorded in S.181 along its western edge, approximately 1.60m above the ditch base. Initial fills (not illustrated) consisted of two thick dumps of loam (12753). Similar fills were recorded to the east (S.184, Fig.6.20), extending up the side of the ditch to an upper level of 17.50m OD (12762 and 12763). No finds were recovered. What may have been the same two fills were recorded further north (S.179), surviving to an upper level of 17.90m OD and forming a deposit c.1.50m thick at its lower extent. These fills appear to represent the results of silting and erosion into the ditch.

At the northern end of the observations beneath Castle Meadow, another section (S.183, T58/25, not illustrated) indicated the presence of deliberate, thick dumps of clean sand and chalk (12764 and 12765), amounting to a total depth of 3.50m of fill.

Area 4

The basal fills in the part of the ditch recorded in Area 4 (G2/4) were probably the result of silting and erosion, infilling the ditch to a depth of c.2m. Basal fills in the east-facing sections (S.435, 434 and 436, Fig.7.15) covered the base and southern side of the ditch and consisted of more mixed deposits than those in the opposing sections. Those here were often mottled and of mid to dark brown, some perhaps being redeposited natural although with a higher clay content, some the result of erosion/rain wash into the ditch (40491, 40485, 40486, 40480, 40479, 40437, 40487, 40488, 40489, 40492, 40487, 40636, 40477, 40512, 40511, 40510 and 40513). Basal fills in the west-facing sections (S.432 and 428, Fig.7.16, Plate 7.8) again spread up the southern edge of the ditch and consisted of clean redeposited natural sand and gravel (40647, 40648, 49649, 40650 and 40651), the latter deposit spreading up the side of the ditch. One showed signs of root/worm disturbance.

Numerous subsequent fills, which may represent silting and refuse deposition into the ditch, were recorded (59 in all, G2/28). These represent erosion and stabilisation of the ditch sides, which would have led to a slight flattening out of the base. In the west-facing sections, such fills were recorded as c.1.70m thick (eg 40413, 40651, 60625, 40659, 40663, 40660 and 40418; Fig.7.16). They were 1.20m thick in east-facing sections (eg 40434, 40490, 40494, 40493, 40496, 40499, 40500, 40501, 40503 and 40508; Fig.7.15). The fills consisted of thin layers of interleaved sand, silts and loam with few inclusions. None of these fills were hand excavated, finds only being retrieved from bulk samples. The minimal resulting finds assemblage suggests a small component of waste.

Area 9

Early silting of the ditch in Area 9 (G9/37) was characterised by light coloured sands and silts, contrasting with later refuse deposits (G9/41, Period 6, Chapter 10) which made up the bulk of the fill. The early silts infilled the ditch to a depth of almost 3m. Silting was concentrated along the base, but was also present against its sides. Such deposition was most notable at the point at which the ditch cut through fills of the earlier north-east bailey ?ditch (Periods 2–4.1). Here, the less stable ground had apparently subsided into the later ditch, exacerbated presumably by weathering and erosion. These fills had the effect of flattening out the base of the ditch. Fills were recorded in south, west, east and north-facing sections, although only those illustrated are described further below. Later fills of the ditch are described in Periods 5 and 6 (Chapters 8 and 10).

The south-facing sections recorded infills along the base and eastern edge of the ditch (S.968, 972, 973, 978, 984, 992, 996, 993, 996–999,

Figs 6.34 and 7.18). The earliest (91294, 91091, 91551, 91550, 91549, 91548 and 91458) consisted of compacted deposits containing frequent chalk flecks and pebbles. Running along the eastern side were two similar layers (91429 and 91428).

Shirehall Car Park (Site 150N)

The earliest fill of the ditch recorded at Site 150N (Fig.7.11) was of clean silt, probably the result of natural silting and erosion. This was followed by refuse deposits of apparent 13–14th-century date, which may have post-dated 1345 (Atkin 2002a, 39), followed by later medieval and post-medieval infilling of the ditch which was succeeded by cellars, then landscaping relating to the construction of the Cattle Market.

Small Finds

Finds from ditch fills recorded in Area 4 included sawn horn (SF7607), an iron nail shank (SF5905) and an intrusive coin of 1613–25 (SF1059), all from fill 40406. Finds from Area 9 included worked stone. Other finds were sawn antler (SF6487; 91091), a copper alloy strip (SF6220) and iron nail shank (SF6571; both from 91549), a copper alloy strip (SF6613; 91550), an iron nail shank (SF6389; 91551) and a copper alloy lacetag (SF6262; 91714).

Pottery

A total of 0.712kg of 12th- to 14th-century pottery was recovered from these ditch fills and is detailed by area in Appendix 6. A large proportion of the material was residual, contemporary fabrics consisting of LMU and GTGW. Six sherds of transitional late LMU were recorded from fill 40433, refining the date of fills in this part of the ditch to the early to mid 14th century.

Zooarchaeological Remains

One ditch fill contained a partial cat skeleton (fill 40416; see Albarella *et al.*, Chapter 7.IV and Part III 1).

The barbican rampart

No direct archaeological evidence survived to indicate the presence of a rampart which may have lain to the north of the barbican ditch, the documented feature having been removed by quarrying and subsequent landscaping (Periods 6 and 7). The most reliable indicators of its form and extent come from antiquarian observations and early maps, which are detailed and discussed in Chapter 12. A rampart may already have existed in this position from an earlier date, relating to a precursor to the barbican ditch (Periods 2 and 3). The likely footprint of the bank can, however, be traced in the position of later features. A series of medieval pits (see below) appear to have been dug at its foot, between it and the motte ditch. Some of the fills of the barbican ditch may have been part of the rampart which had eroded or been pushed into it. During the excavation of Trial Hole 4, deposits adjacent to the ditch were thought to have been the remnants of an associated rampart, which it was postulated had survived as a result of having been buried during landscaping in 1862, levelling the former ground slope (Ayers 1988a, 6). This 'rampart', however, was not located during the main excavation and may in fact have been the western face of the ditch.

Further dumps on the outer side of the ditch, recorded in the north-eastern corner of Area 9, were also believed on site to indicate a rampart (Kirkpatrick may have implied the presence of a rampart in this location; see Chapter 7.V and Chapter 12). The interim report of 1991 suggested that the ditch succeeded 'an earlier, smaller ditch on a slightly different alignment [a reference to the outermost north-east bailey ditch] and was created in part by the deposition of massive dumps of soils which were then cut to form the new ditch' (Reeve 1991, 5). These dumps, however, later proved to be infills and levelling



Plate 7.13 Postpit 46472 (Area 46, Period 4.2)

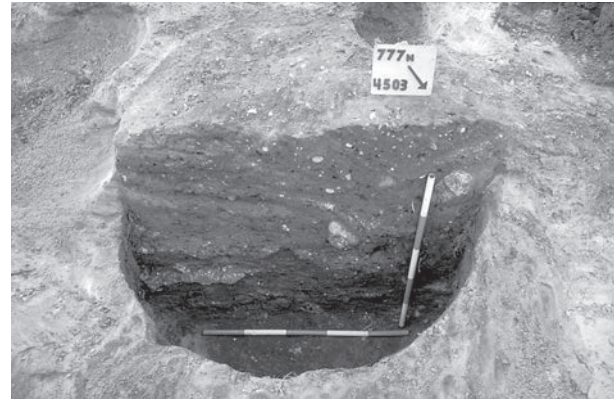


Plate 7.14 Fourteenth-century pit 45196 within the barbican (Area 45, Period 4.2)

of a series of earlier features relating to the north-east bailey.

Open Area 21: pit in the western part of the barbican

by Elizabeth Shepherd Popescu and Andy Shelley

An isolated, sub-rectangular pit (49151, S.4911, G5/40, Fig.7.10) lay just inside the postulated inner edge of the barbican rampart, to the south of the well shaft and west of the motte ditch bridge landing. It was at least 1.10m deep and was filled with a stony, mixed deposit.

Small Finds

Finds included a nail and shank (SF6829).

Pottery

A small quantity of pottery (0.285kg) was recovered from this pit and contemporary fabrics included LMU, GTGW and the later, oxidised GTGW variant from a jug decorated with iron oxide painted decoration. Imports are represented by Siegburg Stoneware. An early to mid 14th-century date is suggested. See Appendix 6.

Open Area 29: pits in the eastern part of the barbican

by Elizabeth Shepherd Popescu and Andy Shelley

(Fig.7.19–7.20, Plates 7.13–7.14)

A group of pits lay in the eastern part of the barbican enclosure, possibly associated with a post-built structure (Building 34 below; Fig.7.19). Human bone was recovered from many of the features, deriving from a pre-Conquest cemetery (Cemetery 2, Chapter 4.II). Many contained notable quantities of building materials, including fragments of limestone.

Furthest to the west was a sub-circular pit (46372, G46/13) with a concave base, only 0.26m deep. Immediately to the south was an isolated post-pit (46472, G46/15, Plate 7.13), with a depth of 1m. The post, which had rotted *in situ*, had been packed around with sand. Although its dating is equivocal, its substantial size may indicate an association with the castle barbican.

To the east were two intercutting pits (G46/13). The earliest (46450) was 0.51m deep, while the second example (46474) was augered to a depth of 3m.

Another area of pitting lay to the east. A sub-rectangular/oval pit (45171, G45/1) was 0.61m deep with vertical sides. Adjacent to this pit to the east were two intercutting pits (45158 and 45196, G45/1). The earliest

(45196) was circular 1.44m deep (S.4503, Fig.7.20; Plate 7.14), with vertical sides and a flat base. Ten fills were recorded, one of which (45183) was a composite for the half of the pit that was removed to record the cross-section. This contained large quantities of animal bone, including two partially articulated birds (see below). The basal fills consisted of redeposited natural clay/sand, presumably originating from collapse of the sides (45240 and 45241). Above this lay loamy sand (45239 and 45238), containing occasional flecks of chalk and a large lens of rubble. The next fill (45223) was a mix of rubble (40%), sand and loam which appeared to be a compacted deposit of domestic waste and building material (chalk, brick and gravel). Overlying this was grey brown sand/loam (45222) with frequent flint cobbles. Some of the latter were covered with mortar and others showed traces of burning. A very large quantity of pottery was recovered, mainly from the north-western part of the fill (see below). This was followed by a layer of grey sandy loam with frequent chalk fragments. Next in the sequence was a composite deposit (45220) consisting of interleaved layers of sandy loam and loamy sand containing chalk and charcoal flecks. The uppermost fill (45219) was silty loam with moderate chalk and charcoal flecks.

Just cutting into the southern edge of this pit was another, irregular pit (45158=45156) which was 0.48m deep, having been disturbed by later truncation. Again, its fills had a high rubble content (15%), consisting of chalk, packed clay, gravel, limestone and flints. Some of the stone had been shaped and one flint was burnt.

Continuing the line of pits and posts towards the north-west was an isolated post (46031, G46/10). Its fill showed signs of burning or charring. Further to the north-west, were three more pits up to c.0.50m deep (46082, G46/9; 46080, G46/5; 46109, G46/25). One contained 50% flint nodules.

Another area of pits/posts lay to the east. The northernmost consisted of an area of intercutting pits and post-pits (45029, G45/2; 45025 and 45067, G45/10). Further to the east, immediately at the rear of the postulated rampart, was an isolated pit (45006, G45/2) 0.50m deep.

Small Finds

Pit 46372 contained a nail shank (SF6699). Pit 45196 (fill 45183) contained knapped flint (SF7454) and two iron nail shanks (SF6596). Two nails (SF6536 and 6542) and a type MP3 iron arrowhead (SF6581; Fig.7.35) were recovered from fill 45222. Fill 45220 contained a nail (SF6546) and a fragment of dressed Caen stone of 12th-century date (SF7453; Chapter 6.III). Pit 46109 contained iron nails and shanks (SF6684, SF6683, SF1112, SF6622, SF1113 and SF1114), while pit 45025 contained a silver long cross penny (SF6474) of Edward I dated to 1302–7.

Human Bone

Disturbed human bone was recovered from pits 45171, 45196, 46109 and 45025.

Pottery

by Irena Lentowicz
(Fig.7.27 on CD)

A total of 6.470kg of pottery was recovered from these pits. The majority came from pit 45196 (5.568kg; Fig.7.27 on CD; see Appendix 6). Although simple, everted rims were recorded, the presence of developed 'hammer-head' rims were recorded which dated this pit to the 13th–14th century. This was further refined by the GTGW vessels. In addition to a jug base and decorated body sherds from other jugs, a flatware base in an oxidised variant was recorded. The oxidised fabric and flatware form are thought to be 14th-century developments of the Grimston Glazed ware industry attempting to expand its range of products to meet changing demands. The other pits contained residual pottery, as well as LMU and GTGW, dating between the late 12th and 14th centuries. See Appendix 6.

Zooarchaeological and Botanical Remains

The large flots from fills of the pits were composed almost entirely of modern intrusive tree roots and were therefore discarded. Pit 45196 (fill 45183) contained the partial skeletons of a domestic fowl and a small corvid (Albarella *et al.*, Chapter 7.IV and Part III 1). Fish bone is detailed in Part III, Table 96.

?Building 34: post

by Elizabeth Shepherd Popescu and Andy Shelley
(Fig.7.19)

The remnants of a possible structure lay within the eastern part of the barbican area (Fig.7.19). Its interpretation both as a building and as dating to this period are highly tentative: it lay in an area of numerous post-holes and dating is uncertain. It was aligned south-west to north-east (roughly parallel to the motte ditch) and consisted of four fairly large corner posts (46309, 46092, 46374/46382 and 46260), with a few smaller posts infilling its sides. If this were a structure, it would have measured *c.*5m east-to-west by *c.*4m north-to-south, confined within the area of pitting described above. Fills of the post-holes were generally of redeposited natural sand, some with cess inclusions.

Small Finds

An iron nail shank (SF6655) was recovered from post-hole 46231. Post-hole 46092 contained iron industrial debris (SF6687).

Pottery

Pottery included a GTGW body sherd along with a handle from an LMT pipkin or skillet, which was sooted. These sherds suggest a late 14th-century date, although could indicate the date of disuse of the structure (*i.e.* Period 5.1) rather than its construction. Other pottery was largely residual. See Appendix 6.

?Medieval wall

by Elizabeth Shepherd Popescu and Niall Donald
An isolated fragment of possible medieval wall (I2650) was recorded during a watching brief to the east of the site (T102, Fig.1.5). It was constructed of flint rubble, bonded with pink/cream sandy lime mortar and faced with flint and brick (the facing perhaps being a later

addition). The thin, hard bricks and nature of the mortar may suggest an earlier date than the post-medieval walls which surrounded it (G9/43, Period 6). The block in question had been heavily truncated by later cellar construction (surviving as a block of 0.70 by 0.6m) and had apparently been incorporated into a cellar, perhaps being refaced at the same time. It lay some 4–5m to the east of the recorded edge of the barbican ditch. Only a small part of the wall was recorded and more may have survived at a lower level.

This wall was built on the north-eastern lip of the barbican ditch at the point at which the ditch curves back towards the motte. It may have been part of a structure facilitating access to and from the barbican, perhaps part of a bridge pier or gatehouse. It is also possible that this feature related to an earlier phase of ditch or was a later feature.

The Shirehouse and its Yard

A length of ditch running along the inner side of the south bailey rampart to the west of the castle approach (Figs 7.10 and 7.21) may either have been linear quarrying running along the rampart (*i.e.* post-dating 1345) or that this was the ditch to the Shirehouseyard (documented from 1287). Dating the feature is problematic. Finds from various fills of redeposited natural include 12th-century ceramics. Its stratigraphic and spatial position, however, suggest that this feature is unlikely to be castle-related (*i.e.* it lay at an odd angle to the projected inner edge of the south bailey defences and its position at the inner side of the rampart is inexplicable in terms of the defensive scheme). A *taq* is provided by a 15th-century pit cutting into dumps overlying the fills of the ditch.

Ditch 14, Phases 1–4: ?ditch to the Shirehouseyard (Figs 4.39 and 7.21, Plate 5.4)

The vertical-sided ditch ran east to west across the northern part of Area 1 (Fig.7.21) and was recorded in section in a machine trench (I1375, S.174, 7.33 and 175, Fig.4.39, Plate 5.4), again in section further east (S.123 and 173) and in plan. It was *c.*4.50m wide and at least 4.20m deep (augered). It may have survived to almost its full extent as some parts of the top appeared to have been slightly weathered. It cut through earlier consolidation dumps (Period 2, Chapter 5.II) and, by implication, the south bailey rampart (Period 3.1, Chapter 6.II), running roughly along its northern edge. The ditch did not continue into the areas excavated to the west (Area 8) or east (Area 6).

A sequence of fills included redeposited natural, dark silts and backfills (also redeposited natural). The description that follows runs from west to east, the fills having been assigned to broad 'phases' although, as the ditch was not bottomed, the primary fills are not included. Infilling may have occurred over a relatively short space of time.

Phase 1: Cut and slumping

A block of earlier stratigraphy (11909, 11927 and 11928) had slumped into the northern side of the ditch (S.175/5). Redeposited natural may have been disturbed from the surrounding rampart by ditch cutting.

Phase 2: Redeposited natural

Two sections (S.174, Fig.4.39 and 175) through the machine trench show redeposited natural, pre-dating dark fills, with similar deposits lying further west (I1911 and I1925).

Phase 3: Silting ?

There followed a sequence of thick silt deposits (11899, 11900, 11924 and 11926; S.174, Fig.4.39 and 175), the first of (c.0.90m in depth) indicated silting rather than refuse disposal. Above were thinner deposits, lighter in colour and containing redeposited natural. These may have acted as infilling to consolidate the silt layers beneath.

Phase 4: Backfill with redeposited natural

Most of the recorded fills were dumps of redeposited natural clay, sand and gravel of varying thickness (11898, 11921, 11922, 11923, 11896, 11919, 11920, 11337 and 11895; S.123, 174 and 175). To the east, additional fills were recorded in a slot (11361 and 11353), the earliest containing pottery including a possible waster. These layers were followed by gravel and mixed silts (11337 and 11296). Numerous fills of the ditch were excavated in the machine trench as a single deposit (11573).

Small Finds

Finds included a whale bone discoidal gaming piece or counter (SF5608 from fill 11557; Fig.7.35). Fill 11337 contained an iron nail (SF5522). Finds from fill 11296 included a residual Mesolithic/Neolithic micro-blade (SF5561). Fill 11573 contained a horseshoe nail and nail shank (SF5525).

Pottery

Pottery was only recovered from Phase 4 fills (0.684kg), the majority of which was residual (see Appendix 6). The small quantity of contemporary material comprised Pingsdorf-type ware, LMU and YTW. In addition, an as yet unidentified body sherd was also recorded. Although a 12th-century date is indicated due to the absence of glazed wares, the stratigraphic position indicates a later date.

The South Bailey

Historical evidence suggests that refuse dumping into the south bailey ditch is likely to have increased from the mid to late 13th century onwards, a process which continued into the 14th century when the south bailey was granted to the borough. The decline of the bailey links to the construction of a city ditch in the mid 13th century, followed by the construction of city walls (see Chapter 7.I and V).

Ditch 10, Phases 5–8: refuse deposition and deliberate infilling

by Elizabeth Shepherd Popescu, with David Whitmore (Figs 5.4 and 6.23–6.24)

Deliberate infilling of the south bailey ditch took place between the mid 13th and 14th century. Above refuse fills in the northern part of the ditch in Area 8 (Period 4.1) was a major sequence of dumps, some possibly deliberately infilling the ditch and dating to the mid 14th century. These fills include large-scale dumps of domestic waste lower down, with cleaner fills towards the top. Infills of the southern part of the ditch recorded in Area 1 date ceramically to the mid 13–14th century. Fills in this part of the ditch were generally fairly clean and some may have been the remnants of rampart material, pushed or collapsed into the ditch from the north. The fills are in contrast to the refuse-type deposits excavated to the north. Further 13–14th-century fills were recorded at the Golden Ball Street site.

Castle Mall, Area 8

Phases 5–8: Refuse and infills

In the east-facing sections, the first refuse deposit was an organic layer (80302, Fig.5.4) of ash, charcoal, chalk, mortar, fish and bird bone and included some tip lines (G8/17). This was interpreted on site as the first of the major ditch infill deposits, apparently deriving from the disposal of domestic waste. It lay across the northern part of the section. Deposits in the top step comprised mixed layers (e.g. 80319) containing brick and tile, some perhaps deriving from erosion of the ditch sides.

These deposits probably include some infilling once the ditch was out of use.

The first major fill recorded in the west-facing sections was a silt deposit containing occasional chalk and mortar, with tip lines (80369 and 80366). Above it were mixed, thick dumps interpreted as deliberate infills (80420, 80429, 80339, 80431, 80338, 80430, 80428 and 80433). These were mixed together, rather than deposited in a layered sequence. Ceramics suggest that this infilling took place in the mid 13–14th century. Samples contained similar evidence to those described in the underlying fills (G8/16); charred cereal and weed seeds (see below).

Castle Mall, Area 1

Phase 5

This phase of infilling (G1/34, Fig.6.23) refers to a sequence of relatively thin dumps/deposits within the south bailey ditch, separated from earlier fills due to their higher silt content and the fact that many were generally dirtier (eg 14147). The sequence ended with a thick dump.

Phase 6

Four deposits were recorded along the southern edge of the ditch and may have been due partly to the effects of erosion and partly deliberate infilling (11326, 11351, 11330 and 14104; Fig.6.23).

Phase 7: possible recut

Appearing to cut into earlier fills were two vertically laid deposits of reddish brown material (14131 and 14132; Fig.6.23). These may have lain within a recut or ditch cleaning cut, although there was no evidence to suggest a similar process in lower or upper sections.

Phase 8: deliberate infilling

A thick dump (11368, not illustrated) showed some root disturbance. It was followed by many deposits of alternating deposits of redeposited natural. In some places, it proved difficult to establish which deposits related to later pits/quarries and which were ditch fills (see Fig.6.23). Some of the fills included here may have been redeposited rampart dumps, pushed into the ditch from the north (making the finds within them residual). There is little evidence of refuse disposal into the ditch, which is surprising as such deposition would be anticipated at this date (i.e. following the construction of the barbican ditch and certainly after the 1345 handover).

Golden Ball Street

A second putative episode of recutting or cleaning out was identified at the Golden Ball Street site (555, GBS Group 49, Fig.6.24). This had a very wide shallow concave profile with a steep gradient to the north edge and with a slightly less pronounced incline to the southern edge. This recut had truncated the latest, most substantial refuse dump (504) and left the ditch filled in to a depth of 1.35m above the original base. This gave a new base level of 22.05m OD. The infilling of this recut was composed of a sequence of layers of erosion and dumped refuse, some with a cess-like appearance (504, 551, 438, 564 and 549). The dumping appears to have been deposited from both sides of the ditch, although the majority of the refuse type fills came from the south.

Small Finds

Castle Mall, Area 8

The group of sixteen copper alloy and iron Small Finds from ditch fills recorded in Area 8 are presented in Table 7.3 on CD. Of note is a copper alloy belt clasp of 13th- to 15th-century date (Fig.7.24; see Goodall, Chapter 7.III).

Castle Mall, Area 1

Finds from fills assigned to Phase 4 include a copper alloy 'paper-clip' rivet for attaching a repair patch to a vessel (SF5526), a complete annular iron buckle and a fragment of another (SF5520). Several of the fills assigned to Phase 6 yielded finds: a broken joiner's dog (SF5533), nails (SF5585, SF6791, SF6779, SF6761 and SF6756), a fragment of iron strip (SF5550.1) and copper alloy sheet (SF6788).

Golden Ball Street

Fill 438 contained an incomplete gilded copper alloy mount with lozenge-shaped terminal (SF260, Fig.7.32), a bone box mount with ring and dot decoration (SF101), a thick, curving piece of iron (SF197), eight iron nails and a nail shank (SF72, SF82 and SF181).

Pottery

by Irena Lentowicz and Richenda Goffin
(Fig.7.28 and 7.29, latter on CD)

A total of 3.955kg of pottery was recovered from all parts of the ditch examined and is fully detailed by site and area in Appendix 6. The residual element was high in both parts of the ditch; indeed in Area 1 almost 80% of the pottery was residual. However, medieval wares (LMU, GTGW, Pingsdorf-type ware and an unprovenanced local product) were common, especially from the north sector (Area 8; 1.870kg, Fig. 7.28) where a number of rims recovered, mostly from developed types J2h, J2i and J2j cooking pots and jars, but also from simpler type J2b and J2c vessels (Fig.7.28, nos 1–6). Bowls were also recorded (types B2i — two rims, B2j, B2h, B2e and B3h; Fig.7.28, nos 7–10.). The presence of more later LMU rim types (type J2i and J2j) and applied strips on GTGW body sherds would indicate a mid 13–14th-century date. In the southern sector (Area 1, 1.885kg; Fig. 7.29 on CD) fewer forms were identified though did include jar and cooking pot rims (types J2b, J2i and J2j; Fig.7.29, no.1), also included a jug rim (type Ce; Fig.7.29, no.2). Other serving vessels represented almost exclusively by GTGW, though sherds of a non-local Red Glazed ware was also recorded, as well as a Stamford ware (Fabric B) jug sherd which may have been residual by this stage. The main contrast between the fills of this ditch and those of the north-east bailey and the barbican ditch, is the absence of LMT wares in the south bailey ditch. Glazed wares are represented by body sherds of GTGW and a non-local product, as yet unprovenanced. The GTGW sherd is decorated with an applied iron-oxide painted strip (11319). This type of decoration is thought to be mid 14th-century and later, although a date for the group of 13th- to 14th-century is acceptable. Two small sherds of Pingsdorf-type ware were also present.

A total of 0.452kg of pottery came from fills recorded at Golden Ball Street, the only contemporary fabric consisting of LMU in 12th- to 13th-century forms (see Appendix 6).

Botanical Remains

by Peter Murphy

Flots from part of the ditch (Phase 7) came from a large number of samples (19 in all) and are all fairly uniform. They are small and contain small fragments of charcoal and small numbers of poorly preserved charred cereals (*Hordeum* (barley), with some *Avena* (oat) and *Pisum* (pea)-type seeds and cotyledons). Charred ericaceous stems were noted, with a few shoots of *Calluna vulgaris* (ling or heather). There was very little mineral-replaced plant matter, providing no evidence for the disposal of sewage. Uncharred seeds of *Sambucus nigra* (elder) were common and fruitstones of *Rubus fruticosus* (bramble) were also present. Sporadic fish and small mammal bones were also found. One sample (BS936) was selected for full analysis and is detailed in Table 7.18 and Chapter 7.IV. Fish bone from ditch fills recorded in Area 8 is detailed in Part III, Table 95.



Plate 7.15 Late 13th- to early 14th-century cess pit 80113, Open Area 30 (Area 8, Period 4.2)

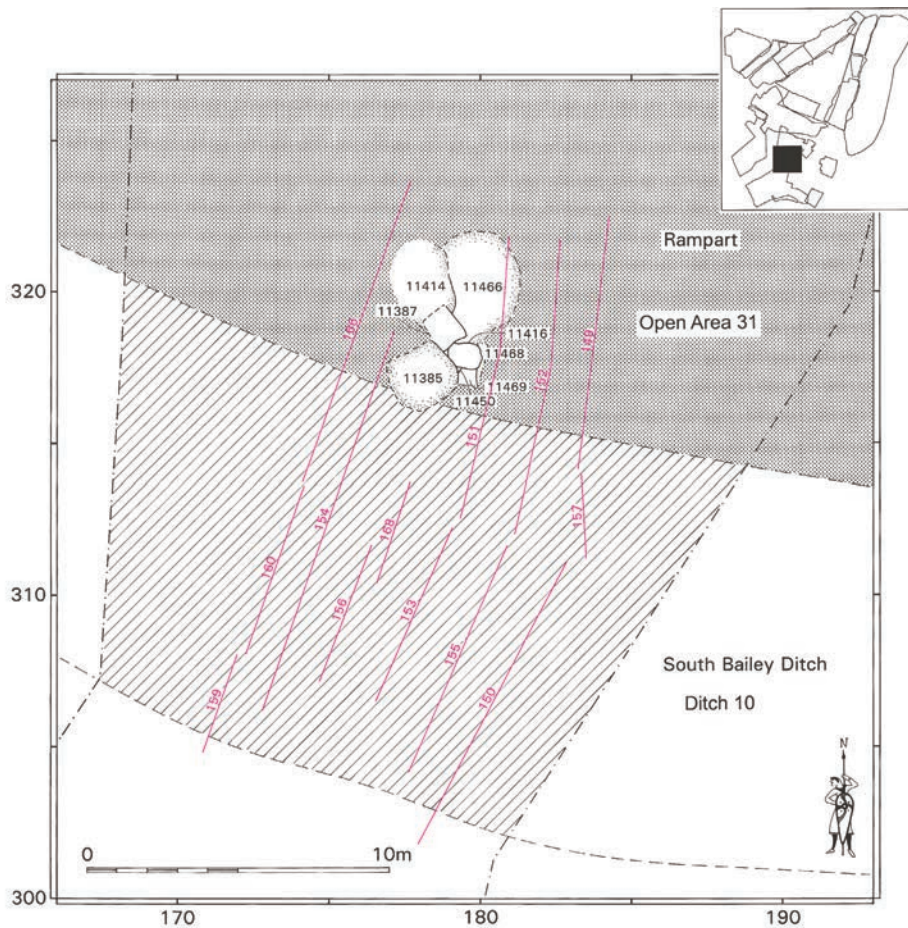


Figure 7.22 Period 4.2: Plan of Open Area 31, above south bailey rampart (Area 1), Castle Fee Property 49/50. Scale 1:250

Encroachment into the South Bailey

Open Area 30: fire-pit

A small circular pit (80113, Fig.7.10, Plate 7.15), 1.30m deep, was cut into dumps associated with the south bailey rampart, lying very close to the eastern edge of the ?former road through the rampart (see Period 3.1, Chapter 6). It may have been used as a fire pit, with a flint bedding and traces of *in situ* burning, as a secondary function, the lower part of the pit having previously been infilled to a depth of 0.50m. Its primary fills including organic matter/straw and plant macrofossils indicate use as a cess pit. A coin suggests a late 13th- to early 14th-century date for infilling.

Small Finds

Primary fills contained residual pottery, an iron swivel hook (SF6432) and a glass bead (SF6452). Upper fills, above the level of the fire, contained a 13–16th-century glass urinal base (SF5786), a nail (SF5946) and an Edward I silver penny (1279–1302; SF5788).

Pottery

The majority of the pottery (0.198kg) was residual TTW and EMW. Only one sherd of LMU and one glazed sherd were recorded.

Botanical Remains

by Peter Murphy

One fill (80200, BS859) produced relatively large numbers of charred cereal grains and other remains indicating that it had been used as a latrine pit. The sample was fully analysed and is detailed in Table 7.18 and Chapter 7.IV.

Animal Bone

Animal bone included the partial skeleton of a domestic fowl (Albarella *et al.*, Chapter 7.IV and Part III 1).

Open Area 31: pits and quarries (Fig.7.22)

Further to the east, on the inner side of the south bailey rampart, were a number of features (three possible quarries, five miscellaneous pits and a possible post, G1/35) which were recorded at the base of a machine trench through the south bailey ditch at a level of *c.*24.25m OD (Fig.7.22). It is possible that some of these features may have pre-dated the original cutting of the south bailey ditch, the northern edge of which had been obliterated by later pitting and quarrying.

Only the fill of the earliest feature in the sequence was recorded (11469), having been heavily truncated by later pits. Cutting into it was a square post-hole (11450), 0.33m deep. To the east, also dug into the earlier pit was a large pit, probably a quarry (11468). Cutting this to the north was another large ?quarry, *c.*3 x 4m across (11466). It was irregular in plan, surviving to a depth of 1.00m (originally at least 2m deep). Its mixed backfills were ‘mounded’ at the pit base, as if the feature had been left open for some time. Cutting the quarry to the west was another possible quarry (11414), itself cut into by a roughly square pit (11387), 0.50m deep. Above the earlier sequence was a small, sub-rectangular pit (11416), 0.30m deep. The last cut in the sequence was a fairly large pit (11385) to the south, 2 x 2m in plan (S.165), possibly a quarry and surviving to 1.04m deep.

Contemporary ground level of the flat-based ?quarries included here may have lain at around 27.00m OD, suggesting that these pits may have been up to 2.80m deep. If so, the survival of the small features recorded is odd, unless they were inserted at the base of the quar-

ries. The relationship of these features to surrounding, possibly later quarrying is uncertain. Two pits contained 13–14th-century pottery, with a mid 13th-century start being suggested. They could represent encroachment into the former south bailey defences following the construction of the barbican ditch to the north, or perhaps after the 1345 handover.

Small Finds

Quarry 11414 contained an iron swivel hook with a non-ferrous metal coating (SF5850; Fig.7.32). The fill of pit 11385 contained a type 2B iron horseshoe (SF5540; Fig.7.35) and human bone (?disturbed from Late Saxon Cemetery 3).

Pottery

A total of 0.765kg of pottery was recovered from these pits. Contemporary fabrics (LMU and GTGW) indicate infill dates of the late 12th to 14th and 13th to 14th centuries. See Appendix 6.

The City: Properties Along the Durnedale/Berstrete (later Timberhill) Frontage

Open Area 32 (Property c/d): pits (Figs 7.3 and 7.23)

A series of six small to medium sized pits, all less than 0.50m deep, and two posts all of apparent 13–14th-century date lay on this road frontage, cutting into earlier pits (Fig.7.23, G1/145). The pits had been used for refuse disposal, lying adjacent to the postulated line of the medieval road to the west. To the north were two roughly oval pits (10925 and 10914). To the south, also overlying earlier pits was an intercutting sequence of features (10440, 10404, 10354, 10145, 10135 and 10424) many of which had been used for refuse disposal including organic and burnt waste.

Small Finds

Pit 10914 contained a copper alloy folded sheet with five copper rivets, possibly used in the repair of a vessel (SF5351). Pit 10404 contained a copper alloy strip (SF5143). Finds from pit 10135 were a copper alloy strip with ?inlay (SF5088), a length of nailed iron binding (SF5107). Finds from pit 10424 were three fragments of copper alloy pin (SF5158), a possible medieval scabbard chape of copper alloy (SF5150; Fig.7.35), medieval window glass (SF5436) and nails, including a horseshoe nail.

Pottery

by Irena Lentowicz
(Fig.7.30)

Well over a kilo of pottery was recovered from these pits (1.766kg). The largest assemblage came from pit 10135 (0.702kg, Fig.7.31); this includes a single residual sherd but is dominated by LMU represented by rims and bases from cooking pots and jars (type J2c, J2j and J2l; Fig.7.31, nos 1–3), as well as from two jugs (types C1a and C1e; Fig.7.30, nos 8 and 9). Bowl rims were also recorded and as well as large vessels with ‘hammer-head’ rims (type B3j; Fig.7.30, nos 6 and 7), more unusual rims were recovered (types B2c and B2m; Fig.7.31, nos 4 and 5). The ‘hammer-head’ rims date the assemblage to the 13th–14th century. A single YTW rim was also recovered (type *cv* 1/6) and decorated body sherds from at least two GTGW vessels. In addition, a rim fragment from a non-local vessel identified as a crucible was also recorded (Fig.7.31, no.10). The fabric is identified as Non-local Medieval Glazed ware, but the glaze itself may be a result of use.

The other pits contained LMU, GTGW and Andenne ware indicating infill dates of late 12th- to 14th-century (see Appendix 6).

Open Area 32 or 33 (Property d): isolated pit (Figs 7.3 and 7.23)

A small, isolated pit (10030, G1/136), 0.40m deep, lay just to the north of the cemetery boundary ditch (Ditch 2, Fig.7.23). It may have lain in a yard at the rear of a property fronting Durnedale/Berstrete (Fig.7.3).

Small Finds

The pit fill contained a copper alloy stud, perhaps from a belt or harness fitting (SF5023).

Pottery

Sherds from two pottery vessels (EMW and LMU) were recovered from this pit (0.228kg) and, although fragmented, this appears to be a primary deposit. The pit appears to date to the 13th century. See Appendix 6.

Ditch 2, Phase 3: refuse deposition (Fig.4.60)

The western section of the boundary ditch of the cemetery of St John de Berstrete (Cemetery 4, Period 1.4) was infilled with considerable quantities of domestic waste in the early 14th century, providing a good ceramic assemblage and yielding other significant finds (G1/48, Fig.4.60). Subsequent graves cut into the fills of the ditch (see below), although the tenement plot of this area suggests that the ditch line continued to exert an influence on the local topography for some time (into the early modern period; see Chapter 10). An upper fill of the ditch (G1/163) included part of a redeposited human skeleton.

Fills along the length of the ditch overlay 12th-century fills (Period 2.1, Chapter 5.II), indicating that the boundary had been maintained during the 13th century. Fills included some apparently deliberate infilling containing frequent shell (10296, 10591, 10531, 10534 and 10535) indicate slumping/tipping from the south. Above this was successive dumping (10468, Fig.4.60) of domestic waste including a very large quantity of animal bone and pottery. Additional fills were recorded further east (10157, 10150, 10126, 10283, 10768, 11293, 11223, 11268 and 11462) and included erosional deposits as well as refuse dumps.

Small Finds

The wide-ranging assemblage of twenty-five Small Finds from ditch fills is summarised in Table 7.4 on CD. A significant find is a residual coin of Aethelstan, dated to 924–939 (SF1024, Davies, Chapter 4.III), while other residual items include a copper alloy hooked tag with incised decoration (SF5052, Fig.4.68; Huddle, Chapter 4.III) and an antler comb fragment (SF5467, Fig.4.69). Another important object is a child's bone reed-pipe (SF5474, Fig. 7.35; Lawson, Chapter 7.III). A gilded copper alloy belt or harness fitting was also found (SF5473, Fig.7.24, Goodall, Chapter 7.III).

Pottery

by Irena Lentowicz (Fig.7.31)

Almost nine kilograms of pottery (8.940kg, G1/48, Fig.7.31) were recovered from the sections through these ditch fills, providing good early 14th-century assemblages (see Appendix 6). The largest group came from section 10356 (6.561kg); fills of 10769 (1.233kg) and 10536 (0.562kg) also produced fairly large amounts. Although Late Saxon and early medieval pottery account for 16.1% of the assemblage (1.443kg) much of this is noted as worn and abraded and is obviously residual. This appears to represent a domestic assemblage, with LMU cooking pots and jars making up the largest proportion. The fabric was represented by rims from a number of vessels including small jars (type J1a) and cooking pots (types J1b, J1c and J1e; Fig.7.31, nos 1 and 2), but dominated by medium size vessels (types J2a — one rim, J2b — twenty six rims, J2c — six rims, J2f — two rims and J2j; Fig.7.31, nos 3 and 4), as well as some previously unallocated rim types (types cv 1/12 — three examples, and cv 1/13 — one example). In addition, the rim of a jug (type C2e) was recorded, along with the rim and spout of at least one other vessel. A bowl rim (type cv 1/22), a curfew rim (Fig.7.31, nos 5) and a lid (type cv 1/23) were also recorded, supporting the domestic interpretation of the assemblage. Only one other medieval unglazed coarse ware was noted, YTW, which by this period may be residual. The remainder of the assemblage is made

up by a small quantity of glazed fine wares. In addition to decorated body sherds and a strap handle from GTGW jugs, a small number of Developed Stamford ware (Fabric C) were recorded. At least two vessels were represented by body sherds alone, some of which were decorated. Other jugs of as yet unprovenanced non-local wares were also represented by rim and base sherds.

Pottery from other fills is detailed in Appendix 6, including Siegburg Stoneware and some LMT body sherds. Whether this material is intrusive or whether it dates the assemblage to the mid 14th-century is unclear. Other medieval fabrics include LMU and Pingsdorf-type ware.

Zoological and Botanical Remains

by Peter Murphy

The flots from fills of the boundary ditch (10468, 65; 10768, 71) were small and essentially uninterpretable, being composed of charcoal, occasional charred cereal grains, uncharred *Sambucus nigra* (elder) seeds, a few bones of fish and amphibians and bone scraps. Large quantities of animal bone were recovered (12.267kg), along with fish bone.

Cemetery 4, St John de Berstrete: late burials (Fig.7.23)

Four graves cut into (or would have if they had survived truncation) fills of the cemetery boundary ditch at the Castle Mall Site (graves 10516, 10865, 11462, and 11465, rows 4, 11 and 12). Two of these were aligned south-west to north-east, roughly on the same alignment as the ditch, one was aligned east-west and the other north-west to south-east. The three to the east would have been intercutting, although subsequent truncation had removed their relationships. By implication, these are all late graves and suggest that the boundary ditch was at least partially infilled at this time, if not completely out of use. The ditch fills that they overlay (described above, G1/48) were of early 14th century date. Other late fills of the ditch (G1/163) contained part of the disturbed skeleton of a young ?male (sk.10230). Other burials may also have been late, although the difficulties of finds contamination and anomalies within the stratigraphic sequence make it difficult to determine which these may have been.

Small Finds

Two intrusive copper alloy LMT dress-making pins were recovered from grave 10516 (SF5180.00 and 5180.01). An iron strip fragment (SF1009) came from the same grave.

Pottery

Grave 10516 contained medieval pottery, as well as residual earlier material. Grave 10865 (66g) contained residual TTW and early medieval wares and LMU body sherds.

Open Area 33 (Property e/f): encroachment into the western part of Cemetery 4 (Fig.7.23)

Along the southern edge of the cemetery boundary ditch (Ditch 2), just cutting into it, were eight pits (G1/74) and a number of posts which may have lain in a yard either at the rear or side of the documented properties detailed in Chapter 7.I. Fills suggest the disposal of domestic refuse. Some pits cut into graves and contained displaced human bone.

Furthest to the west was a roughly circular post-hole (10066/10083), to the east of which was a sequence of four intercutting pits. The earliest (10479=10642=10619) had been fairly heavily truncated, with a surviving depth of c.0.60m. There was some indication that the pit had

been left open for some time prior to disuse. One fill contained a partial skeleton (sk.10451) and disarticulated bone from the same body (a middle aged female) in an upper fill. Above this pit, just clipping its southern edge was another, possibly circular pit (10480). Cutting into the side of the earliest pit described above was another roughly circular pit (10563) which had apparently been cleaned out and had weathered during use as the sides had been eroded back to form an overhang. It was c.1.00m deep, with a possible clay capping above its ashy refuse type fills. The partial remains of another, possibly square pit (10413) cut this pit to the south and had been heavily truncated by the insertion of a later wall. Just to the east were a number of post-holes (10703, 10700 and 10290) and two small pits (10148 and 10114).

Small Finds

The varied assemblage of thirty-three Small Finds is summarised by pit in Table 7.5 on CD. Items of note include an iron horse bit link of pre-Conquest type (SF6776, Fig.4.106; Mould, Chapter 4.III), a copper

alloy belt mount in the form of a repoussé quatrefoil (SF5229, Fig.7.24; Goodall, Chapter 7.III), an iron hooked chain fitting (SF5283, Fig.7.32; Mould, Chapter 7.III) and an iron key (SF5149.01, Fig.7.32; Mould, Chapter 7.III).

Pottery

These pits yielded a total of 0.723kg of pottery. Medieval fabrics included LMU, GTGW, Non-local Glazed ware and Pingsdorf-type ware. Pit 10114 dates ceramically to the mid 14th century, while the others are of 12th- to 14th-century date. See Appendix 6.

Open Area 34 (Property g): pits

by Elizabeth Shepherd Popescu and David Whitmore
A small group of medieval pits were recorded at the Golden Ball Street site (GBS Group 21), to the west of the castle approach road and north of the cemetery of St John. These would have lain broadly within the southern part of Property g indicated on tenement plan Fig.7.3.

A substantial rectangular pit (187, Fig.7.4) lay approximately 3.5m to the north of the Fee ditch at the Golden Ball Street site. Its western end had been truncated by the construction of the Castle Mall shopping

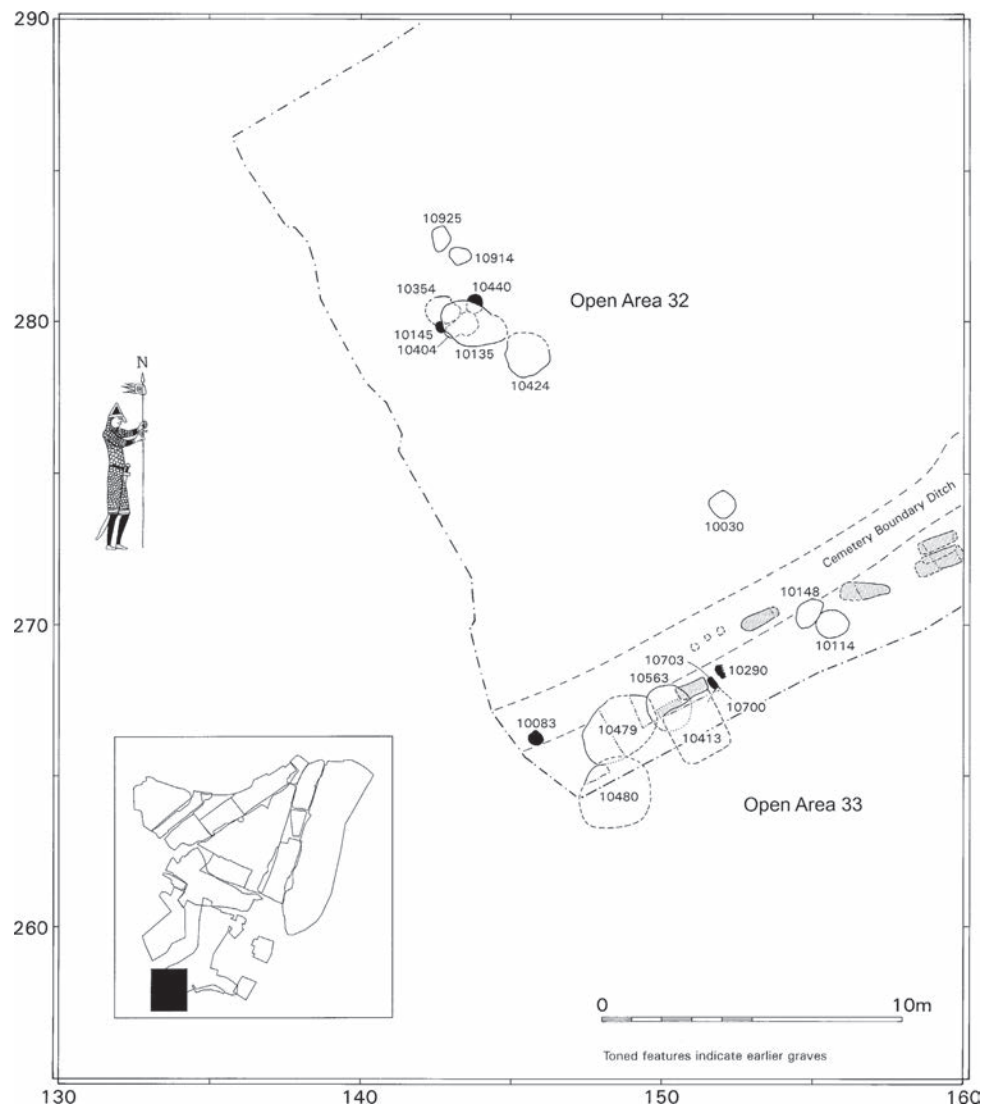


Figure 7.23 Period 4.2: Plan of Open Areas 32 (City Property d) and 33 (City Property e/f), above Cemetery 4 (St John, Timberhill) (Area 1). Scale 1:250

centre, although it survived to over 4.10m in length and 3.00m wide. The relatively shallow depth (0.26m) indicates that the feature had been cut from a much higher level, having probably been quarried through the rampart along the northern side of the ?Fee ditch. A small circular pit or post-hole (324) had later been cut through it.

Four other medieval pits (215, 226, 286 and 307) within the area covered by the postulated ?Fee rampart were also relatively shallow and had apparently been used for the deposition of organic refuse. Although these pits were probably not originally dug for extraction, their shallow depth demonstrates that the rampart was still extant when they were dug. Most had been truncated by later post-medieval pitting.

Small Finds

Pit 187 contained an iron nail (SF37) and a copper alloy annular brooch or buckle (SF204, Fig.7.24).

Pottery

A total of 1.244kg of pottery was recovered. Medieval fabrics include GTGW, LMU, MCW and GRCW. Infill dates span the late 12th to 14th centuries. See Appendix 6.

III. FINDS

Introduction

A total of 218 Small Finds was retrieved from Period 4 deposits at Castle Mall (2% of the total site assemblage), with a further 27 items from Golden Ball Street. Many other diagnostic medieval objects were found residually in later deposits and are included here with the exception of those from late medieval/transitional fills of the barbican well shaft which are cross-referenced below and detailed in Chapter 9.III. Further items were unstratified, those illustrated being described further below.

Dress Accessories and Personal Possessions

Dress Fittings

Glass beads

by Julia Huddle

A small annular ?glass bead fragment (SF6452, not illustrated) was recovered from pit 80113 (G8/28, Period 4.2). Only half of the object survives and it may even be part of a gastropod fossil. Glass beads are not uncommon from Late Saxon contexts, but appear to be less common during the medieval period. Of the 217 medieval beads listed for London in Egan and Prichard (1991, 305) only two are of glass, suggesting that this material was not popular for beads at this time.

Copper alloy brooches

by Alison Goodall

(Fig.7.24)

Two medieval copper alloy brooches were recovered at the Castle Mall site, one unstratified (SF5881) and the other intrusive in a pre-Conquest pit (SF6023). SF5881 has a simple annular frame decorated with eight unelaborated knobs. Comparable brooches from London having four knobs on the frame are illustrated by Egan and Pritchard (1991, 254, fig. 163.1330 and 1333). The

Period	Small Finds (no. objects)	Pottery (Qty)	CBM (Qty)
Period 4.1	22	1280	54
Period 4.2	196	4771	352
Total	218	6,051	406

Table 7.6 Selected Period 4 finds by sub-period at Castle Mall

Period	Small Finds (no. objects)	Pottery (Qty)	CBM (Qty)
Period 4.1	13	33	2
Period 4.2	14	234	3
Total	27	267	5

Table 7.7 Selected Period 4 finds by sub-period at Golden Ball Street

first was found in a context dating to the second half of the 14th century, the other was not stratified. These brooches are no doubt poorer versions of the jewelled or glass-set brooches of the 13th and 14th centuries, such as that from Alms Lane, Norwich (Margeson 1993, 15, fig. 7.58). Contemporary paintings and sculptures show that the brooches were used as garment fastenings rather than purely for ornamentation.

The small lozenge-shaped brooch (SF6023), found intrusively in a Late Saxon pit, would have been used in a similar way, with the pin attached at the constriction at the angle of the frame. Brooches in the 14th century were made with the frame taking various forms, such as octagonal, quatrefoil or heart-shaped (Evans 1970, 58).

Two further medieval brooches were found residually at the Golden Ball Street site. A decorated annular brooch (GBS SF204) probably dates from the 13th or early 14th century. Its moulded decoration is similar to that found on buckles of the period (*e.g.* Fingerlin 1971, figs 25 and 60, dated 13th century). A somewhat comparable brooch, decorated with four cross-hatched knobs, was found unstratified in the Swan Lane excavations in London (Egan and Pritchard 1991, 254 no.1333). The unstratified brooch (GBS SF265) probably dates from the 14th century. Examples of similar hexagonal framed brooches of pewter were excavated at Billingsgate (*ibid.* 257–8, nos 346 and 1347).

SF5881 **Annular brooch** with eight evenly placed knobs on the frame, one hollowed out to form a pin rest. All of the knobs are slightly faceted and are of solid copper alloy without settings or decoration. W: 22mm.
13000, unstratified

SF6023 **Brooch.** Lozenge-shaped annular brooch, with pin constriction at one corner. Pin missing. L: 17mm.
60011, fill of pit 60038, Period 1.3, G1/37

GBS SF204 **Annular brooch.** Frame decorated with four moulded knobs. The knobs appear to have surface decoration, possibly cross-hatching. There is a constriction for the missing pin.
186, pit possibly for extraction of clay from rampart of Fee Ditch, Period 5, G57

GBS SF265 **Brooch.** Hexagonal frame, possibly of pewter or copper alloy, with small knobs at the angles. There may be other decoration on the sides of the frame. The stub of the pin remains.
511, unstratified, G60

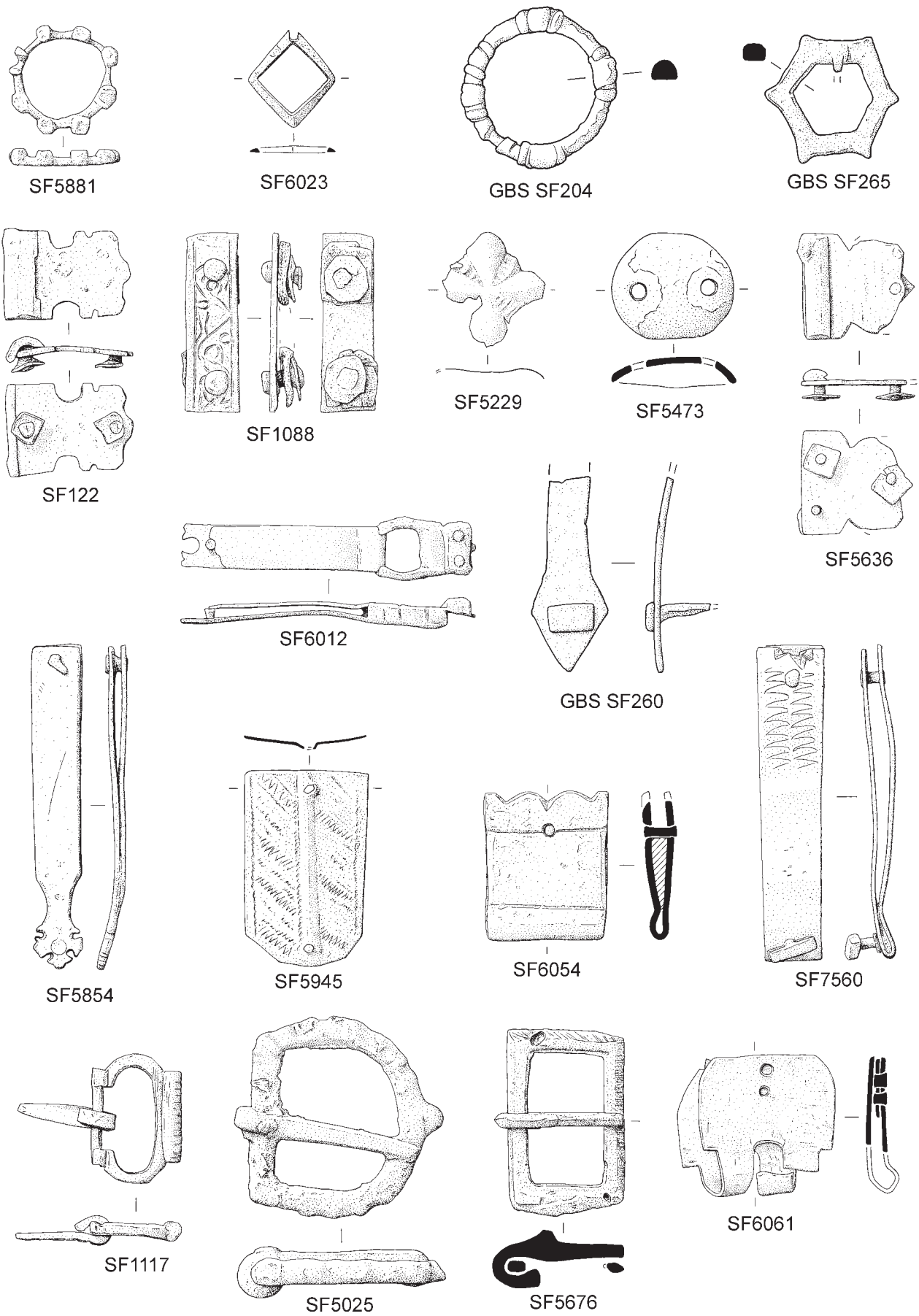


Figure 7.24 Copper alloy objects: brooches (SF5881, 6023, GBS SF204 & 265); belt mounts and clasps (SF122, 1088, 5229, 5473, 5636 6012; GBS SF260); strap-ends (SF5854, 5945, 6054 & 7560); buckles and buckle plates (SF1117, 5025, 5676 & 6061). Scale 1:1

Belt Fittings

Copper alloy belt mounts and clasps

by Alison Goodall

(Fig. 7.24)

Three medieval belt clasps were found (SF122, 5636 and 6012). One end of the strap would have had a buckle-like fitting (which survives on SF6012; *cf.* Egan and Pritchard 1991, 116–120, 156–158) attached to it by means of a plate; the clasps can be distinguished from buckle frames in that they have no pin and neither is there a slot in the plate to accommodate a pin. At the front of the frame there is a swivelling flap with a bar mount attached to it. The fitting at the other end of the strap resembles a small strap-end but this also has a bar mount fitted to it (*cf.* SF122 and 5636). When this fitting passes through the frame and the flap on the frame is folded down, the two bar mounts lock against each other (Egan and Pritchard 1991, fig. 76 and 116–120, 156–158). Clasps of similar type have been found on other sites in Norwich (Margeson 1993, 38, fig. 21.2551–4). The probable date range for this type of object is 14th and 15th centuries.

An alternative type of clasp is demonstrated by SF7560. The T-shaped swivelling portion would have been inserted into a slot in the fitting at the other end of the strap and then turned through 90° to lock it in position; the slot may also have had a separate locking device as illustrated by Egan and Pritchard (1991, 129, fig. 79).

A number of belt mounts were also recovered from Period 4 deposits and include an example decorated with irregular leaf-scroll or guilloche of probable 12th- to 13th-century date (SF1088), a plain convex gilded example (SF5473) and a lobed repoussé quatrefoil example (SF5229). The latter is similar to an example from London (Egan and Pritchard 1991, fig. 117). Two further buckles were found at the Golden Ball Street site. A medieval buckle (GBS SF254, not illustrated) has a buckle plate decorated with leaf scroll ornament which may perhaps be compared with SF1088 from Castle Mall; the frame is a simple D-shape with a thickened front. SF230 may be the frame from a similar buckle.

A fill of the south bailey ditch recorded at Golden Ball Street (438, Period 4.2) contained an incomplete gilded copper alloy mount with a lozenge-shaped terminal (GBS SF260), although this may have come from a casket and could be related to other gilt strips discussed in Chapter 9.

- SF122** **Belt mount or clasp.** Shield shaped belt-plate with bar-mount, perhaps for use with folding strap clasp (Egan and Pritchard 1991, 116–120, 156–158). The plate is cut out of copper alloy sheet and has two notches along each side and a shaped outer edge. The bar-mount is made out of hollow curved strip and has a rectangular notch cut out of one edge. One rivet passes through plate, another through plate and bar-mount. Both have square roves. 14th century.
91201, unstratified
- SF1088** **Belt mount.** Gilded bar-mount from belt, with engraved decoration of a single-line border along the long sides, within which is an irregular leaf-scroll or guilloche design. Inserted through the design are two dome-headed rivets with roughly octagonal roves securing scraps of surviving leather.
91202, fill of pit 91233, Period 4.2, G9/36
- SF5229** **Belt mount** in form of repoussé quatrefoil with lobes between each foil.
10555, fill of pit 10563, Period 4.2, G1/74

- SF5473** **Oval mount** of irregular convex shape, gilded on front surface, with two circular perforations.
11268, fill of cemetery boundary ditch, Period 4.2, G1/48
- SF5636** **Belt clasp.** Shield-shaped belt-plate, with bar-mount, perhaps for use with a folding strap clasp. The plate has a single notch on each side and a shaped outer edge. The bar-mount has a solid D-shaped section and is attached with two rivets, one with a square rove. There is a third rivet with a square rove at the end opposite the bar mount. 14th century.
50054, fill of barbican well, Period 7.2, G5/57
- SF6012** **Belt clasp.** Folding strap-clasp with long rectangular plate with shaped open edge with semi-circular aperture, closed by a single rivet. The folding end has a solid bar-mount attached by two rivets and a tiny central knob. 13–15th century.
80429, fill of south bailey ditch, Period 4.2, G8/17
- SF7560** **Belt clasp.** Long narrow strap clasp. At the open end one third of the length is decorated with two rows of traced zigzag engraving; there is a rivet in between and the open edge of the top plate has a shaped edge with angular notching. At the folded end is a swivelling tab with a T-shaped head. L: 56mm.
10514, disuse of wall, Period 6.1, G1/82
- GBS SF260** **Mount.** Incomplete gilded copper alloy mount with lozenge shaped terminal and (integral) rivet. (not illus.)
438, fill of south bailey ditch, Period 4.2, G49

Copper alloy strap-ends

by Alison Goodall

(Fig. 7.24)

Three strap ends (SF5854, SF5945 and SF6054) are of medieval date. SF6054 is of simple type made from a single sheet of copper alloy folded widthways. SF5854 is of a common type, made of two long narrow plates with an elaborate cut-out trefoil at the terminal, these are dated to the 14th century (Margeson 1993, 36). SF5945 is more unusual; it consists of a single plate with a repoussé rib down the centre and surface decoration of traced zigzag lines. Its rather crude shaping is in contrast to the gilding and decoration and it is conceivable that it has been cut down from another object.

Two copper alloy strap-ends from the Golden Ball Street site were found respectively unstratified and in a post-medieval context. GBS SF168 and SF216 (not illustrated) have forked spacers between the plates; SF216 has a devolved acorn-shaped knob. The type dates from the 14th century.

- SF5854** **Strap-end** with elaborate cut-out trefoil terminal, made from two plates joined by rivets at the terminal and at the open end. L: 59mm.
90000, unstratified
- SF5945** **Mount or strap-end.** Gilded sub-rectangular belt-mount or strap end, with two cut-off corners at one end. Central longitudinal ridge perforated by two rivet holes. One retaining an iron rivet. Either side of the ridge are panels of decoration, with oblique lines of 'rocked-tracer' engraving within grooved borders, each panel having a line of tighter 'rocked-tracer' down each side. L: 35.5mm.
42426, fill of barbican ditch, Period 6.2, G2/32
- SF6054** **Strap-end** made from thick folded sheet with a semi-cylindrical gap at the folded edge, bordered by an engraved line. The open edges are both shaped in an ogee curve, and are bordered by a second engraved line interrupted by a single rivet. Between the lines the edges are bevelled. The metal has a reddish colour. L: 27mm
90000, unstratified

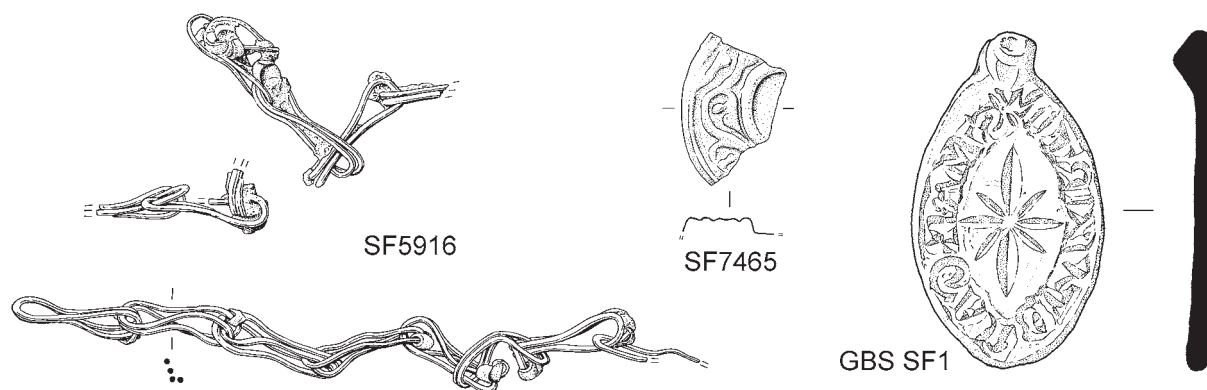


Figure 7.25 Copper alloy chain (SF5916); copper alloy mount or boss (SF7465); lead seal matrix (GBS SF1).
Scale 1:1

Copper alloy belt buckles

by Alison Goodall

(Fig.7.24)

Three buckles and a buckle plate are all of medieval type, only one of which is from Period 4 (SF1117), two are unstratified (SF5025 and 6061), while one is residual from a post-medieval fill of the barbican ditch (SF5676). The front of buckle frame SF1117 has been drawn out and folded over, perhaps in imitation of buckles with separate rollers. It may be compared with examples from London in copper alloy and iron, both from late 13th- to mid 14th-century contexts (Egan and Pritchard 1991, 73, fig. 44.294 and 78, fig. 46.319). A fragment of a possible rectangular buckle came from fills of the south bailey ditch (SF6515, not illustrated).

Two other buckles were found residually at the Golden Ball Street site (not illustrated). An annular buckle (GBS SF254) is of medieval date and may be compared with examples from Castle Mall. An object (GBS SF259) may be a clasp or a buckle with an integral plate.

- SF1117** **Buckle.** Gilded buckle with pin wrapped around narrowed offset pin-bar. The outer edge has been formed into a long cylinder by drawing out and rolling up, and then decorated with short transverse grooves. L: 24mm.
57172, fill of pit 57173, Period 4.1, G47/51
- SF5025** **Belt buckle.** Buckle with D-shaped frame with moulded ridges and small knob at pin rest. Copper alloy pin.
10000, unstratified
- SF5676** **Rectangular belt buckle frame** with bevelled edges, rather badly cast, with casting flash still visible. The pin has moulded projection near loop. File marks are visible on both frame and pin (*cf.* Thuxton, 38, fig.25). L: 35mm.
40345, fill of barbican ditch, Period 6.3, G2/37
- SF6061** **Buckle plate.** Folded sheet buckle plate of short rectangular shape with cut-off corners on top and bottom plates. Cut-out slot for pin and recess for frame. Two rivets at the open end secure a copper alloy spacer plate to the top and bottom plates. L: 26mm.
90000, unstratified

Iron buckles

by Quita Mould

The fragmentary remains of two broken buckles (SF5269.01 and 5405.02), three buckle pins (SF5215, 5221 and 5269.01) and a buckle plate (SF5342), none of which are illustrated, were found in fills of the boundary ditch of St John's cemetery (Ditch 2) and pits

encroaching into the western part of the cemetery. Two small annular buckles (SF5520) of a type found in quantity in the barbican well (Chapter 9.III), occurred in fills of the south bailey ditch.

Personal Possessions

by Alison Goodall

(Fig.7.25)

Copper alloy chain

A chain (SF5916) could have had many different uses, as jewellery, as a garment fastening or for suspension. It is paralleled at Winchester (Biddle 1990, 1090, fig.351, no. 4073), apart from the twisted ends to the links, and probably dates to the early 13th century.

- SF5916** **Chain.** Several small pieces of chain, each link made by forming a piece of fine wire into a loop by flattening the ends and wrapping them around each other and then folding the loop in half.
80331, fill of south bailey ditch, Period 4.1, G8/16

?Silver chain

Numerous strips of grey metal, possibly silver, were found in the north-east bailey ditch (SF1104, fill 91925, G9/24, Period 4.1, not illustrated). Many were tapering and bent into a U- or oval shape, although no actual chain links were found. This may have been part of a chain or offcuts.

Copper alloy ?mount or boss

An unstratified disc (SF7465) is probably a fragment from a decorative mount or boss.

- SF7465** **Mount.** Fragment of disc with a flanged rim and repoussé running leaf-scroll border around a sunken central roundel surrounded by a circular ridge.
49000, unstratified

Lead seal matrix

by Steven Ashley

(Fig.7.25)

A lead seal matrix of 13th-century date attributable to a woman was found residually at the Golden Ball Street site: although recorded as from a post-medieval pit fill, the object appears to have come from a ?17th-century metallated yard surface (see Open Area 51, Chapter

6.II). Seal matrices of women in their own right are not uncommon. However, those of wives are very unusual. Of 311 personal seals recorded in an ongoing catalogue for Norfolk, personal matrices with names, almost all of the late 12th and 13th centuries, form the largest category (Geake *et al* 1999, 2000, 2001; Rogerson and Ashley 2002, 2003). Only one of these matrices involves a named wife.

GBS SF1 Seal matrix. Lead, flat with broken lug at top. Pointed oval, 44 x 25mm. Octofoil. + S³ MARGARET · VXOR TOM (Seal of Margaret wife of Thomas. It is interesting to note that the engraver, aware that he was running out of space, has ligatured the OR, written TOM instead of more usual THOM for Thomas and squeezed the M at the end of the inscription).
308, fill of pit 309, GBS Group 38, Period 6.2

Textiles

by Elizabeth Crowfoot

Scraps of felt, part perhaps from a hat (SF6217 a, not illustrated) were recovered from medieval fills of the barbican ditch (fill 91295, G9/37, Period 4.2). These would originally have been of excellent quality. Further details are given in Chapter 10.III.

Furnishings and Household Equipment

Lighting

Copper alloy ?candlestick

by Alison Goodall

(Fig.7.32)

SF5899 is too fragmentary to be certain of its exact identification. It appears to be the foot-ring from a cast vessel, such as a plate or dish or perhaps a composite candlestick, possibly of medieval date.

SF5899 ?Candlestick. Triangular-section cast foot-ring from a vessel, possibly a candlestick.
90238, external deposit, Period 7, G9/76

Pottery

by Irena Lentowicz

(Figs 7.26–7.31)

A slightly larger ceramic assemblage was recovered from this period, 6051 sherds weighing 34.943kg, which accounted for 3.6% of the site assemblage.⁷ The following text excludes a further 2.276kg of pottery assigned to Period 4 at Golden Ball Street. Late Saxon and early medieval wares were all residual by this period, although some larger vessels may have had a longer life; Late Saxon wares made up 15.4% and early medieval wares 8.5% of the period material. Medieval pottery dominated the period assemblage and accounted for c.65% of the material. This was represented mostly by LMU with single examples of other, probably non-local, unglazed coarse wares. Glazed wares accounted for a much smaller proportion of the medieval pottery, but products from the GTGW industry made their first real impression on the assemblage. The range of other glazed wares was extensive and included products from Stamford and Heddingham as well as non-local Red Glazed and other Medieval Glazed wares. These were accompanied by a

small quantity of imports such as Andenne, Pingsdorf and Paffrath and the introduction of Aardenburg-type wares.

Characteristic of this period was not only the dominance of medieval pottery, the extensive use of GTGW for table wares but also the introduction of late medieval and transitional ceramics. These wares were not recovered in any great quantity, but were a definite presence in this phase. Utilitarian domestic wares were represented mostly by locally produced Late Medieval/Transitional ware (LMT) and supplemented by a small quantity of Dutch or Dutch-type Red Earthenware (DUTR). Table wares were represented by an English import Tudor Green-type ware, and Rhenish Stoneware from Siegburg on the continent. All these latter fabrics are dated to the mid 14th century and represented the first instances of these wares recovered from the site.

Fabrics and forms

Medieval coarsewares

Medieval pottery was dominated by Local Medieval Unglazed ware (LMU) which accounted for 57.0% of the period assemblage. Over half of all the LMU recovered from the site came from this period (53.1%), and as 12% came from Period 3 contexts and 22.4% from Period 5, a total of 87.5% of LMU came from contemporary contexts. Some of the material from Period 5 is likely to be residual; this is discussed in the appropriate chapter.

Over 300 LMU rims were recorded and as one would expect, jars and cooking pot rims accounted for the majority of the forms recovered; 297 examples, 93.4% of Period 4 LMU rims. Of the vessels represented, most came from medium-sized vessels (type J2 — 252 examples), with fewer small jars (type J1 — thirty rims) and ten larger rims (type J3). Most of the small jar rims recorded had simple rims, either upright (type J1a — five rims) or everted (type J1b — twelve examples). Medium and large sized vessels with these rims were also common (type J2a — seven rims; type J2b — thirty five rims; and type J3b — four rims), but by far the largest proportion came from later, diagnostic 13th- and 14th-century rims. The most common were rims with incipient internally and externally pulled profiles, ‘hammer-head’ (type J2i — 141 examples), while developed ‘hammer-head’ rims were less common (type J2j — thirty three rims). Smaller versions of these rims were recorded in earlier phases, but only a single type J1i and five type J1j rims were recovered here.

The next most common form recovered from this period was the jug (ten rims); two jug rims were also recovered from earlier periods. The majority of jugs from this period were represented by small rim fragments from which very little of the profile could be recognised. Four globular jugs with upright rims (type Ca) were recorded, as well as an individual type Ca rim. Jugs with incipient ‘hammer-head’ (type Ci — one rim) and developed ‘hammer-head’ rims (type Cj — four examples) were also present. However, jugs were also represented by other diagnostic sherds such as neck fragments and handles.

A similar number of bowls were recorded, eight in total; again these forms were also represented in small numbers in earlier periods. Four rims were recorded, two with developed ‘hammer-head’ rims (type Bj), one with an incipient ‘hammer-head’ rim (type Bi) and one with a hooked rim (type Bl). One small, two medium and one

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	1760	8.349	29.1	23.9
LMU	3798	19.965	62.7	57.1
Non Local Med Oxidised ware	1	0.006	<0.1	<0.1
Non Local Med Shelly ware	1	0.016	<0.1	<0.1
Non Local Med Chalky ware	1	0.008	<0.1	<0.1
Grimston Glazed ware	163	1.294	2.7	3.7
Grimston Glazed Oxidised ware	72	0.697	1.1	2.0
E Norfolk Med Glazed ware	2	0.015	<0.1	<0.1
Developed Stamford ware	15	0.170	0.2	0.5
Stamford Dense	2	0.057	<0.1	0.2
Hedingham-type ware	10	0.125	0.1	0.4
Non-local Med Glazed ware	27	0.228	0.4	0.6
Med Red Glazed ware	16	0.114	0.2	0.3
Andenne ware	2	0.004	<0.1	<0.1
Aardenburg-type ware	1	0.001	<0.1	<0.1
Proto Stoneware	1	0.013	<0.1	<0.1
Misc. Med Import	10	0.170	0.1	0.5
LMT	30	0.261	0.5	0.7
Tudor Green ware	1	0.008	<0.1	<0.1
Siegburg Stoneware	2	0.003	<0.1	<0.1
Misc. Late Medieval wares	1	0.004	<0.1	<0.1
Intrusive	124	3.306	2.0	9.4
Unidentified	14	0.190	0.2	0.5
Total	6,051	34.943		

Table 7.8 Total quantity and weight of Period 4 pottery by fabric

large bowls were recorded; these were a small bowl with an incipient 'hammer-head' rim (type B1i), a medium bowl with an expanded rim (type B2f) and another with a 'hammer-head' rim (type B2j) and a large bowl with an internally pulled rim.

Other vessels were represented by single examples; this included a curfew rim and the rim from a possible lid. This latter rim may have come from a curfew but the angle of carination was quite low. Another vessel was recorded, with a diameter of 19cm and a flattened rim with a protrusion around the outer edge.

Further medieval unglazed coarse wares were represented by single sherds from non-local kitchen wares, probably from jars as none were recorded as sooted. This included an oxidized fabric, one with shelly inclusions and another with chalky inclusions. Continental imports were represented by the rim and handle from a highly distinctive Blue-Grey ware ladle; these are small cooking pots with a short handle. The best-known source for these products is Paffrath (Jennings 1981, 26), which conforms to the established pattern of imports from the Rhineland.

Medieval glazed wares

The remaining medieval assemblage was made up of glazed table wares. Small quantities of Grimston-type Glazed ware (GTGW) were recovered from previous periods, intrusive in most cases except for late 12th-century contexts in the later stages of Period 3. However, it was not until Period 4 that this fabric made a serious impact on the pottery assemblage, where it accounted for 5.7% of the material. An intrusive jug rim was recovered

from Period 2.2, while in this period only two jug rims were recorded. Most of the material was represented by body sherds only, and the majority of these came from jugs. However, sherds of an oxidized variant of GTGW were recorded in this period, as well as body and base sherds from flatware vessels. These were more common in Period 4.2 than Period 4.1, and are seen as a later development of the Grimston industry attempting to expand its range of products to meet changing demands during the 14th century. Only 13.5% of the GTGW assemblage came from this period and the fabric was much more common in Period 5 where it is discussed in more detail.

Other glazed wares were represented by body sherds only, although these also probably came exclusively from jugs. Local wares were represented not only by GTGW products, but also by sherds from vessels of East Norfolk Glazed ware. These are not uncommon in assemblages from Norwich but are not found in large quantity. Regional products continued to be represented by Hedingham-type wares and Developed Stamford ware, while in addition to Andenne-type ware continental imports were represented

<i>Vessel type</i>	<i>Periods 1 and 2</i>	<i>Period 3</i>	<i>Period 4</i>
Jar/cooking pot	5	60	297
Bowl	3	2	8
Jug	2	-	10
Other	-	-	3

Table 7.9 Total number of LMU rims by vessel form

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	484	2.486	37.8	39.3
LMU	706	3.096	55.1	48.9
YTW	23	0.052	1.8	0.8
Non Local Med Oxidised ware	1	0.006	0.1	0.1
Non Local Med Shelly ware	1	0.016	0.1	0.2
Non Local Med Chalky ware	1	0.008	0.1	0.1
Grimston Glazed ware	18	0.197	1.4	3.1
Grimston Glazed ware (oxidised)	9	0.068	0.7	1.0
E Norfolk Med Glazed ware	2	0.015	0.2	0.2
Hedingham-type ware	8	0.105	0.6	1.6
Non-local Med Glazed ware	2	0.007	0.2	0.1
Med Red Glazed ware	3	0.010	0.2	0.1
Proto Stoneware	1	0.013	0.1	0.2
Misc. Med Import	10	0.170	0.8	2.7
LMT	3	0.009	0.2	0.1
Dutch-type Red EW	1	0.048	0.1	0.7
Tudor Green ware	1	0.008	0.1	0.1
Misc. Late Medieval wares	8	0.160	0.6	2.5
Intrusive	2	0.003	0.2	<0.1
Unidentified	4	0.012	0.3	0.2
Total	1,280	6.329		

Table 7.10 Total quantity and weight of Period 4.1 pottery by fabric

<i>Fabric</i>	<i>Quantity</i>	<i>Weight</i>	<i>% Qty</i>	<i>% Wt</i>
Residual	1253	5.81	26.2	20.3
LMU	3092	16.869	64.8	58.9
Grimston Glazed ware	145	1.097	3.0	3.8
Grimston Glazed ware (oxidised)	63	0.629	1.3	2.2
Developed Stamford ware	15	0.170	0.3	0.6
Hedingham-type ware	2	0.020	<0.1	0.1
Non-local Med Glazed ware	25	0.221	0.5	0.8
Med Red Glazed ware	13	0.104	0.3	0.4
Andenne ware	2	0.004	<0.1	<0.1
Aardenburg-type ware	1	0.001	<0.1	<0.1
LMT	33	0.303	0.7	1.0
Dutch Red EW	3	0.072	0.1	0.2
Siegburg Stoneware	2	0.003	<0.1	<0.1
Misc. Late Medieval wares	1	0.004	<0.1	<0.1
Intrusive	112	3.132	2.3	10.9
Unidentified	10	0.178	0.2	0.6
Total	4,771	28.614		

Table 7.11 Total quantity and weight of Period 4.2 pottery by fabric

by a sherd of Aardenburg-type ware, which generally occur in 13th–14th-century contexts in Norwich.

Late medieval and transitional wares

Late medieval and transitional wares (LMT) were all represented by body sherds only. LMT began to be produced in the early to mid 14th century, responding to the products coming into Norwich from the continent.

This included direct copies of DUTR vessels, some of which were indistinguishable by eye from local products. Therefore, unless the fabric displays characteristic honey-orange glaze and a smooth surface, these DUTR vessels are called Dutch-type rather than Dutch. Other continental imports were restricted to a proto-Stoneware sherd from Period 4.1 and Siegburg Stonewares from the Rhineland, recovered from Period 4.2. Other table wares

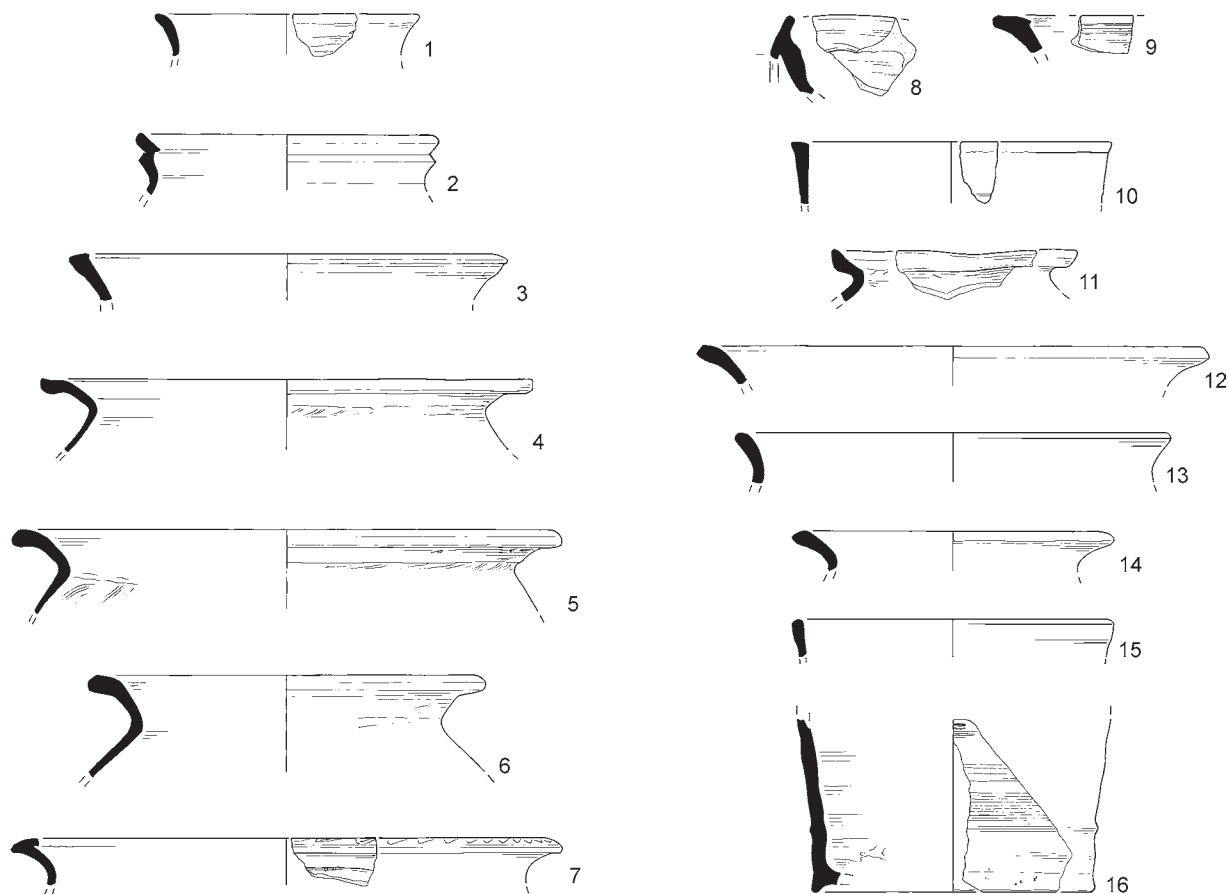


Figure 7.26 Pottery from fills of the south bailey ditch, Ditch 10 (G8/16). Scale 1:4

were represented by an English import, a sherd from Tudor Green-type vessel.

Stratigraphic distribution

Assemblages are detailed by group in Chapter 7.II and Appendix 6, where details of illustrated items can also be found.

Period 4.1

(Fig. 7.26)

Only 18.1% of the period assemblage came from Period 4.1, 1280 sherds weighing 6.329kg. With almost 40% of the material residual, medieval fabrics accounted for most of the assemblage (56.1%) and late medieval/transitional wares for a small proportion. The medieval assemblage was in the main made up of unglazed kitchen wares, represented by LMU with only small quantities of other utilitarian wares. Glazed wares were more prevalent but not overly represented, only 6.5% of the period assemblage and 12% of the sub-period material. The majority of this glazed pottery was GTGW, supplemented by other local glazed wares (from East Norfolk) and regional wares (such as Hedingham-type ware) as well as non-local glazed wares.

Period 4.2

(Figs 7.28 and 7.30–7.31; Figs 7.27 and 7.29 on CD)

Over 80% of the pottery allocated to Period 4 came from this sub-period, 4771 sherds weighing 28.614kg (81.9% of the period assemblage). The residual element has fallen to only *c.*20%, although the quantity of intrusive material has risen to 11% leaving the medieval and late medieval/transitional fabrics in similar proportion to the previous sub-period.

Discussion and conclusions

by Richenda Goffin

The pottery from Period 4, spanning the late 12th century to *c.*1345 which included the final military phase of the medieval castle, made up 3.6% of the overall ceramic assemblage, comprising 6051 sherds weighing 34.943kg. Many of the ceramics were recovered from refuse deposits within the main castle ditches, including the 13th-century barbican. Pottery also came from the deliberate levelling up of features such as the boundary ditch of St John de Berstrete and pits relating to the tenements along the Durnedale/Timberhill street frontage.

This period spans a ceramic phase which is dominated by the presence of local medieval unglazed coarsewares, together with glazed wares, most of which were supplied by the GTGW kiln sites. In Period 4.1 LMU wares account for 48.9% by weight of the assemblage: by Period 4.2 this percentage increases to 58.9%.

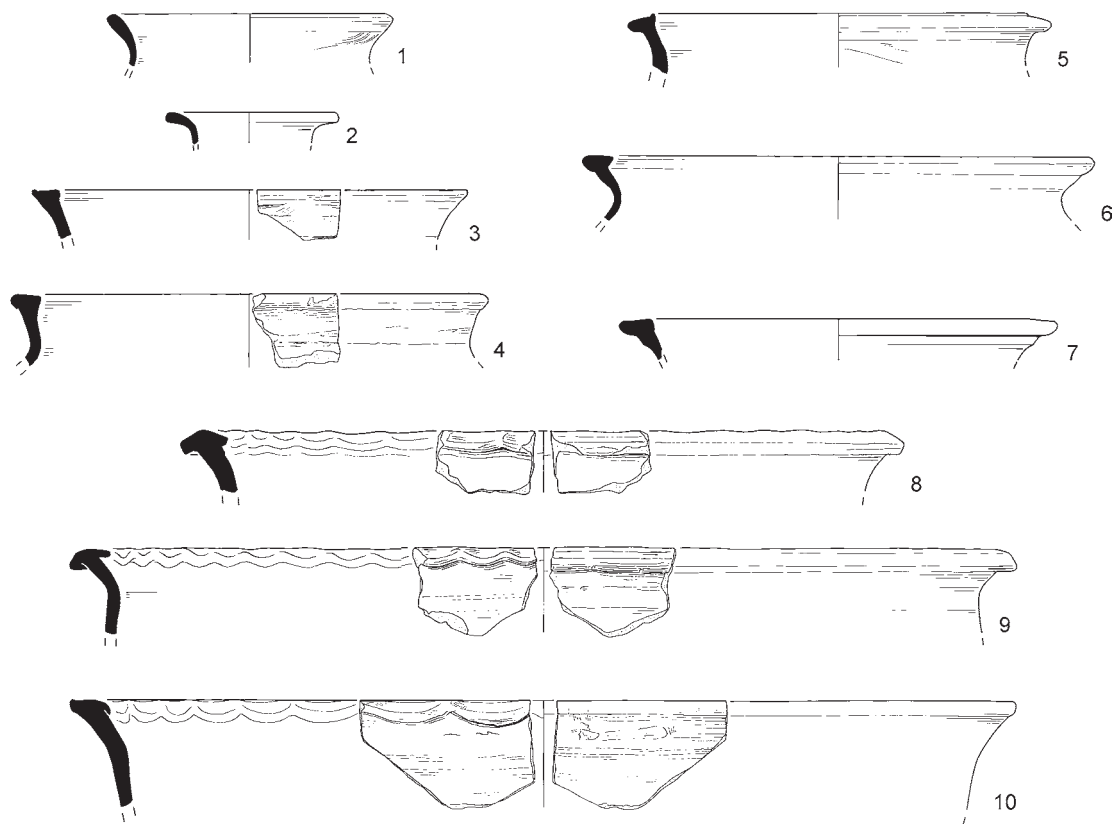


Figure 7.28 Pottery from fills of the south bailey ditch, northern section, Ditch 10 (G8/17). Scale 1:4

Thetford-type ware and residual early medieval wares still form a substantial element of both sub-period assemblages (39.3% and 20.3% by weight respectively). This is not unexpected, since much of the Period 4.1 activity involved the infilling of ditches relating to the castle and pits which had been dug within the confines of the castle area and beyond. The other substantial element, GTGW glazed ware, forms 4.1% of the Period 4.1 assemblage, a figure which rises to 6.0% by weight in Period 4.2.

A wide range of LMU jars and bowls was recovered overall from Period 4 deposits. These include examples with simple everted and inturned rims, as well as many with fully developed rims indicative of a 13th century date or later. Within such broad categories of rim types there are further variants, many of which have been illustrated. A range of decorated sherds are present, which include scoring around the rim, thumbled rims, and applied strips on the body of the vessel. The range of diameter sizes for the jars is large, from small vessels with diameters of 120mm (Fig 7.31 no. 2) and 140mm (such as Fig 6.42 no. 8), to much larger jars with diameters in the region of 280mm (Fig 7.26 no. 5). Although the vast majority of diagnostic sherds of LMU are jars and bowls, some jugs are also present along with one example of a curfew (Fig 7.31 no.5). No LMU lamps were found, a form identified at The Forum (Site 26437N; Goffin in prep.a).

The GTGW ware from Period 4 includes fragments of plain olive lead-glazed jugs with a broad late 12th- to 14th-century date, as well as those which are decorated with iron oxide slipped decoration which date to the 13th and 14th centuries, for example, in pit 10114 in Open Area 32 (City Property c/d). Few very highly decorated

GTGW ware sherds were recorded, although there is a jug fragment decorated with an applied medallion from the fill of a quarry pit in Open Area 31 (pit 11385). There are no examples of GTGW face jugs from this period, although there are fragments of GRIL ware, some of which are oxidised with a plain lead glaze.

Although by far the largest local glazed wares fabric is GTGW, two sherds of East Norfolk Glazed ware are present in the Period 4.1 assemblage. This fabric, which is also been known as Yarmouth-type glazed ware is found in Norwich and other excavation locations mainly to the south and east of the county, including Great Yarmouth (Jennings 1985, 201; Sue Anderson, pers. comm.). The pottery is relatively sandy and usually oxidised and often has a yellowish glaze, and the fabric contains none of the ferrous inclusions which are characteristic of GTGW. The precise dating for this fabric and its source of production has yet to be established. It is present in Periods 4.1 and 4.7 deposits from Alms Lane, Norwich (1275–1400) (Jennings 1985, 182 and 186), and from Period 3 at Dragon Hall dating to the 12th to mid 13th century (Anderson 2005), suggesting that it may be of 13th- to 14th-century date.

Ten fragments of Hedingham glazed ware were also identified from Period 4 at Castle Mall. This fabric can be classified as a regional import rather than being immediately local, as it was produced in a number of kiln sites in North Essex (Wilson and Hurst 1958, 211; 1959, 325; Wilson and Hurst 1965, 215–17; Webster and Cherry 1972, 205; 1973, 184; 1974, 220). The fragments from the Castle Mall excavations include a straight-sided jug sherd from a dumped deposit within the south bailey

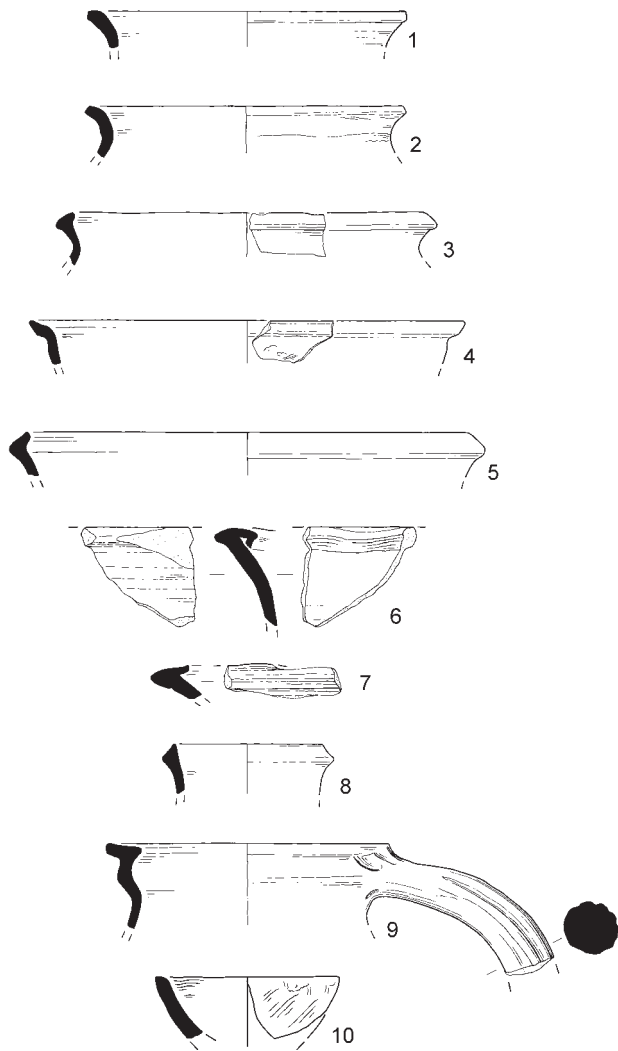


Figure 7.30 Pottery from pits on Timberhill frontage, Open Area 32, City Property (d) (G1/145, part). Scale 1:4

ditch (Ditch 10, Phase 3) (Fig 7.26 no 10). Both the fine micaceous fabric and the coarser variant have been identified on sites in Norfolk in small quantities. Fragments of possible Hedingham ware were identified at Fishergate (Dallas 1994, 22). An example of a Hedingham Rouen-style jug fragment was identified recently from an evaluation at Old Barge Yard, Norwich (Goffin 2003), but it does seem that it is found more frequently on sites in south Norfolk, closer to its point of origin. Thirty-two jug fragments of Hedingham fine glazed ware were recorded from excavations in Thetford (Dallas 1984, 124–5) with another possible group of the coarser variant. Fragments of the fine variant were also identified at Redcastle Furze, also in Thetford (Little 1995, 108).

A small but consistent range of imported wares were present in both the Period 4 assemblage and the medieval pottery found in all periods, confirming the continuing trading patterns established between Norwich and the Rhineland, Northern France and the Low Countries (accounting overall for 0.4% of the total quantity of medieval pottery from the site (see Chapter 13, Table 13.33). At Castle Mall, fragments of a Paffrath-type handled cooking vessel or ladle were present in the fill of

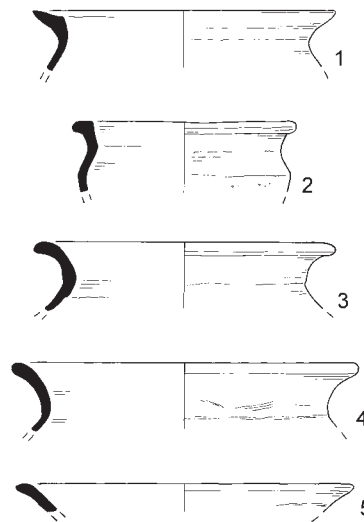


Figure 7.31 Pottery from fills of cemetery boundary ditch, Ditch 2 (G1/48). Scale 1:4

cesspit 91576 located within the north-east bailey ditch (Ditch 9, Phase 10a, Period 4.1). This assemblage also contained a number of LMU vessels and two sherds of East Norfolk Glazed ware.

Paffrath-type ware is a collective term used to describe the pottery made in a number of centres in the Low Countries and Germany. The fabric is characterised by a sandy hard-fired fabric with a distinctive metallic blue-grey surface. It was widely traded along coastal areas of countries encircling the North Sea, but also reached further afield, being found, for example in Dublin (Wallace 1983, 229). In East Anglia this fabric had been identified from excavations in the major ports of King's Lynn (Clarke and Carter 1977) and Great Yarmouth (Anderson in prep.). Although inland, Norwich was a thriving trading depot which was easily reached from the ports of Great Yarmouth and Lowestoft via the extensive river system.

Paffrath-type ware is found in small quantities on many Norwich sites. For example, an almost complete ladle was recovered from the fill of a cesspit attributed to Period 4 (12th to 13th century) at The Forum (Site 26437N; Goffin in prep. a). In total eighteen fragments were recovered from this excavation. Fifty-one fragments were identified from the excavation at Dragon Hall (Anderson 2005). Seven of these sherds came from Period 2 (11th to 12th century) and twelve from Period 3 (12th to mid 13th century), the remainder being residual. Only one sherd was present in another Period 3 (12th to mid 13th century) assemblage from King Street (Site 26460N; Goffin, in Shelley and Brennan forthcoming). Eight fragments from two vessels were present in the pottery assemblage of St Faith's Lane, both in 11th- to 12th-century deposits and as residual elements (Blinkhorn, forthcoming a). Paffrath-type ware was also present from Period 5 deposits and later at the waterfront site of Fishergate (Dallas 1994, 22)

A second, more common import found on sites in Norwich is Pingsdorf ware, which is present in small quantities both Periods 4.1 and 4.2 at the Castle Mall. This hard-fired ware was produced at several centres in the Rhineland from the 10th to the 13th century (Ludtke 1989, 39). Twelve fragments were recovered from Period

4 overall. This compares with twenty-six fragments of the ware which were found in Period 3 and 4 deposits from Dragon Hall covering the period 12th to mid 14th century (Anderson 2005, table 13). An additional twenty-three fragments were identified from nearby excavations in King Street (Site 26460N; Goffin, in Shelley and Brennan forthcoming). At The Forum, fourteen fragments were recovered from Period 3 (mid 11th to 12th century), with only three fragments from Period 4 (12th to 13th century) (Site 26437N; Goffin in prep.a). Thirteen fragments were found in the excavations at St Faith's Lane Norwich, from 11th- to 13th-century deposits and as residual elements (Blinkhorn in Lloyd *et al* 2002). At Fishergate sixty-seven sherds from thirteen or fourteen vessels, with additional small chips, were recovered from Period III2 (11th century) onwards (Dallas 1994, 22).

Small quantities of other imported wares are also present in the Period 4.2 assemblage at Castle Mall, notably two fragments of Andenne type ware from the Meuse valley area of Eastern Belgium. This hard white yellow-glazed ware is not uncommon on coastal sites on the eastern coast of England where it occurs particularly in 12th- and 13th-century contexts. At Dragon Hall, most of the Andenne type wares were present in Period 3 deposits (eighteen sherds, 12th to mid 13th century), but four more were recovered from Period 4 (mid 13th to mid 14th century) (Anderson 2005, table 13). At St Faith's Lane, five sherds of Andenne/Huy type ware were present in M2 deposits of 14th–15th-century date and are therefore likely to be residual (Blinkhorn forthcoming a).

Very small quantities of Dutch-type redware were identified from both phases of Period 4 at Castle Mall, and a small fragment of Aardenburg type ware was present in Period 4.2, found in dump 91312 within the north-east bailey ditch (Ditch 9, Phase 11). A small fragment of Siegburg stoneware was present in the fill of pit 49151 in the western part of the barbican (Open Area 21), and a second sherd in one of the fills of the boundary ditch of the cemetery of St John de Berstrete (Ditch 2). These imported wares from the Low Countries and the Rhineland are found in small quantities elsewhere on sites in Norwich, including three fragments of Aardenburg-type ware and nine Siegburg sherds from Period 3 at Greyfriars (Lentowicz, in Emery 2007) and two fragments of Aardenburg type ware from Period 3 at Dragon Hall (Anderson 2005).

Regionally, the earliest material amongst the selected ceramic groups published at Castle Rising in West Norfolk was recovered from tips in the kitchen waste pit outside and immediately west of the keep, and it is mainly 13th-century in date (Milligan 1997, 112–122). It consisted mainly of EMW cooking vessels with small quantities of GTGW ware jugs, some Scarborough ware and decorated Lincolnshire ware, with a green glazed Saintonge jug (Milligan 1997, 113). This assemblage is primarily utilitarian in its nature. The glazed jugs do include some regional and imported wares, but these are not exceptional and have been identified on other sites in West Norfolk. The pottery may have been used by inhabitants involved in the running and upkeep of the castle who would not require high quality ceramics. In the discussion, Milligan suggests that the lack of high quality ceramics dating to the later phase when the castle was being occupied by Isabella, widow of Edward II in the middle of the 14th century, may be due in part to the high standard of cleanliness and effective methods of rubbish disposal during this period; and

that rubbish may have been deposited well away from the immediate vicinity of the castle (Milligan 1997, 120).

To conclude, at Castle Mall this period was characterised by the dominance of medieval products, and towards the end of the period by the introduction of late medieval/transitional wares. The majority of the assemblage comprised locally produced kitchen wares and, as in Periods 2 and 3, the pottery does not reflect the high status of the castle. This is unsurprising, since the majority of the contexts examined relate to burgeoning tenement activity around the fringes of the Castle Fee, with much of the material being recovered from the infilling of the castle ditches and probably representing domestic rubbish from the surrounding area rather than from the castle itself. The pit groups within the barbican (Open Area 21) are not demonstrably different from those examined outside the castle. The ceramic assemblage from fills and features within the north-east bailey ditch (Ditch 9) is particularly significant since it implies that the barbican ditch, which cut through it, was constructed later than the date of *c.*1216 or immediately afterwards that has often been applied to it (see further discussion in Chapter 7.V).

Additional pottery was examined from pit clusters directly associated with identifiable properties along Durnedale/Timberhill (Chapter 7.II). These groups contain a proportion of residual earlier ceramics, which may indicate their continued use. One more unusual pit contained a larger than average number of bowls as well as a crucible, but on the whole assemblages are made up of LMU cooking vessels and jars, with occasional bowls and a low proportion of jugs. These local wares are supplemented by GTGW and the occasional regional or continental import. Effectively, this is a typical urban assemblage of the medieval period, despite the fact that the castle's outer baileys at least nominally remained Crown property until 1345.

Illustration Catalogue

Period 4.1

- Fig.7.26: Pottery from fills of the south bailey ditch, Ditch 10 (G8/16)
- no.1 LMU, small jar with simple everted rim (type J1a), fill 80265
 - no.2 LMU, jar with upright rim (type J2b), fill 80265
 - no.3 LMU, jar with upright rim (type J2b), fill 80265
 - no.4 LMU, jar with grooved upright rim (type J2ai), fill 80265
 - no.5 LMU, jar with everted rim coming to a point (type J2c), fill 80265
 - no.6 LMU, jar with squared-off rim (type J2e), fill 80265
 - no.7 LMU, jar with developed 'hammer-head' rim and scored decoration (type J2j), fill 80265
 - no.8 LMU, bowl with developed 'hammer-head' rim (type J2j), fill 80267
 - no.9 LMU, bowl with incipient 'hammer-head' rim (type B2i), fill 80265
 - no.10 Hedingham-type ware, jug, fill 80262
 - no.11 TTW, distorted jar with lid-seated, triangular rim (type AB7), fill 80374
 - no.12 LMU, jar with everted, rounded rim (type J2l), fill 80347
 - no.13 LMU, jar with upright rim (type J2a), fill 80331
 - no.14 LMU, jar with everted rim (type J2c), fill 80331
 - no.15 LMU, jug rim, fill 80342
 - no.16 GTGW-type Glazed ware, jug rim

Period 4.2

- Fig.7.27on CD: Pottery from pit 45196, barbican, Open Area 29 (G45/1, part)
- no.1 LMU, jug with internally and externally pulled rim (type C1j), fill 45183
 - no.2 LMU, jug with internally and externally pulled rim (type C1j), fill 45183
 - no.3 LMU, decorated body sherd, fill 45183

- no.4 LMU, jar with incipient 'hammer-head' rim (type J2i), fill 45183
- no.5 LMU, jar with 'hammer-head' rim (type J2j), fill 45183

Fig.7.28: Pottery from fills of the south bailey ditch, northern section, Ditch 10 (G8/17)

- no.1 LMU, small jar with upright rim (type J1a), fill 80241
- no.2 LMU, small jar with simple, everted rim (type J1b), fill 80241
- no.3 LMU, jar with internally pulled rim (type J2h), fill 80321
- no.4 LMU, jar with incipient 'hammer-head' rim (type J2i), fill 80430
- no.5 LMU, jar with developed 'hammer-head' rim (type J2j), fill 80218
- no.6 LMU, jar with developed 'hammer-head' rim (type J2j), fill 80218
- no.7 LMU, bowl with squared rim (type B2), fill 80218
- no.8 LMU, bowl with 'hammer-head' (type B2j) and thumbled rim, fill 80302
- no.9 LMU, large bowl with 'hammer-head' (type B3j) and thumbled rim, fill 80298
- no.10 LMU, large bowl with internally pulled and thumbled rim (type B3h), fill 80430

Fig.7.29 on CD: Pottery from fills of the south bailey ditch, southern section, Ditch 10 (G1/34)

- no.1 LMU, jar with incipient 'hammer-head' rim (type J2i), fill 11376
- no.2 LMU, jug (type C2c), fill 11376

Fig.7.30: Pottery from pit 10135 on Timberhill frontage, Open Area 32 (G1/145, part)

- no.1 LMU, jar with simple everted rim (type J2b), fill 10121
- no.2 LMU, jar (type J2), fill 10121
- no.3 LMU, cooking pot with developed 'hammer-head' rim (type J2j), fill 10121
- no.4 LMU, bowl (type B2c), fill 10121
- no.5 LMU, bowl with inturned rim (type B2m), fill 10121
- no.6 LMU, large bowl with developed 'hammer-head' rim (type B3j), fill 10121
- no.7 LMU, large bowl with developed 'hammer-head' rim (type B2j), fill 10121
- no.8 LMU, jug with upright, pulled rim (type C2e), fill 10121
- no.9 LMU, jug with upright, pulled rim (type C2e), fill 10121
- no.10 Non-local fabric, crucible, fill 10121

Fig.7.31: Pottery from fills of cemetery boundary ditch, Ditch 2 (G1/48)

- no.1 LMU, small jar with everted rim coming to a point (type J1c), fill 10751
- no.2 LMU, small jar with squared rim (type J1e), fill 10468
- no.3 LMU, jar with simple everted rim (type J2b), fill 10751
- no.4 LMU, jar with simple everted rim (type J2b), fill 10751
- no.5 LMU, curfew rim, fill 11268



Plate 7.16 Decorated bone handle in the form of a perched bird (SF5775), of possible 13th- or 14th-century date

Glass Vessel

by John Shepherd

The earliest glass vessel from the site was a urinal (SF5786, not illustrated) recovered from an early 14th-century pit fill (80112, pit 80113, Period 4.2, G8/28). This pit also contained a coin of Edward I (1302–1307). The urinal is of a form which continued in use from the 14th century into the post-medieval period.

Implements

Decorated bone handle

by Julia Huddle

(Fig.7.32, Plate 7.16)

A decorated bone handle in the form of a perched bird was found residually in a post-medieval pit fill. Although the collar at the base suggests it served as an implement handle, the absence of iron staining indicates that the blade or working part of the implement is unlikely to have been metal. Another puzzling feature is the pierced hole in the centre of the flower. Again there is no iron staining which, together with its size, may suggest that it held a tiny bone pin.

Examples of bone objects with 'plugs' similar to that used on the Castle Mall object are known from the 11th century onwards, particularly in chess pieces. Bone and ivory knife handles in the form of human figures, often holding falcons, are attributable to the 13th and 14th centuries, although these are usually larger and sturdier than the Norwich 'handle'. One from Oxford is illustrated in MacGregor (1985, 170, fig. 88, t) and several unpublished examples are held in the National Museum of Antiquities (Edinburgh) and the Peterborough Museum. Bencard has discussed a widespread series of twenty-four handles dating from about 1250–1350 and carved in the form of a young man in a long robe carrying a falcon on his arm (Bencard 1975).

A date in the 13th or 14th century seems probable for the Norwich object, although without a direct parallel, this remains contentious. John Cherry has suggested that, because of the four-petalled flower (quatrefoil motif), it is unlikely to date earlier than the 15th century. The remainder of the handle, however, suggests a 13th-century origin (Sue Margeson, pers. comm.). It is notable that the flower is, in comparison to the rest of the decoration, poorly executed and it could easily have been a later addition, together perhaps with hole at its centre.

SF5775 Handle in the form of a perched bird, probably a hawk. Incised vertical lines show the flight feathers and half ring-and-dots the contour feathers. The eyes and the beak have been carved with great attention to detail. There is a plug in the top of the bird's head to seal the natural hole in the bone. This plug is decorated with lines to show the head feathers. A flower of four petals is incised on the birds breast with a central pierced (but not penetrating) hole. The open end of the 'handle' has a neat collar with mouldings. L: 68mm. Caprine mid-shaft tibia. 80110, fill of pit 80111, Period 6.1, G8/29

Miscellaneous Fittings

Iron swivel hooks

by Quita Mould

(Fig.7.32)

Two small swivel hooks (SF5850 and SF6432, latter not illustrated from 80200, G8/28, pit 80113, Period 4.2) may

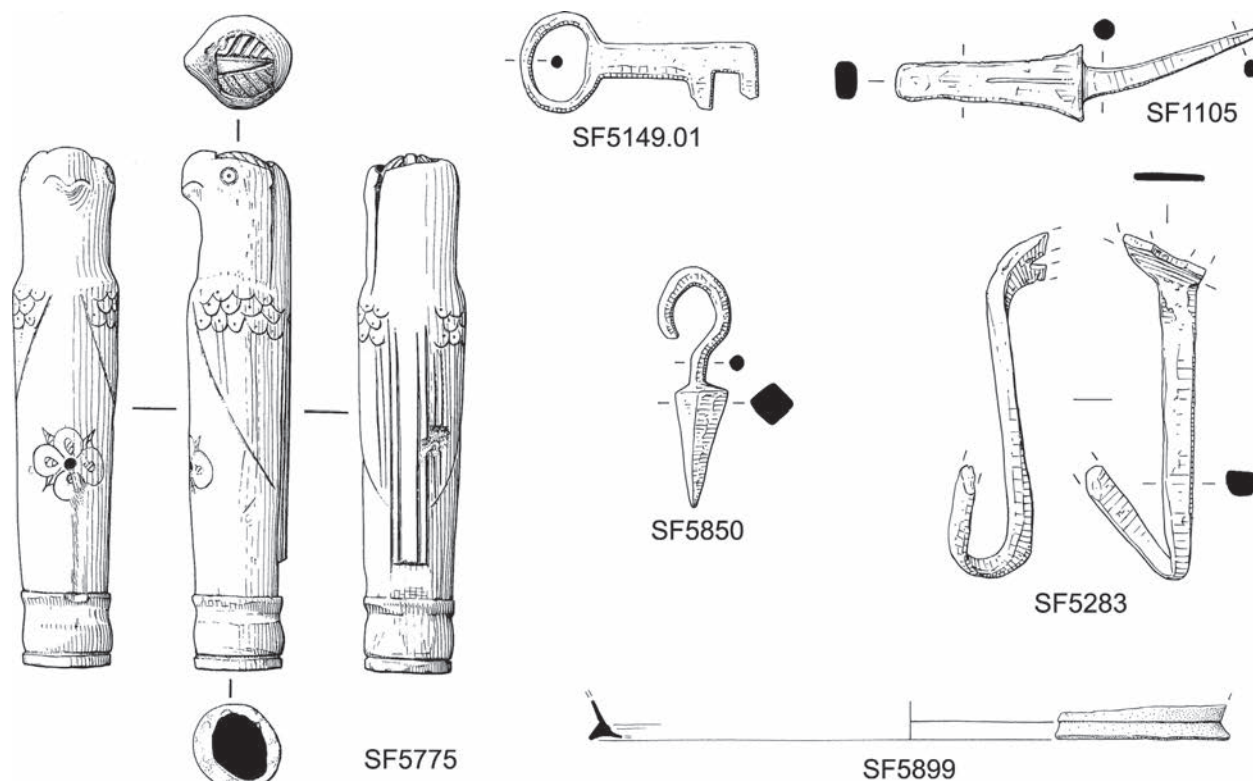


Figure 7.32 Bone handle (SF5775); iron swivel hook (SF5850); copper alloy ?candlestick foot-ring (SF1105); iron chain fitting (SF5283); iron padlock bolt (SF5899); iron key (SF5149.01). Scale 1:1, ironwork at 1:2

have been used on horse harness, a chain or dog leash *etc.*. Two others were also recovered from the site.

SF5850 Hook. Swivel hook, small square-sectioned head tapering to a pointed tip at one end with a looped suspension ring at the other, non-ferrous metal coated. L: 64mm. 11386, fill of pit 11387, Period 4.2, G1/35

Iron chain fitting
by Quita Mould
(Fig.7.32)

A broken hooked chain fitting (SF5283) from a pit fill is similar to others found in Norwich from both medieval and post-medieval contexts (Goodall 1993a, fig. 106, 968-970).

SF5283 Hooked chain fitting, broken at looped terminal. 10459, fill of pit 10563, Period 4.2, G1/74

Buildings

Structural Ironwork

by Quita Mould

A small collection of structural ironwork (not illustrated) was recovered from Period 4 contexts occurring principally in the fills of the boundary ditch around the northern part of the cemetery of St John de Berstrete (Ditch 2) and the south bailey ditch (Ditch 10). It included two U-shaped staples (SF5933 and 5256), a wallhook (SF5296), joiner's dog (SF5533) and two lengths of nailed binding (SF5107 and 5342.01). A total of 34 flat-headed nails and 59 broken nail shanks were found in Period 4 deposits, chiefly coming from Period 4.2. A single clench bolt and a small nail or tack with a large, flat round head were also noted.

Locks and Keys

by Quita Mould
(Fig.7.32)

Iron locks

A padlock bolt from a stock lock (SF1105) was found in the fill of the north-east bailey ditch. Two other examples (SF5258 and 5270, not illustrated) were found in contexts associated with encroachment into the western part of St John's cemetery, as was a small notary key (SF5149.01, see below).

SF1105 Padlock bolt with spine with rivet hole in terminal to attach a leaf spring, closing plate and tang, with non-ferrous coating to prevent rusting of the internal mechanism. L: 108mm, max W: 20mm. 92340, fill of north-east bailey ditch 92462, Period 4.1, G9/24

Iron keys

Small keys with circular bows and simple bits such as SF5149.01 are, based on the dating evidence from London, a long-lasting form, with a date range of at least the late 12th to the late 14th century (Egan 1998, 111), where it is suggested these small keys may have been used for locks on caskets.

SF5149.01 Key. Small key with broken bow and two large teeth projecting at right angle from the stem. L: 31mm. 10421, fill of pit 10563, Period 4.2, G1/74

Window Glass and Cames

by David King

Window glass

The medieval window glass recovered from the site was produced by the broad glass or muff method, as is

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	77	0.914	13.4
Roman	11	0.919	13.5
Fired clay	105	0.428	6.3
Medieval roof tile	156	3.656	53.8
Medieval brick	52	0.663	9.7
Medieval floor tile	1	0.015	0.2
Post-medieval	4	0.195	2.8
Total	406	6.790	

Table 7.12 Total number of fragments and weight of CBM at Castle Mall by fabric in Period 4

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	2	0.220	20.7
Roman	2	0.182	17.1
Fabric 129	18	0.032	3
Fabric 136	18	0.050	4.7
Fabric 300	7	0.005	0.4
RT100/RT103 (RT2/RT3)	2	0.128	12
RT105	1	0.105	9.8
RT117 (RT5)	1	0.215	20.2
Post medieval	3	0.125	11.7
Total	54	1.062	

Table 7.13 Total number of fragments and weight of CBM at Castle Mall by fabric in Period 4.1

<i>Fabric</i>	<i>No. frags</i>	<i>Weight (kg)</i>	<i>% Weight</i>
Misc frags	75	0.694	12.1
Roman	9	0.737	12.9
Fabric 129	27	0.034	0.6
Fabric 136	31	0.300	5.2
Fabric 300	4	0.007	0.1
RT100/103/111 (RT2/RT3)	63	0.941	16.4
RT104 (RT4)	2	0.175	3.0
RT117 (RT5)	1	0.035	0.6
RT114	37	1.995	34.8
RT200	49	0.062	1.1
EB2	1	0.055	0.9
EB3	2	0.260	4.5
EBB	28	0.132	2.3
EB7	13	0.090	1.6
EB8	5	0.065	1.1
EB10	1	0.045	0.8
EB119	1	0.011	0.2
EB150	1	0.005	0.1
FT114	1	0.015	0.3
Post medieval	1	0.070	1.2
Total	352	5.728	

Table 7.14 Total number of fragments and weight of CBM at Castle Mall by fabric in Period 4.2

indicated by the survival of several muff edge pieces. A total of 47 pieces of glass from the Castle Mall site were of medieval type, with a further 20 fragments probably dating to this period. Of these, only two came from medieval deposits, two pit fills both in Area 1 (SF5407, G1/74 and SF5436, G1/145, not illustrated).

Of note amongst the small assemblage from Golden Ball Street, are two fragments of 13th-century glass. Both were found residually in the same late medieval transitional pit (fill 171, pit 170, both SF226). One (no.15, not illustrated) is part of a half-quarry from a quarry glazed window of c.1200–1250 or 1200–1280 in date, with quarries measuring approximately 152mm x 100mm with point angles of approximately 67° and 113°. Quarry glazing was widely used from the medieval period onwards for both ecclesiastical and secular buildings. For a discussion on plain quarry glazing, see Chapter 13.

The other fragment (no.16, not illustrated) is from a window fully or partly glazed with stiff-leaf grisaille consisting of a repeated foliage design painted on clear glass with a cross-hatched background. This type of glazing normally dates from the first half of the 13th century, but examples are known with cross-hatching up to about 1280, although more usually from 1250–1280 the hatching is omitted. Grisaille glazing was also used for both ecclesiastical and secular buildings, but being painted was of higher stature than plain quarry glazing.

Lead comes

No lead window came of medieval type was recovered from Period 4 deposits, although 8 pieces were found in deposits attributed to other periods (Periods 3, 5 and 6). A number of them were formed of compound sections, soldered together. The small group includes type A (x 2), type B (x 2), type B/C (x 1) and type C (x 3), using the typology outlined in Rogerson *et al* (1987, 39). A full catalogue is available in the project archive.

Ceramic Building Materials

by Irena Lentowicz, with Richard Kemp (identification) It was during this period that medieval brick and tile came into contemporary use in Norwich. Despite this, only a small assemblage of 406 fragments weighing 6.790kg was recovered from Castle Mall Period 4 (2.9% of the total). Residual Roman material continued to make up a significant proportion, though it is unclear whether this was being re-used. Fired clay was not as abundant as in previous periods; it was difficult to assess whether this material was in contemporary use, since repair work *etc.* would use similar source material. Floor tile was introduced into the assemblage for the first time.

The most common roof tile type was RT114, which was also recovered as a floor tile fabric. Other fabrics were standard sandy peg tiles, types RT100/103/111 (RT2/RT3) and RT105, which were introduced in the 13th to early 14th century. One large type RT117 (RT5) fragment was intrusive as this type is dated as late 15th-century. Brick accounted for a larger proportion of the CBM by weight, and earlier Drury Group A bricks (types EB1–5, dated to the late 13th–14th century) were not as common as the later Group B bricks (types EB6–11).

Period 4.1

A small group of 54 fragments weighing 1.062kg (16%) came from this sub-period. Although the group is dominated by residual and intrusive material in terms of weight, this represents only a very few fragments. Mortar and plaster fragments were present, as well as what was noted as *opus signum*.

Although a small amount of material came from pit fills, the largest and most varied assemblage came from the south bailey ditch in Area 8 (G8/16, 0.615kg). As well as Roman bonding tile and fired clay Fabrics 129 and 136, a large intrusive roof tile fragment type RT117/RT5 was recovered. A single fragment of roof tile type RT100 came from mixed backfills of the ?Castle Fee ditch (G1/58, 0.035kg), while fills of the north-east bailey ditch (G9/26, 0.032kg; G9/33, 0.125kg) contained only fired clay Fabrics 129 and 300 and a single intrusive brick (type LB1).

Period 4.2

The remaining 84% of material recovered from this period came from this sub-period, 352 fragments weighing 5.728kg. Miscellaneous fragments accounted for a proportion of this and included mostly mortar fragments with smaller quantities of chalk, plaster and fired clay fragments. Residual Roman material accounted for another substantial proportion, while fired clay Fabrics 129, 136 and 300 were also probably residual by this period. This is the first contemporary medieval assemblage and over half was made up of roof tile, 152 fragments weighing 3.208kg (56.0%). Fabric RT114 by far the most common individual type, with smaller quantities of RT100/103/111 (RT2/RT3), RT104 (RT4) and RT200. A wider range of early brick fragments were recovered with Group A types EB2 and EB3 present but Group B types EB7, EB8 and EB10 much more common. Only one floor tile fragment was also recorded. Some intrusive later roof tiles and bricks were also present, for example the type RT117 (RT5) tile.

The largest assemblage came from deliberate infilling of the south bailey ditch (G8/17; 2.495kg). This produced a wide ranging collection of contemporary building material with the only probable residual CBM being some fragments of daub Fabric 136 with wattle and reed impressions. Roof tile was most common with type RT114 most common, but included fragments of other medieval tile types RT100, RT103, RT104 and RT117. Bricks were much less common and were represented by only a few small fragments of type EB8 bricks. Two small fragments of a single glazed roof tile type RT103 came from dumping into the barbican ditch (G2/28, 0.015kg). Only a small quantity of obviously intrusive material came from fills of the ?Castle Fee and south bailey ditches at Golden Ball Street (GBS Groups 26 and 49).

The character of the refuse and backfills of the cemetery boundary ditch, Ditch 2 (G1/48, 0.956kg) was markedly different. The assemblage was smaller and a large proportion was residual earlier material including Roman brick and daub Fabrics 129 and 136. Of the medieval material, brick was more common than tile, with fragments of types EB10 and EB119 recorded; only one fragment of roof tile type RT100 was recorded. The remaining material came from pits, 0.670kg (11.7%).

Discussion

Ceramic building materials, other than daub, are not common in Norwich until the latter part of the 13th century, commencing with the construction of the curtain wall around the Castle Keep (see Chapter 7.I). The contemporary assemblage from Period 4 deposits recorded at Castle Mall is not large, although it does include medieval roof tile and a small quantity of brick, some of which may relate to the construction of buildings within the castle compound. More general comments on the medieval brick, floor and roof tile recovered from the site are given in Chapter 13.

Occupations, Industry and Crafts

Metalworking

Introduction

Although Norwich Castle's defences continued to develop during the 13th century, there was little evidence for metalworking within the south bailey at this date. Despite the attractive expanse of open ground which the castle baileys provided, it was not until after the 1345 handover of the baileys to the city (Period 5) that this area

became available for metalworking and other noxious craft activities. The metalworking waste recovered from deposits assigned to Period 4 (19.469kg; 14.5% of the total site assemblage) indicates small-scale activities at this date, contrasting sharply with the following period. Of the period assemblage 2.452kg (12.6%) came from deposits assigned to Period 4.1 and 17.017kg (87.4%) from Period 4.2.

Chronological and spatial distribution of metalworking debris

by Irena Lentowicz and Justine Bayley (identification)

Period 4.1

Metalworking debris was recovered from the recut and fills of the north-east bailey ditch (Ditch 9; G9/26, 9/24, 9/28 and 9/33). Hearth bottoms came from the second recut (G9/24) and its fill (G9/33), while smithing slag was recorded from pit 92218 within the ditch (G9/35). A range of metalworking debris came from refuse disposal and weathering deposits within the south bailey ditch (Ditch 10; G8/16). This included both ferrous and non-ferrous metalworking represented by hearth bottoms, smithing slag, hearth lining, tuyeres, fuel ash slag and vitrified clay, as well as copper alloy spillages. Pitting to the rear of the Berstete/Timberhill frontage continued to produce evidence of metalworking, with smithing slag recovered from pit 10882 (G1/100).

Period 4.2

Again, much of the metalworking debris allocated to this sub-period came from the fills of ditches or activity cutting the fills. Pit 91233 cut into the north-east bailey ditch (Ditch 8; G9/36) and smithing slag was recovered from it. The earliest fills of the barbican ditch (Ditch 13; G2/28) also contained smithing slag and fired clay. The south bailey ditch produced hearth lining and smithing slag (G8/17), hearth bottom, smithing slag, cinder and an iron object (G1/34). Fills of the ?Shirehouse Yard ditch (Ditch 14; G1/21) included iron pan/concretion, fired clay and iron pan. Refuse fills within the boundary ditch around St John's cemetery (Ditch 2, G1/48) contained hearth bottom and smithing slag. In the eastern part of the barbican enclosure hearth bottom and smithing slag were recorded from pit 45196 (G45/1), while similar debris came from post-holes associated with ?Building 26 (G46/18 and 46/28). Smithing slag was also recovered from pit 11416 (G1/36) within the south bailey.

Ferrous and non-ferrous scrap

by Quita Mould (ferrous), Alison Goodall (copper alloy) and Elizabeth Shepherd Popescu (lead)

Limited evidence of small-scale metalworking was again recorded at this time. Eight fragments of iron strap and four formless fragments — probably scrap from ironworking — were found in Period 4 deposits, with five others coming from fills of the ?Fee ditch at Golden Ball Street (GBS Group 20). Various fragments and off-cuts of copper alloy sheet and strip (x 15) were probably used in the manufacture or repair of artefacts, or were intended for re-melting. Most came from Castle Mall Area 1. Two pieces of leadworking waste or offcut were also recovered.

Discussion and conclusions

by Elizabeth Shepherd Popescu

It is with the later part of this period that both ferrous and non-ferrous metalworking in the vicinity begins to be widely documented (see Tillyard, Chapter 7.I), setting the excavated evidence in its wider urban context. Deeds, for example, provide evidence for a multitude of services and trades in the city between the late 13th and early 14th century (summarised by Kelly, 1983). A wide range of metal-related crafts are recorded including goldsmiths, smiths, cutlers and armourers. Craft and industry required considerable space and there is evidence for the grouping

of activities within medieval Norwich. Numerous metalworkers are known to have become established in premises to the west and north of the castle, although smithing remained concentrated to the north of the city, a location dictated by the local source of the ores and also presumably by safety considerations (Kelly 1983, 31). The continuation of ironworking on the north bank of the river during the 13th and 14th centuries is archaeologically represented at sites on St George's Street and Alms Lane (Atkin and Priestly 1985, 242–244). Many Norwich sites attest to the presence of metalworking activity during the medieval and later periods and considerable evidence has been found for the extraction and preparation of raw materials, as well as the necessary tools and equipment for processing and manufacture (Goodall 1993a, 174–177). Evidence for copper smelting and working has recently been recorded within the former French Borough to the west of the castle (Percival and Hutcheson in prep.), in an area of the city noted for its wide range of metal trades (Kelly 1983, 31).

A local metalworker is mentioned in deeds of 1298 and 1299, while an assessment of 1332 included five metalworkers leasing properties (exact location unknown) within the Castle Fee: a finisher of swords, a leadworker, a cutler, a locksmith and an armourer (Tillyard, Chapter 7.I). Despite this documentation, little evidence for these metalworkers was attested archaeologically at Castle Mall and much of the metalworking waste from this period came from secondary deposits within ditches. Ferrous metalworking waste indicates small-scale smithing, with no evidence for the presence of large scale processing or production workshops within the castle complex during the final period of its active military life (Period 4.1). Non-ferrous metalworking continued to a limited degree on the Durnedale/Timberhill frontage area. A few fragments of copper alloy sheet and strips perhaps used in manufacture and repair were also recovered. During the medieval period, the general lack of excavated evidence for the working of copper alloys has been taken to indicate a domestic rather than a commercial setting (Goodall 1981, 63).

Antler- and Hornworking

Evidence for the importation of shed antler onto the site during the medieval period is provided by two sawn examples, one from a red deer and the other unidentified (Plate 7.17 and SF6487). Such shed antlers may have been collected in the woods around the town or further afield. Further discussion on antlerworking is given in Chapter 13 and Part III.

Only five horncores were recovered from Period 4 deposits (cattle x 1; sheep x 4), all of which came from fills of the boundary ditch around the cemetery of St John de Berstrete (G1/48 and 1/163, Period 4.2).

Fishing Equipment

Copper alloy fish hook

by Alison Goodall

(Fig. 7.33)

Several barbed fish-hooks similar to a fragmentary example from Castle Mall (SF5067) have been excavated previously in Norwich (Margeson 1993, 118–20, fig. 84.746–8), as well as others without barbs. Two of the barbed hooks are of copper alloy, the remaining

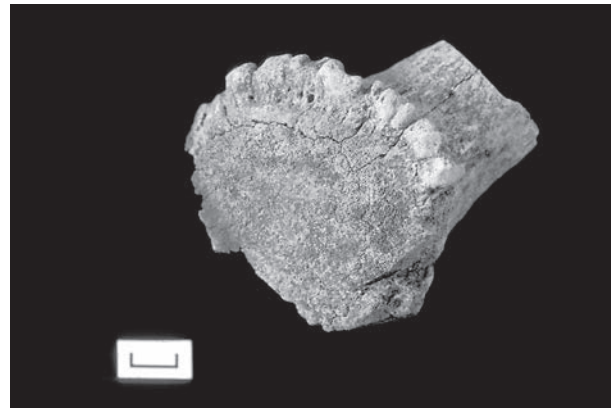
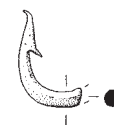


Plate 7.17 Naturally shed sawn red deer antler



SF5067

Figure 7.33 Copper alloy fish hook (SF5067). Scale 1:1

examples are of iron, which is the more common material for fish-hooks. Most of them date from the 17th and 18th centuries, while similar copper alloy hooks from Amsterdam are dated from the 14th to 17th centuries (Baart *et al* 1977, 428–9). The example from Castle Mall may therefore be of medieval, late medieval or post-medieval date.

SF5067 Fish hook. Incomplete fish hook, with barbed point and part of shaft surviving.
10000, unstratified

Mortars

by J.M. Mills and Paul C. Ensom

(Fig. 7.34)

Fragments of two stone mortars of medieval type were recovered from the site, found residually in later contexts. Both are shelly limestones, although from different sources, one in Dorset and the other Northamptonshire or Lincolnshire. The stone types and morphology of mortars are fully discussed by Dunning (1961, 279–84 and 1977, 320–47). Medieval stone mortars are commonly made from limestone. The examples here are from areas well known for their production. The Lincolnshire example (SF6175) may well be from the Weldon Quarry, although this is not certain. The Purbeck industry exploited many different strata for the production of mortars including the Purbeck marble and broken shell beds.

Dunning (1977, 321) suggests that mortars were used both for grinding and pounding. The fragments at Castle Mall appear to have been used for grinding. As both fragments occur on the site reused as building stone rather than in their primary role, it is not possible to speculate further about their primary use.

Limestone mortars were traded throughout the medieval period; much of the dating is related to the dates

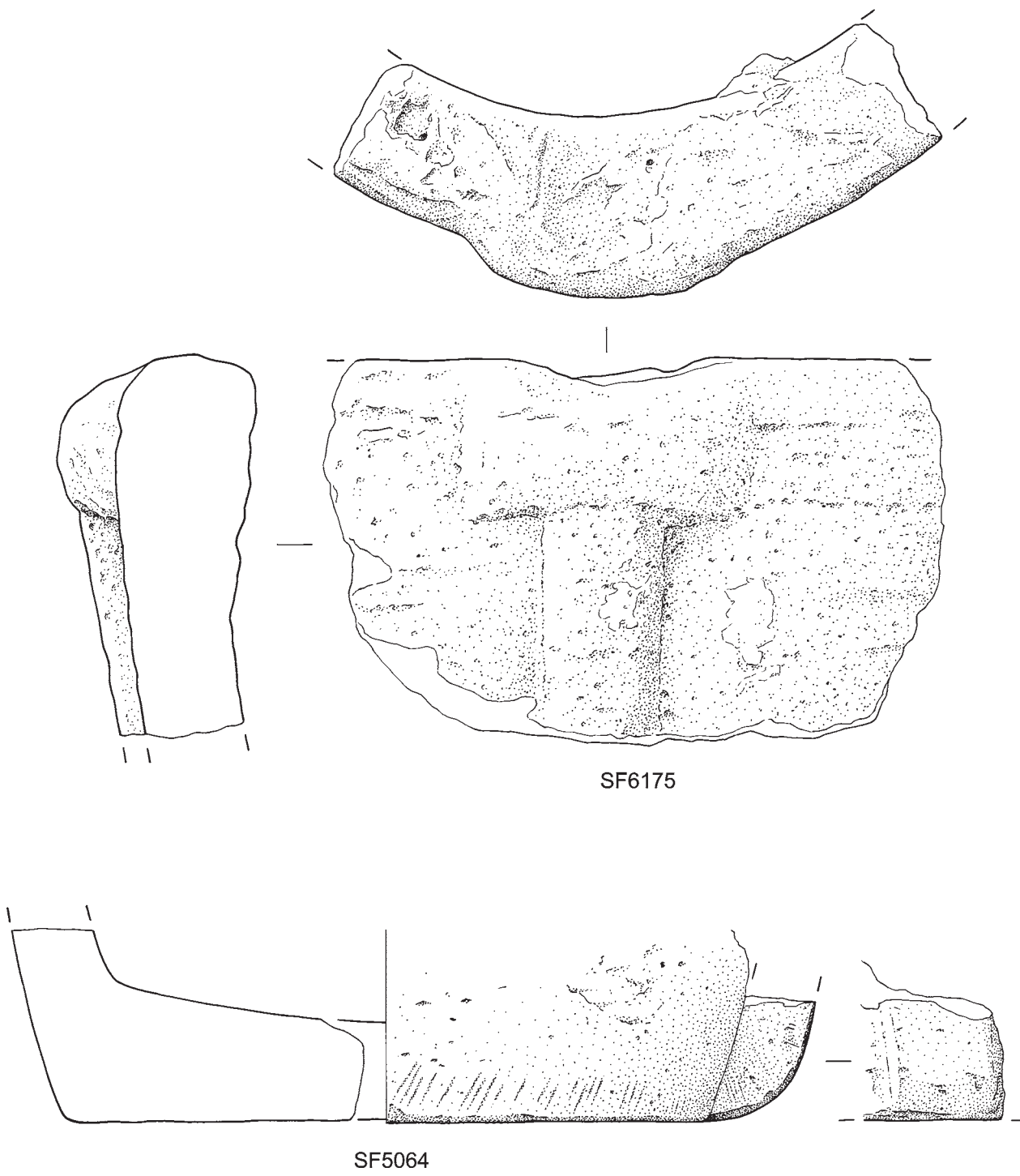


Figure 7.34 Stone mortars (SF6175 & 5064). Scale 1:2

that particular quarries are known to have been worked for architectural stone, the production of mortars being something of a sideline. None of the fragments from these excavations have any features which can date them. However, Dunning suggests that the main period of mortar production in Purbeck was in the 13th and 14th centuries and that two of the Lincolnshire limestone quarries (those of Great Weldon and Barnack) were in operation by c.1300 (Dunning 1977, 324 and 330).

In south-eastern England and East Anglia, the distribution of stone from the quarries of Lincolnshire and Dorset is widespread. These examples do not extend the

known distributions. The fact that both examples were reused as building stone highlights the shortage of local building stone. It is probable that both are 13th- or 14th-century in date, based on the stone types used.

SF5064 Mortar. Approximately one third of the base of a limestone mortar. The stone is a biosparrodite limestone, possibly from the Purbeck limestone group (see below). The mortar is well finished, and although worn the external tooling may have been vertically down the body but leaving a plain band around the base of the mortar. A fragment of a single square-sectioned rib remains. The complete vessel may have had one, two or three ribs, but certainly not four. Equally it may originally have had two ribs and two lugs, and comparable in form and finish with

the purbeck marble mortar from King's Lynn (Dunning 1977, fig. 147, 31). The internal surface is worn almost to a smooth polish. The fragment has been burnt after breakage, and traces of lime mortar suggest that its final use was as building stone.

The shell debris appears to be entirely bivalve in origin. The shells are tightly packed in a sparry calcite cement. There appears to be little variation in the type of shell which, if correct, might indicate a brackish water deposit where large numbers of the same species occur together, for example many of the limestones in the Purbeck Limestone Group. The fact that Purbeck limestones are known to have been used as mortars makes this suggestion all the more attractive. Ext. Diameter *c.* 205mm, wall thickness *c.* 25mm.

10164, fill of slot 10156, Period 7.1, G1/128

SF6175 Mortar. Approximately 20% of the rim of a large straight-sided limestone mortar. Probably Lincolnshire limestone (see below), comparing well with Dr Morton's description of Weldon stone (Dunning 1977, 330–1). A single rectangular lug with a shallow runnel survives below which there is a vertical rib, semi-circular in cross-section. There is differential wear internally with the greatest wear 60 to 70mm below the rim in the form of shallow grooves which indicates the grinding. Burning has caused red colouration of the stone and patches of limestone mortar on all surfaces suggest that the final use of the fragment was as building stone.

This is a very pretty ooliosparite, the latter being a rock where ooliths are the predominant element, mixed with complete and fragmentary remains of invertebrate animals. Gastropods are common and a number of species are represented. Larger shell fragments are assumed to be molluscan, probably bivalve. Crinoid stem fragments are present and there is at least one echinoid spine. The components are very poorly sorted. This type of fauna and sediment represents a marine environment, possibly from the Lincolnshire limestone. Ext. Diameter *c.* 300mm., Wall thickness 42mm (max.). 90421, fill of pit 90451, Period 6.2, G9/114

Whetstones

by J.M. Mills and David Moore

A single fragment of whetstone made from Norwegian ragstone was recovered from Period 4 deposits (SF6813, not illustrated), coming from a pit cutting into the earlier cemetery of St John's (pit 10563, Open Area 33, Period 4.2, G1/74, Property e/f). It is broken at one end and along the length of the stone to give a triangular cross-section. The smoothness of this longitudinal break suggests the stone continued to be used after it was broken.

Of the thirty-nine other whetstones from the site, at least some may also be medieval in origin (specifically some of the thirty-two examples from Periods 5–7 and those found unstratified). The large group found within late medieval fills of the barbican well is detailed in Chapter 9.III.

Querns

by David Buckley

A quern fragment (SF5130) was recovered from a pit (10545, Period 4.1, G1/100, Open Area 28, Property d).

Commercial Activity

by John Davies

Coins

A total of twenty-one medieval coins was recovered. As a group, these silver coins show a great deal of wear. Unfortunately half of this component comprises illegible and fragmentary silver pennies and halfpennies. The entire group has seen extensive circulatory wear. There are three pennies of Edward I (1272–1307), a groat and penny of Edward III (1327–77; see Chapter 9.III).

Of note amongst the group are two unstratified coins. One is an imitation sterling silver penny (SF6001) which may have been produced in the Netherlands in the 14th century. A ?silver 'Hollander' coin (SF6043) may be Dutch or Flemish in origin and is perhaps attributable to Louis I Nevers (1322–46) or Louis de Male (1346–84).

An additional coin of interest is a worn and incomplete billon 'mite' of Louis de Crecy, Count of Flanders, between 1322–46 (SF7032) found residually alongside a small group of other medieval coins in upper fills of the barbican well (Chapter 9).

SF5788 Edward I penny

AD 1279–1302

Obv: EDWR ANGL DNS HYB

Rev: CIVITAS CANTOR

(Canterbury mint)

Class X, North 1039

Wt: 1.05g

80112, fill of pit 80113, Period 4.2, G8/28

SF6001 (debased), imitation sterling silver penny, probably Netherlands

14th century

90000, unstratified

SF6043 'Hollander coin' 'silver?', probably Dutch or Flemish

?Louis I Nevers (1322–46) or ?Louis de Male (1346–84)

Obv: H in centre and trefoils legend. MONETA : GA...

Rev: LVD

90000, unstratified

SF6474 Edward I penny

AD 1302–7

Obv: EDWAR ANGL DNS HYB

Rev: CIVITAS LONDON

(London mint)

Class X

Wt: 1.23g

45019, fill of pit 45025, Period 4.2, G45/10

Jettons

Five English jettons dating to between 1280 and 1400 were recovered along with seven French examples of 14th- and 15th-century date. Most of the latter came from fills of the barbican well and are described further in Chapter 9.III. Of the English jettons, two were from fills of the well, two were unstratified and one was residual in a post-medieval pit.

Tokens

Tokens comprised a major component of the numismatic assemblage from the site. The earliest examples were three lead pieces of medieval date, all of geometric type (two unstratified SF6732 and SF6190, one from a late medieval pit, Period 5.1, SF5048).

Coin weight

A single medieval coin weight was recovered from fills of the barbican well and is described in Chapter 9.III.

Diversions

Musical Instruments

Bone ?reed-pipe

by Graeme Lawson

(Fig. 7.35)

A small perforated bone tube (SF5474) represents another musical bone pipe to add to those already reported from the city of Norwich and from sites elsewhere in Norfolk

(Clarke and Carter 1977, 314; Lawson 1982; 1984 a and b; 1993; 1995; Lawson and Margeson 1993 211–213; Megaw 1968, 149). It is of an unusual type, so far without exact archaeological parallel, but surviving details of the construction of its narrower end may suggest association with a small but growing range of other early English bone pipes which, formerly believed to be flutes, are now identifiable instead as *reed-pipes*.

Bone flutes and bone reed-pipes, although superficially similar, are voiced quite differently: while flutes employ a jet of air blown across a (usually D-shaped) sound-hole at the proximal end, reedpipes are sounded by means of the addition of a vibrating reed. The difference, musically, could hardly be more striking. Cut probably from the lower stems of the common reed, *Phragmites communis*, such components typically generate (in place of the flute's soft piping and shrill whistling tones) a lower-pitched, full-bodied, even raucous, note resembling (and indeed foreshadowing) that of the bagpipe, shawm and modern orchestral oboe and clarinet. Identification of such instruments in the archaeological record therefore expands considerably our appreciation of the characteristic sounds and vigour of medieval and earlier insular folk-musical traditions.

Two features of the Castle Mall instrument's narrower (mouth-piece) end suggest operation as a reed-pipe. The first, the absence of any evidence for a sound-hole in the frontal surface, could be due simply to breakage and loss; however, although the extremity has indeed been broken away it is doubtful whether in this particular bone such extension could have been sufficient to accommodate such a structure. More significant may be a pair of knife-cut facets revealed by closer examination of the surfaces adjacent to the fracture (Fig. 7.35, a and b). Their purpose is uncertain, yet they are clearly a deliberate modification; and while they do not feature in any of the bone flutes so far recovered, broadly comparable chamfering may be discerned in four other pipes, of deer metapodial, from sites elsewhere in Eastern England: two identifiable with certainty as reed-pipes from Ipswich (Lawson in prep.), another from West Cotton, Northamptonshire (Lawson forthcoming) and a fourth, incomplete but otherwise similar specimen from Thetford (Lawson 1995⁸). A pipe from Winchester, Hampshire, also of deer metapodial, may be related to these. (This find also was originally identified as a flute: Megaw 1990, 721, no. 2265.)

In the Ipswich find, which comprises two complete pipes forming a matching pair, chamfering is in both cases well-developed at one end and absent from the other. Although the instrument's orientation has still to be confirmed, the form of chamfering is consistent with adjustment to facilitate insertion of the pipes into a hollow terminal of some sort, perhaps of horn, as found in medieval wooden horn-pipes and bag-pipe chanters.⁹ Such a function would be equally practicable here too. Moreover, the coincidence of such an unusual choice of bone, albeit in this case metapodial of sheep rather than of deer, is noteworthy. Flutes, by contrast, are almost always of sheep/goat tibia or of swan, crane or goose Ulna.¹⁰

Close spacing of the finger-holes is suggestive of manufacture to suit small, delicate hands, possibly a child's; indeed, adult fingers would find such spacing difficult to cover effectively. Such spacing would of course have been necessitated by the shortness of the

bone selected (roughly speaking, shorter pipes require closer finger-hole placement in order to achieve similar musical intervals and scales), but selection could have been made deliberately so as to permit such placement.¹¹ It may also be significant, and it is certainly curious, that the natural septum inside the pipe has received none of the internal smoothing which might be expected in a proper musical instrument and which so clearly characterises all the larger deer metapodial pipes listed above. Nevertheless, wear around the two surviving finger-hole margins confirms that the instrument was indeed repeatedly used by someone in order to make music, and was not merely a trial piece or casual experiment. Accurate replication, now in preparation, should yield important acoustical data and may shed useful light on these questions.

This find came from the back-filling of the boundary ditch to St John's Cemetery. Associated finds suggest an early 14th-century date for deposition. The absence of exact musical parallels precludes close comparative dating; other English bone reed-pipes date from the Middle Saxon period to c. 1300.

SF5474 Pipe. Musical pipe, sheep metatarsus, almost complete, probably a small reed-pipe, possibly a child's toy. Surviving length 8.7cm. Narrower, distal end of bone probably represents proximal (mouth piece) end of instrument. Finger-holes are grouped towards broader, proximal end of bone; out of original total of possibly three holes, one is fully and one partly preserved; both are cut by hand using point of sharp knife. Drilled marker suggests another may have been intended at mid-point, but remained uncut. Unusual choice and small size of bone, and narrow spacing of holes, suggests adaptation to small hand, possibly child's. External surfaces are lightly worked smooth, by knife; internal surfaces unworked and septum unmodified. Areas around finger-holes are well polished through use. Distal end of instrument is fragmented; proximal (mouth-piece) end has suffered recent breakage and erosion but surviving details may indicate use as a reed pipe.
11268, fill of cemetery boundary ditch 10769, Period 4.2, G1/48

Bone tuning peg

by Julia Huddle

(Fig. 7.35)

A bone tuning peg recovered unstratified at Castle Mall (SF5832) is similar to those of Lawson's type A, whereby the string is attached to the peg through a perforation in the narrow end opposite the head (Lawson 1990, 713 fig. 201.00). Suitable instruments for this type of peg would have been harps, fiddles and lyres. Stratified examples of these tuning pegs are known elsewhere from medieval contexts. The earliest examples known come from late 12th-century contexts for example at Wallingstones, Hereford (Lawson 1978) and Ipswich (Riddler forthcoming a).

SF5832 Tuning peg. Incomplete bone tuning peg, broken at one end across a lateral perforation or slot. Shank circular in section expanding towards the head. The head is square in section with rounded-off corners. Some wear marks on the head from possible use of a tuning wrench.
10000b, unstratified

Gaming Piece

by Julia Huddle

(Fig. 7.35)

Part of a whale bone gaming piece was recovered from a medieval ditch which may have served as the ditch to

the Shirehouseyard. Such flat discoidal gaming pieces, customarily decorated on one face with compass drawn grooves and frequently with ring-and-dot ornament, are known elsewhere from 11th- to 13th-century contexts. At Castle Acre, for example (Margeson 1982, 253, fig.47, nos 48–52), London (Pritchard 1991, 205–7, nos 238–43) and Norwich (V. Williams 1987b, 104, fig.84, no. 29). The Norwich parallel is pierced and it is suggested

that this has been done subsequently, indicating conversion to a spindle whorl. MacGregor discusses the raw materials used for these pieces including antler, bone — including cetacean bone — and even ivory (1985, 135–137). Pritchard discusses the earliest two examples from London from late 11th- to early 13th-century deposits, providing support for the long-held view that they were a Norman introduction (1991, 205). The

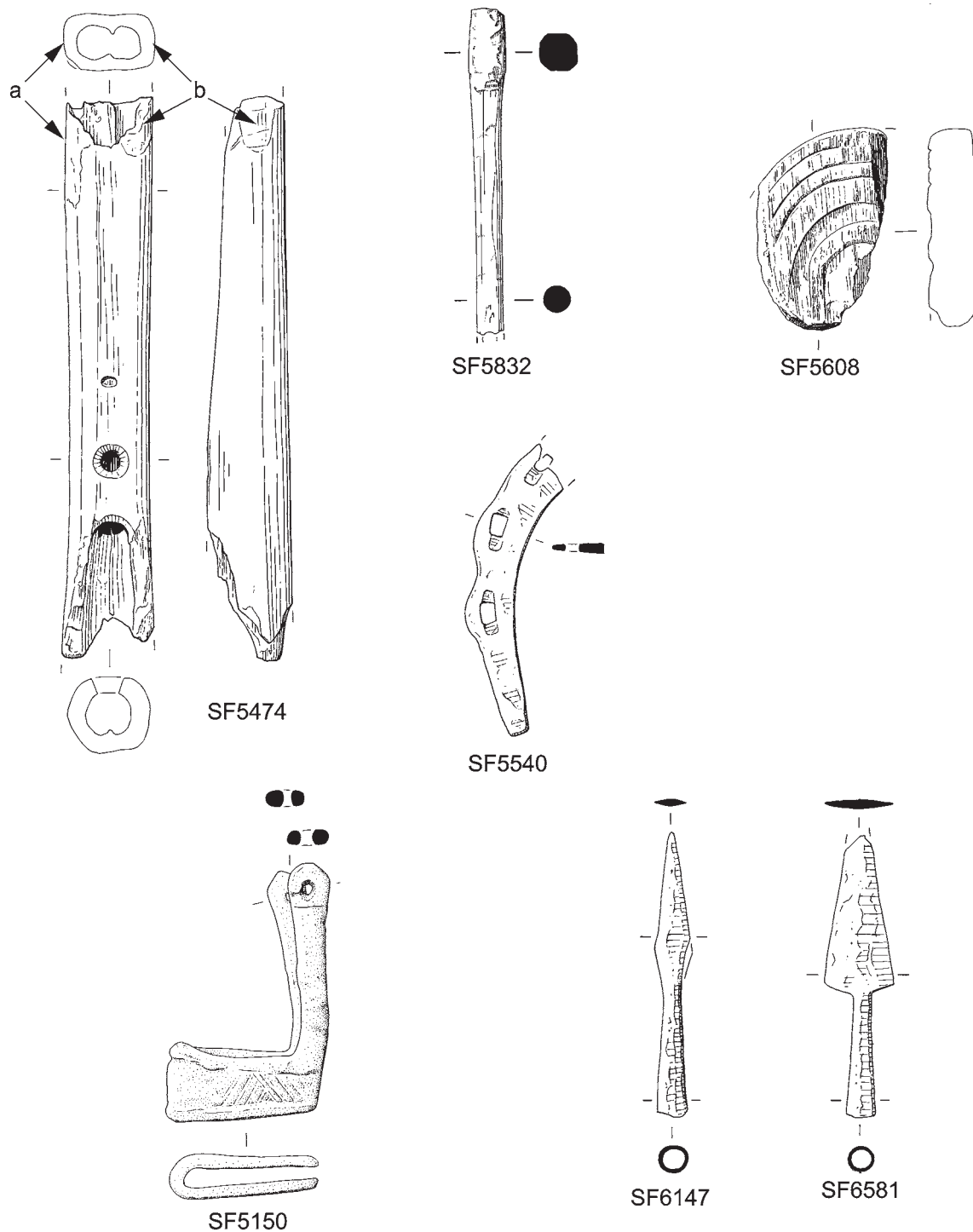


Figure 7.35 Bone reed-pipe (SF5474); bone tuning peg (SF5832); whale bone gaming piece (SF5608); iron horseshoe (SF5540); copper alloy dagger chape (SF5150); iron arrowheads (SF6147, 6292 & 6581). Scale 1:1; ironwork at 1:2

Castle Mall piece comes from a 13th- to 14th-century context.

SF5608 Incomplete bone **discoidal gaming piece or counter**, decorated on one face with five concentric grooves of varying width. Whale bone.
11557, fill of ditch 11375, Period 4.2, G1/21

Horse Equipment

by Quita Mould
(Fig.7.35)

Iron harness pendants and bits

A disc fitting (SF5233, not illustrated; G1/48, Period 4.2) similar to the disc-shaped spur fittings described in Chapter 9, came from a cemetery boundary ditch fill of 13th- to early 14th-century date. It is likely to be a pendant for horse harness as it is noticeably larger than the other hooked spur fittings recovered and no indication of a second hook is visible. It is comparable to undecorated examples of copper alloy found in London (Griffiths in Clark 1995, fig. 47, nos 57, 60), which have a suspension loop rather than a hook. The iron pendant, with its bright 'silver' appearance when new, is perhaps a less expensive version of the decorative copper alloy pendants and bells hung on the brow band, breast band and rear straps of horse harness from the late 12th through to the end of the 14th century (*ibid.* 62).

Mention should also be made here of the small swivel hooks found (see above) which were used on medieval curb bits, see for example two illustrated in the *London Museum Medieval Catalogue* (Ward Perkins 1940 fig. 18,1–2). A side link (SF6776) appears to be of pre-Conquest type and is described further in Chapter 4.III (Fig.4.106).

Iron spur buckles

Two small angular buckle frames (SF5119.02 and 5119.03, not illustrated) with integral plates were recovered from a modern feature and are likely to be spur buckles. They are comparable with a buckle associated with a spur and its other fittings from Swan Lane, London dated to 1250–1300 (Ellis in Clark 1995, 136–7, no 326 and fig.96).

SF5119.03 **Small buckle** with angular frame and integral plate with remains of leather present adhering to the rivet. Non-ferrous metal plating visible in radiograph but not verified during cleaning. Fragment of pin present. L: 20mm. Not illustrated.
10326, modern feature, Period 7, G1/161

Iron horseshoes and horseshoe nails

Fragments of three horseshoes were found in Period 4 deposits. The left branch of a shoe of Clark's type 2B (1995, 86) was found in the fill of a quarry pit. Insufficient remained to allow classification of the other examples, however the smooth edge on one (SF5560) suggested a type 3 (*ibid.* 86–8). Type 2 and type 3 horseshoes might both be expected at this period. Eleven fiddle-key horseshoe nails were recovered.

SF5540 **Horseshoe** left branch with wavy edge, narrow web and three rectangular nail holes within countersunk holes, type 2B. L: 91mm, web w: 17mm.
11360, fill of quarry pit 11385, Period 4.2, G1/35

Weapons and Armour

Copper alloy scabbard chape

by Alison Goodall
(Fig.7.35)

A decorative object (SF5150), which may have served as a scabbard chape or as a belt end, was attached by a rivet through the perforated terminals at the end of its arms. It is very similar to one from a medieval context at Wharram Percy (Goodall 1979, 112, fig. 57.79) and may also be compared with the object illustrated by Egan and Pritchard (1991, 126–9, fig.83.575). This latter object was initially identified as a strap end but, in view of the double thickness of leather enclosed within it, it may be better described as a chape (*ibid.* 129).

SF5150 **Scabbard chape**. L-shaped folded scabbard chape, with broad flat folded terminal and narrower half-round 'arms' at right angles. The end of the 'arms' have pierced circular terminals which have some iron staining, perhaps from rivets. The broader terminal is decorated on both sides of the fold with a sunken rectangular field; on one side this field bears a herringbone relief pattern.
10423, fill of pit 10424, Period 4.2, G1/110

Iron arrowheads

by Quita Mould
(Fig.7.35)

An arrowhead with a triangular-shaped head and straight shoulders (SF6581), from a 13–14th-century pit fill, is a commonly found type: Jessop type MP3 (Jessop 1996, 196 and fig.1). The blade width suggests that, in this case, it may have been used for hunting. An armour-piercing arrowhead was found intrusively in a Late Saxon deposit. It is long and slender (SF6147), appearing to be an armour-piercing arrowhead (Jessop type M8) of a type dating to the mid 13th to 15th centuries (Jessop 1996, 199).

SF6147 **Arrowhead** with lozenge-shaped head of lozenge-shaped section separated from the socket by narrow neck. L: 88mm, blade W: 11mm.
90812, fill of pit 90989, Period 1.3, G9/79

SF6581 **Arrowhead** with triangular head of lentoid section and straight shoulders. L: 87mm. Blade W: c.27mm.
45222, fill of pit 45196, Period 4.2, G45/1

IV. ZOOLOGICAL AND BOTANICAL EVIDENCE

Mammal and Bird Bone

by Umberto Albarella, Mark Beech and Jacqui Mulville
(Plates 7.18 and 7.19)

Assemblage Summary

A total assemblage of 533.5 mammal, bird and amphibian bones and teeth (NISP) was hand collected from medieval deposits at the Castle Mall site, with an additional 166 bones from Site Riddled Samples (SRS) and 51.5 from Bulk Samples (BS). A further 21 animal bones and teeth (NISP) were identified at the Golden Ball Street site. The range of taxa recorded at the Castle Mall site is indicated in Table 7.15. Full details of the mammal and avian bone assemblages from both sites are given in Part III.

<i>Taxa</i>	<i>Hand collected</i>	<i>SRS</i>	<i>BS</i>	<i>Total</i>
Cattle (<i>Bos taurus</i>)	170.5	20.5	8	199
Sheep/goat (<i>Ovis/Capra</i>)	133	45.5	15	193.5
<i>sheep (Ovis aries)</i>	(11)	(13)	(3)	(27)
Pig (<i>Sus domesticus</i>)	61.5	21	5	87.5
Equid (<i>Equus</i> sp.)	5.5	-	-	5.5
Dog (<i>Canis familiaris</i>)	10.5	7.5	-	18
Cat (<i>Felis catus</i>)	25.5*	14*	1.5	41
Red deer (<i>Cervus elaphus</i>)	+	+	-	+
Fallow deer (<i>Dama dama</i>)	1	-	-	1
Hare (<i>Lepus</i> sp.)	1.5	0.5	-	2
Rabbit (<i>Oryctolagus cuniculus</i>)	4.5	-	-	4.5
Lagomorph?	1	-	-	1
Rat (<i>Rattus</i> sp.)	1	1	-	2
House/wood mouse (<i>Apodemus/Mus</i>)	-	-	1	1
Domestic fowl (<i>Gallus gallus</i>)	83*	44	19	146
Goose (<i>Anser anser</i>)	18	10	1	29
Duck (<i>Anas</i> sp.)	3	1	1	5
Teal/Garganey (<i>Anas crecca/querquedula</i>)	1	-	-	1
Grey partridge (<i>Perdix perdix</i>)	1	-	-	1
Curlew (<i>Numenius arquata</i>)	-	1	-	1
Small corvid	12*	-	-	12
Total	533.5	166	51.5	751

Sheep/Goat also includes the specimens identified to species. Cases where only 'non-countable' bones were present are denoted by a '+'. Pig metapodii and ruminant half distal metapodii have been divided by two, while carnivore and lagomorph metapodii have been divided by four. Due to the difficulty in distinguishing between upper and lower incisors in equids and upper and lower canines in carnivores, all have been recorded and then divided by two. All totals which include material from partial skeletons are denoted by '*': this material is described in further detail in Table 7.16.

Table 7.15 Numbers of mammal, bird and amphibian bones and teeth in Period 4 by collection category (NISP)

Sheep/goat remains in Period 4 deposits are notable for a high number of cranial elements. This is interesting when considered in relation to the hind-limb bones which carry the best meat cuts. It is possible that, by this period, the castle ditches and pits were more commonly used for discarding primary butchery and industrial refuse. The sample, however, is not very large and the results must be treated with caution. This was the only period in which no neonatal bones were found. It is also interesting to note that the percentage of gnawing marks at Castle Mall decreases by Period 4, possibly indicating a change of strategy in the organisation of disposal practices.

The highest number of birds was found in Period 4 and after this period their frequency started to decline again. There is no evidence that taphonomic factors lead to a better preservation at this date or that the bird bones came from one or two specific deposits which

could be the consequence of specialised activities. It therefore appears that a slight, but genuine, increase in the economic importance of birds occurred during this period. Among the terrestrial birds, grey partridge bones were found. A partridge coracoid bore cut marks (Plate 7.18). This species was highly prized in medieval times (Simon 1944) and its bones are found in great abundance in some high status sites (Maltby 1982; Albarella and Davies 1996).

Pathologies such as exostoses and abnormal bone growth (Plate 7.19) were noted on some domestic fowl bones, but none were abundant and are therefore of little archaeological interest.

<i>Period</i>	<i>Area/Group</i>	<i>Context</i>	<i>Related feature</i>	<i>Collection method</i>	<i>Species</i>	<i>Notes</i>
4.1	8/16	80268	ditch 80301	hand	cat	4.5 bones
4.2	2/28	40416	ditch 40928	SRS sieve	cat	8 bones
4.2	8/28	80112	pit 80113	hand	dom. fowl	7 bones
4.2	45/1	45183	pit 45196	hand	dom. fowl	13 bones
4.2	45/1	45183	pit 45196	hand	small corvid	11 bones

The number of bones and teeth given are the number of countable specimens from each skeleton

Table 7.16 Summary of partial animal skeletons found within Period 4 deposits

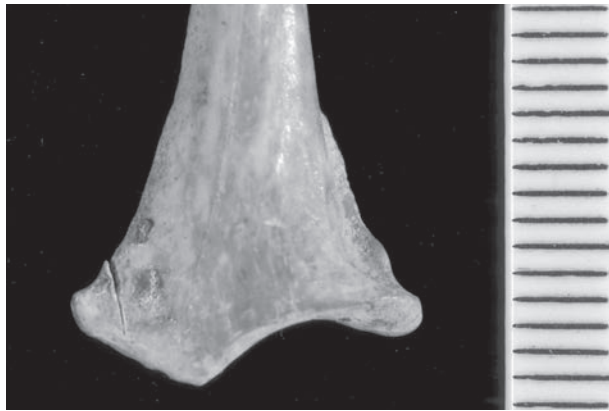


Plate 7.18 Grey partridge coracoid with cut marks



Plate 7.19 Domestic fowl tibiotarsus with large exostoses

Fish Bone

by Alison Locker

The fish assemblage came mostly from Period 4.2 (80%) but there was a higher proportion of hand collected bone from the earlier sub-period (Period 4.1). The assemblage was similar to the two preceding periods in sample size,

dominant species and their range, summarised below in Table 7.17. Herring is 50.4% of the Bulk Sieved sample by bone number (NISP), cod and large gadid 29.9%, whiting 5.8%, the small flatfishes 4.2%, eel 2.9% and haddock 1%. All other fish are less than 1%.

The fish from south bailey ditch were from both Periods 4.1 and 4.2 (see Part III, Table 95) with the larger

<i>Taxa</i>	<i>Hand collected</i>	<i>SRS</i>	<i>BS</i>	<i>Total</i>
Elasmobranch	0	1	9	10
Ray	0	0	11	11
Roker	0	5	13	18
Eel	0	0	33	33
Conger eel	0	1	0	1
Herring	0	3	563	566
Sprat	0	0	62	62
Salmonid	1	0	2	3
Smelt	0	0	3	3
Pike	0	1	0	1
Cyprinid	0	4	3	7
Cod	23	152	134	309
Large Gadid	11	41	201	253
Small Gadid	0	0	3	3
Haddock	0	8	4	12
Whiting	2	4	59	65
Saithe	0	1	1	2
Ling	0	2	4	6
Gurnard	0	0	1	1
Scad	0	0	1	1
Sea Bream indet.	0	0	1	1
Thin Lipped Grey Mullet	0	0	1	1
Mackerel	1	2	7	10
Plaice	0	2	5	7
Plaice/Flounder	0	5	20	25
Sole	0	0	4	4
Flatfish	2	5	5	12
Total	40	237	1,150	1,427

Only material identified to species and/or family level is indicated. Indeterminate fragments including fins and rays were not quantified, though all potentially identifiable material was recorded.

Table 7.17 Numbers of identified fish bones from Period 4 by collection category (see Part III, Tables 81–83)

sample from the earlier phase. Cod was equal by NISP in Period 4.1 and more numerous in Period 4.2, despite a higher proportion of bone recovered from bulk sieving in the later phase. Cod is also high in the medieval pits shown in Part III, Table 96 contributing towards the 'portion' percentage described below.

Quantifying herring and cod as a 'portion' of fish over the period their positions are reversed compared to the NISP (number of identified specimens) as in other periods. Herring is reduced to 21%, while cod rises to 68%. Other gadids are; whiting 6%, ling 3% and haddock 2%. By NISP, however, herring are nearly double the percentage of the combined gadids, over emphasising its contribution to the diet. Ling is a deep water species, found in the more northern parts of the North Sea and the few bones may be from preserved fish brought from a more northerly port. The skeletal elements of cod suggested both fresh and stored fish were present. A total length range of 60 to 120cms was indicated from 15 measured cod bones, while 12 were from fish between 80 and 105cms, adult but not exceptionally large fish.

The only other food fishes, in significant quantity, are the small flatfishes; primarily plaice and flounder and some sole. Their average size and weight could be compared with whiting as a quantity of food and by NISP percentage they score slightly lower than whiting giving some measure of their importance. The rays and other elasmobranch species remain a potentially important group of food fishes, though their poor survival precludes any comparison by quantification. The familiar occurrence of gurnard, scad, sea bream, mullet and mackerel (the latter scoring particularly poorly in this period) indicates a consistent, but low level of consumption of a range of species caught off the local coastline and also from seasonal fisheries for mackerel in May.

Eel was low, at 2.9% and true freshwater species were few. The continuing importance of marine fish both as a food source and in commerce is supported by documentary data for fish houses and shops being present in the city in the period 1285–1311 (Kelly *et al* 1983, 26).

Plant Macrofossils

by Peter Murphy

Very few samples from this period were selected for analysis, either on the basis of assemblage composition or the importance of the context. The main depositional units available for sampling were the fills of castle ditches and various pits (Table 7.18 on CD).

Fills of the South Bailey Ditch

This ditch was sectioned and sampled in Areas 1 and 8 (Ditch 10). From fills attributable to Period 4 (G1/34, 8/16 and 8/17), 28 bulk samples were collected. Flots were small, consisting mainly of charcoal and charred cereal grains with some charred *Pisum*-type seeds, cereal chaff, weed seeds and hazelnut shell, rare remains of ericaceous plants, and some mineral-replaced material. The three largest assemblages were extracted for analysis (BS897, 892 and 936; Table 7.18 on CD) in order to characterise the deposits as a whole. They differ from the remainder only in terms of assemblage size, and even these three assemblages are very small. The charred material is essentially uninterpretable, and could

have been derived from any activities involving crop or food processing in the vicinity. The presence of a few mineral-replaced seeds/fruits of food plants, fly puparia and phosphatic concretions probably points to some deposition of sewage in the feature.

Pit

Fills of a late 13th- to early 14th-century pit (pit 80113, fill 80200, G8/28, Period 4.2) lying above the south bailey rampart produced relatively large numbers of charred cereal grains, predominantly of barley (*Hordeum* sp) in an extremely poor state of preservation, with some barley chaff and a few weed seeds. It is impossible to comment on the functional significance of this charred material, for the assemblage is probably differentially preserved. However, mineral-replaced fig seeds (*Ficus carica*), fly puparia, phosphatic concretions and relatively common fish bones indicate that the feature was a latrine pit.

V. DISCUSSION

The Castle Before c.1345

(Figs 7.36–7.38)

With the advent of the 13th century, Norwich Castle saw its final developments as a medieval stronghold. Although the defences of the motte and its approach were improved and strengthened — notably the curtain wall and its towers around the donjon, new drum towers at the top of the castle bridge and the massively enlarged barbican earthworks — from this period onwards the defences became increasingly constricted within their urban setting. In their revised form the fortifications effectively consisted of the barbican and motte, enclosing a much-reduced area of c.9.7 acres (c.3.9ha). While the sloping ground of the Castle Meadow to the north-east appears to have remained substantially open, the south bailey and more particularly the surrounding Fee were the scene of piecemeal encroachment, a practice which was apparently well established by the early 13th century. With the completion of the city walls in 1344, the castle had become, in Campbell's words, a 'military white elephant' (1975, 12) and the following year saw the transfer of the baileys to the city.

New Ditchwork

Although there is no documentary evidence for alterations to Norwich castle's ditches at this time, it appears that they were probably improved during the first half of the 13th century (see also Chapter 12, 'The 13th-Century Castle'). Documented barbicans of the period include those at Bristol (1220), Lincoln (1224–5), Shrewsbury (1233–4), Dover (1243), Scarborough (1243), Windsor (1249–50) and Marlborough (1250–51) (Colvin 1963 I, 118). New ditchwork at Norwich was concomitant with the provision of stronger gatehouses at the summit of (and possibly on top of) the castle bridge. It was not until later the 1260s, however, that the timber palisade around the circumference of the motte was completely replaced with a curtain wall. With the addition of the barbican, the outer ditches were no longer required as protection

for the castle bridge and archaeological evidence demonstrates that they fell into disrepair.

The north-east bailey (Castle Meadow)

(Figs 7.4 and 7.6; Plates 7.2–7.4)

In the latter part of the 12th century or the beginning of the 13th, the ditch along the southern limit of the north-east bailey was recut in much narrower form (Ditch 9, Period 4.1, Fig. 7.4 and 7.6) along the northern part of the earlier ditch, presumably because the latter had become extensively infilled. The recut had an approximate depth of just over 5m and was 8m or more wide. Its apparently limited lifespan could indicate a connection with a reworking of the defences in association with one of the documented attacks on the castle (e.g. in the 1170s or 1216).

Overlying initial fills of the recut was a small area of occupation deposits, pitting and possible structures. It appears that the ditch had become sufficiently infilled to provide a fairly level surface. Structural elements may indicate the location of features such as animal pens, as well as a possible sunken-featured building. Pottery from these features and early fills spans the 12th to 13th centuries. The location of the pits and structures within the ditch suggests a lack of military significance and it is possible that the undated ditch recorded further north (at Site 416N; Ayers 1985) formed the outer limit of the Castle Meadow at this time.

Subsequently, the ditch recorded at Castle Mall was sealed by a thick sequence of chalky dumps and possible ground surfaces (Period 4.2). In general, this infilling is notable for the apparent rapidity with which it occurred. It may have functioned to level the previous hollow, prior to or contemporaneously with the excavation of the barbican ditch (Period 4.2) which cut through the infill sequence. Material generated during the cutting of the enlarged barbican earthwork could have been used to level up this earlier feature. Pottery recovered from the pits within the north-east bailey ditch and from the final infilling of the ditch itself, is of some interest. A number of fabrics and forms indicate a date in the 13th to 14th or mid to late 14th centuries, although this seems to provide an unacceptably late *tpq* for the construction of the barbican ditch and a date during the first half of the 13th century seems probable (see below). Other finds from Areas 4 and 9 indicate a degree of later contamination.

Further discussion of the possible inter-relationship between the barbican, north-east bailey and south bailey ditches is given in Chapter 12.

The barbican ditch and its rampart

(Figs 7.10–7.18 and 7.36–7.38; Plates 7.5–7.12)

‘Barbicans were extensively used in this period ... They could function to double the main gate with an outer obstacle, to guard against surprise, to narrow the approach, to force assailants to change direction during an attack, or to draw them under fire from the main works of the castle ...’ (King 1991, 121). During the 13th and 14th centuries, such castle barbicans and other outworks were used both to strengthen a castle gate and to provide a platform for the garrison. Examples include those at Sandal (Mayes and Butler 1983, 48 and fig.8), Oxford (Hassall 1976, fig.1), two at Dover (Allen Brown 1984, figs 51 and 52; Colvin 1963 II, fig.53) and the very large example at the Tower of London (Colvin 1963 II, figs

60 and 61). A strong barbican was also added around the east gate at Castle Acre (Coad and Streeten 1982, fig.3). Barbicans could take different forms but were often D-shaped masonry structures and/or ditchwork, effectively forming a ‘fortified island’ (Kenyon 1990, 80). Most were constructed externally to the other castle earthworks, although at Sandal (as at Norwich) a large part of the bailey was lost to the construction of an internal barbican lying between the outer bailey and the motte. Barbican construction represented an attempt to concentrate military strength on the motte and barbican, often at the detriment of the other defences (Kenyon 1990, 81). This appears to have been the case at Norwich where, during the 13th century the massive barbican ditch was excavated (Period 4.2) and the donjon and inner bailey were maintained as a fortress, while the outer baileys gradually fell into disrepair. There is no evidence to suggest that Norwich was provided with a masonry barbican.

The Norwich barbican (Ditch 13) appears from circumstantial evidence to have replaced an earlier, smaller ditch in the same position and it has long been suggested that the new ditchwork may have been in response to the capture of the castle in 1216 by Louis the Dauphin of France. Although major works are documented in 1215 (Chapter 7.I), the pottery from the final phase of the north-east bailey ditch, infilled prior to the cutting of the barbican, indicates that the barbican ditch itself was slightly later. Both the archaeological and historical evidence suggest that the ditch enlargement at Norwich probably took place in the period *c.* 1224 to *c.* 1250 (see Chapter 12, ‘The 13th-Century Castle’).

The existence of the ditch prior to the Castle Mall excavations was well known, as has been outlined in Chapter 7.I. Its staggering scale has now been confirmed. The new castle ditch would have been about 27m wide by more than 10m deep, making it larger than the 13th-century city ditch. The extreme width of the castle ditch had already been noted by antiquarians. In 1938, it was recorded as 100ft (30m) wide running ‘rather inside Harrod’s suggested position’ for the outer castle ditch (Whittingham 1949, 77). This is rather confusing as Harrod only showed the south and north-east bailey ditches (not the barbican), while the two published ditch observations plotted in 1938 (Carter *et al* 1974, fig.7; Fig. 12.5.F) relate to the south bailey and the barbican ditches. The dimensions noted by Whittingham indicate that he was referring either to the barbican or an early phase of the north-east bailey ditch. Disagreeing with Harrod over the presence of the barbican ditch, Beecheno noted the absence of ditchwork in Harrod’s observations made in 1856 to the south of the castle bridge (Beecheno MS 1908, 10; Harrod 1857, 129 fn). The reason that Harrod did not observe the massive ditch to the south of the exposed masonry (a collapsed castle gatehouse excavated at Castle Mall; see Chapter 6) remains surprising given that the trenches he observed (in some places to a depth of 13–14ft) continued nearly as far as Golden Ball Street.

Earlier plans of Norwich Castle’s defences hypothesised a narrow barbican, with little or no space between the associated rampart and the motte ditch (Fig. 12.5.E–G). The evidence from Castle Mall indicates that it was wider internally than previously supposed, with an internal area confined by the postulated rampart of approximately 2,705 square metres (two-thirds of an acre). Enclosed



Figure 7.36 Reconstruction of Norwich Castle during the 13th century, with the new barbican defences and the curtain wall with towers around the top of the motte. Alterations to the bridge included the addition of twin drum-towers at its top. Part of the Great Cockey stream, now partially culverted, may have been diverted in the late 13th century, although it is equally possible that this occurred later. The Shirehouse was constructed in the south bailey during this period, perhaps enclosed within its own ditch.

within it were the deep Norman well (which remained functional) and the gates associated with the two bridges, as well as a number of 13th- to 14th-century pits and the remnants of a possible post-built structure (Building 34).

The relative depths of different observations of the ditch across the Castle Mall site demonstrate how the new earthwork cut across natural contours at the end of the Ber Street spur. In order to maintain an average depth of between 8.50 and c.10m, the level at the base of the ditch varied by just over 7m along its recorded length. An indication of how steep the ground slope was on the eastern side of the castle can be gained from Buck's sketch, made just before the first Cattle Market alterations in 1738 (Plate 6.2). The archaeological evidence suggests that the ditch sides were angled differently in relation to the material through which they were cut. The eastern and western arms cut through more chalk than the part to the south (which cut through sand and gravel) and here the sides were steeper reflecting the stability of the chalk. The earth-moving, workforce and time required to construct the massive barbican defences remains uncertain, given the possible presence of the earlier ditch, although broad calculations are given in Chapter 12, 'Labour and Materials', amounting to c.15,238 man days (see caveats in Chapter 12).

The northwards return of the barbican ditch to the east of the castle may have been recorded inadvertently in a small excavation in 1973 (Site 150N; Carter *et al* 1974; Atkin 2002a), where it was interpreted as part of the south bailey ditch. If this were indeed part of the barbican ditch, it would imply that the feature was slightly wider here than elsewhere along its length (Figs 7.10 and 7.17).

Early fills of the barbican ditch recorded at Castle Mall demonstrate the effects of silting and erosion, although some refuse soon began to be included. Ceramic forms present suggest a depositional date of early to mid 14th-century (Lentowicz, Chapter 7.II). To the north-east, the part of the ditch recorded at Site 150N contained medieval domestic refuse, which it was suggested post-dated the events of 1345 (Green and Roberts 1974, 69; Atkin 2002a, 72). Ceramic dating for the features cut by the barbican ditch at Site 150N is 12th-century, implying that 'either the pottery dating is unduly conservative, and the construction of the castle before 1075 provides a *terminus ante quem* for these features; or, more probably, the excavation of this part of the Castle Ditch can now be seen to be a secondary element in the scheme, which was not carried out before the early 12th century' (Evans 2002, 72). The revised interpretation that this was the barbican ditch rather than part of the south bailey ditch removes any difficulty here.

Infilling of the barbican ditch appears to have been a continuous process with no indication of recutting or cleaning. This silting may have continued into the early post-medieval period, at which time the ditch would still have been about 5–6m deep. From the 15th to 16th centuries, refuse was being deposited alongside accumulated silting (Chapter 8). Most of the refuse fills of the ditch date to the 16th, 17th and 18th centuries, although rubbish could have continued to be dumped in restricted areas between 1738 and 1862 (Chapter 10). The final backfilling and landscaping occurred in association with the construction of the revised Cattle Market in 1862 (Chapter 11) raising the ground level to the east of the

barbican ditch and adding up to a metre of fill to the ditch itself.

Presumably, much of the spoil removed from the new ditch would have gone to construct the associated rampart along its northern edge which, surmounted by timberwork including a palisade and towers, would have formed a formidable defence. There was, however, no direct archaeological evidence for the presence of this bank (see Chapter 7.II, Period 4.2). Kirkpatrick described the remnants of the rampart as it appeared in the early 18th century, reporting a 'bank about the ditch [i.e. the motte ditch] on all sides, though not so high on any part as that ... on the south side'. To the east of the castle bridge he describes 'a bank of earth about twenty yards broad, and in length from east to west about [missing] yards, which they raised higher than the rest of the hill, that laid further southwards, and so steep on both sides and so narrow on the top, that no great number of men could possibly stand thereon to assault the castle.' (Kirkpatrick 1845, 243). The western part of the rampart had already been effectively levelled by Kirkpatrick's time and the surviving remnants of the eastern part of the bank were levelled in 1739 when 'a large outer ditch opposite to the bridge foot leading onto Castle Hill was filled up by cutting down a ridge of hill ranging along by the side of said ditch and the whole space of ground between the Golden Ball Lane and the bridge was completely levelled, which made a fine spot of ground' (*Norwich Mercury*). Kirkpatrick's observations would seem to imply that the massive bank lay immediately adjacent to the motte ditch, although the archaeological evidence suggests that it lay further south, on the inner side of the barbican ditch. A narrow bank and palisade may, however, have run along the inner (motte ditch) side of the new barbican, as is indicated in the period reconstruction (Fig.7.36). See notes on the possible existence of counterscarp ditches in Chapters 2 and 12.

New Masonry and Brick Structures

The stone bridge and gatehouses (Fig.7.36; Plate 6.2)

Although lying outside the area excavated at Castle Mall it is known that a new gatehouse with twin D-shaped towers flanking a gate passage was inserted at the top of the stone bridge, the bases of the towers surviving. The new structure was of the standard form of the period. Many 13th-century and later castles were provided with such twin-towered gatehouses, often with rounded towers. The transition to this rounded form, used in both gates and mural towers, appears to have occurred in the 1220s although recent work (for example at Chepstow; Avent 2002, 27–40) indicates that a late 12th century date is possible. The new form provided better defensive protection than its square or rectangular forerunners (Kenyon 1990, 63–65). Examples are numerous, including those at Castle Acre (Coad and Streeten 1982, figs 17–18), Montgomery (1224; Knight 1983, fig.1) and Nottingham (1251–55; Drage 1983, 120 and fig.4). At Lewes in Sussex, the replacement of an 11th-century gatehouse with a 14th-century barbican is amply demonstrated by the surviving juxtaposition of both gates (Allen Brown 1984, fig.62).

A stone gate may have been added to the top of the Norwich bridge at this time. Kirkpatrick described the

bridge as ‘enclosed with a high wall on each side and in the midst of it was a gate vaulted over and with a lofty and strong tower upon it’ (Kirkpatrick 1845, 241). Amongst the many later drawings of the bridge and integral gate (e.g. Plate 6.6.A) one, produced by Buck in 1738 (Plate 6.2), shows an internal arcade of pointed arches which may imply an origin in the 13th century.

The curtain wall (Fig.7.36)

The 13th-century curtain wall around the top of Norwich Castle mound is the earliest documented example of the use of brick in the city (Tillyard, Chapter 7.I and Lentowicz, Chapter 7.III). A number of archaeological trenches have now been dug around the perimeter of the mound, although no evidence for the wall and its towers has been recorded to date. The two relevant watching brief observations at Castle Mall (T22/47/51 and T36, Fig.1.4) recorded trenches to the west and east of the bridge, the westernmost of which revealed a mass burial of 17th-century prisoners (see Chapter 10).

Other relevant observations are fully reported in a separate volume (Wallis in prep.). Only modern material was recorded during remedial works to the western part of the motte’s perimeter wall and railings (Shelley 1995), while two trenches excavated in the eastern part of the mound provided evidence for banks and walls, but nothing that could clearly be connected with the 13th-century works (Penn 1999a).

The Decline of the South Bailey (Figs 7.36–7.38)

Documentary evidence suggests that refuse dumping into the south bailey ditch is likely to have occurred mainly from the mid to late 13th century onwards, a process which continued into the 14th century when the south bailey was granted to the borough. The decline of the south bailey’s defences during the 13th century is linked to the strengthening of the city defences, while the fact that deposits appear to have been tipped into the ditch from the south (*i.e.* from the city) reflects the use of the convenient ditch for refuse disposal.

Archaeological evidence attests to the deposition of rubbish, including organic matter, into the south-western part of the south bailey ditch during the early 13th century (in Area 8; Period 4.1). Fairly large amounts of fish bone were noted and animal bone included a partial cat skeleton, while plant macrofossils indicate the presence of sewage waste. Ceramics from many fills are homogeneous, cross-context joins and the freshness of the pottery suggesting that this was an undisturbed medieval assemblage. The few artefacts recovered include a copper alloy chain of probable early 13th-century manufacture (SF5916, Fig.7.25; Goodall, Chapter 7.III). After the deposition of these fills, this section of the ditch was full to a depth of 3m from the base. Subsequent fills of this part of the ditch attributable to the mid 13th to mid 14th centuries (Period 4.2) again comprised refuse, followed by thicker dumps which may indicate deliberate infilling. Deposits recorded further south (Area 1) again appear to indicate deliberate infilling at this time, with less evidence for the disposal of waste. At the Golden Ball Street site, fills indicate the presence of refuse including cess, with a possible recut or cleaning episode identified. The variability of the character of fills along the ditch

may relate to the physical constraints of access to the ditch, the western and eastern observations being closer to contemporary access routes. Objects recovered from these later fills are dominated by metalwork, including a belt clasp of 13th- to 15th-century date (SF6012, Fig.7.24, Goodall, Chapter 7.III) and a gilded mount from Golden Ball Street (GBS SF260, Fig.7.24; Goodall, Chapter 7.II). Pottery from these fills indicates a high degree of residuality. Contemporary forms include cooking pots, jars, bowls and other serving vessels, with an increase in the use of glazed wares (Lentowicz, Chapter 7.II; Lentowicz and Goffin, Chapter 7.III).

The Shirehouse

(Figs 7.2, 7.3 and 7.36–7.38)

One of the stated objectives of the Castle Mall excavation was to elucidate the location and plan of the medieval Shirehouse. In the event, no archaeological evidence for the location of the building was apparent although associated documentary and historical research (Chapter 7.I) confirms its likely position on a raised area of ground in the western half of the south bailey (*cf.* Campbell 1975, maps 2 and 3), where the building may have been placed due to lack of space on top of the motte. Little is known about the constructional details of early shirehouses. Norwich is the best attested example in the 13–14th centuries and was used for considerably more than the monthly courts. The physical character of administrative buildings associated with medieval castles is rarely identified archaeologically. The Oxford Shirehouse (also within the castle bailey) was a first floor building, supported on an arcade. A possible 13th-century court room building has been tentatively identified at Launceston Castle (Saunders 1977, 134 and fig.49). This stone hall-like building had possible provision for benches around its walls, giving some indication of the character of the building now lost at Norwich.

At this time, Norwich’s jurisdiction ended at a route circumnavigating the Castle Fee, with the exception of the area to the north of St John de Berstrete (Timberhill) church (Figs 7.2 and 7.3). The northern properties here (Castle Fee Properties 48–51, Fig.7.3), which included two within the parish of St Martin-in-Balliva, were described as within the Castle Fee. Their northern abutments are given as either the Shirehouseyard or the ditch of the Shirehouseyard (see Tillyard, Chapter 7.I and Figs 7.2 and 7.3). The ‘mound’ upon which the Shirehouse lay could either indicate the presence of an actual hill (*i.e.* lying in excavation Areas 2, 4 and 6) or that the building lay above the remnants of the south bailey rampart. There is, however, no excavated evidence to suggest the presence of a masonry building in either location. Two flint walls were recorded above the western arm of the south bailey rampart (described in Period 5.2, Chapter 8.II), although these appear to have been garden terrace walls rather than in any way connected with the Shirehouse, all evidence for which was probably lost during later levelling episodes. Early maps show the building lying at the inner edge of the ‘castle ditch’ taking no account of a rampart.¹²

A ditch recorded at the Castle Mall site ran along the inner side of the south bailey rampart (Ditch 14, Period 4.2). This may have been linear quarrying, or perhaps the ‘ditch to the Shirehouseyard’ which was documented from 1287. A *terminus ante quem* for the date of the exca-

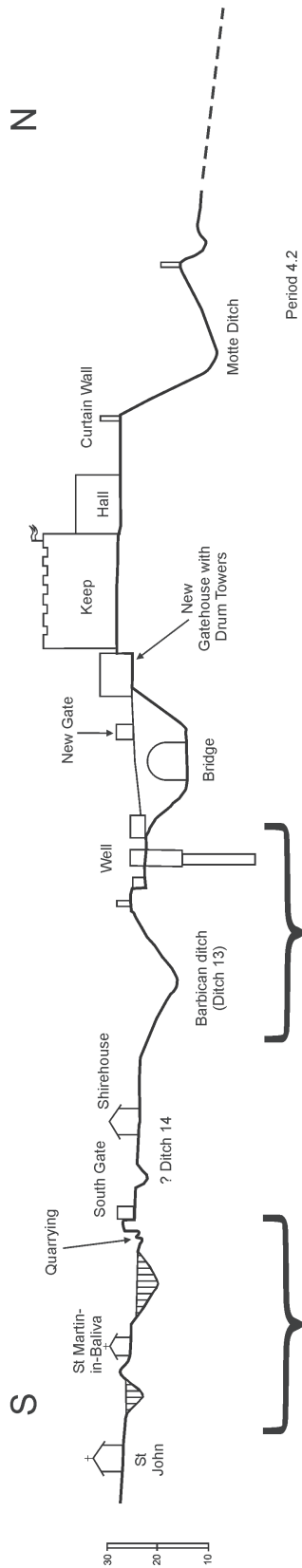
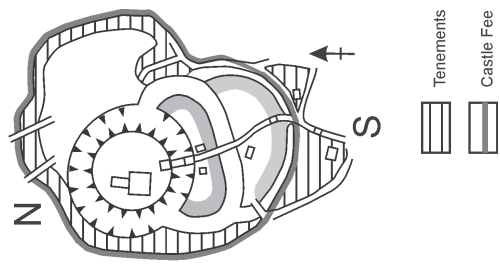


Figure 7.38 Period 4.2: Schematic section north-to-south across the south bailey and barbican defences. Not to scale

vated ditch is provided by a 15th-century pit cutting into its fills. The reconstruction (Fig.7.36) shows the effect of the ditch in relation to the Shirehouse, being illustrated as a small horseshoe-shaped enclosure. It is also possible that the documented ditch was actually the remnants of the south bailey ditch: ‘the ditch of the Shirehouse’ at Norwich is mentioned in many deeds, but whether the Shirehouse simply gave its name to the ditch of the horseshoe enclosure, or whether it was protected by a specially constructed one, seems doubtful’ (Beecheno MS 1908, 19). Such works did occur, however, and ‘at Ipswich a large 11th century ditch and 13th century rampart have been located, significantly, at Shire Hall yard’ (Drage 1987, 125).

At Norwich the position of this mysterious ditch might suggest an association with the tank in front of a public house (?The Jolly Farmer’s) in 1834 adjacent to the hay weighing machine, although the nature of the archaeological evidence suggests that the feature was not this late (see Chapter 11). It also lies in the vicinity of the anticipated position of the Site 60N trench (Fig.2.2), but clearly included *in situ* archaeological remains.

The Castle Fee Boundary, Administration and Status (Figs 7.1, 7.2, 12.7 and 12.9; Plate 12.1)

Elucidation of the position and nature of the Castle Fee boundary was a stated research aim at the project’s outset and one which the Castle Mall and Golden Ball Street excavations have done much to address. It now appears, with evidence drawn from both the documentary and archaeological record, that the initial Castle Fee at Norwich may have been larger than previously supposed and was initially demarcated by ditchwork. The bulk of infilling of the Norman ?Fee ditch appears to have taken place in the late 12th to 13th centuries (Period 4.1) when it was deliberately infilled rather than being used as a convenient rubbish tip. By the end of the 13th century, the ditch had virtually disappeared and some of the later metalworking activity in the area (including bell-founding) lay directly above it.

At some point during the 13th century, circumstantial evidence suggests that the limit of the Fee moved slightly northwards (Figs 7.37 and 12.7), apparently transferred for part of its course to the line of the south bailey ditch (see below). From the latter part of the 13th century until the 1340s, the boundary may have begun to be demarcated by a series of posts or a palisade bearing boundary plaques (Green 1965; Fig.12.9; Plate 12.1). The marking of boundaries in this manner is known elsewhere. At Bury, four crosses defined the limits of the liberty of St Edmund (Heslop 1992, 309). Dunstan’s charter (a probable mid 12th-century or later forgery) refers to the precinct of the church of St Margaret’s Westminster, which is ‘marked out by crosses, ditches and other marks’. Heslop suggests that the gold crosses depicted at the charter’s edges represent boundary markers. These ideas are developed further in subsequent chapters and in more detail in a separate article (Shepherd Popescu *et al*, 2004).

The process of physical contraction of the Norwich Fee (although it remained an administrative entity) may have continued after 1345, when stone posts set around the base of the motte may have been used as yet another demarcation device (see Chapter 8 and Fig.12.7).

While it might be optimistic to expect the archaeological record to reveal a great deal about the administrative

detail of the castle in the 13th and 14th centuries, there is a limited amount of associated artefactual evidence. Two shield-shaped horse harness pendants, both found in Norfolk, are probably of a type relating to Edmund de Hengrave, Sheriff of Norfolk and Suffolk and Keeper of Norwich Castle in 1320–21 (Ashley 2002, 57–58, fig.6.82 and fig.8.111). Another armorial horse furniture mount (an engrailed stud) was found within mid 15th- to early 16th-century fills of the barbican well (SF7042, Fig.9.43; Chapter 9.III; Ashley 2002, 12).

Access

(Figs 7.1, 7.36 and 7.37)

With the contraction of the strengthened defences, the focus of the southern entrance to the castle became even more pronounced. Nevill’s late 16th-century description of the barbican ditch as a semi-circular hornwork has already been noted (Chapter 7.I), although the date at which ‘causeways’ were inserted at either side of the earthwork remains unclear. The routes may, as was the case with the south bailey and Fee ditch terminals, have been existence from the outset, although in defensive terms it would appear more likely that they were created later. The position of such causeways is implied in Cleer’s map (1696; Plate 10.1), although the barbican ditch itself is not evident. They were similarly depicted by Harrod (1857) and Campbell (1975; see Fig.12.5.G). No definitive evidence for such causeways was recorded at Castle Mall, as the relevant areas lay outside the development area (see further comments in Chapter 12). A slight indication of rise in level at the western end of the barbican ditch, where it approached the motte ditch beneath the modern road of Castle Meadow, may indicate the presence of a causeway here although the evidence was inconclusive (see Period 4.2, Chapter 7.II).

As the outer baileys fell from defensive significance, paths and lanes began to develop, two of which led towards the Shirehouse. At least one and possibly two routes led into the northern part of the Castle Meadow, part of which may have been loosely metalled with flint cobbles in the later 13th century (Ayers 1985, 21). Adjacent to Gropecuntlane (now Opie Street; documented from the early 14th century), another north-to-south route (the northern part of which was known as Berningham’s Stile) may have been established adjacent to the motte and barbican, running from Cutlerrowe (London Street) to what was later Cattle Market Street. This route, however, may only have been established after the release of the bailey to the city in 1345. Lying in the suggested position of a crossing point of this routeway across the north-east bailey was a fragment of possible medieval wall which may indicate the position of a bridge pier or gatehouse to the east of the barbican, although the identification and dating are tenuous.

Bailey Usage

(Figs 7.4, 7.10 and 7.36)

Buildings and raw materials

Evidence for buildings on the site at this period is extremely limited, reflecting the use of the baileys for other purposes. This period provides the initial evidence for the use of medieval brick and roof tile, although only a single fragment of medieval floor tile was recovered (Lentowicz, Chapter 7.III). Building rubble was evident

<i>Period</i>	<i>Indeterminate</i>	<i>Latrine</i>	<i>Industrial</i>	<i>Quarry</i>	<i>Refuse</i>	<i>Storage</i>	<i>Fire</i>	<i>Well</i>	<i>Total</i>
4.1	24	2	0	0	6	0	0	0	32
4.2	34	0	0	2	6	0	0	0	42
Total	58	2	0	2	12	0	0	0	74

Table 7.19 Period 4 pit types

in some of the pits dug within the barbican (including limestone, unworked and knapped flint, chalk, brick and gravel). This may have been residue from adjacent works to the castle bridge. Finds from the barbican well included fragments of medieval painted wall plaster (Kirkham, Chapter 9.III). There is limited evidence from the rest of the site for the use of structural ironwork, locks and keys (Mould, Chapter 7.III). Medieval window glass comprised examples produced by the broad glass or muff method, while lead came included examples of compound sections soldered together (King, Chapter 7.III).

Pitting

A total of seventy-four pits of late 12th- to c.mid 14th-century date was recorded at the Castle Mall site (Table 7.19), with a further six recorded at Golden Ball Street. Of the Castle Mall examples four lay within the confines of the north-east bailey ditch, the presence of these and possible structures within the ditch suggesting that it no longer served a defensive function (Period 4.1). A further sixteen pits were recorded within the courtyard at the foot of the castle bridge. A few isolated pits lay within the south bailey, including some which may have served as quarries (Period 4.2). Encroachment also began into the cemetery of St John de Berstrete, with eight pits recorded in the western part of the graveyard, cutting through burials (these pits are described further under 'The City' below).

None of the recorded pits of this date were lined, which is in contrast to all other periods.

The pits recorded cutting into fills of the north-east bailey ditch were, in some cases, used for the disposal of sewage waste, ceramic forms dating them to the late 12th to 14th century (Period 4.1). The date range, however, should probably be tightened to the late 12th to early/mid 13th century, given the comments relating to the dating of the barbican made above. Why the pits were dug, rather than waste being deposited into the base of the ditch, remains unclear (although a similar phenomenon was noted to the west of the site during the Late Saxon period; see Chapter 4). The pits within the north-east bailey ditch were sealed by thick dumps, prior to or perhaps contemporary with the excavation of the barbican ditch (Period 4.2). It is uncertain whether these represent city encroachment into the castle ditches, although this may well have been the case. Similar encroachments into the south bailey were clearly taking place at this time (see below).

In the western part of the courtyard pre-dating the barbican (Period 4.1), the area to the south of the well was re-surfaced and a series of large posts inserted, the fill of one of which contained a gilded dress buckle of late 13th- to mid 14th-century type (SF1117, Fig.7.24; Goodall, Chapter 7.III). A group of pits lay within the eastern part of the barbican courtyard, possibly associated

with a post-built structure (Period 4.2). One produced a relatively large quantity of pottery including 14th-century forms (pit 45196, Plate 7.14; Lentowicz, Chapter 7.II) and other refuse including two partial bird skeletons. Other finds from the pits included a silver long cross penny of Edward I, dated 1302–07 (Davies, Chapter 7.III).

The City

The Great Cockey

(Figs 7.1–7.2, 7.36 and 7.37)

The date at which part of the Great Cockey stream, in the parish of St Peter Mancroft, was diverted eastwards just to the west of the castle remains equivocal (the diversion was first demonstrated by Beecheno in 1908). It is notable that a number of properties developing to the west of the castle appear to have jumped over the original course of the stream. This possibility is evident in the documentary record. In 1285, for example, a property just to the south of Sadelgate was sold with permission for buildings both on the land and above the stream (see Tillyard, Chapter 7.I). The reconstruction offered in Fig.7.36 indicates this culverted stretch, showing the possible diversion of the stream by the late 13th century. The watercourse may, however, have continued to run on its original course (*i.e.* Harrod's 1857 line which is now archaeologically 'proven' at Sites 201 and 758N; see Chapters 2 and 3), gradually being built over in the late 13th century. Harrod suggested that a change of name to Cockey Lane by the time of Henry V (1413–22) indicated that the stream had been completely arched over by this date. The diversion eastwards in the vicinity of what is now the Royal Arcade (north of Sadelgate/White Lion Street) may not have occurred until the 15th century when part of the stream was 'built anew' (see Chapter 8). References to 'the Common or King's Ditch called the Cockey' may have implications for the displacement of the stream in relation to the castle ditches in this area (see Chapter 12). Further comments on the possible date of the diversion of the stream are given in subsequent chapters.

Development of Properties and Street Pattern

(Figs 7.1–7.3, 7.36–7.38)

Figure 7.3 demonstrates a schematic outline of the development of plots and tenements in the area between Durnedale/Berstrete (Timberhill) and the castle approach road (Golden Ball Street) during the late 13th and mid 14th centuries, expanding on Beecheno's plan (MS 1908, map J) which deals generally with the later medieval and post-medieval periods. Although Tillyard's new analysis does much to elucidate the development of the area, the lack of measurements unfortunately hampers accuracy in relation to the excavated remains. There are, however, suggestive pieces of evidence that link the documentary

and archaeological record (see below and Chapters 8–11). The northern boundary of St John's cemetery must have begun to move southwards during this period, as attested both by documented encroachments into the burial ground (beginning at its western end in the late 13th century) and by the presence of late 13th- to mid 14th-century pits in the same area. The evidence, however, conflicts with the presence of a small number of late burials, which were apparently made in the early 14th century; an anomaly which remains unexplained.

Of note amongst the documentary evidence presented in Chapter 7.1 is the reference to a lane reflecting the parish boundary between St Martin and St John's on the eastern side of the castle approach (now Golden Ball Street). This lane may have run along the outer side of the Castle Fee ditch (Ditch 3), until such time as the ditch fell out of use and the route was abandoned (before 1289), perhaps in favour of the route closer to St Martin's church which ran across the postulated line of the former ditch (see Fig.7.37). A notable reference to ground near St Martin's, probably to the south of the church, is to 'soft land' which may indicate the presence of the ditch. Also of note is the presence of a building apparently within a bailey outside (*i.e.* to the south) of the castle gate, supporting the argument postulated on the basis of the archaeological evidence in Chapter 6.

The documented northern line of the cemetery probably reflects the position of the boundary ditch to the west (Ditch 2) and the remnants of the early Fee boundary marker (Ditch 3) to the east. The city plots indicated on Fig.7.3 sub-divide at a point midway between the two flanking roads which may reflect the position of the postulated northwards return of Ditch 3. This line, along with the curving northern boundary of the cemetery, was reflected in the position of late medieval, post-medieval and modern walls (an issue explored further in subsequent chapters).

Six main property strips (some of them sub-divided) developed along the western road frontage (Durnedale/Timberhill) from the late 13th century, many of them narrow, curving back to join plots along the forerunner of Golden Ball Street. It is evident that shops and houses were present on the road frontage by the early 14th century. Properties along the Golden Ball Street frontage appear somewhat less developed at this period, although there are references to ownership by apothecaries and spicers. An evocative piece of evidence comes from the important 13th-century lead seal matrix recovered from the Golden Ball Street site (see below), although it has not proved possible to link it to the documentary record which only begins in earnest in the latter part of that century.

The two westernmost properties in the block (Fig. 7.3, Plots 50, 51/a and b) appear to have spanned the line of the Castle Fee boundary. It is possible that the line of the Fee may at this time have been formed, at least in part, by the line of the south bailey ditch. The ditch was apparently open and in use as a refuse tip during the period in question. If this was the case it would imply a contraction of the initial, Norman Fee boundary (*c.*1067–1094), which may have effectively begun with the recutting of the early ditch to form a hornwork around the south gate (*c.*1094–1121). Such an interpretation brings into question the documented 'ditch to the Shirehouseyard', which may either be a reference to the re-use of the south bailey

ditch as such or may confirm that the function of the small ditch excavated further north (see above). If the medieval Fee boundary did indeed equate with the line of the south bailey ditch then Properties 48–51 indicated in Fig.7.3 would all have lain above the associated rampart.

The western end of the block was formed by the Way to the County Court/Shirehouseyard, which was later to become Orford Street. Of note here is the parallel position of a more southerly route which may have formed a postern entrance into the earlier castle (Chapter 6), although it appears that this route was blocked by this period. No wells that could be attributed to this period were identified, although amongst the documentary evidence is a well-maker present before 1367 (Property 33, see Part IV). A number of wells, some of them shared, were present by the late 14th century (see Chapter 8 and Part IV).

Activities within Castle Fee properties

Both the Castle Mall and Golden Ball Street excavations demonstrate the presence of pitting during this period, although it appears to have been broadly confined to the south of the south bailey ditch and rampart. No features attributable to the late 12th to mid 14th centuries were found in the eastern half of the south bailey (Castle Fee Properties 38–46, Fig.7.3), although this area had been heavily disturbed by quarrying during the late medieval period.

To the west of the castle approach, a few pits were found within some of the five documented plots lying within the Castle Fee (Properties 47–51, Fig. 7.3). An isolated cess pit, which may have seen secondary use as a fire pit, lay close to the former road through the south bailey rampart and would have lain either within Castle Fee Plot 50 or 51 (Open Area 30, Fig.7.3 and Plate 7.15), adjacent to the property owned by 'Meyr' the Jew until 1285–6 (Chapter 7.1). Finds included the partial skeleton of a domestic fowl, a glass urinal and an Edward I silver penny of 1279–1302.

Further to the east, pits, posts and possible quarries were cut into the northern side of the south bailey ditch, perhaps quarrying the rampart (Open Area 31). Ceramics recovered from them suggest that this activity was carried out in the 13–14th centuries. The pits would have lain in Castle Fee Properties 49 or 50 (Fig.7.3), which documentary evidence indicates may have been substantially undeveloped land (Chapter 7.1). These few pits are forerunners of the explosion of quarrying activity which was to follow the 1345 release of the baileys, although most of this activity was concentrated to the east of the castle approach (see Chapter 8).

Pitting within city plots and encroachment into the cemetery of St John's

As noted above, documentary evidence indicates the presence of a number of late 13th- to mid 14th-century properties along the sloping frontage of Durnedale/Timberill and the lane to the east (later Golden Ball Street) (Tillyard, Chapter 7.1), the presence of which is attested archaeologically. Although no evidence for structures was found, a number of pit groupings demonstrate activity at this time. The first comprises a small group of features (Open Area 28, Period 4.1) which relate broadly to the eastern part of City Property (d) (Fig. 7.3). These pits lay to the south-west of the earlier junction of the south bailey

and ?Fee ditches and contained ceramic types spanning the 12–14th centuries (Period 4.1). Slightly later pits were found in the western, street frontage end of what may have been the same plot (Open Area 32, Period 4.2). These had been used for refuse disposal and contained small assemblages of medieval artefacts including a decorative scabbard chape or belt end (SF5150, Fig.7.35; Goodall, Chapter 7.III). One pit provided a good 13th- to 14th-century ceramic assemblage.

By 1294, a cottage in the western part of the cemetery of St John de Berstrete was already occupied by a glover (de Castra), who transferred it to another (de Newbrid) (Tillyard, Chapter 7.I; Fig.7.3). Adjacent to this tenement to the north-west was a small triangular block owned by the Drawswords (from the 1270s to 1290s). Along the southern edge of the cemetery boundary ditch, just cutting into it, were eight pits which may have lain within City Property e or f (Open Area 33). Finds suggest the disposal of domestic refuse during the 13th to 14th centuries. Some pits cut into graves and contained human bone, including one with the upper part of a torso reburied within it. The generally domestic artefactual assemblage included a copper alloy repoussé quatrefoil belt mount (SF5229, Fig.7.24; Goodall, Chapter 7.III).

The excavated boundary ditch of St John's cemetery (Ditch 2) appears to have run along the northern side of City Property e, its course soon being reflected in the line of a documented footpath. The western section of the ditch, which had remained open, was infilled with considerable quantities of domestic waste in the early 14th century (see below) having apparently been maintained in a relatively clean state during the 13th century. A notable assemblage of artefacts was recovered (Chapter 4.II, Table 7.4), significant items including a residual 10th-century coin of Aethelstan (Davies, Chapter 4.III) and a child's bone reed-pipe (SF5474, Fig.7.35; Lawson, Chapter 7.III). The line of the cemetery ditch continued to exert an influence on the local topography for a considerable time and is reflected in the line of late medieval and post-medieval walls (Chapters 8 and 10), the path ultimately being mirrored in the course of an alley known as Grout's Thoroughfare (Chapter 11).

Pitting of 13–14th-century date was also recorded at the Golden Ball Street site (Open Area 34), probably relating broadly to the southern part of City Property g, ownership of which during the period 1220–1337 is indicated on Fig.7.3. These pits had probably been cut through the rampart along the northern side of the ?Fee ditch.

Craft Activities and Daily Life

It is with this period that a wealth of documentary evidence for the Castle Fee area becomes available, particularly in relation to crafts and trades concentrated in the vicinity of the castle (Chapter 7.I). In archaeological terms, however, the evidence is relatively limited until the late medieval period. Despite the fact that metalworkers and linked trades are well-attested around the perimeter of the Fee, the site yielded only limited evidence for small-scale ferrous and non-ferrous metalworking at this period, including three crucibles (Shepherd Popescu *et al*, Chapter 7.II; Table 13.21). A few whetstones were found and there was also limited evidence for antler- and hornworking. Commercial activity is attested by a group of medieval coins, jettons and tokens and a single

French coin weight. The coins include two interesting 14th-century examples from the Netherlands/Flanders (Davies, Chapter 7.III).

The quantity of artefacts recovered from this period contrasts dramatically with the subsequent one: just over 200 Small Finds came from Period 4, while nearly 6,000 came from Period 5. Of note amongst the Period 4 artefactual assemblage is an enigmatic handle in the form of a perched bird of prey, the function of which remains obscure (SF5775, Fig.7.32 and Plate 7.16; Huddle, Chapter 7.III). Another significant object is a 13th-century lead seal matrix from the Golden Ball Street site, one of a rare class attributable to a wife, in this instance Margaret wife of Tom (GBS SF1, Fig.7.25; Ashley, Chapter 7.III). Generally, the range of dress accessories and personal possessions recovered from the site at this period is relatively limited (including brooches, belt fittings, strap ends, buckles, chains, part of what may have been a felt hat and gilded mounts). The group is supplemented by residual finds from late medieval fills of the barbican well (Chapter 9.III), which included a number of earlier objects including dress accessories and personal possessions such as a mirror case (SF6932, Fig.9.13; Goodall, Chapter 9.III) from the 12th to 13th century.

Pottery recovered from Period 4 deposits was generally of a domestic character, dominated by locally produced kitchen wares, with only small quantities of Continental imports (Lentowicz, Chapter 7.II; Goffin, Chapter 7.III). A number of pits within the barbican contained useful ceramic groups (noted above). Almost 9kg of pottery came from the cemetery boundary ditch, providing a good early 14th-century domestic assemblage of both coarse and fine wares. Forms here include cooking pots, jugs, jars, bowls, a curfew, a pipkin or cauldron and a spiked lamp. One pit on the Durnedale/Timberhill frontage contained a notable number of bowls, as well as one of the crucibles.

Diversions of the period are represented by a few objects. The reed pipe (noted above) is of some interest and is currently unparalleled. Lawson has outlined its potential usage in the context of medieval and earlier folk music traditions (Chapter 7.III). A bone tuning peg may have been used on instruments such as harps, fiddles or lyres (SF5832, Fig.7.35; Huddle, Chapter 7.III). A whale bone gaming piece was also found (SF5608, Fig.7.35; Huddle, Chapter 7.III). Finds relating to horses, hunting and fighting include horse harness, a dagger chape and a single arrowhead (Fig.7.35; Goodall and Mould, Chapter 7.III, *passim*). Contemporary items recovered from the barbican well include a sword pommel, arrowheads and spurs (Chapter 9.III, *passim*).

Artefacts relating to food include a single fish hook (of medieval or post-medieval date), two stone mortars and a single quern (Chapter 7.III). Plant macrofossils include waste from crop/food processing as well as sewage (Murphy, Chapter 7.IV). Considerable quantities of animal and fish bone (over 12kg) were recovered from early 14th-century fills of the boundary ditch of St John's cemetery, although the plant macrofossils from the ditch proved uninterpretable. In general, the animal bone assemblage from the period attests to the disposal of both butchery and craft waste, although unlike other periods no neonates were present (Albarella *et al*, Chapter 7.IV). There was a small but apparently significant increase in the consumption of birds at this period. Partial skeletons

of both birds and cats were recovered from the fills of pits and ditches.

Churches and Cemeteries

(Figs 7.3, 7.10 and 7.36–7.37)

St John de Berstrete

As noted in the introduction to this chapter, little information about the continued development of this church and cemetery appears in the contemporary documentary and historical record. Examination of encroachment into this cemetery was one of the stated research objectives of the project, allied with consideration of the implications for the local medieval settlement pattern and churchyard studies. As has already been detailed, both archaeological and documentary evidence indicate that encroachments into the western part of this cemetery began during the 13th century. Such encroachment is apparent elsewhere in Norwich's churchyards. At St George Tombland, for example, part of the graveyard was 'probably cut back in the later Middle Ages, as a revival of commercial activity on Tombland led to the establishment of small shops' (Ayers 1994a, 89).

The new archaeological evidence demonstrates that the northern boundary of St John's cemetery shifted southwards during this period (Figs 7.3 and 7.10), eventually reducing to its present curving line. The position of Grout's Thoroughfare in the late 19th century (1880s OS map; Plate 11.6) respects almost exactly the line of the cemetery boundary ditch and Fee boundary marker. Somewhat confusingly, the route name migrated southwards to a surviving alley north of the church during the modern period (Chapter 11). In this and other instances at the site it appears that a later routeway was set at least partially directly within or above a ditch, rather than running along side it. Further comments on the formation and course of the route are given in later chapters.

As something of an anomaly, four graves associated with St John's cemetery cut into early 14th-century fills of the cemetery boundary ditch, at which period pitting was already taking place in the immediate vicinity (Fig. 7.10). The presence of burials at this date may be more apparent than real, perhaps having more to do with anomalies in ceramic dating and/or the stratigraphic sequence. It appears, however, that several burials had been disturbed during the cutting of 13th- to 14th-century pits in the vicinity, the presence of partially articulated remains implying disturbance relatively soon after original burial (*i.e.* within a few years; *cf.* Black's forensic comment in Chapter 4.IV). By the late medieval period (late 14th to 15th centuries), the northern part of the cemetery had been entirely given over to metalworkers (Chapter 8).

St Martin-in-Balliva

By this period, with the infilling of the earlier ditch surrounding it, this church and its surroundings would have become increasingly subsumed within its urban setting. Its connection with the castle continued, however, and it remained the burial ground for prisoners. Documented owners/occupants within the parish have

been detailed in Chapter 7.I, demonstrating in particular the presence of numerous bell-founders.

Conclusions

The 13th century saw the final flowering of Norwich Castle as a military stronghold, with the contraction of its defences into a heavily fortified but considerably smaller fortress. When combined with the documentary and historical evidence, the archaeological results have demonstrated the growing tensions between the castle and the plots and tenements developing around the fringes of the Fee.

The end of this period, and indeed this volume, sees Norwich Castle at the end of its active life as a medieval fortification. It was, however, to retain its role as a gaol and administrative centre into the modern period. With the handover of the castle baileys to the city in 1345, the emphasis of this report shifts towards the burgeoning city. The motte and donjon were left incongruously stranded at the heart of the urban core, the abandoned outer earthworks and other defences exposed to the quarrying and robbing that were to follow.

Endnotes

1. [Roll (or list) of payments and settlements]
2. Much of the information given below is derived from a lecture given by Richard Sharpe on 'The Castle, the Sheriff and the administration of the County', at a dayschool on Oxford Castle (Rewley House, Oxford, October 1998).
3. 'Lorimer' referring to a bit maker or spurrier from lorain 'harness strap' (Sandred and Lindström 1989, 153).
4. Workers of an alloy of copper, zinc, lead and tin (Sandred and Lindström 1989, 116).
5. Possibly a reference to land above an infilled ditch.
6. The main Carmelite Friary in Norwich was established in 1256, to the north-east of Whitefriars Bridge; Fig. 7.1.
7. Note, however, the caveats over the dating of the Cemetery of St John, now re-phased to Period 1.4 (see Chapter 4).
8. Extensive internal modification (involving complete removal of all trace of the septum) initially hampered bone identification (Lawson 1995, fig. 87 no. 14): subsequent study has yielded reliable reinterpretation as metatarsus of red deer and has thus opened up the possibility of identification as a reed-pipe (Lawson forthcoming).
9. In pipes of bone this might have involved packing materials such as beeswax; in an early medieval wooden example from York, so far unique in England (Richardson 1961, 63, 85 and fig. 19 no. 20), adaptation takes the more sophisticated form of a fully developed, tight-fitting tenon.
10. The internal forms and dimensions of metatarsals, even of red deer, do not ideally suit them to the manufacture of flutes, and very few instances of such use have been reported. The deer metapodial flute from White Castle, Gwent, with its extensive surface modification and elaborate decoration, is highly individual in both design and manufacture (Megaw 1961). The small two-hole flute of sheep metatarsus from medieval Winchester (Megaw 1990, 721, no. 2264) has also required extensive modification. Such modification is another feature which seems rarely if ever to have been practised in the manufacture of bird ulna and sheep/goat tibia flutes.
11. A similar problem emerges in experimental performance upon replicas of medieval flutes made from goose ulnas; it is possible that such flutes are miniatures of those made, presumably for adult use, from the very much larger ulnas of swan and crane (e.g. Lawson and Margeson 1993, 211–2, no. 1756).
12. Hochstetter's references to the 'castle ditches' may be misleading as the south bailey ditch had been infilled/encroached upon by this date and the term may be generic.