Eastern Triangle (land between Key Street & Star Lane), Ipswich

IPS 605 (IAS 5903)

Archaeological Post-excavation Assessment

& Updated Project Design

SCCAS Report No. 2012/063

Client: Reef Estates Ltd

Author: Kieron Heard
October 2012

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HER Information

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Any opinions expressed in this report about the need for further archaeological work are those of the Field Projects Team alone. Ultimately the need for further work will be determined by the Local Planning Authority and its Archaeological Advisors when a planning application is registered. Suffolk County Council's archaeological contracting services cannot accept responsibility for inconvenience caused to the clients should the Planning Authority take a different view to that expressed in the report.

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Date: October 2012

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Summary

This report presents the results of an archaeological evaluation and subsequent excavation on the Eastern Triangle site, Ipswich. It provides a quantification and assessment of the site archive and considers the potential of that archive to answer specific research questions. The significance of the data is assessed in relation to the regional research agenda and recommendations are made for the dissemination of the results of the project.

In this instance it is recommended that following further analysis of the archive a full analytical report should be prepared. Depending on the results of the analysis it is likely that a further stage of reporting (publication) will be required. Although the nature and scope of any publication cannot be determined at present a minimum requirement will be for a summary of the results of further analysis to be submitted for inclusion in the Proceedings of the Suffolk Institute of Archaeology and History.

The Eastern Triangle site was located just outside Ipswich's Anglo-Saxon and medieval core and close to its waterfront. The underlying superficial geology consisted of river terrace deposits of sand and gravel, at a maximum height of 4.12m OD and sloping downwards from northeast to southwest.

Small amounts of prehistoric, Roman and Early Anglo-Saxon material were found residually in later deposits, suggesting very little activity on the site during those periods. Rather more Middle Anglo-Saxon pottery was found, but again this was residual material and does not provide evidence for permanent occupation of the site at that time.

A general increase in pottery deposition beginning in the Late Anglo-Saxon period together with the evidence of several large pits and at least one human burial that was probably of the same date, indicate that by *c.* AD 850 there was permanent occupation on or adjacent to the site. A small amount of residual human bone from later features close to the burial suggests that it might have been part of a small cemetery.

During the 12th–13th century sequences of clay-and-timber buildings were constructed in the southern part of the site. They were perpendicular to modern Key Street, suggesting that the street might have had earlier origins than has been supposed previously. The buildings were represented by sunken clay floors and associated occupation layers, rows of postholes and the remains of clay walling. Localised areas of scorched floor material probably indicated the positions of internal hearths, while more extensive scorched areas might have resulted from the destruction by fire of at least one of the buildings. The presence of hammerscale and small amounts of slag suggest that iron working was carried out in at least one of the buildings.

In the late medieval period two cellared, masonry buildings were constructed on the Key Street frontage, one at either end of the site. The cellars survived particularly well, having remained in use until the late 19th- or early 20th century, and the archaeological evidence indicated that both buildings had complex histories of modification and refurbishment. The building at the west end of the site was known from the early 17th century as the Gun Inn (or Gunstone) and its ownership can be traced to at least the late 16th century. It was a substantial structure measuring approximately 18.5m long x 7m wide, with septaria walls up to 0.60m thick. The other building, at the east end of the site, was smaller and, from photographic evidence, is thought to have been a domestic dwelling; given its waterfront location it was probably a merchant's house.

During the post-medieval period the Key Street frontage of the site was developed intensively, while areas to the rear were retained as yards and gardens where quarries, cesspits and wells were dug. Many of these cut features dated from the Tudor period and have produced significant finds assemblages that include imported Dutch pottery and building materials; these support documentary evidence for a significant Dutch presence in Ipswich from at least the 15th century.

The Gun Inn was rebuilt in the late 19th century as the Gun public house, which survived (as the Gun Café) until the 1980s when Cranfield's Mill redeveloped the entire site as a lorry park.

1. Introduction

1.1 Site location

The Eastern Triangle site is located in central Ipswich, just outside the historic core of the town and close to Ipswich Wet Dock (Fig. 1). It is centred at Ordnance Survey National Grid Reference TM 1664 4413 and encompasses an area of approximately 1,570m^2. It is bounded by Key Street to the south, by Star Lane to the north and by commercial premises to the east. To the west the site is bounded by a short link road connecting Star Lane and Key Street; this marks the former junction of Lower Orwell Street and Key Street. The site is owned by Whitbread plc and is to be developed as a Premier Inn hotel.

1.2 The scope of this report

This report was commissioned by H. A. Goddard & Sons Ltd., on behalf of Reef Estates Ltd., and produced by the Suffolk County Council Archaeological Service (SCCAS), Field Team. It has been prepared in accordance with the relevant Brief and Specification (Wade, 2011) and Written Scheme of Investigation (Gardner, 2011). The report is consistent with the principles of Management of Research Projects in the Historic Environment (MORPHE), notably Project Planning Note 3 Archaeological Excavations (English Heritage, 2008). The principal aims of the project are as follows:

- Summarise the results of the archaeological fieldwork
- Quantify the site archive and review the post-excavation work that has been undertaken to date
- Assess the potential of the site archive to answer research aims defined in the Brief and Specification
- Assess the significance of the data in relation to the current regional research framework (Medlycott, 2011) and with reference to previous regional research guidelines (Glazebrook, 1997; Brown & Glazebrook, 2000)

- Make recommendations for further analysis (if appropriate) and dissemination of the results of the fieldwork

1.3 Circumstances and dates of fieldwork

There have been two distinct phases of archaeological fieldwork on the Eastern Triangle site in recent years. The first was an evaluation by trial-trenching that took place between 03 November and 12 December 2008. That work was funded by the then owners of the site (Wharfside Regeneration (Ipswich) Ltd) and was in relation to a planning application for proposed student accommodation (IP/04/00313/FUL). It was carried out in accordance with a Brief and Specification issued by SCCAS, Conservation Team (Wade, 2007).

SCCAS, Field Team excavated three evaluation trenches within the footprint of the proposed buildings, as shown on Figure 2. In accordance with the Brief and Specification Trench 3 was designed to allow the investigation of a late medieval cellared building, known from previous archaeological work on the site.

The evaluation revealed complex stratigraphic sequences that included pits and other intrusive features of potentially Middle Anglo-Saxon to post-medieval date, horizontal strata (including possible floors/surfaces) and building remains of medieval and later date. Sherds of prehistoric pottery recovered from medieval deposits suggested that earlier features might be present also. Archaeological deposits survived to an average height of 0.53m below current ground level.

Following the completion of the fieldwork the proposed development of the site was cancelled and funding was not made available for the reporting of the results of the evaluation.

In 2011 SCCAS, Field Team carried out an excavation in response to an archaeological condition relating to a planning application by the new owners of the site (Whitbread plc) for the erection of a hotel. Specifically, planning consent was conditional upon a programme of archaeological work being carried out prior to the commencement of development. The excavation was conducted in accordance with a Brief and

Specification by Keith Wade (SCCAS, Conservation Team; Wade, 2011) and a Written Scheme of Investigation (WSI) by Rhodri Gardner (SCCAS, Field Team; Gardner, 2011).

Three areas of the site were investigated (Areas 1, 2 & 3; Fig. 2), all within the footprint of the proposed development; this included the hotel building and part of a courtyard below which a surface water attenuation system was to be installed. The three areas of excavation had a combined area of *c.* 450m^2, representing approximately 50% of the footprint of the proposed hotel building and 29% of the total area of the site. This was less than was stated in the WSI, mainly because excavation could not extent right up to the perimeter walls but also because of some live drains/sewers in the central part of the site.

The excavation areas partially overlapped the earlier evaluation trenches. For the purposes of this assessment Area 1 and Trench 3 have been combined as *Area A*, Area 2 and Trench 1 are combined as *Area B* and Area 3 and Trench 2 are combined as *Area C* (Fig. 3, onwards).

Within the areas of excavation modern surfaces, overburden and obstructions were removed using a mechanical excavator and exposed archaeological remains were dug with hand tools. Most features and deposits were excavated fully, although some larger cut features with low potential for finds retrieval were sample-excavated. At the direction of the Curatorial Officer (Keith Wade) medieval masonry walls were preserved *in situ*, and arrangements were made with the principal building contractor (ISG Jackson) for the appropriate protection and preservation of those remains during subsequent ground work.

A single-context recording system was used, based on a unique sequence of context numbers in the range 0321–1060 (0101–0320 having been allocated during the evaluation). Horizontal deposits and intrusive features were drawn in plan (at 1:20) and selected sections were drawn (at scales of 1:10 or 1:20, as appropriate) on gridded drawing film. Written records (context descriptions, etc) were made on *pro forma* context sheets.

Planning was in relation to a 5m site grid that was laid out using a Leica RTK Global Positioning System. Levels were calculated by reference to an Ordnance Survey bench mark of 3.54m OD located on the northeast corner of the nearby Customs House.

A digital photographic record was made, consisting of high-resolution .jpg images. Also, a sequence of aerial photographs of the site and surrounding area was commissioned.

Selected deposits were sampled for environmental analysis.

The primary (paper) archive for both phases of fieldwork is located currently at the SCCAS Bury St Edmunds office. The finds are stored at the SCCAS Bury St Edmunds office (box locations: L/140/5 and L/141/4, evaluation; J/107/3 & 4, L/140/5, L/141/4 and L/143/5, excavation) and the environmental samples are at the SCCAS warehouse in Ipswich. It should be noted that the paper records and finds from the evaluation are archived under the site code IAS 5903 and those from the excavation were given the Historic Environment Record (HER) number IPS 605.

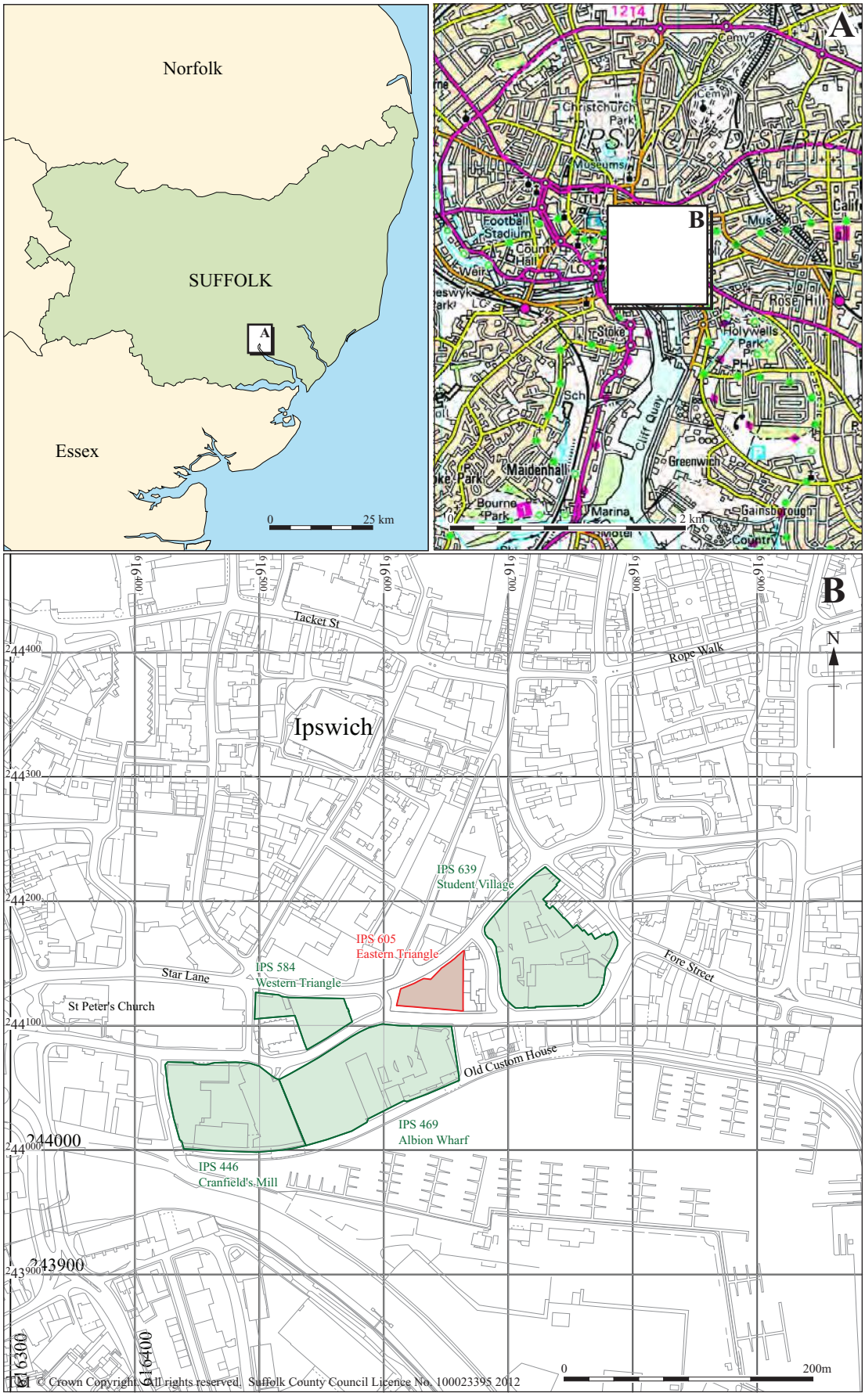

Figure 1. Site location (red), and nearby excavations mentioned in the text (green)

Figure 2. Plan locating the evaluation trenches (green) and areas of excavation (blue)

2. Geological, topographic and archaeological background

2.1 Geology and topography

The superficial geology of the central Ipswich area consists mainly of glacial outwash sands and gravels that have been eroded by the River Gipping/Orwell and overlaid on their lower slopes by undifferentiated river terrace deposits, also of sand and gravel. These Pleistocene deposits (periglacial and fluvial) predominate to the south of a line defined by the main east–west route through the town (Carr Street/Tavern Street/Westgate Street) and have been found consistently throughout excavation in the lower two-thirds of the town. On the higher ground, overlooking the valley to the north of Ipswich, the outwash deposits give way to tertiary sands and clays capped with a layer of boulder clay.

Tributary streams running off the impermeable clay bands to the north drain southwards across the town towards the River Gipping/Orwell. Some of the main north–south streets, such as Brook Street and Lower Orwell Street (formerly known as 'the Wash', and lying immediately west of the Eastern Triangle site) follow the courses of these streams, although today the water is channelled under ground.

The variation in the depth of archaeological deposits across the town suggests that the topography was originally more undulating, with a number of shallow valleys dissecting the glaciofluvial sands and gravels from north to south. It is apparent from excavation and geotechnical records that extensive levelling has occurred, possibly as late as the 16th century, throughout central Ipswich; this is particularly noticeable within the inter-tidal zone to the south of the former strand line, the position of which is marked approximately by Key Street and College Street.

Current ground levels vary from *c.* 4.8m OD at the northeast corner of the site to *c*. 4.0m OD at the western end and *c*. 3.7m OD along the southern boundary.

2.2 Archaeology

The Eastern Triangle site is located just outside of Ipswich's historic core. The town was founded as a trading centre on the north bank of the River Gipping in the late 6th or early 7th century (Early Anglo-Saxon period); at that time it was confined to a few hectares adjacent to the waterfront. During the 8th century (Middle Anglo-Saxon period) the town grew considerably, eventually covering about fifty hectares or roughly the same area as the modern town centre.

During the late 9th and early 10th century (Late Anglo-Saxon period) the Danes occupied Ipswich and they were responsible for the construction of the town's first defensive ditch and bank. On the eastern side of the town the ditch incorporated a natural watercourse (a north–south tributary of the Gipping/Orwell) that flowed along the line of what is now Lower Orwell Street, immediately to the west of the Eastern Triangle.

During the same period, occupation extended into areas beyond the town's defences, notably to the east of the town along Fore Street and down towards a probable waterfront in the area of Neptune Marina.

The archaeological background to the Eastern Triangle site was reviewed last in 2003 (Loader & Breen, 2003). That report highlighted a number of key research themes in relation to the site, notably topography/drainage and the origins of modern Key Street/College Street; both of these subjects remain poorly understood. The most significant finding of the 2003 report related to previous archaeological field work on the Eastern Triangle site (IPS 370), as described below:

The foundation trench for a perimeter wall alongside the new carriageway (Star Lane extension) was cut in 1982, following the demolition of the Gun Café and a warehouse to the north. This revealed a flint and mortar wall, 60 cm wide running N–S alongside Lower Orwell Street and a corner of the same building was revealed to the northeast. The east wall was later found by limited hand excavation, revealing a building measuring 5.6m wide, internally, and over 14.6m in length. The south end had apparently been removed by the construction of the cellar under the Gun Café. The east wall had footings at least 1.45m below the modern ground level and although there was no sign of the sand and gravel subsoil, the walls were excavated through what appeared to be water laid deposits (*ibid*. 3–4).

Since 2003 several major excavations have taken place in this part of Ipswich in response to the threat to the archaeological resource posed by the regeneration of the waterfront. The results of those excavations are yet to be published and post-excavation analysis of the results has not yet been undertaken for many of the sites. The provisional results are summarised below, and the sites are located on Figure 1.

IPS 446 (IAS 6405) Cranfield's Mill (2003–6)

A sequence of alluvial deposits included a peat layer (0.5m thick) that produced Roman finds of late 1st- to 2nd-century date.

A series of *in situ* hurdles running for at least 30m along the water's edge at a level of 0.5m to 0.8m AOD are thought to have represented Middle or Late Anglo-Saxon revetments. They provide important evidence for the position of the Anglo-Saxon waterfront and for contemporary water levels.

Following land reclamation a large, well-constructed cellared building was erected close to the waterfront; it was probably a merchant's house dating to the late 15th century. The walls were made of septaria blocks with moulded limestone around the door and window openings. The building was 6m wide and extended for 20m back towards the medieval quayside from the College Street frontage. It survived, with various modifications, until the second half of the 19th century.

IPS 469 (IAS 6406) Albion Wharf (2005–7)

A trial trench evaluation was followed by open-area excavations, but only the results of the evaluation phase are available and these relate mainly to the use of the site in the late medieval period. They included a fragment of a late medieval or early post-medieval septaria-built wall and the remains of a possible cobbled surface of 13th to 14th-century date. In the eastern part of the site a substantial wooden structure was recorded in unexpectedly deep alluvial deposits. This has been interpreted as a probable late medieval pier or jetty-type structure within a previously unknown inlet that extended as far north as modern Key Street. An earlier peat deposit (0.75m thick) was recorded also, but could not be dated.

IPS 584 (IAS 5804) Western Triangle (2007)

A trial trench evaluation and subsequent excavation was carried out at the former Cranfield's Mill garage (Western Triangle site). This site was located immediately west of the tributary stream beneath Lower Orwell Street, and was therefore just inside the Anglo-Saxon / early medieval town defences. Substantial septaria-built walls were found, currently thought to have been of *c.* 14th-century date. These were incorporated into later buildings, but appear to have originally stood right on the water's edge. To the south of the walls were typical waterlogged foreshore deposits while to the north there was an area of very dense pitting and other occupation evidence of broadly contemporary date to the earliest phase of wall construction. The evidence suggests that the postulated 'bay' into which the tributary stream discharged was larger than was thought previously. This in effect pushes the known south-eastern corner of the town boundary slightly further to the northwest and raises questions about the construction of St Mary Quay church, which would appear to have been founded on marshland rather than sound gravel.

IPS 639 (IAS 5908) Student Village (2011)

A trial trench evaluation and subsequent excavation provided rare evidence for prehistoric occupation in the Ipswich area, as shown by a pit containing Neolithic–earlier Bronze Age worked flints and a ditch containing pottery of a similar date. There was little evidence for the use of the site in the Roman period, which was in accordance with the results from other excavations in this part of Ipswich. Anglo-Saxon occupation was represented mainly by intensive pitting in the northern part of the site, probably relating to properties fronting onto Fore Street, to the east.

During the medieval period much of the site was used as a cemetery, which is thought to have been that of the 'lost' church or chapel of *Ostirbolt;* that building might have stood somewhere on the Student Village site. The cemetery had been identified originally in 1981, during the excavation of William Brown's timber yard (IPS 369 / IAS 5901), which had been carried out in advance of the construction of Slade Street to the west of the site (Loader, no date).

Other significant evidence for medieval activity included dumping for land reclamation along the southern edge of the site, in what must have previously been the inter-tidal zone of the river, and the subsequent construction of a waterfront building, represented by a flint and septaria foundation.

The cellars of at least two Tudor buildings (one of which has been identified from early maps as a malt house) were found along the southern frontage of the site, representing the intensive development of Key Street by merchants in the early post-medieval period.

3. Original Research Aims

The Original Research Aims (academic objectives) for the evaluation phase of the project were defined in the relevant Brief and Specification (Wade 2007, 2) as follows:

ORA 1: Establish whether any archaeological deposit exists in the area, with particular regard to any which are of sufficient importance to merit preservation *in situ.*

ORA 2: Identify the date, approximate form and purpose of any archaeological deposit within the application area, together with its likely extent, localised depth and quality of preservation.

ORA 3: Evaluate the likely impact of past land uses and natural soil processes.

ORA 4: Define the potential for existing damage to archaeological deposits.

ORA 5: Define the potential for colluvial/alluvial deposits, their impact and potential to mask any archaeological deposit.

ORA 6: Define the potential for artificial soil deposits and their impact on any archaeological deposit.

ORA 7: Establish the potential for waterlogged organic deposits in the proposal area.

ORA 8: No specific Research Aims for the excavation phase were formulated, although the Brief and Specification did state that the academic objective of the project should 'centre upon the high potential for this site to produce evidence for Anglo-Saxon and medieval occupation' (Wade 2011, 3).

4. Site sequence: preliminary results of the fieldwork

4.1 Introduction

The following summary of the results of the fieldwork is based on a low level of interpretation of the site data. The archaeological contexts have been assigned to *groups* (numbered G2001, etc) based largely on their stratigraphic and physical relationships and generally without reference to artefactual dating. Some of the more important groups are discussed below, and a complete list with descriptions and likely date ranges is included as Appendix 2.

The groups have been assigned provisionally to historic periods, as described below and illustrated on Figures 3–7. Note that on those figures, only the groups described in the text are labelled.

4.2 Natural strata

River terrace deposits

River terrace deposits of sand and gravel (G2024/G2104/G2217/G2283/G2306/G2382) extended site-wide, sloping downwards gradually from northeast to southwest. They were observed at a maximum (probably truncated) height of 4.12m OD at the northeast end of Area B, and at a minimum height of 1.81m OD near the southern edge of Area A. At the extreme west end of Area C these deposits were not seen and they are assumed to have been below 1.0m OD; this suggests that the natural gradient became steeper in this part of the site.

Subsoil deposits

At a few locations the river terrace sands and gravels were overlaid by deposits of silty sand (G2103/G2164/G2262/G2305/G2381/G2431/G2437) that are interpreted provisionally as remnants of naturally-developed subsoil. In most cases these deposits were disturbed by animal burrows and roots and were truncated heavily by human activity.

4.3 Prehistoric (2600 BC – AD 43)

The evidence for prehistoric activity on or close to the site is slight. A few sherds of prehistoric pottery and some worked flints occurred residually in later deposits. Pit G2430 (Area C) produced eight small fragments of possible Bronze Age pottery and four worked flints; however, it is likely that the pit was over-excavated and the finds do not therefore provide conclusive evidence of a prehistoric date for this feature since they might have derived from the surrounding subsoil G2431.

4.4 Roman (AD 43–410)

There is nothing to indicate that the site was occupied in the Roman period. Only two sherds of Roman pottery and one or two fragments of Roman tile were found, all as residual finds in later features.

4.5 Anglo-Saxon (AD 410–1066)

Early Anglo-Saxon (AD 410–650)

Only six sherds of Early Anglo-Saxon pottery were found, and half of these occurred residually in later features. The remainder (three joining sherds) came from a small pit G2012, recorded in section in Area B.

Middle Anglo-Saxon (AD 650–850)

Middle Anglo-Saxon pottery occurred with greater frequency (fifty-one sherds from twenty-five contexts) but in almost all cases it was found residually in later features. The only feature that produced exclusively Middle Anglo-Saxon pottery (and then only two sherds) was pit G2061 (Area B; Fig. 3); since the pit was partly unexcavated (lying beyond the limit of excavation) the pottery dating evidence is inconclusive. There is no clear evidence that the site was occupied during the Middle Anglo-Saxon period.

Late Anglo-Saxon (AD 850–1066)

A general increase in pottery deposition beginning in the Late Anglo-Saxon period (477 sherds from eighty-five contexts) together with the evidence of several large pits and at

least one human burial that was probably of the same date, indicate that by *c.* AD 850 there was permanent occupation on or very close to the site.

Late Anglo-Saxon pits were found in all three excavated areas, as shown on Figure 3. For example, pit G2024 in Area B was up to 2.60m wide x >1.20m deep, and contained a well-defined sequence of fills tipping steeply towards the centre of the pit. These produced moderate amounts of Thetford-type ware (with smaller amounts of Middle Anglo-Saxon pottery), kitchen refuse such as animal bone and shellfish, and charcoal/ash. A notable find from this pit was a bone ice skate (SF5006). A sequence of three large, intercutting pits in Area C (G2271, G2272 and G2273) and other pits in Area A (such as G2155) produced similar assemblages. Unfortunately none of these Late Anglo-Saxon pits could be excavated fully because their lower levels were below the water table. Primary fills could not therefore be sampled, but it seems likely that most of these features were wells or cesspits that were subsequently filled with domestic refuse.

The largest single assemblage of Thetford-type ware (111 sherds) came from a much smaller pit G2274, in Area C. The pit was up to 1.32m wide but survived to a truncated depth of only 0.20m. It contained the remains of three or four vessels, apparently broken *in situ*, together with moderate amounts of bone and some slag. The function of pit G2274 is uncertain, although clearly it had a different purpose to the much larger and deeper pits nearby.

A human burial G2276 was undated but on stratigraphic grounds is assumed at present to have been of Late Anglo-Saxon date. The body was laid supine with the head to the west, in an unusually wide grave (0.90m). Preservation of the skeleton was poor; it was represented by the cranial vault, two fragments of mandible, a fragment of the right clavicle, part of the right scapula, fragmentary shafts of all limb bones except the right fibula, parts of the left pelvis and some foot bones (Pl. 1).

Grave G2276 was adjacent to another possible grave G2277 (that was largely truncated by post-medieval cellar G2240 but that did contain part of a leg bone), and both were truncated by a third grave-shaped feature G2275. The fill of cellar G2240 produced three disarticulated fragments of human bone that might have originated from one of these possible graves.

4.6 Medieval (AD 1066–1500)

Timber buildings and contemporary features

Moderate amounts of 11th- to 12th-century pottery were found residually in later features and suggest that Late Anglo-Saxon occupation of the site continued without interruption into the early medieval period. During the 12th–13th century timber buildings (houses or workshops) were constructed in the southern part of the site (Area C). Although these were not well preserved (having been truncated by later cellaring) they were represented by sequences of sunken clay floors and associated occupation layers, rows of postholes and the remains of clay walling (Fig. 4; Pls. 2 & 3). Localised areas of scorched floor material probably indicated the positions of internal hearths, while more extensive scorched areas might have resulted from the destruction by fire of at least one of the buildings (G2407). One particularly well-made hearth (G2264) was built using small, rectangular slabs of sandstone.

Environmental analysis of samples from occupation layers and probable hearths within the buildings has revealed moderate amounts of flake hammerscale (in association with charcoal) indicative of iron working (for example, G2255 / Sample 13 and G2407 / Sample 17). Also, a posthole associated with one of these medieval buildings (part of G2253 / Sample 5) contained a small quantity of undiagnostic slag, 8g of slag dribbles and a flat piece of iron that could be either smith's stock or an off-cut from smithing.

No complete ground plans of the buildings were found but wall lines, where seen, were perpendicular to Key Street. Where successive buildings were superimposed wall positions seem to have remained unchanged, suggesting that property boundaries were fixed. For example, a north–south alignment of closely spaced postholes (G2259/G2260/G2261) associated with a sequence of clay floors was superseded by a line of postholes (G2252/G2253) on the same alignment but with different dimensions and spacing.

The clay-and-timber buildings were sealed by extensive soil deposits (G2251, for example), approximately 0.30m–0.40m thick, containing a large pottery assemblage that has been dated to the mid 13th–mid 14th century. These deposits possibly accumulated during a period of abandonment of the site although (given the proximity of

the site to the river and the likelihood of flooding) they might have been dumped in order to raise the ground level.

Clay-and-timber buildings were not found in the western and northern parts of the site (Area A and Area B). This might have been due to subsequent horizontal truncation (particularly in Area B, where modern truncation extended to the natural stratum) but it is more likely that during the earlier medieval period those were open areas; certainly there was intense pitting in those areas of the site, and two larger features (G2014 & G2023) in Area B have been interpreted provisionally as medieval gravel quarries.

The Gun Inn

In the late medieval period a long, cellared building was constructed at the west end of the site (Area A; Fig. 4; Pls. 4 & 5). The ownership of this property can be traced to at least the late 16th century, and in the early 17th century it was known as the Gun Inn or Gunstone, on the corner of Gunpowder Lane. It was seen originally during the watching brief in 1982 when parts of the west, east and north walls of the cellar were recorded (Loader & Breen 2003, 3; Wade, 1982). These limited observations combined with cartographic evidence indicated a building measuring about 18.5m north–south x 7m east–west, presumably fronting on Key Street to the south.

During the 2008 evaluation the east wall of the cellar (G2090) was recorded in greater detail. It was approximately 0.60m thick and survived to a depth of up to 2.26m. It was built largely of rough-hewn septaria blocks and bricks (some re-used), with occasional flint (pebbles and nodules) and tiles. The materials were randomly coursed and bonded with much hard, cream-coloured mortar. Generally there was greater use of bricks for the internal face; two splayed windows were built entirely of bricks although it is not clear if these were part of the original construction.

The original floor of the cellar was not seen. The earliest recorded internal deposit was an undated tanking layer of clay, up to 0.30m thick (G2076; not shown on Fig. 4). This was overlaid by a sequence of make-up layers and surfaces (G2069/G2070/G2074/G2075) but these were of post-medieval date.

The merchant's house

Another cellared building was constructed at the east end of the site (Area C; Fig. 4; Pls. 6 & 7), probably at about the same time as the Gun Inn. It survived until the early 20th century and photographic evidence suggests that it was typical of a merchant's house of the late medieval period.

The building measured approximately 11.5m north–south x 4.2m east–west and was at least 1.75m deep. The walls (G2216) were 0.30m–0.40m thick and were built of rough-hewn septaria, flint and limestone, with occasional red and yellow bricks, bonded with friable, sandy lime mortar.

The original floor of the cellar was a layer of compacted sandy silt and pebbles (G2214). Environmental analysis (Sample 18) has revealed abundant flake hammerscale in the floor, indicative of ironworking.

4.7 Post-medieval (AD 1500–1900)

During the post-medieval period the Key Street frontage of the site was developed intensively, while areas to the rear were retained as yards and gardens where quarries, cesspits and wells were dug. Many of these cut features have been dated to the late medieval / early post-medieval (Tudor) period and have produced significant finds assemblages that include imported Dutch pottery and CBM.

Buildings from the Tudor period were largely destroyed by the construction of cellars in the 19th and 20th centuries. Notable survivals included a brick-built cellar (G2032; Area B; Fig. 5) that was backfilled in the late 17th century, a north–south foundation (G2290; Area C; Fig. 5), built (unusually for Ipswich) of chalk with some septaria, flint and brick, and a cesspit with a brick-built barrel-vaulted roof (G2285; Area C; Fig. 5) backfilled in the late 16th- or 17th century.

Two late medieval buildings (The Gun Inn and the 'merchant's house') continued in use (with extensive modifications) throughout the post-medieval period, as described below.

The Gun Inn

The cellar of the Gun Inn was substantially remodelled during the post-medieval period (Fig. 5). An opening was made in the east wall to give access to the cellar of an adjacent building (G2087), provisionally dated to the 17th- or 18th century. When this new building was constructed one of the splayed window openings in the east wall of the Gun Inn was blocked with brickwork (G2077). The doorway was blocked subsequently with a brick wall G2088.

The Gun Inn cellar was divided into two rooms by an east–west brick wall (G2066), which was not quite perpendicular to the original east wall of the cellar. The room to the north of wall G2066 went out of use and was backfilled, mostly with sandy deposits containing much CBM and some pottery of the late 18th- or 19th century (G2068). The cellar of the neighbouring property to the east (G2087) was backfilled at about the same time (G2082).

The southern room continued in use after the northern room was backfilled. Two brick piers (G2065) built against wall G2066 are assumed to have been the base for a new chimney. At about the same time the room was given a brick and tile floor (G2064). Subsequently a single-skin brick wall/facing on a stepped foundation (G2063) was built against the east wall of the cellar, on top of floor G2064.

During the latter part of the 19th century the Gun Inn was rebuilt as the Gun public house. There was little stratigraphic evidence for this. It is clear from cartographic evidence that cellar wall G2066 was used as the foundation for the rear wall of the new property. The cellar was backfilled with soil containing much building rubble and small amounts of pottery and other artefacts dated broadly to the 19th century (G2062). A trench was then dug for an L-shaped foundation of mortared brick rubble (G2444), presumably supporting internal walls. According to the 1982 watching brief report (Wade, 1982) the southern part of the medieval cellar was destroyed by the construction of the cellar for the new public house. The rear wall of the new public house cellar was probably located just to the south of Area A.

The merchant's house

This late medieval building (Figs. 5 & 6) had a particularly long and complicated history of modification and refurbishment, and survived until the early 20th century.

Some of the significant post-medieval modifications to the medieval cellar were as follows:

- An external cesspit with mortared flint walls G2208 and a vaulted brick roof G2006 was built against the northwest corner of the building, probably in the Tudor period. Subsequently part of the original cellar wall G2216 was demolished to allow walk-in access to the former cesspit, which then was used as a storage chamber or coal-hole.

- The upper part of the rear wall of the cellar was rebuilt in brick (G2209); the rebuild incorporated two splayed openings (G2199 and G2200), presumably windows or chutes.

- A flight of stairs (G2182) was built to provide access to the cellar from the west side of the building. This was subsequently blocked off and backfilled (G2181) when a bonded warehouse (G2221 etc.; Fig. 7) was constructed next door.

- Two substantial brick piers G2178 were constructed in the centre of the cellar as the base for a new chimney.

- The rear wall of the building was eventually rebuilt entirely in brick (G2204), approximately 0.80m south of its original position. At the same time a doorway was made in the northeast corner of the cellar, leading to an east–west corridor of unknown extent.

- A row of brick pillars (G2170–75) was built (and subsequently re-built), presumably to help support the floor above.

- The floor of the cellar was raised on several occasions, probably in response to rising ground water levels. A succession of brick or tile surfaces and make-up deposits were recorded, as well as a sub-floor, brick-built drain (G2180).

4.8 Modern (1900–present)

Most of the cellared buildings along the Key Street frontage continued in use into the 20th century. For example, according to documentary sources the ‘merchant’s house’ (31 Key Street) at the east end of the site survived until at least 1909 but by 1912 had been demolished and replaced by an office and stables. These events were represented archaeologically by the backfilling of the cellar (G2168) and possibly by the construction of concrete strip foundation G2165 (Fig. 7).

The Gun public house remained in use (as the Gun Café) until the early 1980s. The building was demolished as part of the redevelopment of the site as a lorry park for the nearby Cranfield’s Mill. At that time any remaining cellars along Key Street were backfilled and the site was levelled; the latter was represented archaeologically by a site-wide deposit of soil and demolition rubble (G2003). Lorry inspection pit G2078, a massive, reinforced concrete and brick structure with three chambers over a thick concrete slab, was constructed at the west end of the site (Fig. 7). At the same time a network of drains and interceptors were installed (G2004, for example), electric and telephone cables were laid (some of which were recorded archaeologically) and the site was resurfaced with block paving G2001; this formed the ground surface during both phases of archaeological fieldwork.

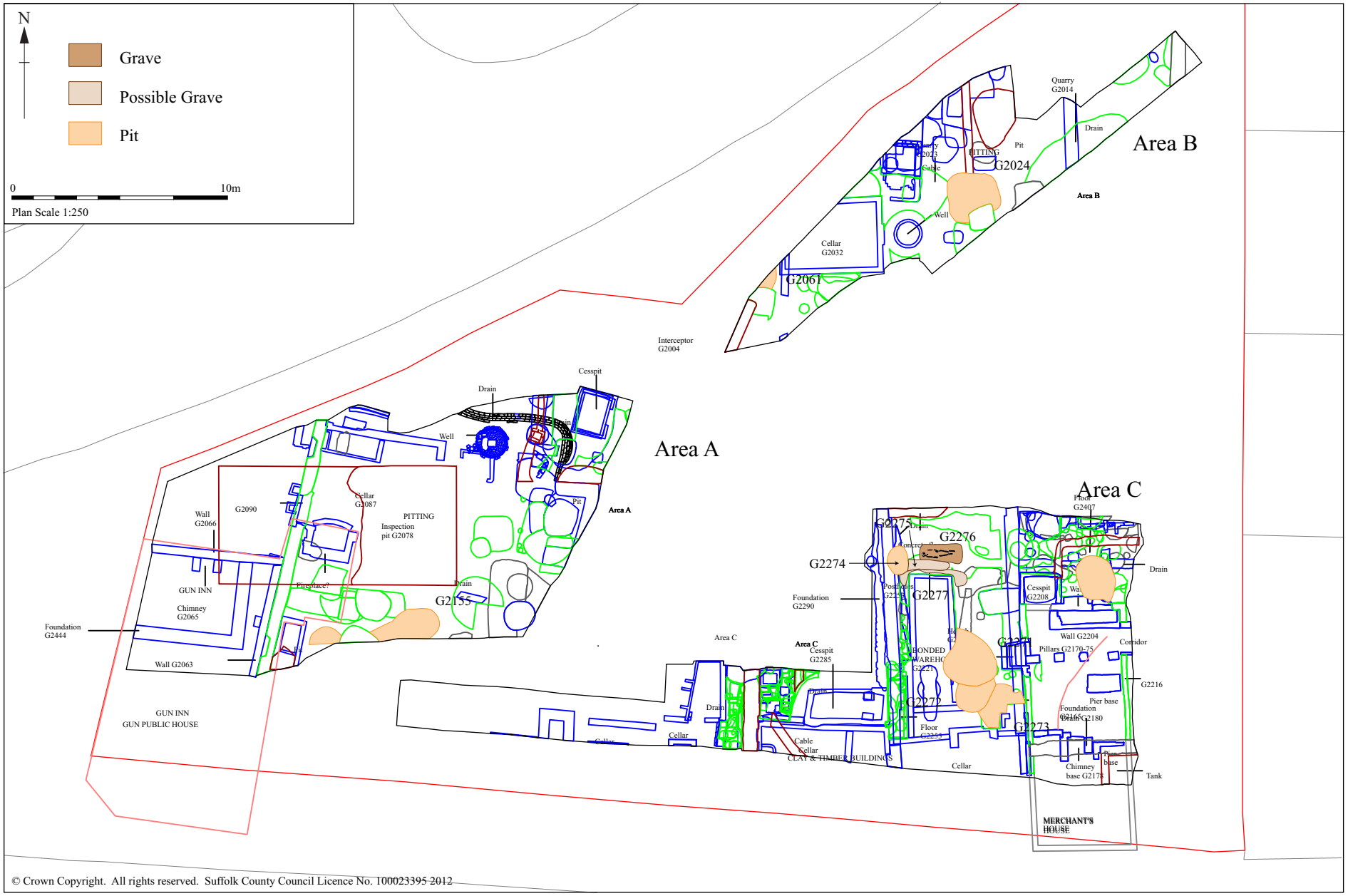

Figure 3. Simplified plan of Anglo-Saxon features

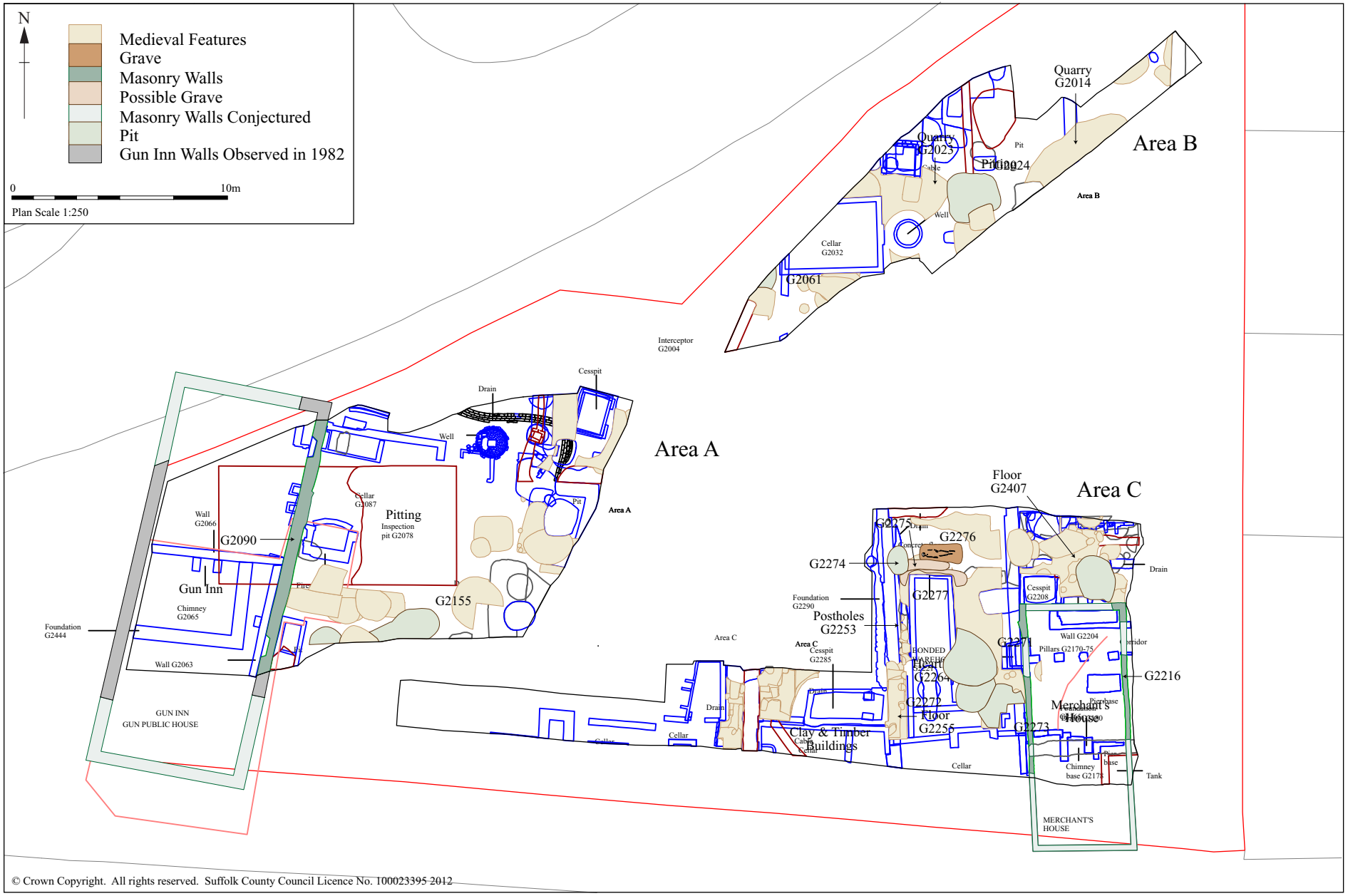

Figure 4. Simplified plan of medieval features

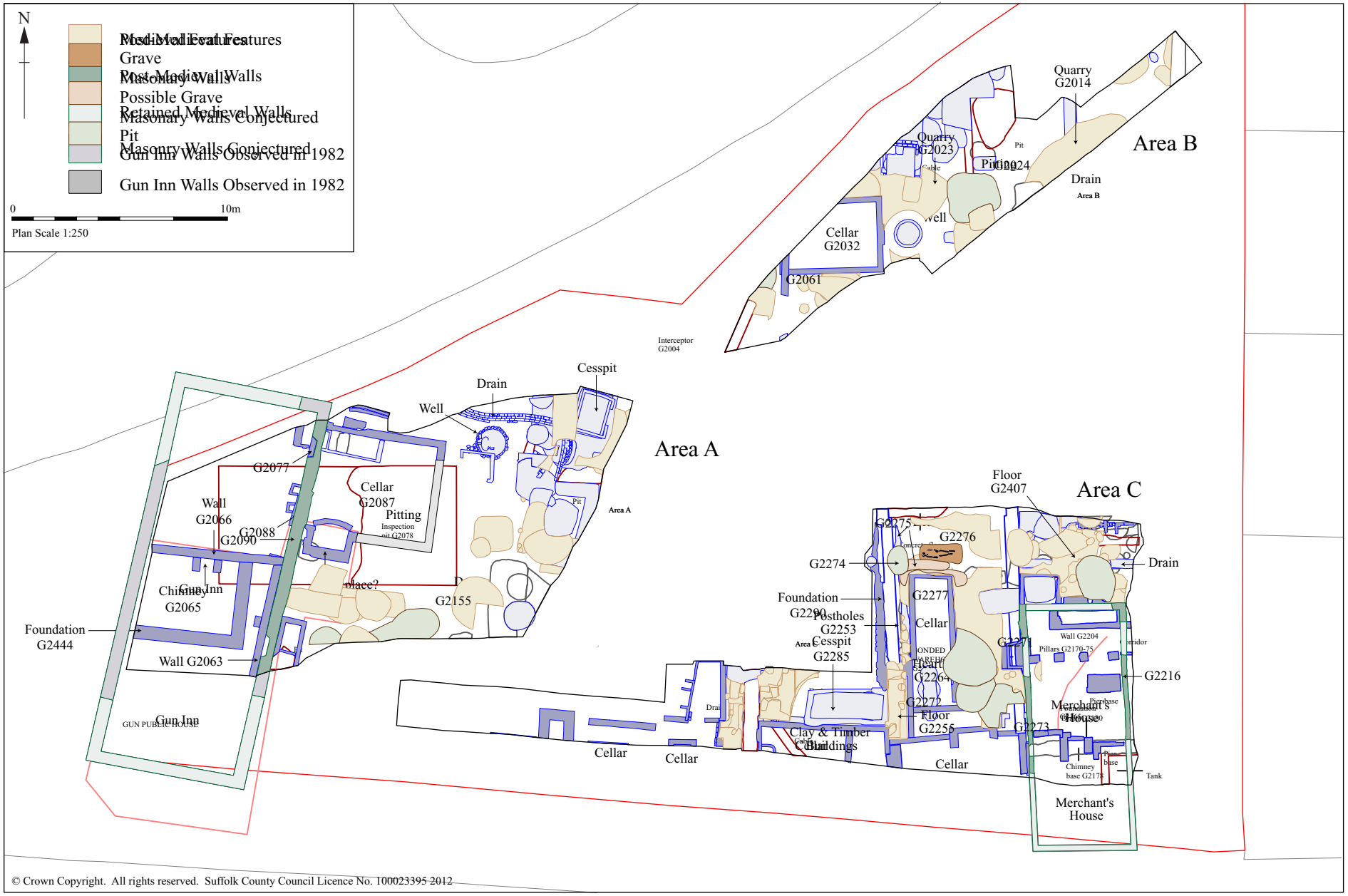

Figure 5. Simplified plan of post-medieval features

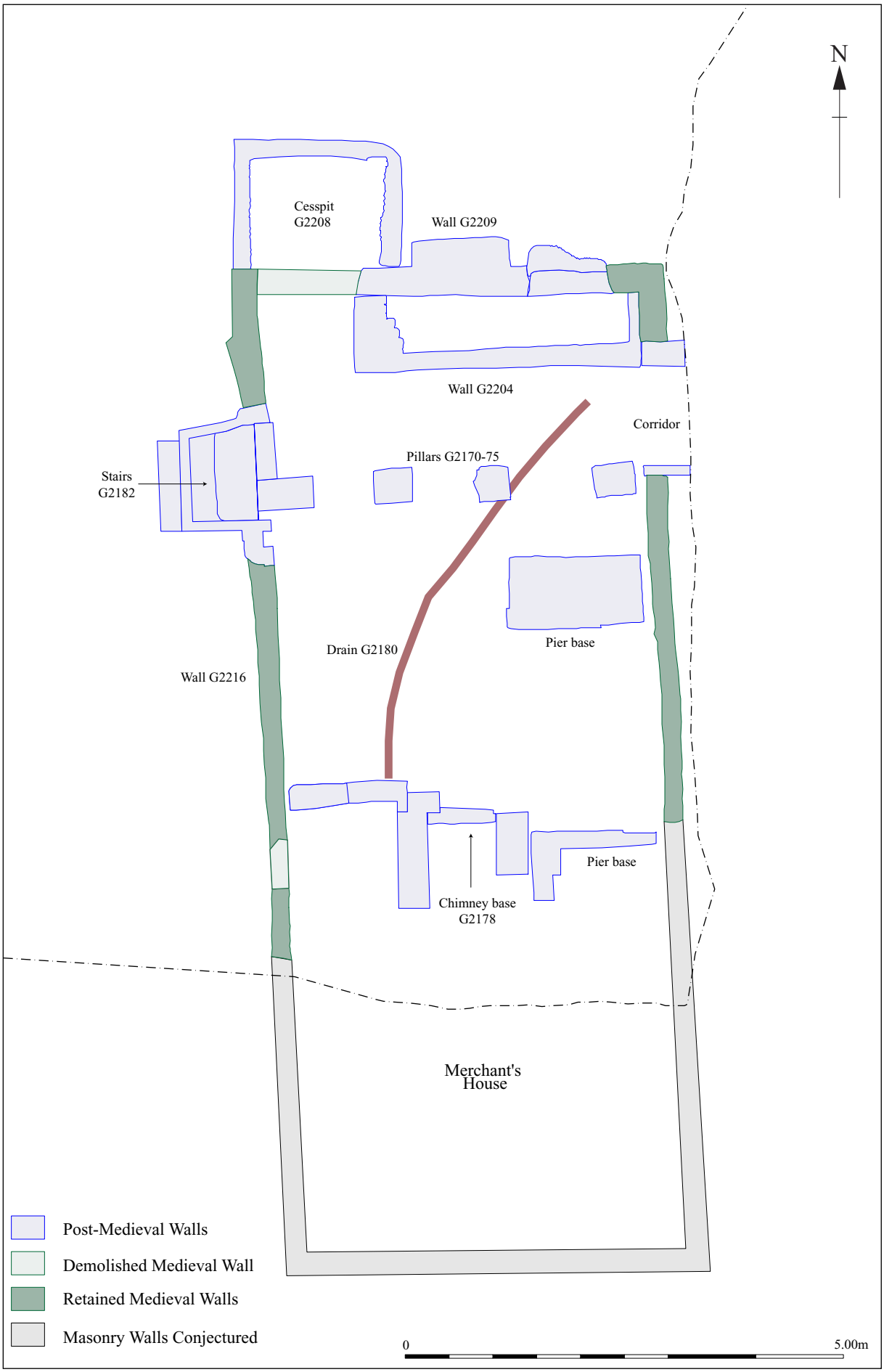

Figure 6. Simplified plan of the 'Merchant's House'

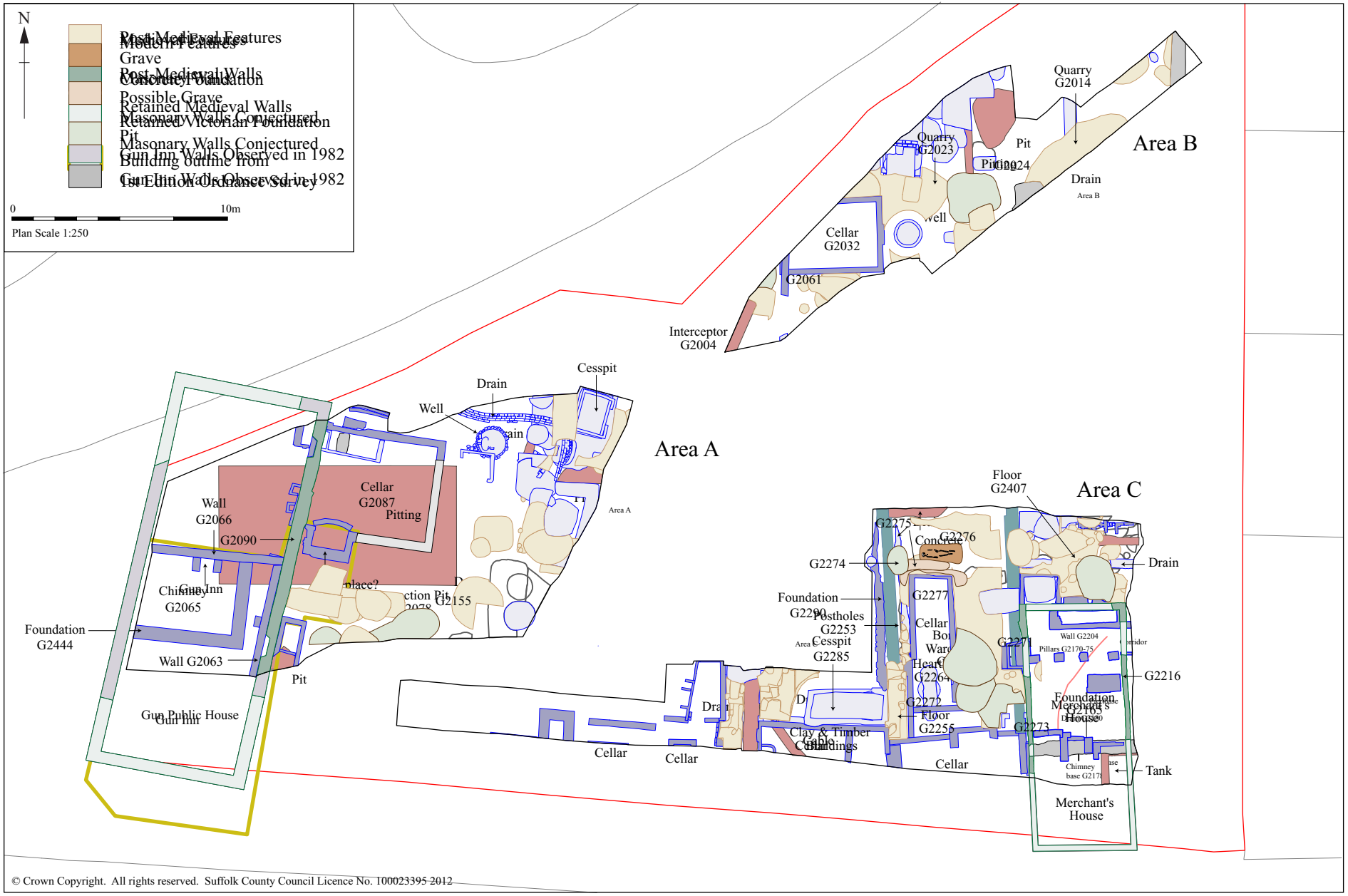

Figure 7. Simplified plan of modern features

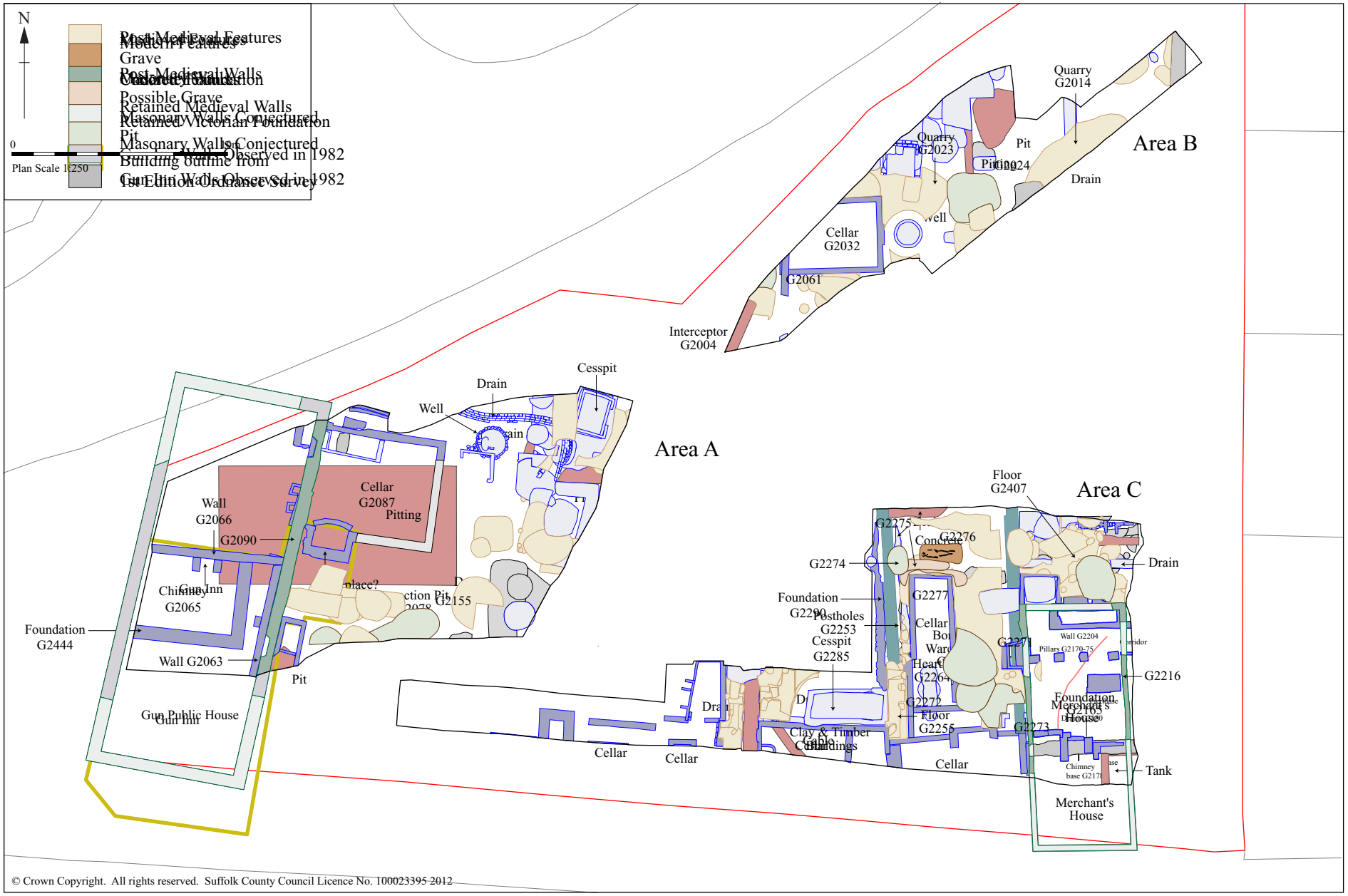

Figure 8. Simplified plan of undated features

Plate 1. Probable Late Anglo-Saxon burial in Area C, looking S (0.5m scale)

Plate 2. Medieval clay-and-timber building in Area C, looking N (1m scale)

Plate 3. Postholes for a medieval timber building in Area C, looking N (0.5m scale)

Plate 4. General view of the Gun Inn cellar, looking NE

Plate 5. General view of the Gun Inn cellar, looking SE

Plate 6. General view of the 'merchant's house' cellar, looking N (1m scale)

Plate 7. Vaulted chamber at the NW corner of the ‘merchant’s house’ (0.5m scale)

Plate 8. Tudor cesspit (centre) and 19th-century cellar (lower right), looking NE (1m scale)

5. Quantification and assessment

5.1 Post-excavation review

The following post-excavation tasks have been completed for the stratigraphic, finds and environmental archives:

Task 01: Completion and checking of the primary (paper and digital) archive
Task 02: Microsoft Access database of the stratigraphic archive
Task 03: Microsoft Access database of the finds archive
Task 04: Microsoft Access database of the environmental archive
Task 05: Catalogue and archiving of images
Task 06: Contexts allocated to groups
Task 07: Group description/discussion text
Task 08: Scanning (security copy) of plans and sections
Task 09: Plans digitised and integrated with GPS survey data
Task 10: Digitised plans sorted by period
Task 11: Processing, dating and assessment of finds
Task 12: Assessment of environmental samples

5.2 Quantification of the stratigraphic archive

The stratigraphic archive for both phases of fieldwork (evaluation and excavation) is quantified in Table 1.

Type	Quantity	Format
Evaluation		
Context register sheets	8	A4 paper
Context sheets (numbered 0101–0320)	220	A4 paper
Small finds register	1	A4 paper
Digital image register	1	A4 paper
Environmental sample register	1	A4 paper
Environmental sample sheets	3	A4 paper
Plan drawing sheets	112	290 x 320mm drawing film
Section drawing sheets (numbered 1–13)	13	290 x 320mm drawing film
Digital images (GAN 001–097)	97	3008 x 2000 pixel JPGs
Excavation		
Context register sheets	25	A4 paper
Context sheets (numbered 0321–1060, exc. 0594–96)	736	A4 paper, in two folders
Small finds register	2	A4 paper
Section register sheets (evaluation & excavation)	1	A4 paper
Digital image register	7	A4 paper
Environmental sample sheets	5	A4 paper
Plan drawing sheets	618	290 x 320mm drawing film

Section drawing sheets (numbered 14–33)	20	290 x 320mm drawing film
Plan matrix sheets	30	290 x 320mm drawing film
Stratigraphic matrix	7 12	290 x 320mm drawing film 420 x 300mm drawing film
Digital images (HPE 001–099; HPF 001–099; HPG 001–099; HPH 001–027)	324	Various high resolution JPGs
Aerial photographs (raw images on one CD, three copies)	27	6048 x 4032 pixel JPGs
Assessment report (SCCAS report no. 2012/063)	1	A4 wire-bound

Table 1. Quantification of the stratigraphic archive

5.3 Quantification of the finds and environmental archives

Richenda Goffin

Introduction

The quantities of bulk finds from both phases of fieldwork are given in Table 2 and a full quantification is shown in Appendix 4.

Find type	No.	Wt/g
Pottery	2088	47494
CBM	1733	335407
Fired clay	13	310
Mortar	190	7204
Clay tobacco pipe	395	2205
Post-med bottle glass	38	2683
Iron nails	97	2093
Worked flint	39	835
Burnt flint/stone	110	541
Slag	-	7300
Metalworking ceramics	36	4864
Stone	86	22581
Animal bone	4990	43330
Shell	1649	12474

Table 2. Bulk finds quantities

Pottery

Sue Anderson

Introduction

A total of 2088 sherds of pottery weighing 47.494kg was collected from 193 contexts. Table 3 shows the quantification by fabric; a summary catalogue by context is included as Appendix 5.

Description	Fabric	Code	No	Wt/g	Eve	MNV
Unidentified handmade	UNHM	0.002	3	2		3
Unidentified Flint Tempered	UNFT	0.02	3	16		3
BA Flint Tempered	BAFT	0.31	10	101		3
BA Grog Tempered	BAGT	0.33	40	419		3
RB Greyware	RBGW	1.10	2	10		2
Total pre-Saxon			*58*	*548*	*0.00*	*14*
Early Saxon fine sand	ESFS	2.04	4	65		2
Early Saxon grog	ESGS	2.05	1	3		1
Early Saxon medium sandy	ESMS	2.22	1	29		1
Gritty Ipswich Ware	GIPS	2.31	20	396	0.49	19
Sandy Ipswich Ware	SIPS	2.32	31	712	0.16	28
Total Early/Middle Anglo-Saxon			*57*	*1205*	*0.65*	*51*
Thetford-type ware	THET	2.50	459	6980	5.45	329
Thetford Ware (Grimston)	THETG	2.57	2	75	0.10	2
Stamford Ware Fabric A	STAMA	2.61	3	25		3
St. Neot's Ware	STNE	2.70	13	24		11
Late Saxon import	LSIM	7.72	1	2		1
Total Late Saxon			*478*	*7106*	*5.55*	*346*
Early medieval ware	EMW	3.10	6	35		6
Essex-type EMW	EMWE	3.102	5	82	0.15	4
Early medieval ware gritty	EMWG	3.11	2	17		2
Early medieval ware shelly	EMWS	3.14	13	443	0.20	2
EMW micaceous	EMWM	3.16	1	4		1
Yarmouth-type ware	YAR	3.17	37	328	0.21	31
Yarmouth-type non-calcareous	YARN	3.171	1	5		1
Early medieval sparse shelly ware	EMWSS	3.19	33	256	0.05	31
Early medieval gritty with shell	EMWSG	3.191	1	4		1
Stamford Ware Fabric B	STAMB	3.71	2	10		1
Pingsdorf Ware	PING	7.24	4	42		4
Total early medieval			*105*	*1226*	*0.61*	*84*
Medieval coarseware	MCW	3.20	79	1092	0.75	69
Medieval coarseware gritty	MCWG	3.21	4	57		2
Medieval coarseware micaceous	MCWM	3.24	90	1468	0.28	68
Hollesley-type coarseware	HOLL	3.42	22	984	0.78	12
Hedingham coarseware	HCW	3.43	3	87	0.16	2
Hedingham coarseware (fine variant)	HCWF	3.431	1	30		1
Ipswich medieval coarseware	MIPS	3.44	9	208	0.20	5
Medieval shelly wares	MSHW	3.50	4	24	0.13	3
Unprovenanced glazed	UPG	4.00	7	59		7
Colchester Ware	COLC	4.21	34	729	0.10	25
Mill Green Ware	MGW	4.22	14	234		11
Hedingham Ware	HFW1	4.23	3	71		3
Essex sandy orange wares	ESOW	4.24	10	268		6
Ipswich Glazed Ware	IPSG	4.31	17	205	0.14	14
Hollesley Glazed Ware	HOLG	4.32	6	48		5
Scarborough Phase I	SCAR1	4.41	17	53	0.14	4
Scarborough Phase II	SCAR2	4.42	2	62		2
London-type ware	LOND	4.50	13	205		10
Brill/Boarstall Ware	BRIL	4.61	2	24		2
Developed Stamford Ware	STAMC	4.71	3	3		3
Low Countries Highly Decorated	AARD	7.25	1	6		1
Flemish greyware	FLGW	7.29	4	37		4
Saintonge Ware	SAIN	7.31	42	583	0.98	24
Rouen Ware	ROU	7.34	1	1		1
North French Micaceous Ware	NFRM	7.371	1	1		1
Andenne Ware	ANDN	7.62	5	36	0.13	4
Total medieval			*394*	*6575*	*3.79*	*289*
Unprovenanced late medieval	NLLM	5.00	6	127	0.17	1
Late medieval and transitional	LMT	5.10	67	1093	0.89	50
Cistercian type Ware	CTW	5.20	1	3		1
Surrey Whiteware transitional	SWWT	5.40	11	27	0.22	9
Late Essex-type Wares	LMTE	5.60	1	17		1
Late Colchester-type Ware	COLL	5.61	48	3159	0.82	24
Siegburg Stoneware	GSW1	7.11	13	504	0.50	12
Langerwehe Stoneware	GSW2	7.12	12	201	0.24	12
Raeran/Aachen Stoneware	GSW3	7.13	42	1361	2.72	34

Description	Fabric	Code	No	Wt/g	Eve	MNV
Dutch-type redwares	DUTR	7.21	226	8298	5.79	76
Dutch redwares unglazed	DUTU	7.211	44	1300	0.44	35
Late Saintonge Ware	SAIL	7.311	21	362		1
Martincamp Ware Type I	MART1	7.361	1	12		1
Martincamp Ware Type II	MART2	7.362	2	12		1
Merida-type ware	MERI	7.52	3	77		1
Spanish tin-glazed ware	STGE	7.53	1	8		1
Total late medieval			*499*	*16561*	*11.79*	*260*
Post-medieval redwares	PMRW	6.10	14	587	0.57	8
Iron-glazed blackwares	IGBW	6.11	24	1013	0.48	5
Glazed red earthenware	GRE	6.12	109	3848	2.39	76
Local early post-medieval wares	LEPM	6.13	2	33		2
Speckle-glazed Ware	SPEC	6.15	9	151	0.25	6
Border Wares	BORD	6.22	41	1311	1.10	24
Tin glazed earthenwares	TGE	6.30	51	1221	1.75	23
Post-medieval slipwares	PMSW	6.40	2	65	0.13	2
Staffordshire-type Slipware	STAF	6.41	3	37	0.09	2
Staffs-type slipware on red earthenware	STAFT	6.411	1	9		1
Metropolitan Slipware	METS	6.42	4	162		4
German stoneware	GSW	7.01	2	5		2
Cologne/Frechen Stoneware	GSW4	7.14	28	644	0.62	16
Werra Ware	WERR	7.27	2	90	0.16	1
Dutch-type slipwares	DUTS	7.28	33	703	0.88	1
Westerwald Stoneware	GSW5	7.15	13	280	0.60	7
Total post-medieval			*338*	*10159*	*9.02*	*180*
Late post-medieval unglazed earthenwares	LPME	8.01	1	50		1
Industrial Slipware	INDS	8.02	1	3	0.08	1
Refined white earthenwares	REFW	8.03	102	1666	4.09	40
Creamwares	CRW	8.10	10	119		4
Pearlware	PEW	8.11	4	37	0.11	4
Yellow Ware	YELW	8.13	11	613	0.41	4
English Stoneware	ESW	8.20	3	538	1.00	3
English Stoneware London-type	ESWL	8.21	1	25		1
English Stoneware Nottingham-type	ESWN	8.22	1	33		1
Porcelain	PORC	8.30	4	31		1
Staffordshire white salt-glazed stonewares	SWSW	8.41	4	70	0.15	4
Black stonewares and basaltes	BLSW	8.43	2	43		1
Late glazed red earthenware	LGRE	8.50	2	462	0.17	2
Late slipped redware	LSRW	8.51	7	369		4
Late blackwares	LBW	8.52	1	11		1
Total modern			*154*	*4070*	*6.01*	*72*
Unidentified	UNID	0.001	5	44		4
Totals			**2088**	**47494**	**37.42**	**1300**

Table 3. Pottery quantification by fabric

Methodology

Quantification was carried out using sherd count, weight and estimated vessel equivalent (eve). The minimum number of vessels (MNV) within each context was also recorded, but cross-fitting was not attempted unless particularly distinctive vessels were observed in more than one context. A full quantification by fabric, context and feature is available in archive. All fabric codes were assigned from the author's post-Roman fabric series, which includes East Anglian and Midlands fabrics as well as imported wares. Thetford-type ware fabrics are based on Dallas (1984), and forms on Anderson (2004). Form terminology for medieval pottery is based on MPRG (1998). Redwares were identified based on Jennings' Norwich work (Jennings, 1981) and Cotter's work in

Essex (Cotter, 2000). Recording uses a system of letters for fabric codes together with number codes for ease of sorting in database format. The results were input directly onto a Microsoft Access database.

Summary description of the assemblage

Prehistoric and Roman

Fifty-six sherds of prehistoric pottery were collected, of which thirteen are flint-tempered and forty are grog-tempered and may be of Bronze Age date. Three sherds are from a sample and are too small for the fabric type to be identified. Most sherds were residual in later contexts, but no later finds were recovered with the possible Bronze Age material from pit 0860 (G2340). Forty-two sherds came from quarry pit 0112 (G2015), where they were presumably redeposited following disturbance of a prehistoric feature. Two vessels are represented in this feature, one with finger impressed decoration and one with a more pointed rim, both of which can be dated to the Bronze Age.

Two sherds have been identified as Roman, both greywares and both redeposited in later contexts. The fragments are burnished externally and may be part of the same vessel. They came from pit fills 0551 (G2115) and 0726 (G2133).

Early and Middle Anglo-Saxon (5th–9th century)

A small quantity of handmade pottery was identified as Early Anglo-Saxon, the majority of which are in sandy fabrics. All are body fragments. A large, thick-walled, medium sandy sherd from quarry pit 0112 (G2015) has deep girth-grooving and appears similar to Ipswich Ware, suggesting it may be a handmade copy of Middle Anglo-Saxon date. Four fine sandy burnished sherds were collected from pit fills 0150 (G2012) and 0343 (G2024), the latter containing no later pottery. A grog-tempered sherd was found in pit fill 0417 (G2022), but it is soft and abraded and could also be part of a Roman storage vessel.

Only a relatively small quantity of Ipswich Ware was recovered from this site. Apart from two sherds from pit 0461 (G2061), all pottery of this type was found in association with later pottery. Eight rims are present, six from jars, one from a lugged vessel and one from a spouted pitcher. None are decorated.

Late Saxon – early medieval (10th–12th century)

Almost a quarter of this assemblage is Late Saxon in date, the majority of it Thetford-type ware. Small quantities of non-local Late Saxon wares are also present. Only thirty-two rims are present. Identified vessels include small, medium and large jars or cooking pots, handled jars and large storage jars with applied strips. No bowls, lamps or other unusual forms were identified in the Thetford Ware group, but one St Neot's Ware bowl is present. Based on the rim typology developed for Thetford itself (Anderson, 2004), the majority of jar rims in this group belonged to the second half of the Thetford Ware period (i.e. 11th century), with only three type 3 and type 5 rims present.

The early medieval group is relatively small in this assemblage. Local calcareous-tempered fabrics (EMWS, YAR, EMWSS) predominate, with few of the medium sandy fabric (EMW) typical of northern and western parts of East Anglia represented. Eight of the nine identifiable forms are jars, with a variety of rim types typical of their fabrics. One bowl was also identified in EMWSS. Some vessels, particularly those of Essex type, had been wheel-finished and were probably contemporary with the high medieval wares. Pottery from further afield includes Stamford Ware and Pingsdorf Ware in both the reduced and white-firing varieties.

Medieval (Late 12th–14th century)

The high medieval group makes up just under a fifth of the assemblage. Just over half of the group by sherd count comprises coarsewares of local manufacture. The majority of coarsewares are of unknown provenance and include fine and medium sandy fabrics (MCW, MCWM). Many of the body sherds appear similar to Norwich 'LMU', although the micaceous version is more common in Ipswich and is likely to be a local product. Certainly rimsherds in these fabrics are more typical of Suffolk than Norfolk. Other sherds were identified from east Suffolk (HOLL) as well as the locally produced medieval coarseware (MIPS) and a few sherds from Essex (HCW, COLC). These sources are also represented amongst the large group of glazed wares, with the addition of material from Yorkshire, Lincolnshire, London, Buckinghamshire, France and the Low Countries. The unprovenanced glazed wares included sherds which may be locally or regionally manufactured (or possibly later medieval). The range of vessels of this period is typically a mixture of jars, bowls and jugs, with one pan-handled skillet also identified in Ipswich glazed ware (IPSG). This unusual form has been found in the

town before, in a grave excavated during an evaluation at St Margaret's churchyard (Anderson, 1999).

Late medieval (14th–15th century)

Late medieval wares make up another quarter of the assemblage by sherd count, but over a third by weight. A number of largely complete vessels are present, including a Dutch redware cauldron and a large part of a Colchester ware cistern. Unusually, the group is dominated by Dutch-type redwares, the majority of which are not fully glazed and may be relatively early in date. This is one of the largest groups of this type of pottery from the town to date and perhaps it provides a clue to the nationality of the occupiers here during this period. Dutch settlers were certainly present in Ipswich during the 15th century (Amor 2011, 32) and it is possible that some of them brought their own pottery with them. The largest groups were from cellar 0500 / G2168 (fifty-five sherds of twenty-six vessels), in which they were probably redeposited, and pit 0398 / G2044 (seventy sherds of five vessels) that may be a contemporary dump. A number of other imported wares belong to this period, most notably German stonewares and a few French vessels, as well as a Spanish (Valencian lustreware) sherd and a base fragment of a Portuguese (Merida) jar.

Post-medieval (16th–19th century)

The post-medieval group is also relatively large and much of it may be contemporary with the late medieval and transitional material, dating to the 16th century. Glazed redwares dominate the group, and there are a few unglazed redwares, along with whitewares and slipwares from further afield. German stonewares and Dutch and German slipwares were the main imports of this period.

Pottery of 18th/19th-century date also formed a relatively large group. Refined factory-made whitewares are the most common type and include a range of tablewares, with transfer-printed or spongeware decoration being the most frequent. Most other wares of this period are represented by only one or two sherds. The most unusual is a black stoneware base with yellow transfer printed Chinese-style design, a type known by collectors as 'yellow printed brownware'.

Five sherds are unidentified, two of which may be ceramic building material. Two yellow(?) glazed sherds in a fine whiteware fabric were burnt. A base fragment in a fine, thin-walled fabric with external smoothing is possibly an import but the date is uncertain.

Pottery by context

Finds were recovered from a total of 113 features and forty-nine other contexts, of which 118 contained ten or fewer sherds each. Approximately 66% of the assemblage (by count) was collected from pits/quarries and cellar fills, with only small quantities from other feature types. A summary of the pottery by feature type is provided in Table 4.

Feature Type	No	Wt/g	MNV
Pit	857	23389	489
Quarry pit	134	1637	91
Well	20	301	17
Posthole/stakehole	80	290	77
Cellar	379	10413	225
Cellar wall	5	48	2
Structure	142	4890	28
Foundation/structural cut	8	95	6
Drain	10	219	7
Floor/surface/tread	36	254	31
Deposit/layer	344	3927	272
Unspecified	66	1847	52
Finds	7	184	3

Table 4. Pottery types present by feature type.

The contexts have been allocated to stratigraphic groups, and the pottery assemblage can be assigned to 153 of those groups, most of which represent the fills of individual pits or individual layers. Six groups contain over 100 sherds. These are G2044 (16th-century rubbish pit, 103 sherds but only eighteen vessels), G2198 (post-medieval cellar, 103 sherds of sixty-four vessels), G2014 (late medieval quarry pit, 105 sherds of sixty vessels), G2274 (Late Saxon pit, 112 sherds of eleven vessels), G2251 (medieval soil deposit, 131 sherds of ninety vessels) and G2031 (19th-century cellar backfill, 216 sherds of 118 vessels).

A summary of the assemblage by feature groups and pottery periods is included in Appendix 6, together with suggested spotdates.

Ceramic Building Material (CBM)

Sue Anderson

Introduction

A total of 1733 fragments of CBM weighing 335,407g was collected from 143 contexts. A summary is included as Appendix 7.

Methodology

The assemblage was quantified (count and weight) by fabric and form. Fabrics were identified on the basis of macroscopic appearance and main inclusions. The width, length and thickness of bricks and floor tiles were measured, but roof tile thicknesses were only measured when another dimension was available. Small fragments from samples were weighed but not counted, as most were unidentifiable. Only a small quantity of the assemblage (138 pieces, 69935g) was retained following recording.

The assemblage

Table 5 shows the quantification of CBM by type and form. The majority of fragments fell into the 'roofing' category.

Type	Form	code	No	Wt (g)
Roman	Roman tile	RBT	1	69
	Roman tile?	RBT?	1	141
Roofing	Plain roof tile: medieval	RTM	83	4835
	Plain roof tile: medieval?	RTM?	12	867
	Plain roof tile: post-med	RTP	1149	93236
	Ridge tile	RID	21	3044
	Pantile	PAN	1	4
	Hip tile	HIP	1	112
Walling	Early brick	EB	37	3922
	Early brick?	EB?	7	6429
	Dutch brick	DUT	49	13442
	Dutch brick?	DUT?	27	15625
	Late brick	LB	262	150128
	Late brick?	LB?	7	1268
	Moulded brick	MB	5	7848
	Wall tile	WT	5	165
Flooring	Flemish floor tile	FFT	26	9003
	Floor tile	FT	3	960
	Floor brick	FB	8	14542
	Floor brick?	FB?	1	42
	Quarry floor tile	QFT	9	9863
	Quarry floor tile?	QFT?	8	439
Miscellaneous	Malting tile	MALT	4	696
	Drain pipe?	DP?	4	132
	Unidentified	UN	3	307
Totals			**1733**	**335407**

Table 5. CBM by type and form

Fabrics

The CBM was divided into basic fabric groups based on major inclusions. Twenty-nine different groups of fabrics were identified in this assemblage. The descriptions are as follows:

Estuarine (medieval and post-medieval)

These fabrics are extremely variable in colour, density and degree of firing/hardness; medieval bricks made from estuarine clays are common throughout the south-east of England and have been described in detail by Drury (1993). In addition, smaller bricks made from similar estuarine clays were made in the Netherlands in the 17th century and are sometimes found in ports along the south and east coast, although they are best known in London (Smith, 2001).

est Variable colour (pink, purple, yellow, white) estuarine fabrics, tempered with coarse organic (voids), clay pellet and flint inclusions, some fine shell. Brick. 96 pieces, 23941g.

Red sandy (Roman and medieval to post-medieval)

These fabrics generally have a similar range of coarse, naturally occurring, local inclusions (ferrous oxide, flint, chalk), often as a background scatter, and have been divided on the basis of quartz sand grain size or abundance. Fabrics ‘ms’ and ‘fs’ (‘medium’ and ‘fine’) were generally allocated unless pieces showed some clear difference in size or abundance of other inclusions.

fs Fine sandy red fabric with few coarse inclusions. Includes roof tile, brick, floor tile and drainpipe. One fragment is Roman, but mainly post-medieval. 833 pieces, 78192g.

ms Medium sandy red fabric with few other inclusions. Roof tile, late brick, floor tile. Medieval and later. 247 pieces, 25950g.

cs Coarse sandy dark red fabric with abundant medium sand and moderate coarse quartz, occasional coarse flint. Roof tile. Medieval. 1 piece, 67g.

fsx Fine sandy with poorly mixed red and white clays. Post-medieval. Floor tile. 9 pieces, 3255g.

fsm Fine sandy micaceous. Post-medieval. Roof tile. 3 pieces, 518g.

fscq Fine sandy matrix with occasional large rounded quartz. Post-medieval. Roof tile. 3 pieces, 177g.

fsc/msc Fine/medium sandy with sparse coarse or common fine chalk. Roof tile. Medieval and post-medieval. 6 pieces, 658g.

fsf/msf Fine/medium sandy red fabric with coarse flint. Brick and roof tile. Medieval and later. 19 pieces, 3020g.

Red sandy with 'grog', ferrous or clay pellets (medieval and post-medieval)

Fine and medium sandy fabrics containing combinations of rounded grog, red clay pellets and rounded ferrous inclusions.

fsg/msg	Fine/medium sandy, sparse fine to coarse rounded grog. Roof tile, brick and floor tile. Medieval and post-medieval. 285 pieces, 76162g.
fsgf/msgf	Fine/medium sandy with grog and flint. Brick. Post-medieval. 2 pieces, 348g.
fsfe/msfe	Fine/medium sandy with moderate to common small red ferrous inclusions. Roof tile and late brick. Medieval and post-medieval. 52 pieces, 19055g.
fsgfe/ msgfe	Fine/medium sandy with grog and ferrous inclusions. Brick, roof tile and floor tile. Post-medieval. 61 pieces, 41382g.
fscp	Fine sandy orange fabric with common soft red clay pellets. Roof tile, brick, floor tile and Roman tile. Mainly post-medieval. 56 pieces, 14044g.
fsgcp	Fine sandy with grog and clay pellets. Brick. Post-medieval. 1 piece, 1287g.
fsfcp	Fine sandy with clay pellets and sparse coarse flint. Brick. Post-medieval. 4 pieces, 11706g.

White fabrics (post-medieval)

White-firing, generally made from gault clays, although some in this group may be estuarine Dutch bricks.

wfs	White-firing fine sandy with few other inclusions. Brick, floor brick, malting tile. Post-medieval. 23 pieces, 26087g.
wfe	White-firing fine sandy with ferrous inclusions. Brick and malting tile. Post-medieval. 2 pieces, 890g.
wfx	White-firing with red streaks. Brick. Post-medieval. 1 piece, 256g.
wgo	White-firing with organic inclusions (voids). Brick. Post-medieval. 13 pieces, 1622g.
wfg/wsg	White-firing fine/medium sandy fabric with common white or red grog. Brick and floor brick. Post-medieval. 11 pieces, 5871g.
tge	Tin-glazed earthenware. Wall tile. Post-medieval. 5 pieces, 165g.

Forms

Roman tiles

Two fragments were identified as possibly or certainly of Roman date. One fragment was abraded and had a reduced surface, and the other was over-fired. Thickness could be measured for the latter, which measured 20mm thick and was therefore within the range for roof tiles of the period.

Roofing

A total of 1267 roofing fragments (102,098g) were collected. These comprised plain roof tiles (1244 fragments), ridge tiles (twenty-one fragments), hip tile (one fragment), and

pantile (one fragment). Table 6 shows the quantities of roofing material by fabric and form.

Fabric	RTM	RTM?	RTP	RID	PAN	HIP
cs	1					
fs	8	12	722	14	1	
fsc	2		1			
fscp	4		37			
fscq			2	1		
fsf			2			
fsfe			20	1		1
fsg	3		148	2		
fsgfe			7	3		
fsm			2			
ms	59		168			
msc	3		0			
msf	1		15			
msfe			13			
msg	2		12			
Totals	**83**	**12**	**1149**	**21**	**1**	**1**

Table 6. Roofing material by fabric and form

Roof tiles were in red-firing sandy fabrics, most of which were probably of high medieval to post-medieval date. Some of the main fabrics appear to have been used throughout these periods. Nine fragments were glazed. Based on firing, appearance and, to some extent, fabrics, approximately ninety-four plain roof tile fragments were high/late medieval (RTM), and 1149 were late/post-medieval (RTP). Of the 1244 fragments of plain tile, 136 had circular peg holes and ten had square ones. Two nib tiles were present and are likely to be of medieval date.

Of the twenty-one fragments of ridge tile, fourteen were medieval and the rest were post-medieval. None was complete but thicknesses varied between 10–18mm. This is within the range for plain roof tiles, so it is possible that further examples were present but not recognised. Four of the medieval tiles were crested, all with stepped crests varying from simple two-step examples to more complex styles with a number of steps or points. All fourteen medieval sherds were glazed, generally in orange or orange-brown but occasionally in green. One post-medieval fragment had a knife-trimmed edge.

Fragments of one hip tile and one pantile were recovered. The latter was a flake of the top surface, which was reduced. Both are post-medieval.

Walling

The brick recovered from the site represents a small sample of the material present in wall foundations and other structures, as well as fragments recovered from stratified contexts. Table 7 shows the fabrics and forms present.

Fabric	EB	EB?	DUT	DUT?	LB	LB?	MB	WT
est	39	7	47	3				
fs					50	1		
fscp					7	1	4	
fsfcp					4			
fsfe					9			
fsg					99	4	1	
fsgcp					1			
fsgf					1			
fsgfe					46			
ms					19			
msf					1			
msfe					5			
msg					5			
msgf					1			
msgfe					2			
wfe					1			
wfg				1	7	1		
wfs				9	3			
wfx					1			
wgo				13				
wsg				1				
tge								5

Table 7. Walling by fabric and form

Forty-four fragments of ‘early bricks’ (Drury, 1993) were present. These varied in size between 201–220 x 100–114 x 45–60mm. Most were typical of the medieval bricks found elsewhere in the region, but it is possible that some fragments were Dutch bricks that have been misidentified. In particular a group from 0868 (G2150) was noted as possibly Dutch, but all were larger than the examples quoted by Smith (2001, 34). Seventy-six fragments or complete bricks were identified as Dutch, most of which were less than 90mm wide and 185mm long, although some of similar appearance were slightly larger. Many of these showed signs of wear and had probably been used as floor bricks.

Red-firing late bricks were the most common types in this group. They were generally in fine sandy fabrics. The bricks were generally handmade and probably date between the 16th–19th centuries. A large group was measurable in at least one dimension. Thicknesses ranged between 43–67mm, widths between 90–125mm, and lengths between 200–282mm. Generally the thinner bricks are of early date, whilst those of

60mm or greater are likely to belong to the 19th/20th centuries, suggesting that in this group a range of dates is represented. However the majority are likely to belong to the earlier half of this date range.

One fragment of moulded brick was found in floor 0662 (G2185); it had a concave edge and measured 110mm wide and 50mm thick. Four bricks which had been cut into identical curved shapes and which could be placed together to form a small circle, were recovered from structure 0344 (G2029). These measured 223–230 x 81–83 x 56–57mm.

Five fragments of two tin-glazed earthenware wall tiles were recovered from cellar fill 0581 (G2181). One tile had a blue hand-painted scene showing a wherry-like boat and a church, and the other showed a blue hand-painted fish or dolphin.

Flooring

Table 8 shows the quantities of floor tile and brick by fabric and form.

Fabric	FFT	FT	FB	FB?	QFT	QFT?
fs	14	2			3	
fscp	2					
fsfe	3					
fsg	6	1			2	
fsgfe					3	
fsx					1	8
ms	1					
wfg				1		
wfs			7			

Table 8. Flooring by fabric and form

Twenty-six fragments of typical Flemish floor tiles of 14th- to 15th-century date were collected. They were decorated with dark brown or green lead glaze or yellow glaze over a white slip. Most were in small and medium sizes, but a couple of larger fragments were present also.

Three floor tiles are likely to be of high or late medieval date, but do not have the typical nail holes associated with Flemish tiles. One is green glazed, and one has white slip and a yellow glaze but is poorly made with one sunken and one raised margin.

Gault clay floor bricks of 18th/19th-century date are not well represented in the assemblage, although a few complete bricks were collected as samples. Four were from structure 0327 (G2026) and measured 240–245 x 120–124 x 38–40mm. It is likely that some of the white Dutch bricks were also used as floor bricks, as noted above, but these were probably of 17th/18th-century date.

Eight fragments in fine sandy fabrics were probably quarry tiles, all recovered from cellar fill 0356 (G2031) and pit fill 0643 (G2211). Some were heavily worn and could be Flemish tiles, but no nail holes were present. Nine fragments were in fine sandy poorly mixed fabrics and had sunken margins similar to the Dutch bricks in this assemblage. One of these, from 0356 (G2031), was complete and measured 213 x 213 x 41mm.

Miscellaneous

Four fragments of two white-firing malting tiles were found in structure fill 0268 (G2097) and posthole fill 0608 (G2386). One had large holes with four smaller holes in the 'base' of each, and the other had three smaller holes in each larger one. They measured 34mm and 28mm thick respectively.

Four fragments of a fine sandy drain pipe(?), possibly of medieval date, were found in posthole fill 0683. The curvature suggested a diameter of 100mm.

Unidentified

A fragment of a flat tile from 0365 (G2033) had a hole at the broken edge that appeared to be cruciform in shape. This would be unusual for a peg hole and it seems likely that the tile was not a typical plain roof tile. Its function is uncertain.

An abraded fragment of white-firing clay with no surfaces and a small whip in a fine sandy fabric were also unidentified.

Provenance

The site is well stratified and much of the material is derived from sealed deposits. Pottery and other dating evidence may prove useful in suggesting dates for particular CBM fabrics and forms. CBM was collected from 117 context groups, although only fifteen contained more than twenty fragments.

The majority of fragments were found in pit fills (1234 fragments) and horizontal deposits (150 fragments). There were 252 fragments from structures, floors, foundations, cellars and a well, most of which were complete or partial samples of bricks or tiles. There is some evidence for residuality of material, but this may reflect reuse of earlier material in later structures and is not perceived as a problem in the interpretation of the site. Reuse of material, reflected by the presence of mortar on breaks and other surfaces, was common practice during the medieval and post-medieval periods.

Fired clay and mortar

Thirteen fragments of fired clay weighing 310g were recovered from four contexts from the excavation, with more being recovered through the sampling process. This has not been recorded at the assessment stage.

One hundred and ninety mortar fragments (7204g) were collected from eleven contexts. The majority of the material comes from pit fills and cellar fills. The mortar has not been catalogued.

Clay tobacco pipe

Kieron Heard

Introduction

This report assesses the clay tobacco pipes from both phases of fieldwork. It includes some general comments on the nature of the assemblage, the quantification and dating of the pipes, brief discussions on some significant groups of pipes and recommendations for further analysis and publication.

Methodology

Where possible the pipe bowls have been identified by reference to Adrian Oswald's Simplified General Typology (Oswald 1975, 37) and bowl type numbers are therefore given the prefix OS. Occasion reference has been made to Atkinson and Oswald's Chronology of Bowl Types for London (Atkinson & Oswald, 1969), in which case the type numbers have the prefix AO.

Stem and mouthpiece fragments have been dated approximately according to their thickness and the diameter of the stem bore; generally larger bores suggest a 17th-century date and the narrowest bores are found on 19th-century pipes. Precise stem bore measurement has not been undertaken.

The pipe fragments have been quantified and recorded on hand-written Museum of London clay tobacco pipe record sheets using a system developed by the writer from guidelines proposed by David Higgins (Higgins, 1988). There are twenty record sheets (one per context) and these are stored in the site archive, which is housed in the SCCAS office at Shire Hall, Bury St Edmunds. Some of the data from the context record sheets has been reproduced in this report as Tables 9 and 10.

General nature of the material

There are 395 pieces of clay tobacco pipe, in the following proportions: sixty-nine bowl, 314 stem and twelve mouthpiece fragments. Two pipes have makers' marks and five pipes are decorated. There is no evidence for clay pipe manufacture on the site. There are no obvious foreign imports and it is assumed that all of the pipes were made in this country.

Most of the pipes are dated to the mid to late 17th century date (1640–1700) or to the 19th century. Pipes of the early 17th century and the 18th century are poorly represented in this assemblage.

Pipes were recovered from twenty contexts, mostly deposits associated with the use or disuse of cellars. Only three contexts produced more than one bowl fragment and only two contexts produced more than ten bowl fragments. More than half of the contexts contained only stem/mouthpiece fragments.

The pipes are generally very fragmented and abraded. No complete pipes have been identified and the relative proportion of bowl to mouthpiece fragments (nearly 6:1) suggests that not all pipe fragments were recovered.

The clay tobacco pipes are summarised by context in Table 9.

Context	Bowls	Stems	MPs	Total	Broad date	TPQ	Group	Group description
0239	1	23	2	26	1780–1820	1800	G2082	Cellar backfill
0249	1	16	0	17	1810–1840	1810	G2083	Backfill of cellar alcove
0268	0	1	0	1	19th c	1800	G2097	Backfill of cesspit
0269	0	1	0	1	19th c	1800	G2062	Cellar backfill
0276	0	8	1	9	1580–1910	1800	G2068	Cellar backfill
0278	1	11	0	12	1580–1910	1800	G2070	Levelling for cellar floor
0308	1	12	0	13	1580–1800	1680	G2074	Cellar deposit
0324	3	15	0	18	1670–1700	1670	G2238	Cellar backfill
0326	0	1	0	1	17th c	1600	G2021	Well construction
0339	12	43	2	57	1640–1680	1640	G2028	Backfill of brick structure
0342	0	1	1	2	17th c	1600	G2026	Backfill of brick structure
0350	0	1	0	1	19th c	1800	G2219	Cellar backfill
0356	49	170	6	225	1610–1710	1680	G2031	Cellar backfill
0365	0	1	0	1	19th c	1800	G2033	Pit fill
0397	0	1	0	1	17th/18th c	1600	G2044	Pit fill
0451	0	2	0	2	17th c	1600	G2284	Pit fill
0470	0	2	0	2	1580–1910	1800	G2317	Fill of robber trench
0534	0	1	0	1	17th c	1600	G2329	Fill of posthole
0769	0	4	0	4	19th c	1800	G2190	Levelling for cellar floor
0775	1	0	0	1	17th c	1600	G2192	Bedding for cellar floor
Total	**69**	**314**	**12**	**395**				

Table 9. Quantification and dating of clay tobacco pipes, by context and group

Significant groups

0324 (G2238: Backfill of cellar G2239/G2240)

Bowls = 3, Stems = 15, Mouthpieces = 0
Broad date range = 1670–1700; TPQ = 1670

This deposit produced three similar pipe bowls of late 17th-century date. They have no obvious parallel in Oswald's General Typology although they might be considered as larger versions of his type OS6; they are similar in size to the large pipes (such as OS8 and OS9) of the late 17th- and early 18th centuries. These bowls are elongated and fairly upright, with slightly bulbous sides and flat, oval heels. Two of them have lines of milling around the rim. They probably represent a local style of manufacture.

0339 (G2028: Backfill of brick structure G2029)

Bowls = 12, Stems = 43, Mouthpieces = 2
Broad date range = 1640–80; TPQ = 1660?

The backfill of a brick structure produced twelve pipe bowls broadly comparable to Oswald's types OS5 and OS6, with an overall date range of 1640–80. These are medium-sized, bulbous pipes with flat heels, and mostly with some degree of milling around the rim.

0356 (G2031: Backfill of cellar G2032)
Bowls = 49, Stems = 170, Mouthpieces = 6
Broad date range = 1640–1710; TPQ = 1680

This was by far the largest group of pipes and although it covered a wide range of dates most of the bowl forms were of the late 17th- or early 18th centuries. The absence of definitely 18th-century forms (OS10, for example) suggests that this assemblage was deposited pre-1700.

The pipes from 0356 are summarised in Table 10.

B	S	M	Form	Date	Comments
1	0	0	OS4	1600–1640	
1	0	0	OS5	1640–1660	
6	0	0	OS6	1660–1680	Medium to large, bulbous bowls, generally with heart–shaped and flared heels. They are from several different moulds
21	0	0	OS8	1680–1710	Many of these are probably from the same mould. They are elongated, slightly fluted bowls, very similar to contemporary forms made in the London area (AO20)
11	0	0	OS9	1680–1710	Elongated bowls, broadly comparable to OS9 but in a variety of forms
9	0	0	?	17th c	Broken heel/bowl fragments
0	170	0	?	17th c	Generally small fragments of stem. One of them has lines of milling running around it (see Decorated Pipes)
0	0	6	?	17th c	Simple cut mouthpieces

Table 10. Summary of clay tobacco pipes from context 0356

Marked pipes
Two late 18th- or 19th-century pipes have the maker's initials moulded in relief on the sides of the spur.

WA: Moulded in low relief (suggesting a worn mould) on the spur of a ribbed OS13 bowl, dated 1780–1820. The maker was probably Webster Adams II (1752–1828) or his son Webster Adams III (1787–1853) who had a pipe manufactory in Curriers Lane, Ipswich (0239).

AG: Moulded in relief on the spur of a ribbed OS24 bowl, dated 1810–40. The maker is unknown (0249).

Decorated pipes
1. A type OS13 bowl (marked WA) is decorated with narrow vertical ribs (0239).

2. A 19th-century stem fragment is decorated with moulded lines of poorly executed leaves or flower heads (0239).

3. A type OS24 bowl (dated 1810–40) is decorated with alternating wide and narrow vertical ribs, and has lines of paired leaves running along the seams. The pipe is marked with the maker's initials AG (0249).

4. A 17th-century stem fragment has lines of milling running around it. Although this might have been purely decorative, this method was often used to help bind the clay together at a point of repair (0356).

5. A 19th-century stem fragment is decorated with moulded lines of poorly executed leaves or flower heads. A similar design was found in context 0239 (0769).

Post-medieval bottle glass

Introduction
A total of thirty-eight fragments of post-medieval bottle glass weighing 2683g was recovered from the excavation.

Methodology
The rims and bases of the bottles were examined for diagnostic features and briefly catalogued by context.

The assemblage
The largest quantity of bottle glass was found in cellar fill 0356 G2032 (twenty-nine fragments @ 2585g). A minimum of five globular wine bottles is represented either by bases or necks. The best preserved bottle consists of the remains of a complete base and body of green opaque glass without the neck or rim (1117g). It is relatively straight sided in shape and measures *c.*118mm in height, with a low basal kick and un-ground pontil scar. Its overall proportions indicate that it is likely to date to the early 18th century (Noel Hume 1980, 63).

The neck and part of the rim of a later wine bottle from posthole 0534 (G2329) dates from the late 18th- to early 19th century.

Other small undiagnostic fragments of post-medieval bottle glass were distributed in several other contexts.

Iron nails

Ninety-seven nails or fragments of nails were collected from twenty-four contexts. All the nails are medieval or post-medieval and were only recorded as bulk artefacts.

Slag and metal-working ceramics

Lynne Keys

Introduction and methodology

A small assemblage (7.3kg), all from the excavation phase of fieldwork, is discussed in this report. Area 1 produced 2.601kg of material, Area 2 737g and Area 3 3.961kg. Virtually all the slag was recovered by hand on site; only residues from Sample 0005 were presented for examination. The assemblage was examined by eye and categorised on the basis of morphology; in addition, slag and soil adhering was tested with a magnet. Each slag or other material type in each context was weighed together except for smithing hearth bottoms, which were individually weighed and measured for statistical purposes. Quantification data and details are given in Table 11.

Context	Samp	Identification	Wt (g)	Lgth (mm)	Br (mm)	Dp (mm)	Comments	pcs
0342		undiagnostic	21					
0356		burnt coal	28					
0356		iron-rich cinder	22					
0356		smithing hearth bottom	183	70	60	40	incomplete	
0356		undiagnostic	29				with copper-alloy inclusions	
0356		undiagnostic	242					3
0356		undiagnostic	7					
0417		vitrified hearth lining	8					
0450		undiagnostic	107				smithing hearth bottom fragment?	
0460		undiagnostic	197					2
0480		undiagnostic	17				with copper-alloy inclusions	4
0499	5	iron	2				flat; smith's stock?	
0499	5	slag dribbles	8					
0499	5	undiagnostic	22					lots
0608		smithing hearth bottom	265	120	85	35		
0611		smithing hearth bottom	571	120	85	40		
0632		undiagnostic	380				fragment of smithing hearth bottom?	
0632		undiagnostic	513					
0699		undiagnostic	77					2
0699		undiagnostic	458					
0737		smithing hearth bottom	513	110	90	40		
0737		smithing hearth bottom	547	100	90	50		
0836		smithing hearth bottom	928	120	120	50		
0842		undiagnostic	541	90	90	65	fragment of smithing hearth bottom with hearth lining adhering	1
0842		undiagnostic	521					
0882		smithing hearth bottom	673	95	80	75		
0918		undiagnostic	43					

0976		vitrified hearth lining	131				slagged	2
0982		smithing hearth bottom	176	90	40	40	fragment; iron-rich	
0982		undiagnostic	13					
0982		vitrified hearth lining	32					
0991		iron-rich undiagnostic	5					
0991		vitrified hearth lining	19					

Table 11. Quantification of slag by context

The slag

Activities involving iron can take two forms: smelting or smithing.

Smelting is the manufacture of iron from ore and fuel in a smelting furnace. The products are a spongy mass called an unconsolidated bloom consisting of iron with a considerable amount of slag still trapped inside, and slag (waste).

Smithing involves the hot working (using a hammer) of the bloom to remove excess slag (primary smithing) or, more commonly, the hot working of one or more pieces of iron to create or to repair an object (secondary smithing). As well as bulk slags, including the smithing hearth bottom (a plano-convex slag cake which builds up under the tuyère hole where the air from the bellows enters), smithing generates micro-slags. These can be hammerscale flakes from ordinary hot working of a piece of iron (making or repairing an object) and/or tiny spheres from bloom smithing or high temperature welding used to join or fuse two pieces of iron. Hammerscale is so small that, despite being very magnetic, it is usually only recovered by soil sampling of floor surfaces and the fills of cut features that contain larger slags.

Slag described as undiagnostic cannot be assigned to smelting or smithing either because of morphology or because it has been broken up during deposition, re-deposition or excavation. Other types of debris in an assemblage may derive from a variety of high temperature activities - including domestic fires - and cannot be taken on their own to indicate iron working was taking place. These include fired clay, vitrified hearth lining and cinder (unless the latter is iron-rich – i.e. magnetic). If found in association with quantities of iron slag, however, they are almost certainly products of the process taking place.

Slag types present in this assemblage are shown in Table 12.

Slag type	wt (g)	iron process
iron-rich cinder	22	undiagnostic
iron-rich undiagnostic	5	undiagnostic
slag dribbles	8	undiagnostic
smithing hearth bottom	3856	smithing
undiagnostic	3188	undiagnostic
vitrified hearth lining	190	not diagnostic

Table 12. Quantification of slag types, by weight

There were eight examples of smithing hearth bottoms (total weight 3856g) and statistical data for these are shown in Table 13.

	range (g/mm)	median	standard deviation
weight	176–928	482	261
length	70–120	103	18
breadth	40–120	81	23
depth	35–75	46	13

Table 13. Smithing hearth bottoms – statistical data

Key groups

There are no key groups of any great significance. The ones that have any slag concentration are G2253, a posthole fill and G2031, a cellar backfill.

Discussion of the slag assemblage

The slag and related debris were produced by secondary smithing; no smelting slags were present. Posthole fill 0499 (part of G2253 in Area C), was sampled for environmental analysis and contained a small quantity of undiagnostic slag, 8g of slag dribbles and a flat piece of iron that could be either smith's stock or an off-cut from smithing. In addition, fragments of flake and spheroidal hammerscale were identified in the sampled material (see Plant macrofossils and other remains).

The back fill 0356 of a cellar in Area B (G2031, G2032) contained just over half a kilo of slag and related high-temperature debris. As this is definitely redeposited material it is not worth further attention. However it should be noted that this feature also contained the stoneware crucible type fragments with the copper alloy remains (see below).

Metalworking ceramics
Richenda Goffin

Introduction
A total of thirty-six fragments of vitrified ceramic material (4864g) was recovered from five contexts (Table 14).

Context/Group	Crucible		Vitrified CBM		Date Range
	No.	Wt/g	No.	Wt/g	
0342/G2026	12	1210	7	426	
0356/G2031	20	2954			19th C
0365/2033	1	67			19th C
0470/2317	1	92			19th C
0534/2329	2	115			L18th-19th C
Total	**36**	**4438**	**7**	**426**	

Table 14. Breakdown of metalworking ceramics and associated material

The assemblage
The majority of the assemblage consists of fragments of cylindrical stoneware crucible, which are semi-vitrified on both the internal and external surface. The largest fragment, which was found in cellar fill 0356 (G2031) has a diameter of 21mm. A single fragment of the rim shows part of the pouring lip which has the remains of some copper still adhering to it. An associated fragment from the same context is made from over-fired brick or fired clay, which has a vitreous deposit that also contains a small fragment of copper alloy.

The largest quantity of crucible fragments appears to be from the backfilling of the cellar that contained many ceramics dating to the 17th-18th centuries, but also some sherds dating to the 19th century.

Worked flint
Scanned by Colin Pendleton

Thirty-eight fragments of worked flint weighing 857g were collected. One fragment of a flint nodule was natural but showed evidence of mortar to indicate that it had been used structurally.

The flint was scanned briefly but not catalogued. The small assemblage included some worked flakes that are likely to date from the Late Neolithic to Early Bronze Age period. Four fragments were found with possible Bronze Age pottery in pit 0860 (G2430). In most other cases the flint was found as residual elements, for example, a flint in the fill 0857 of medieval pit G2427.

Heat-altered flint and other stone

110 fragments of heat-altered flint and other stone were collected (541g). For the most part the stone was used as packing or consolidation material but there are also miscellaneous single fragments of heat-altered flint present. The greatest quantities were recovered from bulk samples taken from two groups of postholes in Area C (G2252 and G2253) that formed parts of medieval structures. Heat-altered flint and stone were also present in deposit 0625 (G2256, a possible hearth or deliberate dumping in order to even up a depression in a clay floor) and deposit 0794 (G2214, the original cellar floor in the 'merchant's house').

Lavastone

Four fragments of lavastone quern were present in three contexts, 0690 (G2244), 0882 (G2422) and 0982 (G2151). None of the stones showed any diagnostic features apart from a fragment from 0982. This had an outer diameter between 36mm and 46mm, and may have come from a larger millstone rather than a domestic hand-turned stone. One of the outer edges has been roughly dressed, whilst the other side has been worn smooth through usage. The lavastone is grey, vesicular and likely to be imported from the Rhineland.

Stone

A total of eighty-six fragments of stone was recovered (22.581kg). Forty-one fragments of irregularly shaped sandstone were collected from medieval hearth 0490 (G2264). They are slightly pink in colour, presumably from being heat affected. A very large circular fragment of similar dressed stone, also heat affected, was found close to the hearth, imbedded in clay floor 0492 (G2265). It has sooted residue on both flat surfaces and might have been used as a hearthstone.

Irregular fragments of septaria stone were recovered from contexts 0397 (G2044), 0467 (G2242), 0468 (G2242), 0552 (G2115), 0544 (G2242), 0699 (G2144), 0643 (G2211)

and 0942 (G2410). These came mainly from pits dating to the post-medieval period and may represent demolition material from earlier buildings.

A small, broken block of limestone that was burnt on one edge was present in post-medieval pit 0690 (G2244).

Fragments of slate were recovered from ten contexts. Pieces from 0375 (G2047), 0544 (G2242) and 0614 (G2392) are large and may represent the remains of roofing slates dating to the post-medieval period.

The small finds

Introduction

104 small find numbers were allocated from the excavation phase, with a further seven from the evaluation (Table 15). The small finds were preliminarily recorded on a Microsoft Access database (reproduced as Appendix 8) and selected metalwork was sent for x-ray. The assemblage dates primarily to the medieval and post-medieval periods, although there are some fragments of worked antler and bone implements that are likely to be Anglo-Saxon and/or early medieval.

Material	Quantity
Antler/bone/ivory	11
Ceramic	1
Copper alloy	44
Glass	12
Iron	32
Lead	4
Stone	6
Textile	1
Total	**111**

Table 15. Small finds by material

Small finds by material

Antler, bone and ivory

Skate

A fragment of a semi-finished bone skate (SF5006) was found in a Middle Anglo-Saxon pit (G2024, fill 0423). It is made from a horse metatarsus, the distal end of which has been cut off so it tapers to a point. The under-surface is very smooth and there are no

perforations. Similar skates have been found in other central Ipswich sites that are Anglo-Saxon in date.

Musical instrument?

A single fragment of worked bone (SF5038) that has two circular holes drilled into it was recovered from the fill of a quarry pit (G2135, 0632) dated to the 16th century. The feature also contained a small quantity of Middle and Late Anglo-Saxon pottery. The bone is fragmentary and is curved, and although it could perhaps be part of a musical instrument such as a pipe, in view of its curvature this seems unlikely, and it is more likely to represent a waste fragment.

Knife handles

The remains of a scale-tanged handle (SF5046) were identified in a modern cable trench (G2005, 0462). It is joined together with four rivets. The terminal is expanded and is a similar shape to an example from Norwich, although the one from IPS 605 is more ornately carved at the end. The example from Norwich dates to the early post-medieval period (Margeson no 779, 1993).

Another scale-tanged bone handle (SF5030) was found in the backfill of post-medieval brick-lined pit G2117. The bone plates are decorated in ring and dot motifs in groups of three and the dating is uncertain.

Waste

The antler small finds include seven fragments of red deer antler waste identified in deposits that date from the 11th century (G2153, 0980) into the 13th century (G2268, 0752), with one fragment that was accompanied by pottery dating to the 15th–16th century (G2395, 0737).

Brush

The bristle end of a small, ornate ivory brush (SF5008) was recovered from the fill of a cellar (G2031, 0356). It has copper staining around the head indicating that the bristles were made of fine copper wire (MacGregor, 183). Post-medieval pottery fragments, including some 19th-century wares, were found in this deposit.

Glass

Window glass

Small quantities of medieval/late medieval window glass (SF5053) were found in pit G2211 (context 0643). These were opaque and in poor condition. Two slightly thicker pieces had grozed edges. None were obviously decorated. The fragments were found with a large assemblage of ceramic building material and pottery dating to the 16th century.

Vessel glass

A few fragments of late medieval early post-medieval vessel glasses were identified. Several pieces of the upper part of a green-tinted pedestal beaker with optic-blown wrythen ribs (SF5099 from Sample 15) were identified in the fill of a pit (G2211, 0643) containing 16th-century pottery. The base of this vessel (SF5054) was found in the same pit (G2211 0642). Such vessels, which are considered to have been made exclusively in England, belong to the second half of the 16th century into the first half of the 17th century (Willmott, 47, fig 30).

A curious piece of vessel(?) glass rim (SF5055) that has been folded over and that has a curved external edge has not yet been identified fully. It comes from floor bedding 0797 (G2192) and has been covered with mortar.

The bases of two other vessels were present in fill 0228 (G2288) of cesspit G2285, in association with early post-medieval pottery. A colourless, complete pedestal-type base measuring 104mm in diameter (SF1002a) was recovered, together with six additional pieces including two rim sherds (rim diameter 90mm), indicating that the original vessel was quite large with a cylindrical body. The upper part of the pedestal base is not conical, but it is flat, although slightly concave. It is likely that this is a 16th-century example, made in a mixed alkali or soda glass (Willmott 2002, 45). If this is the case such vessels are rarely found in England, and their distribution hitherto seems to be restricted to the south of England.

The base of a second smaller pedestal vessel (SF1002b) is made of a darker, green glass (diameter 75mm). It is much more like the green-tinted potash beakers that date to the second half of the 16th- and first half of the 17th century (Wilmott, 2002).

The remains of the lower part of a decorated green stemmed wineglass (SF1001) from fill 0249 (G2083) was found with pottery dating to the 19th century.

Stone

Fragments of whetstones were recovered from both phases of fieldwork. A schist stone was identified from the evaluation (SF5101) from medieval quarry pit G2022. Other whetstones were identified in 0752 (G2268, SF5031) that contained Late Anglo-Saxon and medieval wares and 0903 (G2341, SF5024). A large fragment of grey, unidentified stone from construction fill G2198 tapers towards a point and has apparently been worked (SF5014).

Ceramic

A large fragment of moulded, fired clay (SF5009) was found in the fill 0326 of a well containing pottery dating to the 17th century and earlier (G2021). It shows the moulded impressions of a repeated design of octagonally grouped triangles around a central impressed orb. It does not appear to be a mould, nor is it good enough quality to represent a terracotta moulding.

Iron

Thirty-two small finds were made of iron. Although a proportion of the objects remain without object names, some initial identifications were possible.

A substantial part of an iron rowel spur (SF1005) was recovered from fill 0228 (G2288) of cesspit G2285. The spur consists of one complete side, the rowel box and rowel pin with six intact points. The same context contained a large iron handle, probably from door furniture (SF1003). The pottery accompanying this feature dates to the late 16th- or 17th century.

Three iron knife blades were identified (SF1004, SF5032 and SF5049) that in all cases were accompanied by early post-medieval or post-medieval pottery. An iron tool, possibly a gouge or chisel (SF5075) was present in backfill 0339 (G2028) of structure G2029. Other iron objects include staples, chain links and strap fragments.

Copper alloy

Forty-four copper alloy objects were recovered in total.

Coins and jettons

Six coins and/or possible jettons were present in the assemblage. These are all heavily encrusted and corroded. A farthing (SF5003) dated to James I or II was found in pit fill 0330 (G2036). They are Nuremberg jettons dating to the 16th century or later.

Dress accessories

There are seven examples of lace tags, together with nine small find numbers allocated to copper alloy dress pins, many of which were recovered from the environmental samples. A wire loop fastener was retrieved from Sample 15 from pit G2211).

A finger ring with double setting containing two glass pellets (SF 5015) was recovered from pit fill 0726 (G2133). The pottery from the fill of this feature is mixed and includes post-medieval wares but the ring is likely to be medieval (Margeson 1993, 5, fig 1, no 3).

Household objects

A fragment of a copper alloy cauldron (SF5007) with an everted rim present in pit G2042 (0345) is likely to be post-medieval.

Lead

The four lead small finds include a token (SF5083) from pit fill 0397 (G2044), a lead weight, a lead strip with rivet holes and a lead off-cut.

Textile

Fragments of dried-out textile (SF5100) were present in Sample 12 from cesspit G2117 (fill 0553), which contained pottery dating to the 16th century or slightly later. The largest fragment is *c.* 1cm square, but there are many smaller fragments with different gauge weaving patterns. The cloth pieces are off white, buff and mid brown in colour and are in a stable condition. It is quite possible that they represent rags for use as lavatory paper.

The environmental evidence

Introduction

The following types of biological and environmental remains were recovered: human bone, animal bone, shell and plant macrofossils with associated remains.

Human bone

Sue Anderson

Introduction

An articulated human skeleton 1006 (G2276) was recovered from the excavation. Four fragments of disarticulated bone were also collected from two other contexts.

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 (WEA 1980), with the exception of adult tooth wear scoring that 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).

The articulated skeleton

The bones are in poor condition with a high degree of post-mortem surface erosion and fragmentation, and represented a single adult. They comprise the cranial vault (deformed), two fragments of mandible, a fragment of the right medial clavicle, a piece of the right scapula coronoid process, fragmentary shafts of all limb bones except the right fibula, part of the left ilium and ischium, and fragments of the calcaneums.

Due to the degree of erosion, it is difficult to assess the robusticity of the individual, and almost all sexing characteristics of the skull are missing or eroded. The main exception is the mandible, which has a very robust chin. The sciatic notch appears wide, but again this is likely to be a result of erosion. The clavicle shaft fragment retains its surface and appears to be relatively large. On balance the individual appears to have been male. No degenerative change was seen on the few surviving joint fragments, and the surviving epiphyses are all fully fused. The cranial sutures are still clear externally, although they are fully obliterated endocranially. Most of the teeth had survived, only two upper and

one lower incisors being lost post-mortem. Tooth attrition suggests that the individual was in the young to middle-aged range. No dental pathology is present, but there is some calculus formation and a slight degree of enamel hypoplasia in the canines.

A full list of systematically scored non-metric traits is included in the digital archive. None of the bones could be measured, but the estimated length of the left femur is around 430mm. This places the individual towards the high end of the female and the low end of the male ranges for femur lengths at the Wolsey Street medieval cemetery in Ipswich (Anderson 2004b, 28).

No pathological conditions were observed.

Disarticulated remains

Cellar backfill 0324 (G2238) contained fragments of three bones: the lower two-thirds of an adult right femur shaft in good condition; a small fragment of adult fibula shaft; and the proximal half of a left femur of a child aged *c*. three years old. Another adult right femur shaft was found in possible grave fill 0978 (G2277), but was very eroded and all surfaces had been lost.

Summary

The articulated skeleton is that of a young to middle-aged adult male. He was probably relatively short in comparison with other men of the period. His teeth, although worn, showed no signs of decay and there was no evidence for abscesses in the surviving alveolar bone. The few fragments of joint showed no evidence for degenerative or stress-related disease.

Duplication of elements in the disarticulated remains indicate that they represented at least three further individuals, two adults and a child.

Animal bone
Julie Curl

Introduction
A total of 43,330g of faunal remains was retrieved by hand-collection and sample processing methods. The assemblage has produced at least twenty-four species, comprising domestic and wild mammal (including rodents), domestic and wild bird and fish. A very small quantity of disturbed and re-deposited human bone was also recorded. The assemblage also produced a few pieces of antler working waste.

Methodology
The assessment was carried out following a modified version of guidelines by English Heritage (Davis, 1992). All of the bone was scanned to determine range of species and elements present. Where species identification was not possible, an attempt was made to determine if the remains were those of large mammals, small to medium mammals, small mammals, birds, fish and herpetofauna (reptiles/amphibians) and more detailed counts of these fragments that are not identifiable to species are in the digital archive. A note was also made of butchering and any indications of skinning, horn or antler working and other modifications. When possible a record was made of ages and any other relevant information, such as pathologies. Counts and weights were noted for each context with additional counts for each species identified, counts were also taken of bone classed as 'countable' (Davis, 1992) and measureable bone (following Von Den Driesch, 1976).

Sample material was briefly scanned, weighed and counted primarily to record the range of species and elements present and these were recorded as 'present' in the catalogue by groups at this stage.

All information was recorded directly into Microsoft Excel spreadsheets for quantification and assessment. A basic catalogue of the hand-collected material and a separate catalogue of the sample material are included as Appendix 9. The full assessment database, with more detailed catalogues and counts are available in the digital archive.

Quantification, provenance and preservation
A total of 42,184g of faunal remains, consisting of 2,475 pieces, was recovered from the hand-collected remains and a further 1,146g, consisting of 2,515 elements, was

recovered from sieved samples. Quantification by method of retrieval or processing can be seen in Table 16.

Collection method	Bone weight (g)	Bone count
Hand-collected	42,184	2,475
Sample material	1,146	2,515
Total faunal assemblage weight & count	**43,330**	**4,990**

Table 16. Quantification by weight and count of the hand collected and sample material, with total weights and counts for the assemblage

For the hand-collected bone, the bulk of the material (just over 70% by weight) was retrieved from a variety of pits. Just over 19% was recovered from cellar fills and over 6% was produced from layered deposits. The remaining 5% (by weight) was found in a variety of fills, including postholes, a drain, a brick structure and unspecified features. In terms of the dates for the bone, the largest quantities were recovered with finds of a medieval to late and post-medieval date. Less than four kilos of bone was found in Anglo-Saxon deposits and less than two kilos of bone was found in fills that are currently not dated. Quantification of the hand-collected assemblage by weight(g), feature type and date is presented in Table 17.

Feature	Period					Feature Total
	Anglo-Saxon	Medieval	Late Medieval	Post-medieval	Undated	
Brick structure					258	258
Cellar			2,711	5,257	101	8,069
Drain		68	91		2	161
Feature (Unspecified)	165	15	266			446
Finds/Pit			70			70
Floor					1	1
Foundation				39		3
Layer	17	2,377	47	139	174	2,754
Pit	3,456	9,847	11,040	4,295	1,039	29,677
Posthole/Pit					98	98
Posthole	28	29		49	161	267
Quarry pit		335				335
Structure				9		9
Period Total	**3,666**	**12,671**	**14,225**	**9,788**	**1,834**	**42,184**

Table 17. Quantification of the hand-collected faunal assemblage by weight (g), feature type and historic period

Overall the condition of the bone is generally good, although much fragmentation has occurred from butchering. There are numerous measurable (following Von Den Dreisch, 1976) and countable (Davis, 1992) bones: these will allow identification to species of

approximately half (by element count) of the assemblage and the collection of metrical data that can allow estimation of stature, age and breed.

Some gnawed material was noted, including a goose humerus in pit fill 0811 (G2271) that had been gnawed by a cat or small canid. A few fragments showed some burning, probably representing cooking and fire debris.

Sample material

Eighteen soil samples were taken for sieving for environmental evidence, which yielded a total of 1,146g of bone, consisting of 2515 elements. The remains from many of the samples are in very good condition and there is survival and retrieval of numerous small fish, bird and rodent bones. The range of species seen in the assessment scan includes three species of vole, mouse, a range of birds, including possible passerines (perching birds). Some bone from domestic mammal species were also seen in the samples. Two human bones (a metacarpal and skull fragment) were identified in the sample from the cellar fill 0324 (G2238), which were recovered with fragments of cattle, sheep/goat, probable rabbit and fish bone.

Context	Sample	Ctxt Qty	Wt (g)	LDM	SMDM	DWM	WM	SM	Rod	M	Bird	Fish	HSR	Species Range	MNI	Butchering	Comments
0324	1	200	75	*				*		*		*	*	inc HSR			inc human metacarpal and skull fragment
0397	2	500	339	*	*			*		*	*	*		range of fish + bird	10	*	large and small fish, birds
0471	4	45	27							*	*	*					
0495	3	60	28							*	*	*		mostly mamm al frags			
0499	5	36	23							*		*					
0512	6	27	15							*							
0514	7	4	2							*							
0544	10	145	20					*	*	*	*	*		mouse, fish +			
0551	11	150	108	*	*			*		*	*	*		fish, wild bird, +	5		inc large species of fish
0553	12	24	172	*		*						*		most cattle			
0553	12	400	35						*	*	*	*		mostly fish	5		
0623	13	290	22								*	*		mostly fish			
0625	14	80	46							*		*		fish + mamm			

														al			
0643	15	350	143	*	*		*	*	*	*	*	*		voles, rabbit, bird+	8	*	inc range of voles
0644	16	25	3							*	*	*					
0794	18	120	49	*		*				*		*		mamm al and fish			
0931	20	14	7					*		*	*	*					
0964	21	20	13							*		*					
1036	26	10	3							*		*				*	
1036	26	15	16		*				*					mostly mouse			several bones of mouse sp.

Table 18. Quantification by element count and sample weight and record of species groups seen in the assessment scan

The samples material has the potential to provide additional environmental evidence for smaller species (including probable 'pest' species) living on and around the site as well as giving an indication of the surrounding environment. The sample material can also provide additional material for the main domestic species, additional species for food (such as the fish, bird and small mammal) and allow comparison of retrieval methods.

A separate, full catalogue of the sample assessment is available in Appendix 9, while more complete information is contained in the digital archive.

Species and initial observations

The assessment scan of the whole assemblage (hand-collected and sample material) showed at least 24 species, which included the main domestic food mammals, a range of domestic and wild bird, fish, deer, small mammal and rodents. A quantification of species by period (hand-collected only) is shown in Table 19.

Species	Period					Species Total
	Anglo-Saxon	Medieval	Late Medieval	Post-Medieval	Undated	
Bird (misc, wild and juvenile)	1	22	39	23		85
Bird - Fowl	4	1	1		2	8
Bird - Goose		3	4			7
Cattle	36	114	133	89	30	402
Deer - Fallow		1		1		2
Deer - Red		6	1			7
Dog/wolf		1				1
Equid		2	2		2	6
Feline				1		1

Fish	36	10	24	68	9	147
Mammal	129	397	578	263	18	1,385
Pig/boar	4	51	73	17	7	152
Sheep/goat	23	61	101	60	7	252
Small mammal	4	2	12		1	19
Total	**237**	**671**	**969**	**522**	**76**	**2,475**

Table 19. Quantification (NISP) of hand-collected species by period

The bulk of the assemblage (by weight) consists of the main food mammals – cattle, sheep/goat and pig/boar. Both sheep and goat were noted during the assessment and probable wild boar remains were also seen, although much of the porcine remains are likely to be domestic pig. Ages of the main food mammals vary considerably with both adults and juveniles present, with some mature and several neonatal individuals from the main food species.

A range of bird bone was seen, including goose, fowl and wild species. One fowl bone showed modification (spur removal) that suggests stock management. Relatively few bones of small mammals were seen, with sparse remains of cat, rabbit and possible hare.

There is a range of adult and juvenile bones with the main domestic mammals and quite striking size differences suggest either different breeds or sexual dimorphism.

A range of butchering was regularly noted, with both primary cuts from skinning and secondary dismemberment and preparation of cuts of meat; some butchering was quite excessive. Fine knife cuts were also noted on equid bones and a cat, which suggest these species were also included for skinning. One cattle mandible showed knife cuts on the inner jaw, which would suggest tongue removal.

Several pathologies were noted, particularly with the cattle, suggesting a range of uses for these animals and indicating that some stress was incurred for this group. Some pathologies were seen with the sheep/goat, including ‘thumbprint depressions’ on a sheep horn core in pit fill 0811 and on another sheep in pit fill 0812 (both G2271).

Some working waste is included in the faunal assemblage with a sawn antler tine fragment from a red deer in 0737 (G2398) and four fragments of cut and sawn red deer

antler in 0752 (G2268). A sawn red deer tine and chopped and cut sheep horn cores were identified in 0812 (G2271). Another red deer antler tine, which had been sawn and broken, was found in 0980 (G2153), along with a chopped sheep horn core. The antler waste has been separated out and catalogued as waste in the small finds database (SFs 5103–5106).

Shell

1649 fragments of shell were collected, weighing 12,474kg. Oyster shells were identified in seventy-four contexts, and mussel shells were found in seventeen contexts. The shells were mainly present in the fills of pits from all periods, with oyster being present in pit fill 0460 (G2061) that contained Middle Anglo-Saxon pottery. Both oyster and mussel shells were found in the oven structure 0885 (G2409).

Land snails were identified from one context – pit fill 0726 (G2133).

Plant macrofossils and other remains

Lisa Gray

Introduction

Twenty-six samples were collected during the excavation phase of the fieldwork, as summarised in Table 20.

This report provides an assessment of the type and quality of preservation of organic (mainly botanical) remains and any inorganic materials in the samples.

Sample	Context	Group	Date	Feature type and/or sample details
1	0324	G2238	17th–18thC	Cellar fill
2	0397	G2044	16thC	Fill of rubbish pit
3	0495	G2252	13thC?	Posthole fill
4	0497	G2252	13thC?	Posthole fill
5	0499	G2253	13th–14thC	Posthole fill
6	0512	G2253	13th–14thC	Posthole fill
7	0514	G2253	13th–14thC	Posthole fill
8	0516	G2253	13th–14thC	Posthole fill
9	0491	G2264	medieval	Burnt clay surface of hearth
10	0544	G2242	L15th–16thC	Lower fill of pit –possible cess
11	0551	G2115	16thC?	Backfill of cesspit G2117
12	0553	G2116	16th C?	Primary fill of cesspit G2117
13	0623	G2255	13th/14thC	Occupation layer over clay floor
14	0625	G2256	12th–13thC	Possible hearth
15	0643	G2211	16thC	Fill of cesspit
16	0644	G2211	16thC	Fill of cesspit
17	0694	G2407	13th–14thC	Charcoal rich lens within clay floor 0694
18	0794	G2214	late medieval	Cellar floor
19	0885	G2409	medieval?	Burnt clay in oven 0886

20	0931	G2282	13thC?	Fill of small pit containing animal bone
21	0964	G2371	15th–16thC?	Occupation layer
22	1005	G2276	Late Saxon?	Fill of grave
23	1005	G2276	Late Saxon?	Gut sample from skeleton 1006
24	1005	G2276	Late Saxon?	Pelvic sample from skeleton 1006
25	1036	G2378	13thC	Scorched clay interleaved with crushed coal or charcoal
26	1036	G2378	13thC	Mixed occupation deposits/tread layers

Table 20. Sample descriptions

Sampling and processing methodology

Sampling, flotation and residue sorting was carried out by SCCAS. Processing was carried out using a flotation tank with a 300 micron mesh sieve (Anna West, *pers comm*). Each sample was processed completely.

Once with the author the flots were scanned under a low powered stereo-microscope with a magnification range of 10x to 40x. The abundance, diversity and state of preservation of eco- and artefacts in each sample were recorded. A magnet was passed across each flot to record the presence or absence of magnetic material (e.g. hammerscale). All data was recorded onto paper record sheets for tabulation. These sheets are kept with the author's archive and copies available on request.

Identifications were made using modern reference material (author's own and the Northern European Seed Reference Collection at the Institute of Archaeology, University College London) and reference manuals (such as Beijerinck, 1947; Cappers *et al.,* 2006; Charles, 1984; Fuller, 2007; Hillman, 1976; Jacomet, 2006). Nomenclature for plants is taken from Stace (Stace, 2010). Latin names are given once and the common names used thereafter. All items have been given estimated levels of abundance, and the results of the plant macrofossil assessment are shown in Appendix 10.

Results

Quality and type of preservation of the plant macrofossils

Plant macrofossils preserved by charring and waterlogging were present. Contamination was low; the flots contained no evidence of bioturbation and the samples were taken from land near the waterfront in Ipswich where waterlogged preservation was likely.

Charring occurs when plant material is heated under reducing conditions where oxygen is largely excluded (Boardman & Jones 1990, 2; Campbell *et al.* 2011, 17). These conditions can occur in a charcoal clamp, the centre of a bonfire or pit or in an oven or when a building burns down with the roof excluding the oxygen from the fire (Reynolds 1979, 57). Charring leaves a carbon skeleton resistant to biological and chemical decay (Campbell *et al.* 2011, 17).

Waterlogged plant remains tend to be recovered from sediments where the water table has remained high enough to inhibit the activities of decay-causing organisms or in anoxic situations such as pits with high organic contents or sediments sealed by a layer of mud (Campbell *et al.* 2011, 19).

Most of the fly puparia were mineralised. Mineralization is the term used to describe the preservation of organic material by the replacement of organic compounds with calcium phosphate, calcium carbonate or silica (Zohary and Hopf 1994, 6). Calcium phosphate could have been present in archaeological deposits in lime used to sterilise cesspits, in urine, in fish bone and scales or in calcium-rich soil (Green 1979, 281). One mineralised globular object was found in Sample 2. The formation of these objects is still uncertain but it is likely that they form in calcium carbonate-rich environments (Carruthers, 1988).

The charred plant remains

Charcoal fragments of identifiable size (>4mm^2) were recovered from most samples with the highest number in Sample 10 (context 0544, lower fill of cesspit G2242). Charred twig fragments were found in Samples 3, 4, 5, 15, 17 and 18. Most were present in Sample 4 (fill of posthole G2242).

Charred cereal grains and seeds were present in low numbers in samples from all periods. There was very little variation between samples. It is possible that these charred remains are general background waste from earlier periods and incorporated in to later deposits with backfill.

The most significant assemblages were from Sample 12 (pit fill G2116) and Sample 16 (pit fill G2211). Both of these samples came from fills interpreted as cess and the high number of edible fruit seeds seems to indicate this. Both contain abundant seeds of fig (*Ficus carica* L.) and less frequent quantities of seeds of grape (*Vitis vinifera* L.).

Sample 12 also contained many blackberry/raspberry (*Rubus fruticosus*/*idaeus*) seeds and less frequent apple/pear (*Malus*/*Pyrus* sp.) seeds.

Faunal material in the flots

Oyster shell fragments and fish bone were common. The faunal remains that are most indicative of the interpretation of cess are the mineralised and unmineralised whole and fragmentary fly puparia in Sample 12 and Sample 16.

Inorganic material

Magnetic material was common in most samples and most frequent in Samples 1, 2, 3, 14, 16, 18, 21 and 22. Most of these were flakes and lower numbers were spheroidal hammerscale. Spheroidal hammerscale is formed when droplets of hot slag are expelled during welding and primary smithing and flake hammerscale is formed by mechanical or thermal shock when iron is forged (Starley, 1995). Slag, pot, fired clay, heat-altered flint, iron, copper, nails and lime/mortar were also present in the residues of many of the samples.

Biases in recovery, residuality, contamination

Low levels of contamination were noted. No evidence of bioturbation was present in these samples.

6. Potential of the data

6.1 Realisation of the Original Research Aims

ORA 1: *Establish whether any archaeological deposit exists in the area, with particular regard to any which are of sufficient importance to merit preservation in situ.*

Realisation: Archaeological deposits and features of Anglo-Saxon to post-medieval date were found in all parts of the site, except in localised areas where they were removed by modern intrusions. Some late medieval masonry walls were considered by the Curatorial Officer to be of sufficient importance to merit preservation *in situ.* These were the east wall of the Gun Inn cellar (Area A) and the cellar walls of the 'merchant's house' (Area C). It is understood that some proposed piles were relocated in order to avoid those remains and that due care was to be taken by the building contractors during ground work in order to protect the walls. The success (or otherwise) of those measures has not been determined because archaeological monitoring of ground work was not carried out.

ORA 2: *Identify the date, approximate form and purpose of any archaeological deposit within the application area, together with its likely extent, localised depth and quality of preservation.*

Realisation: Archaeological deposits and features ranged in date from the Anglo-Saxon period to the 20th century. They included intrusive features such as cesspits, quarries, wells and drains, layered deposits such as external soil horizons, internal floors and associated make-up and occupation deposits, and structural remains of clay-and-timber, stone and brick buildings. Further details can be found in Section 4 and Appendix 2.

ORA 3: *Evaluate the likely impact of past land uses and natural soil processes.*

Realisation: Natural soil processes were represented by the development of subsoil deposits over the river terrace gravels. However, these deposits were amended by subsequent human activity and few, if any, natural soil profiles were preserved.

ORA 4: *Define the potential for existing damage to archaeological deposits.*

Realisation: Generally there was modern truncation to an average depth of 0.50m below current ground level. This truncation was associated mainly with the redevelopment of the site as a lorry park in the 1980s. The construction of a lorry inspection pit at the west end of the site caused considerable local disturbance to archaeological strata, as did the insertion of some petrol interceptors and other drains. The construction of cellared buildings along the Key Street frontage in the post-medieval period also caused considerable disturbance to earlier strata along the southern boundary of the site.

ORA 5: *Define the potential for colluvial/alluvial deposits, their impact and potential to mask any archaeological deposit.*

Realisation: Although close to the River Orwell, the site was mostly above the inter-tidal zone and alluvial deposits were not encountered.

ORA 6: *Define the potential for artificial soil deposits and their impact on any archaeological deposit.*

Realisation: N/A

ORA 7: *Establish the potential for waterlogged organic deposits in the proposal area.*

Realisation: Deeper archaeological features extended below the water table and it is likely that waterlogged organic deposits were present, particularly along the southern boundary of the site. These could not be investigated due to depth restrictions.

ORA 8: *The academic objective of the project should 'centre upon the high potential for this site to produce evidence for Anglo-Saxon and medieval occupation'.*

Realisation: The evidence for Anglo-Saxon occupation was derived mainly from pits of 9th- to 11th-century date (Late Anglo-Saxon). Although pottery of the Early and Middle Anglo-Saxon periods was found it was mostly residual in later deposits. At least one burial was found, and this was potentially also of Late Anglo-Saxon date.

Occupation of the site continued into the early medieval period, although this was represented only by residual pottery of 11th–12th-century date. During the 12th–13th centuries clay-and-timber buildings were constructed in Area C, while other areas seem to have remained open and were used for quarrying and the digging of pits. The timber buildings were sealed by external soil deposits that might have developed during a period of abandonment of the site, although some of this soil might have been imported to raise ground levels. In the late medieval period at least two substantial cellared masonry buildings were constructed on the Key Street frontage of the site, while areas to the north mostly remained open as gardens or yards. The late medieval buildings continued in use throughout the post-medieval period.

6.2 General discussion of potential

The site archive has the potential to address research objectives relating to topography, urban development, the built environment, trade and industry, demographics and artefact studies, with particular relevance to the Anglo-Saxon, medieval and post-medieval periods.

Potential of the stratigraphic archive

For the purposes of this assessment a low level of interpretation (based on the grouping of related contexts) has been applied to the stratigraphic archive and this, together with finds dating (principally the pottery) has allowed a simple site sequence to be proposed (Section 4). Further analysis of the site records, incorporating the results of existing and proposed work on the finds and environmental archives together with further consideration of the documentary and cartographic evidence, would lead to a fuller understanding of the site sequence and its local and regional significance. This would be achieved by assigning the *groups* described in this report to *land-use entities* (buildings, open areas etc), each of which might have more than one *phase* of activity or development. The land-use entities would in turn be assigned to site-specific

chronological *periods*, reflecting clear and significant changes to the layout or function of elements within the site.

In particular there is considerable scope for further analysis and reporting of the medieval and later building sequences along the Key Street frontage of the site. This has the potential to contribute to one of the important research themes for Ipswich, namely the origins of Key Street and the effects of that route on the development of the town's medieval quays.

Potential of the finds archive and recommendations for further work

General potential

There is some evidence of prehistoric activity on site, mostly from pit G2430. A study of the Bronze Age pottery and the flint will contribute to establishing the date and extent of this, and this information can be added to our existing understanding of prehistoric activity in the Gipping valley.

Further study of the distribution of the Middle and Late Anglo-Saxon artefacts will contribute to an appreciation of the nature of the land-use and the lay-out of the town at this time. The Late Saxon domestic refuse identified in the pits can be compared with similar assemblages elsewhere in the centre of Ipswich.

In spite of the considerable evidence of early medieval structures, the artefactual evidence for this date is not substantial and consists of mainly residual pottery, supplemented by some small finds.

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More detailed analysis of the finds and environmental remains in combination with a close examination of certain structural features will contribute to providing information on the character and extent of the land-use of parts of the site, particularly the area along Key Street during the late medieval and early post-medieval periods.

Consideration of the finds assemblages from individual buildings may enhance our knowledge of their appearance and their functions, as well as providing evidence of the level of affluence of the inhabitants. This should be done alongside a study of the documentary evidence for this part of the waterfront. A study of the spatial distribution of

the pottery and ceramic building material may be particularly fruitful for this. Little has so far been published on the important centre of Ipswich, and selected groups of artefacts can be compared with others of a similar date from other East Anglian centres such as Norwich and Colchester, or other cities such as Canterbury and York.

The presence of the ceramic crucible fragments and metalworking waste that had been mainly deposited into the cellar G2031 should be examined further, so that the processes which were being undertaken can be described, and if possible, associated with documentary evidence for the later part of the post-medieval period.

Pottery

Overall the diversity of pottery types represented in this assemblage is exceptional, with 100 different fabric groups being recorded. As some of those are generic, the group probably represents a larger number of original sources.

The presence of prehistoric, Roman and Early Anglo-Saxon pottery from the site suggests that there was activity during these periods, although the quantities are small. There is potential for at least one feature to be of prehistoric date, pit 0860 (G2430) that contained only Bronze Age(?) pottery and flints. More detailed recording and dating of the prehistoric and Roman groups may be possible if appropriate specialists are involved at the analysis stage.

A small quantity of Middle Anglo-Saxon pottery was recovered but most of it was residual with later material. Only two contexts contained Middle Anglo-Saxon pottery alone, pits 0460 (G2061) and 0735 (G2435).

The Late Anglo-Saxon to post-medieval groups are all relatively large, with the exception of the early medieval group, but this is a transitional period that generally produces smaller quantities than the preceding and following periods on urban sites. The Late Anglo-Saxon to medieval groups contain only small quantities of identifiable forms but, depending on where these are in the site sequence, it may be possible to use them to enhance the dating evidence for these periods in the town. This is particularly lacking for the medieval period at present. It will also be important to look at the sequence with regard to medieval coarseware fabrics, although again the evidence is

unfortunately limited for this site as a large proportion of the medieval coarseware is in one fabric.

The late medieval and post-medieval groups both contain larger quantities of identifiable vessels, including several near-complete examples. Some useful pit groups are present, particularly G2044 with several Dutch redware vessels, and G2017 that contains a number of identifiable forms. The large group from cellar G2031 includes a wide range of post-medieval fabrics and forms. It may be worth choosing a selection of late medieval and / or post-medieval wares for illustration to represent one or more individual pit groups, but the forms are generally no different from other assemblages of this type and can be paralleled in the published *corpora* for both Norwich and Colchester. Therefore this is only important if the site will be published, since there is little previous published material of this date from Ipswich.

The assemblage can be compared with other large assemblages from Ipswich sites at Neptune Quay and Wolsey Street (Anderson, in archive) and Cranfield's Mill (Goffin, in archive). Comparison with assemblages from sites elsewhere in the town and the wider region will help to place the site in context.

Spatial distribution of the pottery may be of value in determining the growth and decline of areas within the site. Estimation of the degree of residuality by context will also be of use in this study.

In summary, the potential of this assemblage is to provide evidence for dating and phasing of the site; pottery use, consumption and possibly manufacture; trade links both within and outside East Anglia; and status of the occupants.

Recommendations for further work on the pottery

- Spatial and temporal analysis of pottery (2 days)
- Analysis of key groups (1 day)
- Production of publication report (3 days)
- Illustration of 13 vessels (more if publication is anticipated)

Ceramic Building Material

The potential of this assemblage is to provide information on the types of ceramic building material in use at the site during the medieval to post-medieval periods. The site is currently not phased so further work will be required to complete the CBM analysis once this information is available.

Late to post-medieval tile and brick form the bulk of this assemblage but some probable medieval CBM is also present. There is particularly high potential to provide information on the buildings that stood on this site as there is a high proportion of material (largely in the form of samples) that was recovered from the structural features themselves, or was associated with them.

Also of interest is the large group of Dutch bricks present in the assemblage, particularly as the pottery assemblage also contains a high proportion of Dutch vessels. This type of brick is not common elsewhere in Suffolk. Problems in distinguishing this material from the early bricks that also occur on the site have been noted above (5.3), but there is a possibility that some of the less certainly identified bricks could be dated from their contexts and by association with other finds.

The preliminary assessment presented in this report provides an outline of the CBM types present in the assemblage, but the material has not yet been placed in context, either within the site itself or as part of the broader historic environment of the region.

Recommendations for further work on the CBM

- Comparison of the assemblage with other large groups of CBM from Ipswich and elsewhere in the county is required.
- Three-dimensional spatial distribution of CBM fabrics and forms in features and structures will be important in studying the taphonomy of the site, and in providing information relevant to the study of social status and land use.
- In order to reconstruct the types of buildings present in different phases, it will be necessary to integrate the analysis of the ceramic building material with the study of any other building material collected from the site (e.g. fired clay, stone, wood, plaster/mortar, window glass and fittings), as well as any recorded structural evidence.

- A report suitable for archive and/or publication will be prepared.

Total amount of time estimated: 3 days

Fired clay and mortar

Only small quantities of these two material types were recovered, although more pieces were retrieved amongst the finds from the bulk samples. Some fragments of fired clay were found in pit fill 0460 (G2061) that was the only feature containing Middle Saxon pottery. Four fragments were found with early medieval and medieval pottery in quarry fill 0417 (G2022).

In spite of the evidence for clay and timber buildings dating to the 13th–14th century, there is surprisingly little fired clay or mortar recovered as an artefact type.

Mortar was recovered from pit fills and the fills of cellars that contained ceramics of mixed dates. Unless the mortar fabrics can be equated with *in situ* remains there is little potential for further analysis, although basic recording should be undertaken for the archive, and its spatial distribution considered.

Recommendations for further work on the fired clay and mortar

- Analysis of fired clay and mortar
- Spatial analysis and possible structural descriptions
- Production of report

Total amount of time estimated: 1.5 days

Slag and metalworking ceramics

The slag and related debris were produced by secondary smithing; no smelting slags were present. Much of the slag was almost certainly redeposited material and not near any focus of smithing.

The exception to this, however, may be G2253 in Area C. Post hole 0511 (fill 0499), was sampled on site and contained a small quantity of undiagnostic slag, 8g of slag dribbles and a flat piece of iron that could be either smith's stock or an off-cut from

smithing. In addition some hammerscale was present in the bulk samples, such as from cellar floor 0794 (G2214)

The backfill 0356 (G2031) of cellar (G2032) in Area B contained just over half a kilo of slag and related high-temperature debris. The same feature contained several cylindrical fragments of stoneware that are of some interest, as they are obviously part of some post-medieval manufacturing activity that involves non-ferrous metals.

The ceramic containers have not been fully identified, nor the processes that were being undertaken within them, which clearly involves the use of copper. The slag and related debris from this feature should be re-examined in view of the crucible fragments. It would also be worth investigating whether there is any documentary evidence for the manufacturing of metal objects on the site during the post-medieval period.

Recommendations for further work on the slag and metalworking ceramics

- Any more slag from samples not processed at the time of assessment will require examination and assessment.
- The flat piece of iron from post hole 0511 (G2253) should be passed to the specialist dealing with iron objects with a note to say it was associated with iron smithing.
- The hammerscale identified during the environmental analysis should be examined and its distribution considered, with a view to establishing when and where any smithing was taking place.
- The slag deposited into the cellar backfill G2031 should be looked at to establish whether what kind of metalworking activity could have been taking place, along with the fragments attached to the stoneware ceramic fragments.

Total amount of time estimated: 1 day

Clay tobacco pipes

The excavation has produced a medium-sized assemblage of clay tobacco pipes dating mostly to the mid–late 17th century. Although the pipes can be classified broadly according to Oswald's Simplified General Typology there are considerable variations in form that must represent local styles. Also, given that Ipswich was a major port it is

possible that some of these pipes might have been brought in from other parts of the country.

Very few groups of pipes from Ipswich have been recorded and as far as the writer is aware none have been published. Indeed, the pipe-making industry of Suffolk as a whole has received remarkably little attention compared to that of neighbouring counties.

The significant groups of 17th-century pipes from the Eastern Triangle site form a representative sample of the range of pipes that were in use in Ipswich at that time and as such are worthy of further analysis and publication.

The purpose of the analysis would be to produce a detailed catalogue of the pipe fragments, recording the various attributes of each piece (such as form, the use of milling, bottering, burnishing etc). The catalogue would be accompanied by illustrations (to publication standard) of a representative range of pipes from the site to demonstrate bowl forms, marks and decoration.

Following detailed analysis a publication report should be prepared to provide a synthesis of the pipe evidence from this site, concentrating on the significant groups of 17th-century pipes identified in this assessment. The publication text could be incorporated in an overall site report or submitted for publication in the newsletter of the Society for Clay Pipe Research.

Recommendations for further work on the clay tobacco pipes

- Further analysis/recording (3 days)
- Publication text (2 days)
- Illustration of *c.* 20 pipes (2 days)

Post-medieval bottle glass

Apart from the group of bottles in cellar backfill 0356 (G2031) that have been described earlier the remainder of the site assemblage is fragmentary and warrants no further work.

The small finds

A few small finds were found in pits dating to the Middle and Late Anglo-Saxon period. The partly finished bone skate (SF5006) was recovered from pit 0735 (G2061), and fragments of waste antler from artefact working were found in other pits 0980 (G2153), and 0812 (G2271). Pit 0903 (G2341) that was dated by Thetford-type wares contained a whetstone, a possible buckle frame, a strap and a ferrule.

Although the small finds have been initially catalogued, it is likely that closer study of these artefacts will confirm that other objects dating to the Anglo- Saxon period are present as residual elements in later finds assemblages, as there are considerable quantities of Late Anglo-Saxon and early medieval wares present in many of the later deposits. A possible example of this is the disc brooch (SF5016) that was found in the post-medieval quarry pit fill 0699 (G2144).

Few objects date to the early part of the medieval period, with no coins or datable items apparent. Fragments of hollow copper alloy tubing, (SF5005 G2036) are likely to be medieval, as such finds are usually mounts from caskets and occasionally book covers (Ian Riddler, *pers. comm*). Small quantities of medieval and late medieval dress fittings and personal items were recorded (SF5012, SF5079, finger ring SF5015 from G2133) and these should be fully catalogued. Some of the window glass is also likely to be medieval or late medieval, but none of it is highly decorated and there is little that can be said about it.

The majority of the small finds date to the late medieval transition into the early post-medieval period. These include copper alloy buckles, lace tags and pins – all artefacts that are commonly recovered from urban sites. In addition the ironwork includes utilitarian items such as knives, some door furniture, a spur, staples and hinges. The post-medieval glass vessels are for the most part not uncommon but the presence of the clear pedestal drinking beaker is a rare find and requires further study. The vessel was found in a possible cess deposit in barrel-vaulted roof structure G2285, and it may be that further research could be done on the occupants of this building during the late 16th to early 17th century. In addition glass fragment SF5055 requires further identification.

The ceramic moulding SF5009 from well G2021 (SF5009) should be identified and described. The iron object identified in the slag assemblage from G2253 that could be related to metalworking activity requires radiography and further identification.

The textile fragments (SF5100) are very fragmentary but are in good condition. Several different weave types can be seen. The fragments came from the primary fill 0553 of a Tudor cesspit (G2116), and it is quite possible that the textile remains are deliberately cut up rags to be used for toilet paper. Similar fragments that are of Dissolution date have been found elsewhere close to churches and in these circumstances their re-use could be interpreted as an act of deliberate desecration of clerical vestments (Ian Riddler, *pers. comm*).

The overall small finds assemblage spans the Anglo-Saxon to the post-medieval periods, and represents a typical urban assemblage that can be compared to similar sequences from Colchester, Ely, Kings Lynn, Norwich and Thetford as well as fortified sites such as Castle Acre (Ian Riddler, *pers. comm*). The fact that so little has hitherto been published from Ipswich should also be borne in mind, but there are few objects amongst the assemblage that deserve publication in their own right. There is some merit however in discussing the distribution of the artefacts once full stratigraphic and documentary analysis has been undertaken. It might for example, be worthwhile to take a particularly rich assemblage from a Tudor cesspit, and consider both the artefacts and environmental deposits in order to gain some knowledge of the living conditions, diet and level of affluence of a household living in urban Ipswich at that time. It would also be worthwhile to consider other archive catalogues for the small finds, as, for example, other bone skates of Anglo-Saxon or early medieval date have been found in other sites in central Ipswich.

Recommendations for further work on the small finds

- Initial examination of small finds (1 day)
- Catalogue and discussion text for published material (2.5 days)
- Library visit, selection for illustration, checking drawings (1 day)
- Specialist work: Identification of textiles SF5100 and report (2 days)
- Illustration of 10 small finds and photos of 5 small finds

Potential of the environmental archive

Human bone

The human bone assemblage has been fully catalogued, apart from two pieces of human bone in the animal bone assemblage that should be extracted and added to the human bone report. Radiocarbon dating is recommended to find out the date of the articulated burial.

Animal bone

Depending on final dating and context information, the faunal assemblage has the potential to provide useful information on the domestic and wild species utilised and living on and around the site. The main assemblage contains mainly domestic stock with a good deal of butchering, ageing and pathological evidence that can provide information on the uses, health and husbandry of the domestic animals kept here.

The material from sieved samples, particularly the small mammal, bird and fish bone, is in very good condition with many complete small bones that will allow accurate identification of species present. The sample material has the potential to provide additional elements from domestic stock and wild species used or living on site and will also provide additional environmental evidence for the site and surrounding area. The samples will need to be sorted and any human bone removed prior to final analysis.

Several pathologies were noted in the assessment; these pathologies should provide further information on the state of health, use and husbandry of the stock at this site and need full recording and analysis.

Any further study of the assemblage should concentrate on the undisturbed material from Anglo-Saxon, medieval and late to early post-medieval contexts.

Recommendations for further work on the animal bone

- Sorting of sample material and analysis of selected sieved and hand-collected material.
- Comparison with other sites and updating assessment report (7 days)

Shell

Oyster and some mussel shells were mostly identified from pit fills on the site, dating from the Middle Anglo-Saxon period to the post-medieval period. Small quantities of both types of shell were found associated with oven G2409 and hearth G2264. No further work is required on this material, although its presence should be considered when discussing the contents of particular features such as cesspits that have good potential for a discussion on the artefactual and environmental remains.

Plant macrofossils and other remains

Potential for information on specific features and activities

The charred plant remains are probably general background waste. The uncharred fruit seeds do indicate that cess was present in the sampled features, especially as these seeds were accompanied by mineralised puparia and mineralised concretions.

The samples taken from grave G2276 showed no variation and produced small assemblages of charred grains and charcoal similar to the other samples. Sample 18 was taken to see if it revealed anything about the original use of a cobbled cellar floor in the so-called 'merchant's house'. The botanical remains were not significant but the sample did produce abundant hammerscale suggesting that metalworking may have taken place. Sample 25, from possible hearth G2362 revealed nothing more than the coal fragments observed during excavation.

Overall significance of the assemblage

The plant and faunal remains indicate that cess was present as suspected during the excavation. Two samples in particular contained many edible fruit seeds and mineralised fly puparia. The metallic remains indicate that industrial waste had accumulated at the site. The charred plant remains are low in number and often abraded suggesting that this is general background waste rather than evidence of activities at the site.

Recommendations for further work on the plant macrofossils

The charred grain and seeds remain were counted and it was possible to record all other taxa and inorganic remains. Therefore no further work is recommended on the archaeobotanical material. It will not be possible to identify the charred remains beyond

the level recorded here because of the absence of chaff. The waterlogged plant remains have also been identified as closely as their level of preservation allowed.

The better preserved and identifiable charred plant remains would potentially be suitable for radiocarbon dating but it is unlikely that they will give an accurate result because they are low in number and could have been introduced with backfill.

Potential of the documentary archive

Further consideration of the documentary evidence would lead to a better understanding of the history and ownership of the two late medieval cellared buildings – the Gun Inn and the 'merchant's house'. It is likely that a search of the photographic archive at the Suffolk Record Office would locate 19th- and early 20th-century images of the properties on the Key Street frontage of the site.

Recommendations for further work on the documentary archive

- Documentary research and reporting (2 days)
- Photographic archive search (1 day)

7. Significance of the data

The site data has considerable local significance and can contribute to research topics such as topography and its effects on Ipswich's urban development, extra-mural activity during the Late Anglo-Saxon period, and the origins of Key Street and its influence on the development of the medieval waterfront.

The significance of the results of the fieldwork can be considered also with reference to regional research frameworks (Glazebrook, 1997; Brown & Glazebrook, 2000; Medlycott, 2011).

Social organisation within Anglo-Saxon, medieval and post-medieval towns is a research topic for the Eastern region that was highlighted originally by Ayers (Brown & Glazebrook 2000, 30). Among the areas for examination that he proposed (and that might be addressed by the data from the Eastern Triangle site) were the following:

- A more developed understanding of spatial analysis in towns
- Detailed examination of buildings, their location, function and form

Urban development was cited as one of the major research theme in the same document (*ibid*. 43), to be explored under the following headings:

- Urban origins and development within contemporary social and economic frameworks
- The complexity of towns as social and economic constructs
- The development cycle in towns and its impact upon society
- The influence of the urban process and market upon society in general
- The role of towns in the development of society specifically with regard to technology, economic, cultural and political innovation

The Revised Framework for the East of England (Medlycott, 2011) reviewed the progress that had been made in addressing previously proposed research topics and suggested a number of future research topics for the Anglo-Saxon, medieval and post-

medieval periods. Those relating to Anglo-Saxon and medieval towns are of course most relevant to the Eastern Triangle site, in particular:

- The development and role of the towns as defensive centres, changes in their internal layouts and housing densities, their role as centres of supply and demand

Several over-arching research themes were proposed also (*ibid*. 84). Within the theme of urban research the followed subjects have particular relevance here:

- The morphology of medieval towns within a social, economic and political context, and in particular the earlier layout of towns

- The identification of urban housing, shops, warehouses etc., evidence for regional styles, the importation of crafts people from outside the locality, the adoption of innovations or ideas in construction methods or forms

- The archaeological and documentary evidence for urban areas should be better integrated

The Revised Framework concludes that for the Anglo-Saxon and medieval towns of the eastern region the ‘collation and synthesis of published and unpublished excavations needs to be undertaken’ (*ibid*. 70). This suggests that the significance of the data from the Eastern Triangle site would be enhanced if it were amalgamated with the results from nearby (largely unpublished) excavations such as those at the Western Triangle site and Albion Wharf (Section 2.2).

8. Analysis and reporting: aims and objectives

8.1 Revised Research Aims

RRA 1: Can further analysis of the stratigraphic archive provide a better understanding of the temporal and spatial development of the site during the Late Anglo-Saxon, medieval and post-medieval periods?

RRA 2: Can the site data be used to reconstruct the local topography and is there any evidence for the watercourse known to have existed to the west of the site?

RRA 3: In the absence of ceramic dating evidence can radiocarbon dating be applied to the burial G2276?

RRA 4: Given the number of Anglo-Saxon pits on the site, is there any evidence for contemporary buildings?

RRA 5: Medieval clay-and-timber buildings were found – what were their functions and how do they compare to contemporary buildings found elsewhere in Ipswich or the wider region?

RRA 6: What does the presence of 12th–13th-century buildings in the southern part of the site say about the origins of Key Street, and does the archaeological evidence tally with that from documentary sources?

RRA 7: Two substantial medieval masonry buildings (the Gun Inn and the ‘merchant’s house’) were found – how do these compare to contemporary buildings found archaeologically (or even extant) elsewhere in Ipswich?

RRA 8: Can documentary evidence shed any further light on the ownership and use of the Gun Inn and the ‘merchant’s house’?

RRA 9: How does the evidence for post-medieval buildings on Key Street and the use of external areas (including some evidence for industrial processes) to the rear of those properties relate to the documentary and cartographic evidence?

8.2 Analytical report synopsis

It is proposed that following the post-excavation analysis of the stratigraphic, finds and environmental archives the results of the fieldwork should be described in greater detail in an analytical report, to be made available as 'grey literature' *via* the OASIS on-line archaeological database.

The report would include a phase- and period-based account of the site sequence, integrated with finds and environmental evidence. An important aspect of the report would be the juxtaposition of the archaeological and documentary evidence for urban development on the site. The revised Research Aims stated above (8.1), together with other aims that might be defined during the analysis, would be used to guide the analysis and help to place the evidence in a broader context. The text would be accompanied by relevant maps and plans, section drawings, finds illustrations and photographs, site photographs and archive photographs.

Depending on the significance of the results of the analysis it is possible that the Curatorial Officer will require a further stage of reporting, such as a summary in the county journal *Proceedings of the Suffolk Institute of Archaeology and History* or as part of a more thematic publication incorporating the results from other Ipswich excavations.

9. Analysis and reporting: task sequence

The following tasks are proposed in order to complete the stratigraphic, finds and environmental analysis, leading to the production of a full analytical report:

9.1 Stratigraphic method statement

Task 1: Analysis of the stratigraphic archive, with reference to finds and environmental data and documentary/cartographic evidence, in order to define land-use entities, phases and periods

Task 2: Written descriptions of land-use entities, phases and periods

9.2 Finds and environmental method statement

Task 3: Ensure that slag, hammerscale and fishbone are separated out from sample residues and send to appropriate specialists

Task 4: Remove fishbone from animal bone assemblage and send to specialist

Task 5: Go through small finds and sort out those that require further x-rays

Task 6: Send human bone for C14 dating

Task 7: Prehistoric pottery – analysis and report

Task 8: Post-Roman pottery – analysis and report

Task 9: CBM – analysis and report

Task 10: Fired clay and mortar – analysis and report

Task 11: Clay tobacco pipe – analysis and report

Task 12: Worked flint – catalogue and report

Task 13: Slag and metalworking ceramics – analysis and report

Task 14: Additional radiography of iron

Task 15: Small finds – analysis and report

Task 16: Vessel glass – identifications and report

Task 17: Textile – identifications and report

Task 18: Human bone – additional identifications, add to report

Task 19: Animal bone – analysis and report

Task 20: Fish bone – analysis and report

Task 21: Updating of catalogues, databases and appendices

Task 22: Production of integrated updated finds reports

9.3 Documentary method statement

Task 23: Targeted research into Gun Inn and the 'merchant's house'

Task 24: Search for archive images at Suffolk Record Office

Task 25: Preparation of draft report on the documentary evidence

9.4 Graphics method statement

Task 26: Production of draft plans for stratigraphic phases and periods

Task 27: Production of draft section drawings

Task 28: Production of final maps, plans and sections for report

Task 29: Pottery illustration

Task 30: Small finds illustration

Task 31: Clay pipe illustration

9.5 Radiocarbon dating method statement

Task 32: Radiocarbon dating of human bone

9.6 Photographic method statement

Task 33: Selection of site photographs for analytical report

Task 34: Selection of archive images for analytical report

Task 35: Preparation/manipulation of images for analytical report

Task 36: Finds photography

9.7 Analytical report method statement

Task 37: Production of draft report

Task 38: Copy editing of draft report

Task 39: Specialist edit and corrections

9.8 Post-excavation project management method statement

Task 40: General project management

Task 41: External reader

Task 42: Subsequent corrections

Task 43: Proof reading and indexing

Task 44: Archiving (stratigraphic)

Task 45: Archiving (finds)

9.9 Summary of tasks

No.	Description of task	Staff	Days
Stratigraphic			
1	Stratigraphic analysis	KH	20
2	Land-use/phase/period descriptions	KH	10
Finds			
3	Extraction of finds/fish bone from samples/send away	RG	0.5
4	Removal of fish bone from animal bone/send away	RG	0.5
5	Selection of small finds for x-ray	RG	0.25
6	Send human bone for C14 dating	RG	0.25
7	Prehistoric pottery – analysis, report & catalogue	SP	1
8	Post-Roman pottery – analysis & report	SA	6
9	CBM – analysis & report	SA	2
10	Fired clay & mortar – analysis & report	SA	1
11	Clay tobacco pipe – analysis & report	KH	5
12	Worked flint – catalogue & report	SB	1
13	Slag & metalworking ceramics – report	LK	1
14	Additional x-rays		
15	Small finds – analysis & report	IR	4.5
16	Vessel glass – identification & report	HW/RG	0.5/0.5
17	Textile – identification & report	SHa	3
18	Human bone – additional IDs, add to report	SA	0.25
19	Animal bone – analysis & report	JC	7
20	Fish bone – analysis & report	DM	3
21	Updating/editing catalogues, databases & appendices	RG	1
22	Production of integrated finds report/editing	RG	3
	Consumables (archive boxes, transport etc)		
Documentary			
23	Research	AB	1
24	Archive image search	AB	1
25	Draft report	AB	1
Graphics			
26	Draft land-use/phase/period plans	KH	5
27	Draft section drawings	KH	3
28	Report maps, plans & sections	CB	20
29	Pottery illustration	SHo	2
30	Small finds illustration	SHo	2
31	Clay tobacco pipe illustration	SHo	2
Radiocarbon dating			
32	C14 dating (one sample @ £290) + admin	SUERC	n/a
Photographic			
33	Selection of site photographs for report	KH	0.5
34	Selection of archive images for report	KH	0.5
35	Preparation/manipulation of images for report	KH	0.5
36	Finds photography	GA	0.5
Publication text			
37	Production of draft analytical report	KH	20
38	Copy editing of report	RG	1
39	Specialist edit & corrections	Various	1
Post-excavation project management			
40	General project management	RG	3
41	External reader	?	1
42	Subsequent corrections	KH	1
43	Proof reading & indexing	RG	2
44	Archiving (stratigraphic)	KH	1
45	Archiving (finds)	RG	1

Table 21. Summary of tasks

SCCAS staff

KH = Kieron Heard (Project officer and principal author, SCCAS)

RG = Richenda Goffin (Finds manager / Post-excavation manager, SCCAS)

CB = Crane Begg (Graphics manager, SCCAS)

GA = Gemma Adams (Graphics assistant, SCCAS)

External specialists

SA = Sue Anderson (Pottery, CBM & cremated human remains)

AB = Anthony Breen (Documentary research)

SB = Sarah Bates (Worked flint)

JC = Julie Curl (Animal bone)

SHa = Sue Harrington (Textiles)

SHo = Sue Holden (Illustration)

LK = Lynne Keys (Slag)

DM = Daniel Makowiecki (Fish bone)

SP = Sarah Percival (Prehistoric pottery)

IR = Ian Riddler (Small finds)

HW = Hugh Wilmott (Glass)

SUERC = Scottish Universities Environmental Research Centre

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Kieron Heard directed the fieldwork and was assisted by Andy Beverton, Preston Boyles, Bill Brookes, Tim Browne, Phil Camps, Roy Damant, Tony Fisher, Steve Manthorpe, Jezz Meredith, Simon Picard, John Sims and Anna West (SCCAS, Field Team).

Jonathan Van Jennians (SCCAS, Finds Team) processed the finds and Anna West (SCCAS, Environmental archaeologist) processed the environmental samples.

Richenda Goffin (SCCAS, Post-excavation Manager) assessed and reported on the finds and environmental evidence and edited the final report. Additional contributions were made by the following specialists: Sue Anderson (pottery, CBM & human skeletal remains), Julie Curl (animal bone), Lisa Gray (plant macrofossils and other remains), Kieron Heard (clay tobacco pipes) and Lynne Keys (slag), Colin Pendleton commented on the worked flint and Ian Riddler gave advice on some of the small finds.

Graphics are by Crane Begg (SCCAS, Graphics Team). Anthony Breen carried out the documentary research and Commission Air took the aerial photographs.

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