Archaeological Field Unit

Deeply Stratified Medieval and Post-Medieval Remains at Market Mews, Wisbech

Mark Hinman

2002

Cambridgeshire County Council

Report No. 156

Commissioned by Garnett Netherwood Architects on behalf of Wisbech Retail Ltd

Deeply Stratified Medieval and Post-Medieval Remains at Market Mews, Wisbech

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SUMMARY

Between 19/6/96 and 27/6/96 The Archaeological Field Unit (AFU) of Cambridgeshire County Council carried out an archaeological evaluation at the junction of Market Mews and Little Church Street, Wisbech (TF 4630 / 0969). The work was commissioned by Garnett Netherwood Architects on behalf of Wisbech Retail Ltd. / Bilsdale Properties and was carried out within the terms of a brief set by the County Archaeology Office (Development Control; Louise Austin: Design brief for archaeological evaluation at Market Mews, 1996).

As a result of the evaluation a limited programme of emergency excavation revealed an impressive sequence of deeply stratified medieval and post medieval deposits. The stratigraphic sequence contained conclusive evidence for metalworking activity in addition to at least thirteen distinct building phases, the earliest of which was dated to the thirteenth century. Floors associated with these buildings were sealed by extensive accumulations of fine silts deposited during episodic flooding. Organic preservation throughout the sequence was good with the best preservation seen towards the bottom of the sequence. Despite excavation in excess of 3.00m below the current ground surface, no natural geology was encountered and there was every indication that the archaeological sequence continued below this level.

The excavation represents the most comprehensive sample of medieval archaeology ever recorded in Wisbech. Such information will be of great significance to both the research of this important Fenland Town, and to the medieval fenland as a whole. In addition, the extensive sequence of episodic flooding and occupation is, although comparable to deposits in other fenland port towns, almost without parallel in its completeness, depth and state of preservation. The discovery of such an important archaeological resource cannot be overstated and consideration needs to be given to the future management of the archaeological heritage of Wisbech.

1 INTRODUCTION

Between 19/6/96 and 27/6/96 The Archaeological Field Unit (AFU) of Cambridgeshire County Council carried out an archaeological evaluation at the junction of Market Mews and Little Church Street, Wisbech. The work was commissioned by Garnett Netherwood Architects on behalf of Wisbech Retail Ltd. / Bilsdale Properties and was carried out within the terms of a brief set by the County Archaeology Office (Development Control; L Austin: 'Design brief for archaeological evaluation at Market Mews', 1996). The development proposal for the evaluated area included the construction of an extension to the rear of two shop units.

During the course of the evaluation it became apparent that a considerable depth of medieval and early post-medieval stratigraphy survived over the whole of the development area. Given that the construction programme for the new development was already set any excavation had to be completed by 15/7/96, therefore a rapid response was required. With a minimal delay it was possible to commence excavation of a portion of the development area on 2/7/96 and to conclude the excavation on schedule on 15/7/96. Initially the area of excavation covered c 70m^2 giving a 14% sample of the total development area, although this was reduced to a 1.92% and 1.71% sample by area within Areas 2 and 3 respectively (see section 6, p14). The total volume of archaeological deposits within the development area remains unknown but should comprise, as an absolute minimum, 1320m^3 of stratified remains.

Prior to this excavation archaeological investigations within the town of Wisbech consisted of a single project conducted during 1991 to establish the presence, nature, age of and state of preservation of archaeological deposits within the New Market prior to pedestrianisation. Although the results of this fieldwork (Hoyland, Cambridgeshire County Council Archaeological Report series no. 47) were inconclusive a historical survey of the New Market area was undertaken which, with minor revisions, has been incorporated into the body of this report.

This project has served to highlight the incredible wealth of archaeological remains present within the development area and suggests that remains relating to the development of the town from its earliest Saxon origins, surviving as a series of deeply stratified and exceptionally well preserved deposits, are likely to be present below much of the modern town. The extraordinary level of preservation witnessed during this excavation owes much to the rather precarious siting of Wisbech at the junction of the outfalls of the rivers Nene and Wellstream (Ouse). Combined with its low lying position, proximity to the sea and marked deterioration of the climate during the medieval and early post-medieval periods, this ensured that the town was the victim of frequent and severe flooding from both the rivers and the sea. Each episode of flooding carried enormous quantities of water-borne silts into the town, effectively burying phase upon phase of new development over the centuries.

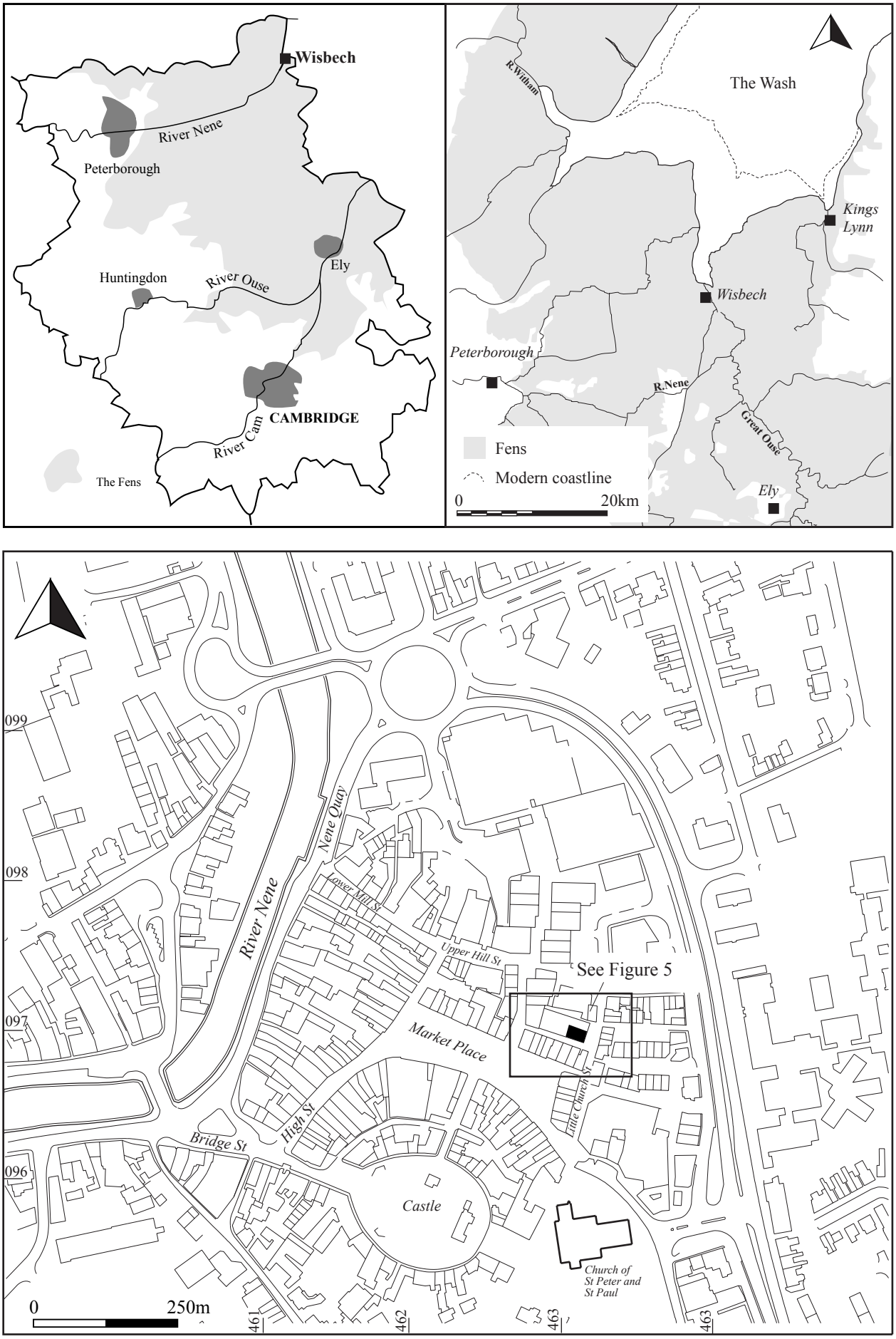

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Figure 1 *Location map*

2 GEOLOGY AND TOPOGRAPHY

Solid geology in the vicinity of Wisbech comprises Jurassic Ampthill clays, and pre-Flandrian gravels have been observed at below -15.0m OD (Waller 1994, 228). Settlement patterns, however, have been dictated by a complex and locally variable Flandrian sequence of marine transgressions, river channel (or roddon) formation, and reed swamp growth. These have led to the deposition of a thick accumulation of silts, clays, and peats.

Peat growth has been recently dated to the late Bronze Age near Wisbech, and may have continued into the Romano-British period in some places, (*op. cit.*, 250). Romano-British salt manufacturing sites occupied slightly raised ground (such as roddons) in the area, and a series of middle Saxon sites occupied similarly precarious sites to the north-east of the town.

The town of Wisbech (*Fig. 1*) is situated approximately 40 miles north of Cambridge, and the town centre is flanked on the west side by the River Nene and was, until recently, defined on the east side by the disused Wisbech Canal (now the A 1101/Falcon Road). The town was originally situated where the Wellstream joined the Wysbeck: the former was, in recent times, part of the Wisbech Canal (*Fig. 2*), the latter formed part of the main outfall of the Great Ouse, and is now part of the Nene. The town also lies on the crossing of the A47 Kings Lynn to Peterborough, and the A 1101 Ely to Long Sutton routes.

The area subject to evaluation and excavation lies to the north of the castle site, within the postulated "New Market" area.

3 METEOROLOGICAL BACKGROUND

The fortunes of the town of Wisbech are inextricably bound up with the shifting outflows of the Nene and, particularly, the Ouse. Due to its precarious siting on low lying ground adjacent to the outfalls of these two major water courses the town appears to have been particularly prone to flooding and other climactic variations. The combination of a number of factors conspired to create what appears to have been a particularly extreme environment in the area surrounding Wisbech and across the whole of the Fenland throughout the medieval period and it is important to consider these conditions when examining the development of the town in general.

With the decline in temperature levels associated with the so-called Little Ice Age, that began around AD 1250 and continued into the seventeenth century, there was an increase in the incidence of severe winters and a shortening, by about a month, of the growing season.

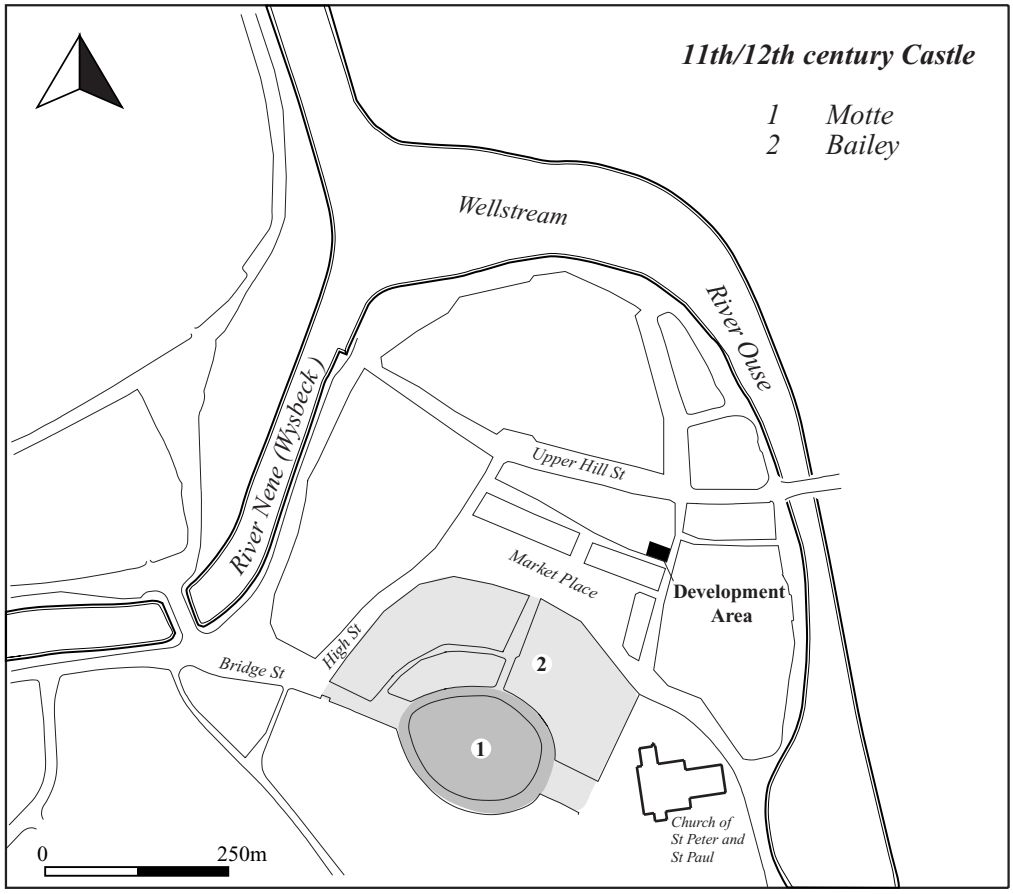


Figure 2 *Medieval Wisbech showing the position of the castle and the course of the rivers Ouse (Pre C14th) and Nene*

In addition, during this same period, it appears that the main track of depressions over the eastern North Atlantic shifted further south. This effect, together with a rising sea level, explains the increase in storminess and sea flooding recorded in the period around the North Sea. These conditions caused water bodies such as the Norfolk Broads in England and the Zuider Zee in Holland to be established. A great deal of land with many villages was also lost from the west coast of Denmark. Corresponding erosion on the eastern coast of England resulted in the loss of many coastal settlements including two great ports (Ravenspur or Ravensburgh, which stood on land east of Hull beyond the present Spurn Point, and Dunwich on the coast of Suffolk, which also extended farther east than it does today). Situated between these two regions, Fenland settlements around The Wash would also have been vulnerable to increased storminess and marine inundations during this period (*Dr John Kington pers. comm).*

The devastating effects of abnormally high tides, lengthy wet periods and stormy weather were further exacerbated by intermittent periods of drought. During these periods the rivers had insufficient power to scour away the silts accumulating within their tidal channels so that they became shallow and incapable of dealing with either high tides or freshwater inundations. Documentary sources relating to episodes of flooding and drought in the fens at

this time are extensively reviewed in Hallam (1965) and will not be repeated here. Hallam points out that times of drought are dangerous when succeeded by high tides, combined with heavy rains or melt-waters and an onshore gale. He goes on to state that *'the higher the tide comes, the higher the deposit that they leave; the more dangerous they are at their fiercest, the safer the deposit that they leave'*. This certainly appears to support the interpretation of the findings of the Market Mews excavation where it seems that the greatest accumulations of flood borne silts were deposited as a result of the most devastating inundations. Such large deposits of silts trapped within and around the damaged buildings of the town significantly raised the ground level prior to rebuilding.

The thirteenth and early fourteenth centuries were periods of unusually high tides beginning with the disaster of 1236.

4 HISTORICAL BACKGROUND FOR THE TOWN OF WISBECH

Wisbech is first referenced as a grant to the abbey at Ely *c* 1000AD from the East Anglian Bishop Aelfwine. The scale and nature of Saxon occupation is unknown but a manor is currently though to have been located on the west bank of the Wysbeck due to the siting there and presumed pre-Norman origins of the Old Market (VCH Vol. 9, 243).

The 'New' Market Place is situated on the tongue of land bound by the two water courses, and north of the outer ditches of the former castle, whose topographical influence is still reflected in the fan-shaped distribution and wedge-shaped building plots bordering the south side of the Market Place. The relocation of the Market to its current location was likely to have been contemporary with the construction of the Castle in 1089 and the church of St Peter and St Paul. These elements combined could be seen as evidence for a conscious descision to develop a place perhaps already of some importance through the stimulation and regulation of trade (Pestel forthcoming).

The development of the port town of Wisbech has been inextricably linked to the viability of the Nene outfall and Fenland waterways. Continuous silting up of the Nene was a recurrent problem, preventing all but the smallest ships from reaching the town. The success of the early port is uncertain, the impression given by surviving records is that during the thirteenth century Wisbech was a large and slightly urbanised village. Also, at some time around the beginning of the 14th century violent storms caused the diversion of the River Ouse from Wisbech to its present course via King's Lynn. The cutting of Morton's Leam from Peterborough to Guyhirn in 1480 improved the flow of the Nene with a consequent increase in trade. The town became a corporate borough in 1549 and by the early 18th century was becoming a major port. As Taylor (1977) notes this period of prosperity, which continued into the 19th century, is still reflected in the architecture of the town.

The town has also suffered episodic severe flooding, the first documentary reference to which is made in 1236, when flooding destroyed the castle and probably dramatically affected the whole area around the market place, (Hoyland 1992, 3).

The *Flores Historiarum* states: 'But on the morrow of the blessed Martin (Nov. 12th) and throughout the octaves of the same, with the wind very strong, and accompanied with a rumble of thunder, the waves of the sea flooded in, transgressing their accustomed limits, so that in the confines of that same sea, and in the marsh, as at Wisbech and in similar places, small boats, herds, and also a great multitude of men perished.' (*FH, vol. 2, 219 as quoted in Hallam 1965, 127).*

An additional description of this event is made by the 13th century chronicler Mathew Paris: 'Then on the morrow of saint Martin and within the octaves of the same there burst forth suddenly at night extraordinary inundations of the sea, and a very strong wind was heard at the same time as unusually great waves of the sea. Especially in places by the sea, the wind tore up anchors and deprived the ports of their fleets, drowned a multitude of men, wiped out flocks of sheep and herds of cattle, ripped out trees by their roots, blew down houses and destroyed the beaches. And the sea rose up in waves for two days and the night between them - a thing unheard of; nor did it ebb and flow in the usual manner because of the onset of contrary winds, which are supposed to have held it up. Thereafter were seen the buried corpses of drowned people, lying in hollows made by the sea close to the beach, for at Wisbech, and in the neighbouring townships, thus next to the beach and sea side, an infinity of people perished, so that in one not particular populous township in one day a hundred bodies were given over to a grievous tomb'. (*MP, Ch Maj, vol. 3, 379 From Hallam, 1965, 127).*

The disaster of 1236 is one of many historical events likely to be preserved within the archaeological sequence in Wisbech. When flood events are identified within the stratigraphic sequence it is important to remember the effects that they had on the lives of the inhabitants, their livestock and property. Historical accounts such as those mentioned above, serve to bring us closer to an understanding of the living conditions of the town's early inhabitants.

5 WISBECH MARKET PLACE: HISTORICAL RESEARCH

By L. Hoyland

5.1 Introduction

The historical survey of the Market Place in Wisbech and its environs by L. Hoyland was commissioned by Fenland District Council as a component of archaeological fieldwork undertaken in the New Market in December 1991. The research aim was to summarise historical sources pertaining to the Market

Place and those streets to be developed, namely High Street, Bridge Street, Union Street and Market Street. The results of this work have been included with minor modifications within the body of the current report as they relate to the immediate area of the excavation.

5.2 Sources of evidence

There are various historical and cartographic records pertaining to the town of Wisbech, the most important of which are the Corporation Records dating from the inception of the Corporation in 1549 (see 'Sources', Appendix VIII). There are also records from the Commission of Sewers reports who held authority under the Common Law, but who received recognition in 1427 from a statute from Henry VI. Other records prior to the founding of the Corporation are recorded in the Ely Episcopal Registers.

Most of the Corporation Records were referenced in the nineteenth century: Mr Jackson made an index and short descriptions of the records, and Mr Watson catalogued the entries in Jackson's volumes. Histories were written in the last century about Wisbech: they detail the main events of the town's history, transcripts of the records, and personal reminiscences.

There are no maps which show the entire town centre of Wisbech in any detail prior to 1830. A map of the late eighteenth and early nineteenth century of the castle (MIS/612:Wisbech Museum), gardens and premises shows Market Street, and houses on the south side of Market Place and High Street. Church Lane is shown with unmarked buildings to the west. Unfortunately there is no scale or title to the map.

Another survey of the castle estates (Ref.408/E6:CRO) is dated 1792 and is at a scale of 80 inches to the mile. This map is, however, less detailed than MIS/612 but shows the Custom House (later the Butter Market) and the entrance from Bridge Street to the High Street, although the Market Place is not shown.

The 1830 map by J. Wood (Wisbech Museum) is the first surveyed plan of Wisbech. It locates properties in the High Street and Bridge Street by a numbered key: the Customs House, the Girls Charity School in Lower Hill Street, the Chapel in Upper Hill Street, and the Rose and Crown in High Street are all listed. One small square feature is marked in the Market Place.

A detailed map of the town (Wisbech Museum) was undertaken in 1853 under the auspices of the Public Health Act 1848. It was surveyed by R.H. Dobson at 44 feet to the inch. Inns and other properties in the Market Place, High Street, Bridge Street, and Hill Street are named, and the Market Place is formally laid out with the locations of lamp-posts, SG (sewer grates), pumps and pavements shown. The map is tinted to show land-use. A smaller scale version of this map is held in the Cambridge Record Office, and has revisions edited by C.

Mumford in 1867. The sewers which traverse the Market Place on this map are reflected in the position of modern services.

There seem to be no illustrations of the Market Place prior to the nineteenth century, and most of these are contained within the various histories of Wisbech written at this period (see 'Sources' Appendix VIII). There were many photographs of the town taken from the mid-nineteenth century onwards, most notably by Samuel Smith in the early 1850s: these are held in Wisbech Museum.

5.3 Markets And Fairs In Wisbech

Markets in Wisbech have a lengthy history, the absence of charters relating to their inception implies an origin in the pre-Conquest period.

Since the Medieval period, there have been several distinct and economically important markets in Wisbech, selling products in their own separate market places. The Old Market place, described below, is still the focus of financial and banking activities in the town, and in the 1930s it was still the focus of local farming trade. Until the 1950s some stalls were still set up on a Saturday.

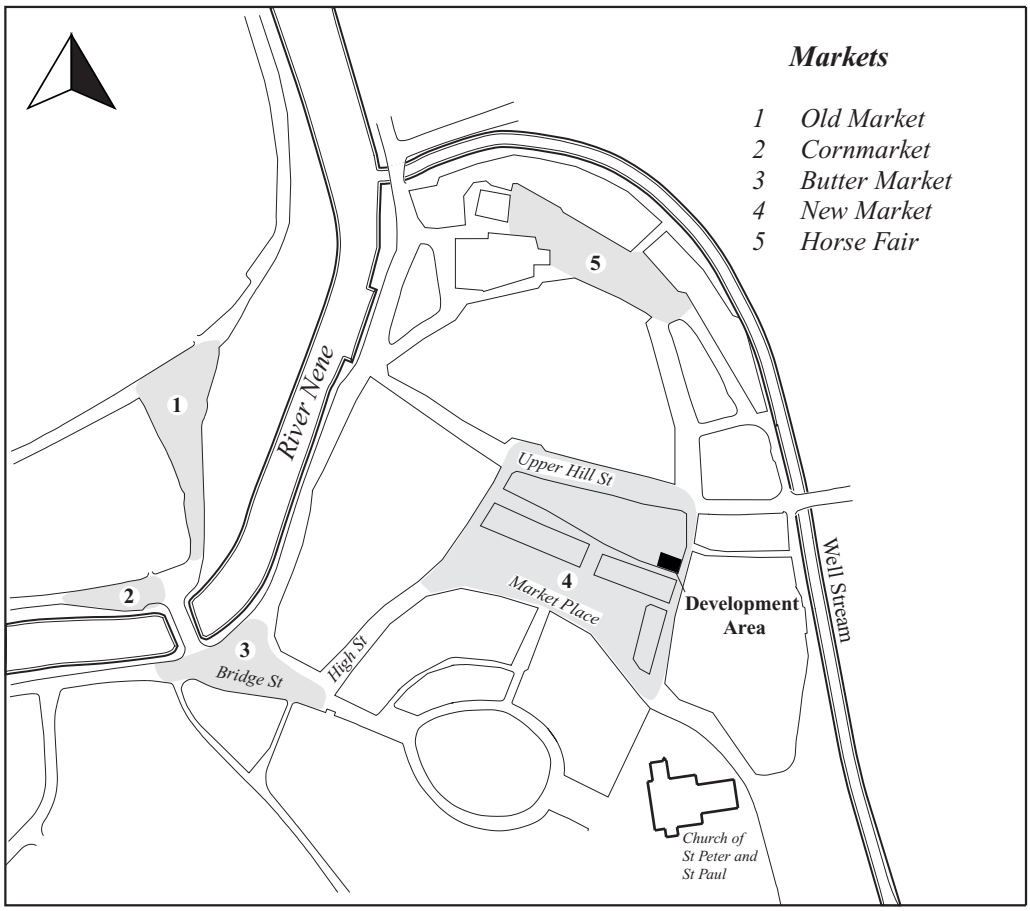


Figure 3 *Wisbech markets*

The Timber market (not illustrated) was held next to the Wisbech canal near the present day Norfolk Street. Lyson in 1808 noted that the timber came from Northamptonshire and was traded to the Navy in vast quantities. (Magna Britannia Vol.II, Part 1. London)

The Horsefair in July was held at the north-east tip of the peninsula, at the confluence of the Wisbech Canal and the Nene, and the Butter Market was held in Bridge Street, but the most important market by the mid-nineteenth century was the Corn market, held behind the Old Market on the North Brink. By the 1840s over 250,000 quarts of corn were traded, making it the second largest corn market in England after Wakefield. (VCH Vol IV, 262)

The right to hold the Trinity fair was granted to Wisbech in 1327 by Bishop Hotham and under the terms the fair lasted over nineteen days. Bishop Alcock's survey in 1492 to 1493 shows that a market was usually held on a Saturday (as in the present day), and that the Trinity fair had moved to become associated with the feast of St Peter and St Paul, to whom the church was dedicated (*op. cit.*).

By the end of the eighteenth century five fairs were recorded: the Saturday and Monday over Palm Sunday for hemp and flax, the Monday and Saturday before Whitsun, the 25th of July was the Horse Fair, and the 1st and 2nd of August was for the sale of hemp. Lysons in 1808 also mentions a fair on the day before Lady Day and Lammas Day. In the 1930s fairs were held on the Saturday after the 14th of February, the second Thursday in May, the 25th of July, the first Thursday in August, and the third Wednesday in September (*op. cit.*).

5.4 The New Market: An Historical Survey

The earliest markets were likely to have been held on the present site of the Old Market, situated on the west bank of the Nene, probably under the influence of the Saxon manor on this side of the river (VCH, vol. 4, pp.240 and 243-246). There are no specific records of when the market moved to its present 'New Market Place' site, but it is likely to have moved soon after the Conquest, when the Normans built the castle in 1089. The market reflected in its geographical shift the new political power-base and it's medieval development outstripped that of the old market area. The pattern of establishing the market near to the castle and the church has parallels in other towns, such as St Albans. (Taylor 1977, 251).

By 1221 we have the first references to the New Market: tenants in military service are listed and a William de Longchamp is noted as having 'a messuage in the New Market thereto'. The terrible floods of 1236 destroyed the Norman castle and the whole area around the Market Place was affected as the assessments of 1251 of tenants holdings were drastically reduced and de Longchamp's messuage was destroyed by the sea along with at least half of the land belonging to him (VCH Vol IV, 245). That the earliest references to the Market and its tenants should record the destruction of their property by the

sea is significant and fully reflected in the nature of the surviving archaeological record.

The area covered by the present Market Place is certainly much smaller than its Medieval counterpart, as title deeds dating from 1471 refer to all the land from the bridge to the present Market Place as New Market. No streets are mentioned by name. In 1492, the Terrier of Bishop Alcock shows that there were 115 tenants in the New Market Place as opposed to 32 in the Old Market, indicating how much the New Market Place was becoming the focus of the town.

With the inception of the Corporation of Wisbech in 1549 came the systematic recording of town affairs and it is from these detailed accounts and records that nearly all information about the Market Place and its environs comes, prior to the first map of the town made in 1830.

The public-spirited Corporation paid accounts in 1549 "for the payving of the Market Place, and for raggestone, sand and workmanshippe of the same £17.2.2". Another reference in the same year refers to the presence of a Market Cross "for lead, tymber and workmanshippe of the crosse in the Markett place £4.3.4" (trans. Walker and Craddock 1849). This market cross was reputedly built by John de Feckenham, a Catholic recusant held prisoner in Wisbech Castle, who died in 1585. The market cross was located at the west end of the Market Place and was replaced in 1765 by an obelisk (VCH, vol. 4, 263).

One significant reference to events in the Market Place is contained in a report to the Session of Sewers of 1570 concerning Crab Mersh Bank: "which bank from Crabmersh gate was decayed in Bishop Goodrick's time, and part thereof carried (by consent of the Bishop) for the pavement of the market place in Wisbeche, and part by Mr Wm Bloomfield, for the making of a windmill there" (Corp. Rec. i). Bishop Goodrick was in charge of the diocese between 1534 and 1554: the above reference mentions the bank was decayed at this time but it is less clear exactly when the bank was redeposited in the Market Place. Since the Market Place was first paved in 1549, it could be that material was deposited at this time, the bank earth forming a level foundation. The reference to a windmill is also interesting as the present Market Place was frequently referred to as Market Hill (the present day Hill Street was formerly known as Ship Lane), indicative therefore that in former times it may well have formed slightly higher ground relative to its surroundings, than it does at the present time.

This account has important archaeological implications: if the material was dumped on the Market Place it could seal any early archaeological remains on the Market Place site. Evidence from the Market Mews excavation leads us to expect an excellent sequence of well stratified remains, relating to both the development of the New Market and deposits which could in fact pre-date the establishment of the market.

The next major work undertaken in the Market Place was in 1591 when an order was issued by the Corporation for the erection of the Butchers Shambles on the Market Hill and the placing of stalls there for the butchers. Unfortunately, contemporary records say nothing about the construction, building details or exact location of the Shambles. All our information comes from writers collating information well after the event of the demolition of the Shambles in 1811. It is therefore likely that the nature of the Shambles, and the adjacent Shire Hall which was demolished at the same time, may have been altered and modified through the centuries, and for this reason the Shambles and the Shire Hall will be discussed below with the discussion on the general improvements to the Market Place in 1810 - 1811. There is a Corporation account for the purchase of 20,000 tiles in 1591 which may have been related to roofing the Shambles, but little else is recorded apart from routine maintenance and repair work. A market house is recorded as being repaired in 1614, and seems to have been rebuilt on a more substantial scale near the river, probably on the site of the Butter Market (VCH, vol 4, 263). In 1595, the shambles cost £107.7.00. and were let at an annual rent of £7.10.00 (Corp.Recs iii).

There is however, an indirect reference to a building which was generally thought to be much older than the buildings around it. Watson, interviewing a 94 year old citizen in 1827, records that in Butchers Row (the space between the Shambles and the houses opposite on the south-west side of the Market Place) there was a very old building with ‘some rude carved work in front, on wood, which seemed to be a man felling an ox, and other devices, with an inscription in Saxon characters, unintelligible’ (Watson 1827, 312). This building was also demolished in 1811 but the fact that it is so distinctly different than the rest of the Shambles of the late 18th / early 19th century (and yet with a carving of a man felling an ox - a butcher?) may indicate remnants of an earlier phase of the Shambles.

There are many accounts in the Corporation Records of sundry repairs to the wells and pumps in the Market Place, which must have supplied not only the traders but the townsfolk as well. In 1638 "the towne bailiff was appoynted to pay unto William Harvie his bill of laying out in repaire of the backside and getting uppe the pump on the Markett Hill and other layings out £3.17.0" (Craddock and Walker 1849) and in 1640 the well or pump on the Market Place had to be repaired. A well was ordered to be cleaned and ropes and buckets provided in 1661. Another paving of the Market Place was undertaken in 1665 and the well was disannulled. Later in the same year a pump is ordered for the well in Market Hill and in 1676 a new pump was erected and supplied by a new well.

The records of 14th of April 1680 indirectly mention the old Shire Hall, which was demolished at the same time as the Shambles in 1811. Exactly when the building was erected is obscure and there are no records to indicate it was built by the Corporation. The record refers to the letting "to Robt Squire the shope under the Shire house" for 13 shillings per annum. As with the Shambles the only account of the actual structure is from Watson (1827), and the above

account would suggest that the building was of two storeys, the lower used for commercial purposes.

The Market Place received upgrading in 1683 with an order to pave the street near the Shambles and that a well and pump be constructed at the east end, providing the neighbours contributed £7. Other sanitation works are recorded in 1753 when a substantial iron grate was laid down 'where the crying stone lately stood, in the Market Place for carrying of the waters'. This implies that the crying stone, where the town crier made his announcements (and which Watson in 1827 noted as positioned near the Rose and Crown in High Street) had at one time been situated in the Market Place.

Another paving of the Market Place "at the expense of the town estates" occurred in 1764, and in the following year a pump was moved, its new position uncharacteristically detailed: "upon the Market Place ....from the place where it is now stand and be set down opposite or nearby opposite to Mr Jim Massingale(?) seven or eight feet from the water way opposite the said." Both the 1753 and the 1764 records show that open sewers ran through the Market Place at this time.

In 1765, the town bailiff was instructed to erect four dials on the obelisk in the Market Hill: it replaced the old Market cross at the west end of the market and it is not entirely clear whether the obelisk had been erected earlier than this date. The obelisk, removed in 1811, was designed by Burgess. From an ink drawing made by Burgess, Gardiner (1898) states that the Obelisk appeared to be 32 feet high with no inscription but had an urn placed at its top and its pedestal much blackened 'by bonfires, which, in those days, were kindled near its base, when public rejoicings took place'. There are also references in a private diary held in Wisbech Museum of abusive inscriptions and an effigy which were placed there after a robbery in 1770 (VCH, vol 4, 263). Gardiner (1898) cites the location of the obelisk (and by implication the old market cross) as facing Messr Dawsons door (present day No. 28 Market Place), slightly off-centre to the main axis of the modern Market Place.

In 1772 a repair order for the engine house on Market Hill was sent out: this is peculiar in that there are no other references to an engine house in the New Market Place but there are many which refer to the building and repairs of the engine house in Old Market. There are other repairs ordered in 1775 when the obelisk and a pump in the Market Place had to be repaired.

One of the most dramatic and significant changes seen in the Market Place must have been the Improvement Act of 1810 which introduced the "taking down and removing the Shambles therein, for paving, cleansing, lighting the said Town". Under this Act, the Corporation resolved in 1811 "that the Town Bailliff do cause the obelisk standing in the Market-place to be sold by auction as now standing, and to be taken down, and that he request the magistrates to give an order for the taking up and removal of the cage and stocks adjoining the old shambles" (Craddock and Walker 1849). Prior to this, there had been a footpath next to the shops which was bordered by posts but with no chains

between them. The Market Place was also paved at this time and in 1849 Craddock and Walker described it thus: The Market Place "forms a parallelogram of 380 feet by 94, of which 310 by 37 are appropriated to the stallage, and the rest as thoroughfare. The stallage portion is slabbed on the portion intended for passengers, and cobble-paved where the stalls stand. It was completed in this form in 1811 at a cost of £1170" (Craddock and Walker 1898, 436). A photograph of the Market Place taken in 1857 by Samuel Smith clearly shows the distinctive arrangement of the cobbles and flagstones, as well as contemporary street furniture (WM 049: Wisbech Museum). Much of the distinctive character of the Market Place must have been lost when the new developments took place and the Shambles, Shire Hall and obelisk were removed.

As has been noted above, there are almost no references to the Shambles at any period apart from the notes that Watson made in 1827 when collecting the reminiscences of elderly townsfolk. Butchers Row was the name of the alley formed between the Shambles and the houses opposite on the south-west side of the Market Place. The house with the carved frontage was here. Gardiner (1898) refers to the evaluation of the Shambles carried out by several interested parties prior to their demolition, and he quotes a sketch and notes from the diary of the grandfather of a Mr Forster. These show the Shambles as a rectangular building with a smaller rectangular lean-to at its north-east corner, with its long axis running north-south at right angles to the main building. It lay adjacent to, and east of, Shire Hall. The Shambles is described as being a wooden building roofed with grey slate and formed a covered market with posts supporting a large chamber over it. Gardiner (1898) notes that the diary included the dimensions of posts, beams, rafters and boarding but mentions no other architectural details. This upper storey was used for corn storage and was reached by a broad stepped external ladder. The butchers stalls occupied the covered area below. Until the early nineteenth century, poultry and eggs were sold from trestles at the side of the Shambles facing Mr Oldham's shop (presently No. 29 Market Place). There are records of a temporary portable structure being erected for the sale of poultry, eggs and butter after the Butter Market was demolished in 1856 (Gardiner 1898, 112). The Shambles and Shire Hall had been in poor repair at the time of demolition - valuations ranged from £217 to £400 - and for some time prior to demolition there were only three shops left in the Shambles.

Gardiner (1898) also describes the Shire Hall as a one-storied building with a semi octagonal end. The principal door was in the central division of this semi-octagon with semi-circular headed windows at each side with the pillory sitting on the flat roof. The building faced Messr Dawson's shop (presently No. 28 Market Place) with its side towards the Ship Inn (presently No. 40). This description states that it was one storeyed, but this is at variance with the letting in 1680 of a shop below the Shire Hall, implying at least another storey. There may be several ways to interpret this: the name ‘Shire house’ may have referred to the upper storey of the Shambles, it may have referred to an earlier building, possibly not at this present location, or that the flat roof of the Shire Hall as it was described in 1811, may indicate that it did at one time have more

storeys, which were later pulled down thus leaving the curious flat roof. The fact that the pillory was here also indicates reasonable access which again could indicate that there was formerly another storey.

The stocks, cage and pillory were all centred around the Shambles and when they were removed, punishments were meted out on a wagon drawn up at one of the corners of the Market Place (Gardiner 1898). The Market Place has also been the scene of many civil celebrations: a dinner to celebrate peace was held there in August 1814, and in 1837 over 4000 people sat to dinner to celebrate Queen Victoria's coronation. In 1865 a platform was erected in the middle of the Market Place, and the central lamp-post converted into a fountain to celebrate the first piping of water from Marham springs to the citizens of Wisbech. Queen Victoria's Golden Jubilee was again commemorated in grand style in the Market Place with dinner, and a tea-party for around 2500 children.

In 1900 further developments took place in the Market Place: the cobbles were covered in asphalt surrounding Market Hill and the remaining area was given a new coat of tar and gravel. Further repairs were made in 1910.

In 1964, recommendations were made for the removal of the disused horse-trough situated at the west end of the Market Place and which had been erected to the memory of the Jackson family. General upgrading of the street furniture was also called for as well as the removal and re-siting of the lamp-posts. The horse-trough was duly replaced by low bollards at the High Street and Church Street ends of the Market Place and it was also recommended that the telephone kiosks and post-boxes be situated towards the public toilets at the east end of the Market Place (Ann. Report Wisbech Soc. 1964). The locations of these public toilets is very unfortunate: because as they lay at the east end of the Market Place and were built underground, they may well have destroyed any trace of the old Shambles and Shire Hall if they encroached upon their location.

In 1987 the Horsefair and Church Mews development was undertaken over an 8 acre site to the north of the Market Place. The development comprises a supermarket and 21 shop units as well as a new bus station. The scheme was completed in 1988. There was unfortunately no archaeological monitoring of the development.

5.5 Historical Survey of the Area Around the Market Place

The Market Place has been discussed in a separate section: in reality of course the area immediately around the Market Place forms an integral part of its function and position within in the town. The discussion below will highlight some of the historical aspects of High Street, Union Street, Hill Street and Market Street (*Fig. 4*).

5.5.1 Market Street

Market Street is the most recent of the streets to be formally planned. It was built by J. Medworth in 1813 when, as owner of Wisbech castle, he developed the castle estate into the present day Crescent properties. An untitled and undated map, probably from the end of the eighteenth century, shows the proposed lay-out of the Crescent with Market Street clearly marked. It is interesting to note that this would have been the first direct access route from the castle to the Market Place: previous access seems was via the north-west gate towards Bridge Street, and the south-east gate past the Church. Walker and Craddock (1849) note an inscription in Market Street, now gone: *"The entrance to this street from the Market Place is the freehold property of Mr Joseph Medworth of Bermondsey, purchased by him at £400 for the accommodation of the town of Wisbech*". Under the 1810 Improvements Act, the houses and street were regarded as private property and therefore outside the Corporation's concern: Watson in 1827 remarks that Market Street had only recently been paved and gravelled.

5.5.2 Bridge street

Bridge Street was formerly the site of the Butter Market. In 1688, a wooden shelter was erected near the bridge, although two years later it is recorded as being in great disrepair due to bad workmanship (VCH, vol 4, 263). The 1792 Castle estate map shows the site of the Butter Market as the Customs House. The Butter Market building was erected at the foot of Bridge Street in 1801: it was a rectangular building comprising an upper storey supported by open arches, and with a hipped roof. This building was demolished in 1856, a portable and temporary wooden framework being erected in the Market Hill where eggs and butter were sold. Gardiner reports that the situation was still as such in 1898. The site of Butter Market is where the Clarkson memorial now stands. Gardiner (1898) mentions that the vaults under Mr Exley's premises (No. 4 Bridge Street) are supposed to have originally connected with those from the castle. Interestingly enough, these vaults are not on the listed building records and it may be that this building had been redeveloped prior to their compilation.

5.5.3 High Street and Union Street

The date for the emergence of the modern street pattern around the Market Place is not clear, but the map of Castle estates in 1792 shows Bridge Street and High Street, with houses marked between the Castle boundaries and the High Street and Market Place. There are many old buildings in both Union and High Street and Gardiner (1898) states that there are vaults under the premises of Mr Broadberry (No.? Market Place), Mr Leach (No. 26 High Street) and Mr Oldham (formerly Mr Dieppe) at No. 29 Market Place. The latter premises was recorded as having a three bayed groined vault, although only one survives to the present day. It is Medieval in date, and it has been speculated that it formed the undercroft of the old Guild Hall, whose exact site remains unknown, but was probably in the Hill Street / High Street / Union Street area

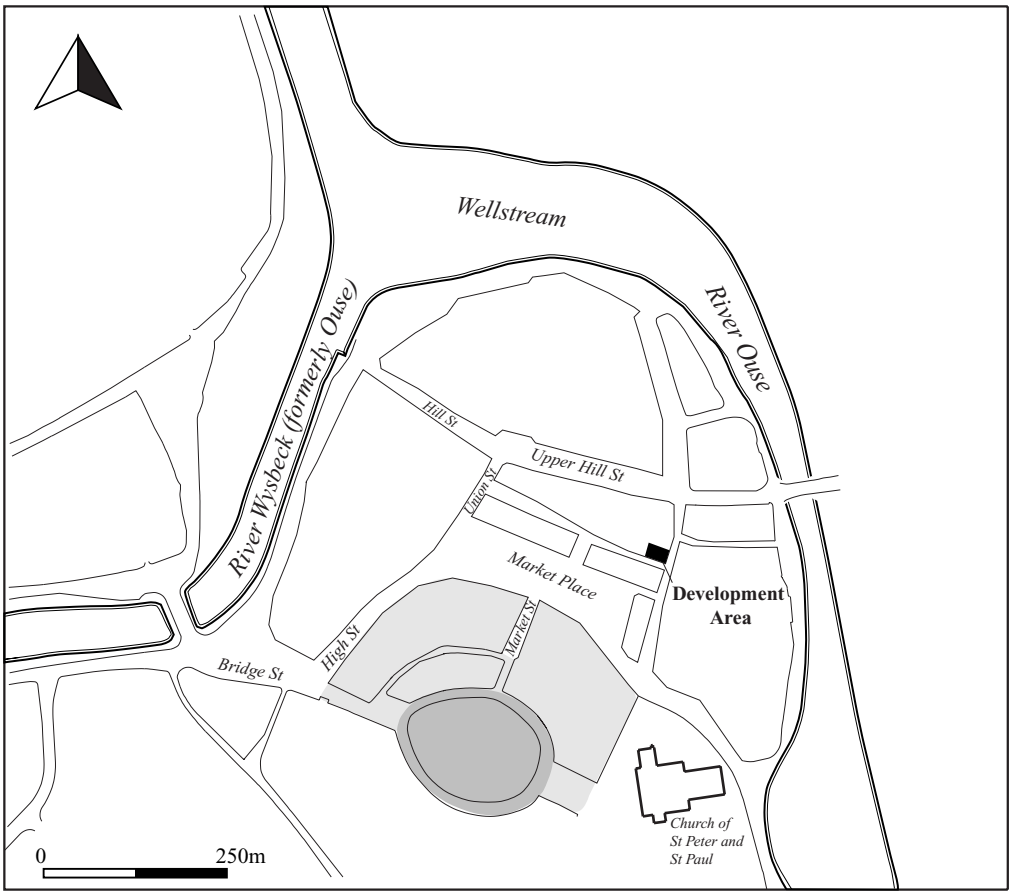


Figure 4 *Wisbech streets*

(VCH, vol 4, 255). It is interesting to note that the premises mark the modern junction of Market Place and Union Street.

There are few Corporation records which relate specifically to High Street and Union Street. The latter was widened under the 1810 Improvement Act. Watson (1827) states that in the 1740's the High Street was partially paved with cobbles next to the houses. In 1756 the centre of the Street was paved with large cobble stones, with a gutter running down the centre of the street. He also quotes reminiscences of Mr J. Stanroyd, a 94 year old senior resident in the town who remembered that prior to 1810, the streets were covered in "loose silt" (similar to the layers seen in the Market Place test pits, Hoyland, 1992) and during the winter planks were laid down, due to the mud. An open sewer ran on the north side of the High Street with three little bridges across it: posts edged the sewer and were used for tethering horses. Next to the Rose and Crown the open sewer was covered with flagstones upon which three steps were raised and fronted by a small wall three feet high: it was here that the Town Crier made announcements, the dias thereafter called the Crying Stone.

One of the oldest buildings in Wisbech is the Rose and Crown Inn (No. 25 Market Place), which is recorded under its older name of the Horn and Pheasant in 1475 (Gardiner 1898).

5.5.4 Hill Street

This street was originally divided into Lower and Upper Hill Street until the 1950s when the modern, all-inclusive name of Hill Street was adopted. Formerly it was known as Ship Lane, and was probably renamed in 1825 when a schedule for Ship Lane / Hill Street is listed in the Corporation Records.

Is the change in name of Ship Lane a reflection of the physical change in the topography of the town through the medieval period? Excavation suggests that change may have been both profound and widespread, (see conclusions) brought about by the deposition of huge quantities of riverine silts in times of flood.

In 1681 a tunnel and grate was laid down in Ship Lane, and in 1714 a well, with pump, was sunk there. It has been suggested that the Guild Hall stood in Hill Street, perhaps where the Town Hall, and later the Grammar School were situated (VCH, vol 4, 255).

In 1814 the girls school was built in Lower Hill Street and was closed in 1928: in 1953 the building was being used as auction rooms. The first recorded post office was established in Upper Hill street in 1793, where it remained until 1851. No. 17 Hill Street was the Food Office until the late 1950s, and there was a fire station in Lower Hill Street until 1932 (VCH, vol 4, 261).

The Town Hall was here until the new one was built on North Brink in 1810 - 1811. Gardiner (1898) remarks that a windmill stood at the end of Upper Hill Street where a Mrs Hampson lived (location not known) and photographs of the High Street looking towards the Market Place, taken by Samuel Smith in 1854, show the windmill sails appearing above the rooftops in the background.

6 FIELDWORK METHODOLOGY

The total development area measured approximately 33m E-W by 16m N-S. The area available for evaluation was limited to 26m E-W by 15m N-S as a building which was to be demolished prior to construction was still present at the western end of the site. A 6m strip on the Little Church Street front was unavailable for evaluation as this area was not going to be disturbed by foundation trenching.

The physical limitations within the development area (*Fig. 5*) in terms of space and access requirements largely determined the positioning of the evaluation and excavation areas. The area of investigation did not remain constant due to these constraints but underwent three main stages of change.

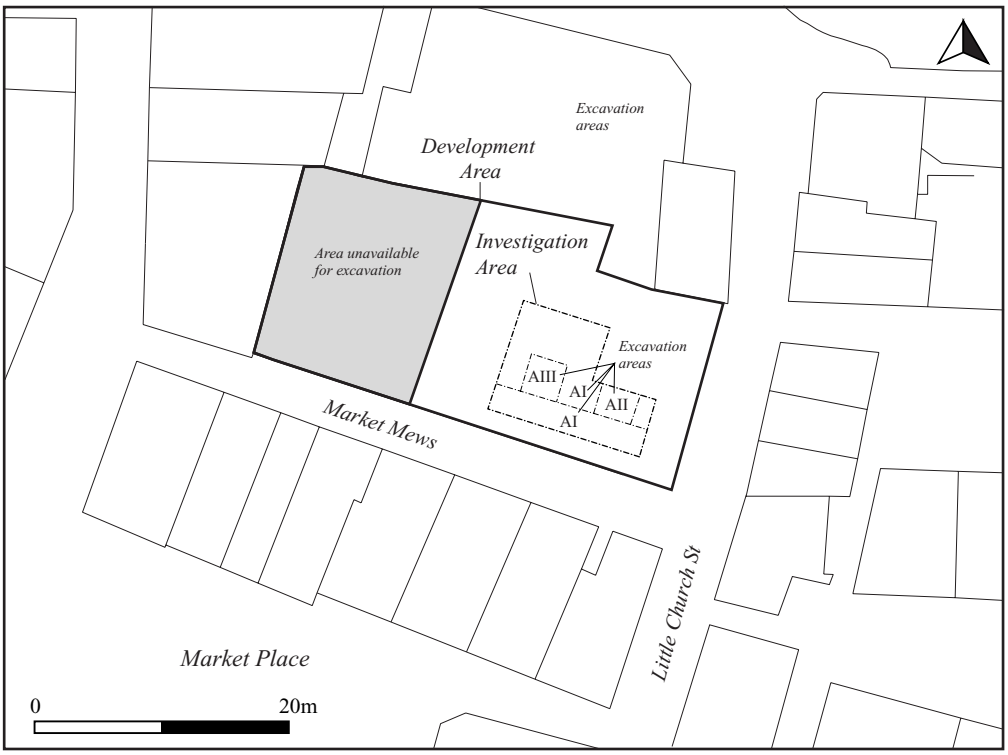


Figure 5 *Detail of development Area*

Stage 1: Evaluation, Area I

An area (Area I), of 12m E-W by 4m N-S positioned 1m from the eastern boundary of the site was opened using a JCB (*Fig. 5a*).

Archaeological deposits consisting of clay floors, beamslots and postholes associated with post-medieval timber framed structures were encountered directly below the compacted rubble of the recent demolition, 0.20m - 0.30m below current ground level (*c* 6.60m OD).

Given the requirement to establish the nature and depth of the surviving archaeological deposits the western end of the trench was increased in width to *c* 7m N-S over what appeared to be a uniform area of mid brown clay devoid of intrusive features. This deposit and the underlying light brown fine silt were removed to a depth of 1.20m from the current ground surface to allow the investigation of more deeply stratified deposits.

Due to the fact that there was only a break of four days between the end of the evaluation and the commencement of the excavation no separation of the evaluation and excavation archives was made. The scope of excavation was agreed in consultation between the County Archaeology Office and Garnett Netherwood. A specification for archaeological excavation within the agreed constraints was subsequently produced by Cambridgeshire County Council Archaeological Field Unit.

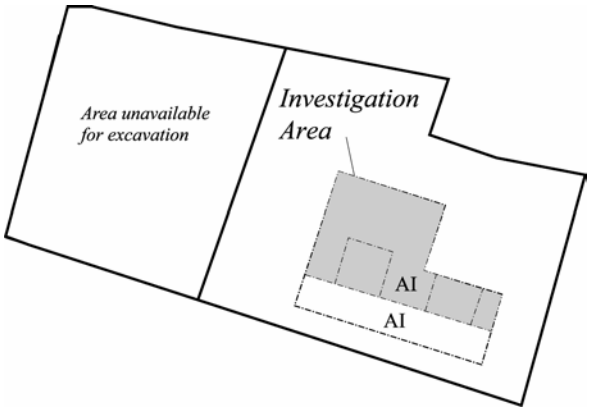


Figure 5a *Stage 1 Evaluation Area*

Stage 2: Excavation, extension of Area I

The excavation took place largely within the bounds of the evaluation trench, building upon the results of the first stage of work. Prior to excavation a further strip *c* 2m wide was machined along the southern edge of the site, down onto the top of the latest surviving archaeological phase, in order to clarify the layout and alignment of these structures (*Fig. 5b*). Buildings, pits and flood deposits within Phases 8-12 were subsequently excavated along the length of the evaluation trench before time restrictions and health and safety considerations prompted the reduction in size and sub-division of the excavation into two separate areas.

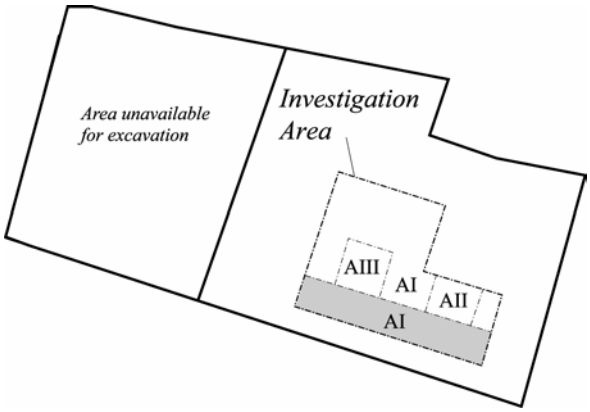


Figure 5b *Stage 2, Expansion of Area AI*

Stage 3: Deep excavation, Area II and Area III

In order to safely excavate the deeply stratified deposits two areas were selected for shoring using sheet piling supplied and installed by the clients.

Area II, at the eastern end of the evaluation trench, measured 3m E-W by 2.50m N-S and Area III, at the western end measured 3m square (*Fig. 5c*).

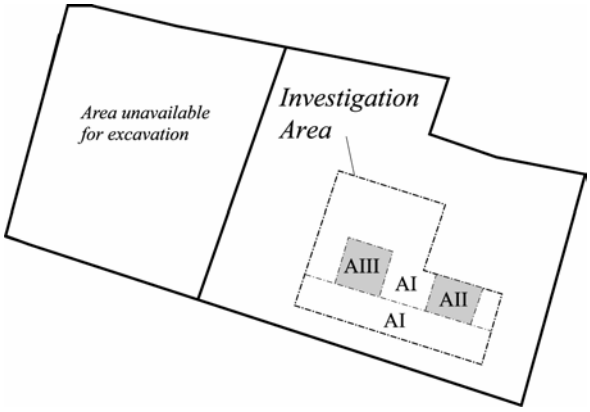


Figure 5c *Stage3, Deep Excavation Within Area AII and AIII*

Excavation by hand within Area II reached a depth of 4.20m OD, c 2.40m below pre-development ground level. The use of an auger for a further 1.70m (to a depth of 2.50m OD) seemed to indicate the continuation of archaeological deposits to this depth.

Excavation by hand within Area III reached a depth of 3.80m OD. The use of an auger for a further 1.20m to a depth of 2.60m OD seemed to indicate the continuation of archaeological deposits to this depth. The auger results however, were by no means conclusive given the small diameter of the borehole required to obtain a sample.

All features and other deposits were recorded using the Archaeological Field Unit's single context recording system. Given the severe time restriction associated with this project however, it was often necessary to allocate context numbers to broad sequences of occupation deposits or floors relating to a particular phase of development (*Fig. 6*). This has resulted in an over-simplification of the surviving sequence within individual buildings. The level of detail obtained from those deposits selected for thin section micromorphological analysis and micro-excavation should be seen as indicative of the complexity and state of preservation of the sequence as a whole (see Appendix V). All site records and artefacts are currently held at the Archaeological Field Unit's headquarters at Fulbourn and stored under the site code WISMM 96.

7 THE EXCAVATION

Evidence for 13 distinct phases of activity and 14 different buildings have been revealed as a result of excavation. Individual phases are defined here as episodes of activity which are subsequently sealed by semi-sterile riverine silts deposited either as a result of flooding or deliberate dumping.

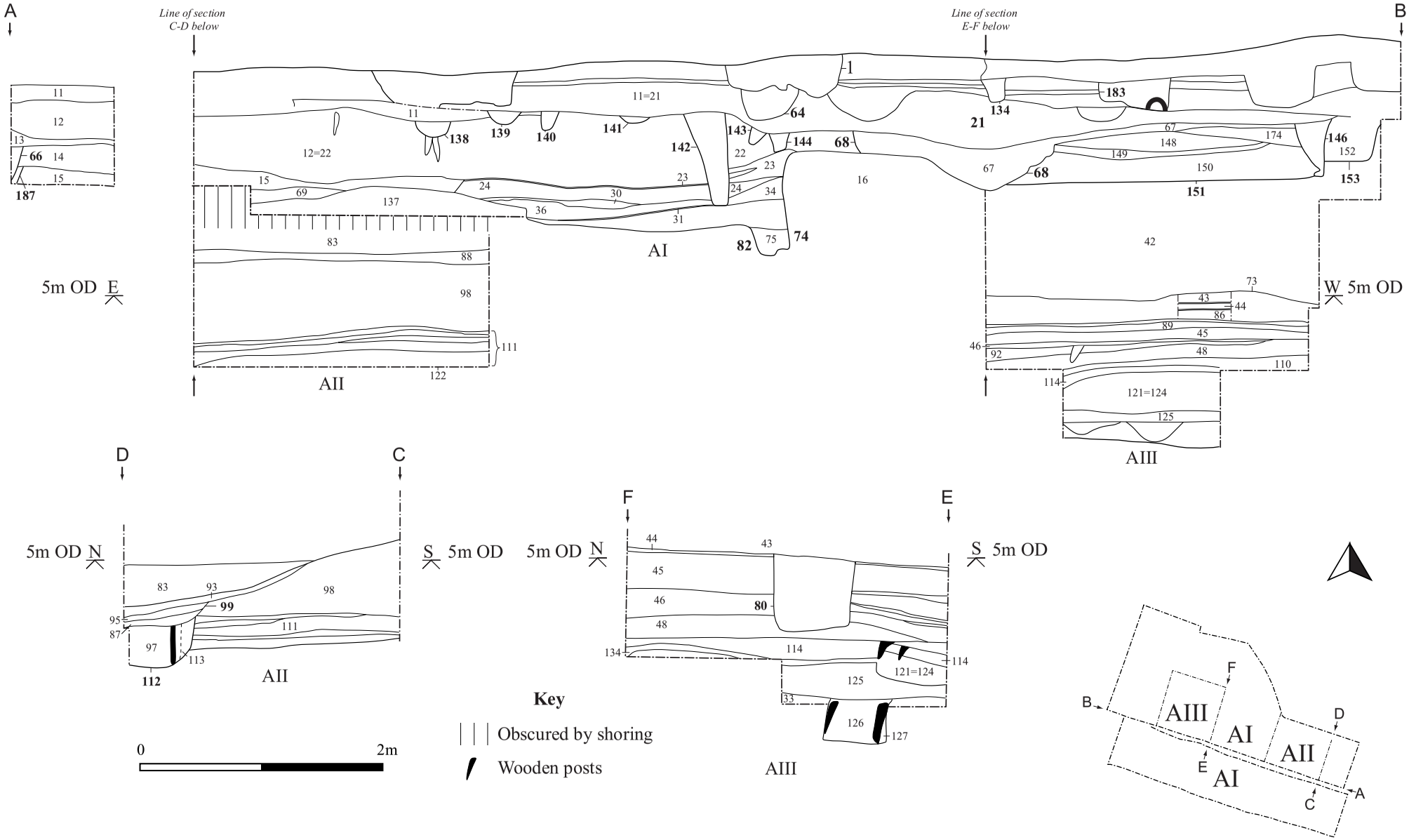


Figure 6 *Main sections (inset shows positions of sections)*

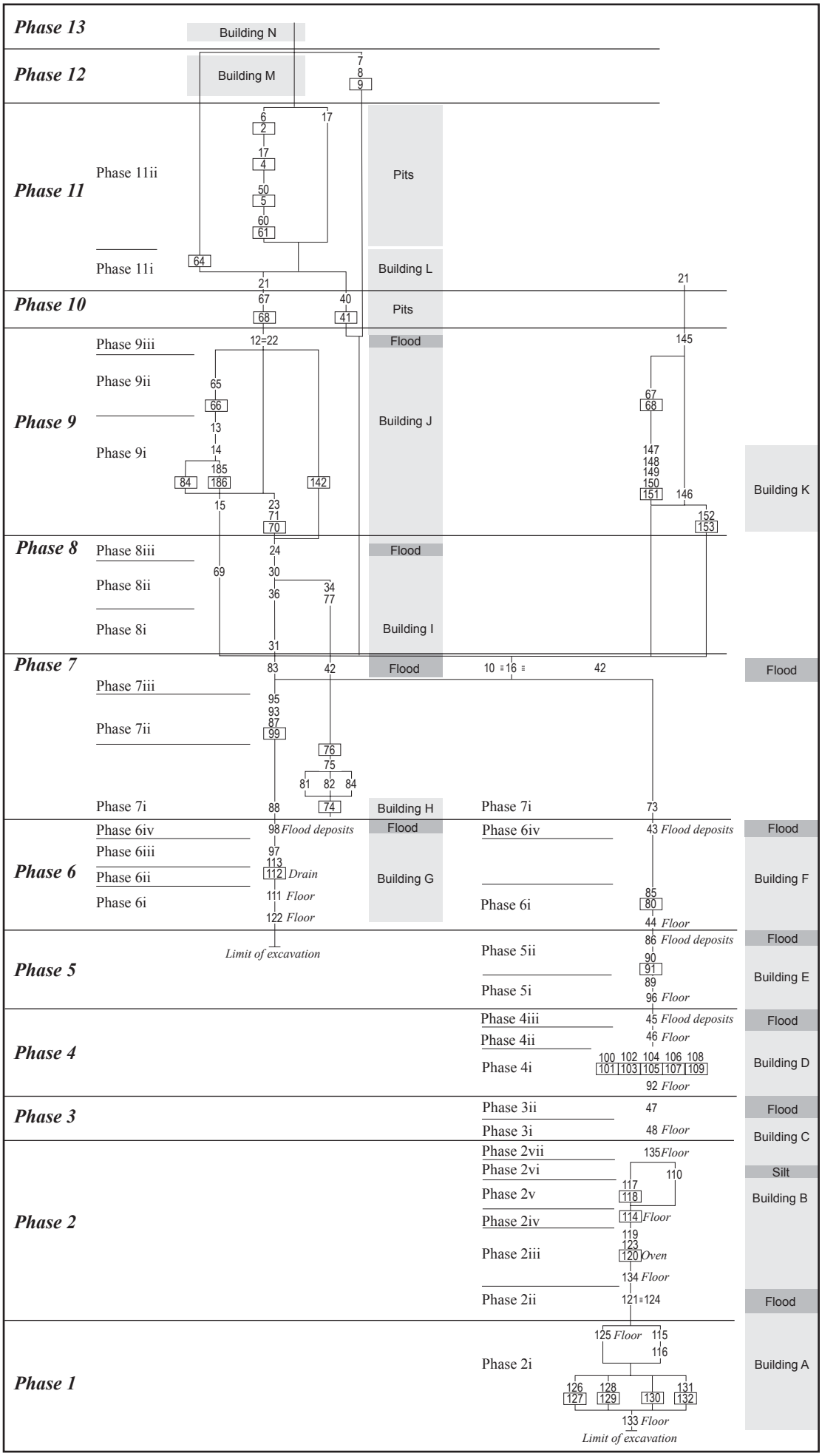


Figure 7 *Site matrix*

Within a single phase more than one episode of activity is often indicated but due to the limited area of excavation it is not always possible to determine whether this evidence represents the laying of new floors, and internal re-modelling within an existing structure, or complete rebuilding. This is particularly problematic within the earliest excavated phases where space and time were most limited. The distinction between a change of phase and episodes of activity within the earliest part of the excavated sequence was on occasion determined by the relative thicknesses of new floors. The thicker a particular floor, the more extensive the remodeling (new episode) or re-building (new phase) indicated.

Within the body of the report context numbers relating to negative features such as pit or posthole cuts are represented by bold text **123**, fills of cut features by brackets (456) and layers such as floors and flood deposits by unhighlighted text 789.

The different phases are described and discussed in order of deposition and several phases are included within each of the historically significant periods defined by the presence of specific ceramic typologies (See Spoerry, Appendix I).

PERIOD 1: 1250 - 1350

This period includes all features attributed to Phases 1 to 3 which were excavated within Area III. All three of the buildings identified within the period (buildings A, B, and C) were characterised by the presence of relatively thick accumulations of finely laminated floor deposits. These floors are thought to have built up over time through the gradual deposition of domestic debris within the confines of individual buildings.

PHASE 1

It is important to remember that phasing begins with the earliest deposits recorded within the excavation area and that the sequence is known to extend below this point. A series of four floors interspersed with thin layers of apparently sterile silts were observed (but not recorded) within the cut sides of foundation trench **127** (*Fig. 6*). These floors appeared to be far less substantial than the earliest surface recorded in plan, floor 133. Individual habitation phases were probably relatively short-lived. The most reasonable explanation of this earlier activity is repeated deposition of riverine silts as a result of frequent flooding events prompting the laying of new floors and the construction of new buildings.

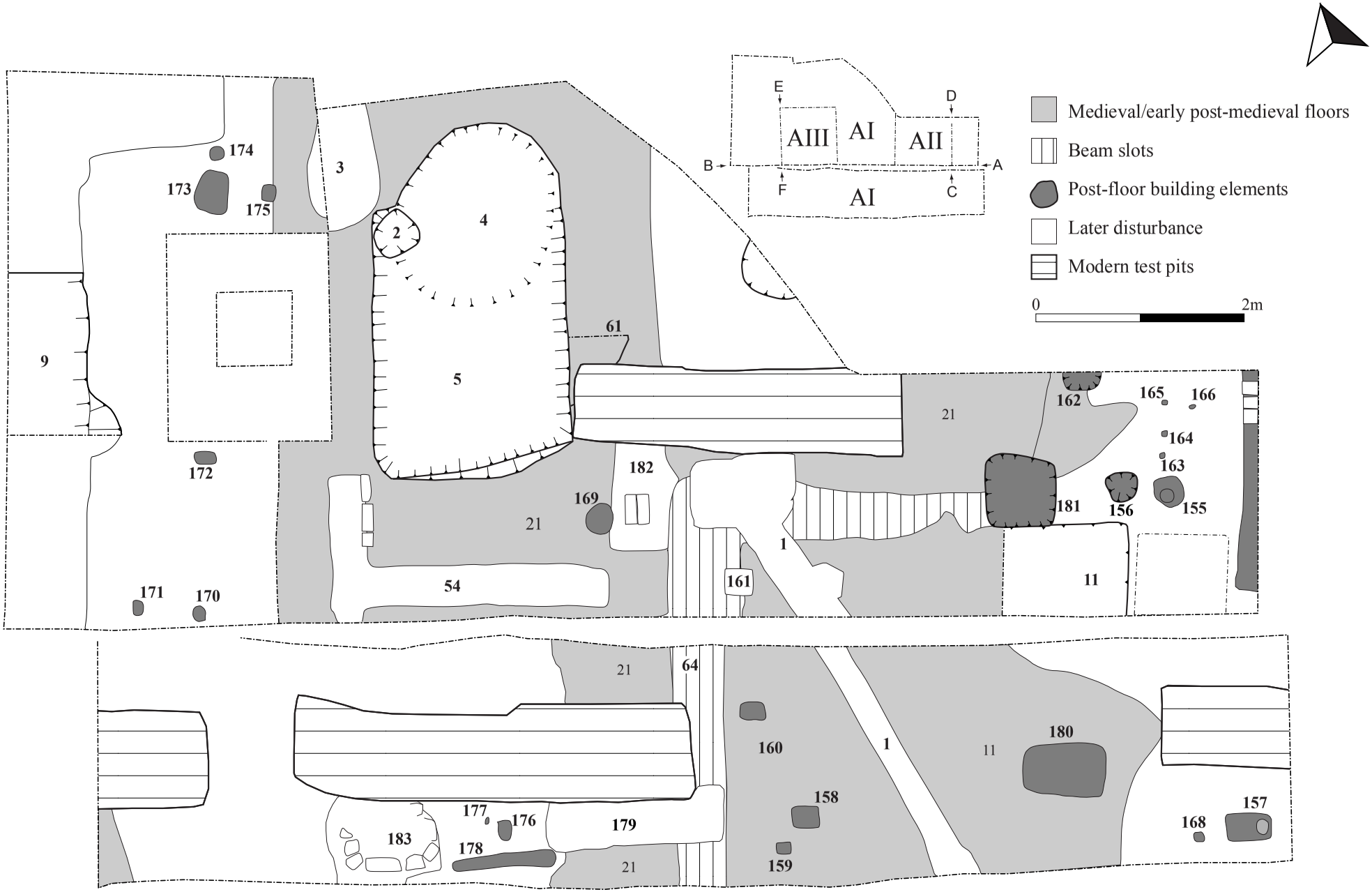


Figure 8 *Plan of excavation*

Whilst preservation of the posts was sufficient to allow each wooden post to be left *in situ* during the removal of foundation trench fill (126), it was discovered, when attempting to lift these posts for further analysis that no coherent structure survived within these materials and as a result none of the posts were retained.

The posts appeared to have been truncated at the surface level of floor 133 indicating either the collapse or deliberate removal of this wall prior to the laying of floor 125. The apparent absence of any trace of demolition rubble overlying floor 133 would seem to suggest that internal elements of Building A were carefully removed, presumably with the intention being to re-use the salvaged materials. Although the excavation area is obviously limited, the total removal of these elements is taken as indicating wholesale re-building rather than remodelling of an existing structure.

It is worth noting here that the posts within trench **127** were inclined to the south at an angle of up to 25° to the vertical and that complete rebuilding of the property was prompted by subsidence. The ground upon which this and later structures were built was clearly unstable and would appear to have been (and may still be) moving downslope to the south west. Determining the extent to which deposits have moved after deposition can be problematic. In this instance a close examination of the extent of floor 133 (*Fig. 8*) shows how this deposit appears to have been dragged southwards, partially obscuring the top of foundation cut **127** thus indicating that post-depositional movement of deposits has clearly occurred. The cause of this subsidence may possibly have been the presence of a small gully or erosion channel adjacent to the site under the present line of Market Mews. The presence of this drainage gully is inferred by the nature of deposition of a series of deposits along the southern limit of Area III and is most clearly illustrated by the deposition of occupational build-up 73 in Phase 7 and is discussed in more detail at that stage in the report.

Posthole **129** (128) length 0.38m x width 0.34m x depth 0.35m was rectangular in plan with rounded corners, near vertical sides and a concave base (*Fig.8, left hand side*). Fill (128) was similar in every respect to foundation trench fill 126 above. This is important as it shows us that the post, which should have survived at least as well as those within **127**, was not present. It is highly likely that this post was deliberately removed prior to the laying of floor 125 and was almost certainly re used. This is a pattern that is repeated throughout the sequence, especially when the physical evidence for flooding events is at its most extreme.

Postpad 130 was a large 0.15m x 0.14m flat fragment of limestone retaining the decayed impression of a square wooden post of side 60mm.

A beamslot, or possibly a trench for a plank built partition, **132** (131) width 0.20m x depth 0.40m, extended into the northern limit of excavation and terminated to the south as posthole **129**. As with this posthole no evidence of any structural remains was visible within the fill of the beamslot indicating the deliberate removal of this wall prior to re-modelling.

Figure 9 *Detail of west facing section within Area III*

Discussion

This group of contemporary features clearly signals the presence of a fairly substantial building within the area of excavation. The method of construction appears to comprise a mixture of timber walling and earthfast posts. The excavation area was insufficient to determine whether foundation trench **127** was an example of clay/stud construction or was intended as a footing for some form of raised sill prior to box frame construction. Information for clay/earth walled construction techniques from this period is limited, with Norwich providing the most extensive range of examples resulting from excavation currently available (Atkin, Carter and Evans 1985). The question of construction techniques is vital to our understanding of the development of the site as a whole and, as will be shown in later phases, the assumptions that have been made concerning these techniques do have a profound effect on our reading of the stratigraphic matrix. It is perfectly possible, for example, that the building represented by **127** etc. was in fact a free-standing timber framed construction without any foundations, and that those early surfaces viewed in the section of the trench are in fact floors from earlier phases in the development of Building A. Each floor could have been lain on successive layers of flood borne silt within a single building. It is simply the restricted size of the excavation (1.50m x 1.40m) that prevented us from clarifying this problem. Later buildings do appear to have been free-standing, without substantial foundations, and this has led to a re- ordering of the site matrix 'as dug'.

PHASE 2

Following the deliberate removal and demolition of internal divisions associated with floor 133 within Phase 1 a new floor was laid, prior to the construction of what is assumed to be a new building. Interestingly no visible evidence for this demolition was apparent between flooring episodes.

Phase 2i: Occupational build-up within Building B

Description of Contexts

Floor 125 varied in thickness from 0.10m to 0.28m and was laid directly onto the top of floor 133. The floor comprised a series of finely laminated layers of dark grey silty clay interspersed with lenses of ash. In addition to fragments of pottery, occasional charcoal, mussel shell and animal bone (including a cod vertebra which had been cut width-ways) were noted to have been trampled into the floor surface. The area of excavation was limited to an area of 1.50m x 1.40m towards the centre of the southern limit of Area III. No cut features were observed within the surface of the floor within this limited area.

A roughly worked bone needle (sf 11) was recovered from this floor. Made from a single large mammal bone, the needle is highly polished, 207mm in length, has a head 22mm wide, pierced by a regular hole 4mm in diameter with the opposing end sharpened to a point (see Appendix III). Such a large needle must have been used for coarse work, such as making or repairing sails or nets. Given the limited size of the excavation at this stage, this object cannot, however, be taken as reliable evidence for any specific activity taking place within Building B.

Internal wall **116** (115) was linear in plan, aligned east west, length 1.80m x width 0.23 m x depth 0.50m, terminating to the east with a 'D'-shaped post 0.60m in height. Wall **116** was originally excavated and interpreted as a foundation trench cut, and therefore seen as being intrusive and thus stratigraphically later than those deposits, including floor surfaces, that it appeared to truncate. The sides were near vertical with a sharp break of slope at the top and base of the cut. The 'fill' (115), a mid to light grey clay silt, contained the decayed remains of a series of wooden stakes of *c* 5mm diameter placed at intervals of 0.10m along the length of the cut. No evidence for a baseplate to hold these stakes as part of a panel was observed and the reason why a trench should need to be cut into such well compacted but soft ground for what would appear to be a fairly flimsy structure was unclear. As a free-standing internal wall attached to the 'D-shaped' post, this feature could be seen to have been constructed immediately after the laying of floor 125. This division appears to have survived the inundation marked by the presence of flood deposit 121 = 124 and represents the boundary of floors in subsequent phases within Building B. The post at the end of this wall may indicate the presence of a doorway.

Phase 2ii: Flood Deposit within Building B

Description of Contexts

Flood deposit 121 = 124, was a fine pale brown sandy clay silt layer 0.25m thick, increasing in depth towards the southern limit of excavation. This deposit represents the surviving evidence of what must have been a highly destructive episode of flooding.

Discussion

As with all later deposits it is believed that the nature of the flood borne material, being composed of extremely fine sand grains encased in a thin covering of clay, enabled it to be carried in suspension in the floodwaters. As the water level dropped these silts were deposited within and around the buildings of the town. It is likely that the wooden structures within the area of excavation would have suffered from the pressures of water and silt against their walls. The buildings on the site appear to have acted as a kind of trap for these river silts and often new floors were laid over newly deposited silts within surviving, but partially buried buildings.

The identification of upstanding walls and other positive features within Phase 2i is of obvious importance. The retention of flood-lain silts within structures with several phases of usage is undoubtedly deliberate and is one of the key factors in explaining the unprecedented depth of archaeological deposits encountered during this excavation. The effect that the retention of flood-lain silts has had on the overall topography of the town is discussed further in Phase 7.

Phase 2iii: New floors and associated oven within Building B

Description of Contexts

Floor 134, of depth 0.10m, was a very dark grey-black compacted silty clay with frequent carbonised organic material. The make up of this floor was similar in many respects to the carbonised organic materials present within the base of contemporary oven cut **120** (123). It is highly likely that the original floor surface of this building built up over the newly deposited flood silt layer 121 = 124 and that rake-out material from **120** had simply been scattered on this surface and became compacted through trampling during the lifetime of the oven. Micromorphological analysis has identified that the make up of this floor (Appendix V, section 5, unit 16) prior to the use of oven **120** consisted of compacted fine silty sand, horizontally bedded, decomposed organic remains, with a range of phytolith types and food preparation debris such as fragments of bone, egg shell, ash and charcoal. Spent fuel from the oven (Appendix V, section 5, unit 15) appears to have been scattered over this initial surface.

Oven **120** (123), was sub-circular in plan, diameter 0.90m with a stepped profile forming a shelf along its southern edge and an elongated flue exiting to

the west. The sides of the oven were lined with clay, which was subsequently partially fired and discoloured a mid orangey red as a result of exposure to heat during its use.

Analysis of the environmental samples taken from fill (123) shows consistency with micromorphological thin sections taken through associated floor 134 and indicates that the oven was fuelled using a mixture of oak, alder and birch (including twigs) as well as a mixture of herbaceous (grasses / rushes / sedges) stems and leaves. After each firing spent fuel was removed from the oven and scattered upon the surrounding floor, subsequently becoming incorporated into that surface through trampling. This was probably a deliberate action driven by the desire to raise floor surfaces above the level of flooding events. Despite the excellent state of preservation of these deposits there is no clear indication that the oven was being used for anything other than the cooking of food products.

Oven Backfill (119) consisted of a loosely compacted mid to light brown clay silt. This deposit represents the deliberate backfilling of the oven and levelling of the immediate area prior to the laying of a new floor 114. This backfilling material was quite distinct from earlier and later flood deposits. It was far less compact and uniform, containing moderate inclusions of small mid-brown clay silt fragments absent from those silts lain as a result of flooding. This event has been identified within thin section 5 (Milek, Appendix V) as a horizon of redeposited river sand containing randomly orientated, rectangular aggregates of laminated levee material (contexts 119.1-119.3). The size of the aggregates in context 119.1, their random orientation, and the lack of disturbance of a fine organic lens (119.2), all suggest that the deposit was the result of a rapid dumping event, supporting the interpretation of the excavator.

Phase 2iv: New floor lain over backfilled oven indicating internal re-modelling within Building B

Description of Contexts

Floor 114, was 0.18m thick and comprised of a series of alternating layers of decomposing organic matter and compacted sandy silt loam. Micromorphological analysis of the thin section has confirmed that these layers represent the episodic build-up of debris through trampling and the subsequent scattering of fresh plant material, including reeds and grasses, to provide a fresh floor covering. Milek (Appendix V) highlights the point that this floor level is significantly different from all of the other floors in thin sections 1, 4, and 5, both in the type and quantity of accumulated debris. Floor 114 (App. V, section 5, 114.1-114.6), contains less bone, no ash or egg shell, and more herbaceous material. This may suggest a change in use of space and/or methods of maintaining the floor, perhaps prompted by a decline in the quality of the climate and consequent rise in the water table.

Further information is available from the environmental samples. Schlee (Appendix II) remarks that of all the samples taken during excavation, sample

22 (from floor 114), along with samples 23 (oven backfill 119) and 24 (from (123) last usage of oven **120**) are by far the richest in terms of quality of preservation and range of species represented. The make-up of floor 114 contained fish bones, including thornback ray (Philpot, Appendix III), marine mollusc fragments, field beans and hazelnuts in addition to a wide range of non-charred weed seeds.

The presence of significant quantities of charred cereals, chaff and straw fragments suggests that, if not derived from earlier oven **120**, then the sample 22 assemblage is derived from another such feature in the immediate vicinity. This seems to indicate the continuity of an almost identical domestic activity utilising the same resources seen in phase 2iii, but now associated with floor 114.

This high quality and range of preservation appears to be only due in part to the proximity of oven **120** and points to a change in the status, function or layout of the buildings of later phases, perhaps in response to the impact of flooding.

The weed assemblage from all three of these early samples contains plenty of evidence that local conditions were consistently or periodically wet, with pondweed and water flea eggs indicating the presence of standing water.

With the known presence of standing water within the buildings of the period it is understandable that every available scrap of domestic waste should be strewn onto these occupation surfaces along with freshly gathered organic materials in order to raise floor levels. This pattern is repeated until phase 9.

Towards the end of use of floor 114 a remodelling of the interior of Building B occurs.

Phase 2v: The addition of an internal division within Building B

Description of Contexts

Slot **118**, aligned east west with upstanding clay sill 117, was 0.93m in length x 0.30m wide x 0.20m in height. Clay sill 117 preserved the impressions of four stakeholes, still containing the decayed residues of circular wooden stakes of *c* 50mm diameter, spaced at 0.20m intervals. The flattened top of the sill may indicate the presence of a beam that, with the stakes, once supported a panel to provide an internal division within building B.

Discussion

The absence of the high degree of carbonised material present within Phase 2iii suggests a change in use for the interior of the structure as does the re-modelling of the internal space. Sill 117 clearly sat on top of the majority of deposits constituting 114, however, a further 10mm of occupational debris (not allocated a separate number during excavation) accumulated over the base of

the sill prior to the relaying of the entire floor as 135. It is worth noting that without the presence of clay sill 117 it would probably not have been possible to distinguish those floor layers lain after the reorganisation of the internal space within Building B.iv from earlier deposits constituting the 'same' floor, using conventional excavation techniques.

Phase 2vi: Flood deposit

Description of Contexts

Layer 110, a very light grey brown clay silt, 0.10m thick, survived adjacent to the north-facing section and probably represents evidence of a relatively minor flood, or was possibly floor levelling utilising riverine silts. If this deposit does represent an episode of flooding this may well have been the reason for the laying of new floor 135.

Phase 2vii: Internal remodelling and final floor associated with Building B

Description of Contexts

Floor 135, a mid-dark grey silty clay layer 0.13m thick was differentiated from earlier flooring deposits due to the lack of clearly visible lamination within the context as a whole, thus suggesting that it had been laid as a single event. This floor was delimited to the south by wall 115. This internal wall was removed and all internal features were sealed by the laying of the next floor in the sequence. Despite the similarities in make-up between floors 135 and 48, Building B was probably removed, or at best extensively re-built, when floor 48 was laid.

PHASE 3

Phase 3i: New floor within Building C

Description of Contexts

Floor 48, 0.30m in depth, was similar in every respect to underlying floor 135. Again it appeared to have been laid as a single episode of dumping and sealed all underlying features. The extent of the re-building/remodelling of the structure previously referred to as Building B, has prompted a change of phase here although further excavation within a less restricted area would be required to conclusively prove the construction of a new building rather than remodelling at this time. In addition to a small quantity of charred cereal grains, environmental processing of sample 20 recovered charred pulses,

hazelnut and cherry stone fragments, leather shoe fragments (Fletcher, Appendix IX) and a few fly pupae.

Phase 3ii: Flood deposit

Description of Contexts

Layer 47 was a pale brown clay silt layer, varying in depth up to a maximum of 0.30m, located within the north eastern quadrant of the area. This flood event deposited the greatest depth of river-derived silts yet encountered and is thought to have provoked a new phase of building. Subsequent floor deposits became thinner and less well compacted, suggesting that they did not remain in use as long as their predecessors.

PERIOD 2: 1350 TO 1450

This period includes all features attributed to phases 4 to 6 which were excavated within Area III, and phase 6 metalworking activity in Area II. All four of the structures identified within the period (buildings D, E, F and G) contained less substantial floor deposits compared to those of the preceding phases. The thickness of these floor deposits combined with the increased depth of silts between phases is thought to indicate an increase in both the frequency and severity of flooding during the period.

PHASE 4

Phase 4i: Floors with a high organic content within Building D

Description of Contexts

Layer 92 consisted of a series of finely laminated floor surfaces and make-up dumps of maximum thickness 0.15m. At least six distinct, major divisions were visible within this context during excavation and the layer as a whole was noticeably springy underfoot. One excavator actually noted that this context was as soft as a carpet to stand on whilst recording. The reason for this seemed apparent from the moment that the upper surface of this layer was exposed. The impressions of partially decayed plant stems up to 0.40m in length were clearly visible as thin light brown strands apparently scattered in a random fashion across the darker organic remains of the previous floor covering. The preservation of these plant impressions was so clear that rushes were distinguishable amidst the general scatter of material.

A concentration of burnt and partially burnt clay and ash formed a distinct lens within these finely laminated surfaces and was present towards the north eastern limit of excavation. This dump of burnt material was thought to derive from an oven or hearth. Whilst this is almost certainly the case, no additional evidence to support this possibility was gained from an examination of the environmental sample taken for this purpose. Occasional bones of pig, sheep and cattle had become incorporated into the general floor make-up.

An assessment of the pollen from a monolith sample taken through this flooring material (Wiltshire, Appendix VI) identified the dominant taxa to be those of cereal type grasses and heather. The lower layers appeared to have more heather and taxa derived from damper soils including sedges, sphagnum moss, bracken and other ferns. The upper layers appeared to contain a higher proportion of cereal type grasses, and herbs characteristic of weedy grassland or meadows. The most abundant woody taxon was hazel, although alder, birch, pine and oak were also recorded. All of the tree and shrub taxa recorded in the deposits are wind pollinated but were probably growing in the catchment area.

Due to the known, high non-carbonised organic content of floor 92 a block sample of this deposit was taken for micro-excavation and peroxide flotation along with the more familiar bulk environmental samples. This was intended to establish the level of information being lost through conventional bulk processing (Schlee Appendix II). For further discussion of environmental sampling methodologies, results and potential strategies for future excavations see the conclusions in section 11.

A series of shallow post impressions **101** (100), **103** (102), **105** (104), **107** (106) and **109** (108) were present towards the southern limit of excavation. The full extent of these features northwards is unknown due to truncation by later drain cut **80**. The deepest of these features 101 was only 0.12m deep, the remainder varying in depth between 20mm and 50mm. Traces of decayed wood were present within the fill of feature **103**, with all other 'cuts' being filled with uniform dark greyish brown silts. Given the soft, spongy consistency of underlying floor 92 it seems unlikely that these features represent evidence for deliberately cut post settings. It is more likely that they were impressions left after the removal of heavy objects, perhaps furniture, from this surface prior to the relaying of the phase 4ii floor 46. The degree of truncation, combined with the limited excavation area meant that it was not possible to identify any pattern within these impressions. The potential clearly exists, however, within future excavations of sufficient area to identify the arrangement of furnishings and heavy objects within the individual rooms of specific buildings.

Phase 4ii: New floor with 'domestic' characteristics within Building D

Description of Contexts

Floor 46, was a compact, dark grey/black finely laminated clay silt layer 0.24m thick, set on an intermittent base of mid-brown clay. A number of artefacts were recovered from the surface of this particular floor. Two identical stone spindle whorls, a copper alloy strap belt loop (used to hold the belt strap end in place), and a decorated object made from a carbonaceous material similar to coal or jet (*Fig. 10*). This object is lozenge shaped, with a *fleur de lys* carved in the centre of the upper surface with two barely legible letters at the base of the design, and small drilled holes above and below the decoration. This object is probably a seal matrix.

Figure10 *Coal or Jet seal matrix with contemporary objects*

Numerous fish bones (including cod) were recovered from the floor make-up (environmental sample 14) along with low quantities of charred cereals and fly pupae. Weed flora represent generally dry conditions, but with some wetland species indicated. Interestingly, the remainder of the faunal assemblage consisted exclusively of bird bones including identifiable skeletal elements of goose and teal.

Micromorphological analysis of thin section 4, taken through context 46, identified a series of fifteen finely laminated deposits of variable composition. Four floor surfaces were identified (46.7, 46.9, 46.12 and 46.14) on the basis of the compaction of the underlying sediments. The significantly higher concentration of organic and anthropogenic inclusions (See Appendix V, *tables 7 & 8*) and the horizontal bedding of the organic component, particularly the amorphous organic fine material, is the result of *in situ* decay of plant material. Unlike the 16th century floor in thin section 1, which contained gravel-sized

inclusions of pottery and lime plaster, the floors in thin section 4 were generally characterised by much finer material, much higher organic contents and a broader suite of domestic debris such as different types of bones (including fish) egg shell, charcoal and ash. This material would seem to be indicative of domestic 'kitchen' activities.

The sediments separating the floor deposits have variable origins. Situated between floors 46.12 and 46.14, context 46.13 was composed of very well sorted very fine sandy silt, with gravel-sized, horizontally orientated aggregates of clay making up approximately 15% of the observable area. The horizontal orientation of the clay aggregates, and the fact that they have horizontally flattened upper surfaces, suggests that these deposits accumulated gradually and were occasionally trampled.

In contrast, the sediment between floors 46.9 and 46.12 (units 46.10 - 46.11), between floors 46.7 and 46.9 (context 46.8), and above floor 46.7 (contexts 46.4- 46.6) consisted of laminated silt and silty clay. These layers resemble levee or floodplain deposits, where fine material suspended in overbank floodwater settles in sorted bands of silt and clay when the speed and turbulence of the water has dropped (Reading 1996). In addition, 46.5 contained and was surrounded by, iron impregnated clay and plant remains (iron pans 46.4 and 46.6) indicating that the sediment was deposited when wet. Milek states that these deposits are best interpreted as overbank flooding events. Context 46.10 which is above the undisturbed, horizontally laminated 46.11 and below floor 46.9, appears to have been substantially affected by post depositional bio-turbation. Besides being substantially reworked, faunal burrowing and *in situ* organic decay left vughs (irregularly shaped voids) over 20% of the observable area. It would appear therefore, that following the flood event that deposited 46.10 and 46.11, and prior to the re-occupation of the site, there was a period of time in which 46.10 dried out, and soil fauna were permitted to move in and disturb the upper portion of the flood deposit.

Discussion

The level of detail afforded us through thin section analysis here allows an illustration of the type of living and / or working conditions within the area of Market Mews during the 14th century. Within the lifetime of the building indicated by the presence of floor 46, it seems that flooding was still a relatively frequent occurrence. Periodic abandonment of the building due to flooding is indicated by contexts 46.10 and 46.11 and the changing level of the water table must have kept these floors damp for prolonged periods. This may suggest that the building or structure was not suitable for domestic habitation but clearly life did go on despite such adverse conditions.

Phase 4iii: Flood Deposit sealing occupation deposits within Building D

Description of Contexts

Flood layer 45, was a pale light-brown sandy clay silt layer 0.30m deep. The flood event evidenced by this deposit would appear to have been of sufficient severity so as to cause the abandonment of Building D and instigate a new phase of building. The quantities of riverine silts deposited as a result of this event must undoubtedly have caused extensive damage. It would appear that following this flood the inhabitants/occupiers of this area quite literally 'upped sticks' i.e. pulled any surviving building materials out of the ground and built a new structure on the same plot of land.

PHASE 5

The major flood event indicated by the presence of up to 0.30m of silts within phase 4iii marks a number of changes. After this event floor deposits within individual phases of the development of the site (the thickness of which is taken to indicate intensity/length of use) are notably thinner and less well compacted than in earlier phases. In contrast, the depth of silts deposited between building phases increases. This is certainly due to a deterioration in the climate which, when combined with the silting up of the Wellstream (Ouse) and the Nene, resulted in the increased frequency of overbank flooding. Given the depth of some of these deposits and clear evidence for the level of destruction caused by the floodwaters it is difficult for us to appreciate the living conditions endured by the inhabitants of Wisbech during the medieval and early post medieval periods. Still, no matter how bad conditions were within the town it seems that there were always those less fortunate. For example, the Victoria County History mentions that, in 1315, *'Richard Lambert of Lynn, illegally imprisoned in Wisbech Castle, was so inhumanly gnawed by toads and other venomous vermin that his life was despaired of'*. The continuing cycle of rebuilding following flooding is clear evidence that life went on in the town and although we may be able to anticipate the effects of these conditions on the general health and life expectancy of the population, the effects on the economy of the town cannot be established through the results of this one small excavation.

Phase 5i: Floors containing traces of lime and other features associated with Building E

Description of Contexts

Layer 96, a mid brown clay 30mm thick, was only present adjacent to the south west limit of excavation. The interpretation of this deposit is unclear due to the poor level of preservation, although it is likely to represent the partial survival

of a newly lain floor surface or the base of a clay sill similar, perhaps, to the example excavated within phase 2iv.

Floor 89, consisted of a series of finely laminated very dark grey silty clay deposits 0.10m thick, present along the southern limit of excavation. These deposits were consistent in terms of their make-up, with the accumulation of waste on living surfaces seen within earlier phases of activity on the site. During the excavation of this deposit seeds, eggshell and fish bones were all clearly visible and had clearly been trampled underfoot. Patchy, thinly spread deposits of a white chalky substance thought to be lime were also observed during excavation. The presence of lime might hint at the type of activity being conducted in or near to this structure. It is commonly associated with the processes of tanning and curing of animal hides and, as with the metalworking activity that took place during phase 6, this was a particularly anti-social activity often conducted on the periphery of a settlement.

Posthole cut **91**, rectangular in plan with vertical sides and a concave base, retaining the impression of a wooden post, was the only direct evidence for a structure associated with the floors within this phase. Posthole fill (90), a yellowish brown artefactually sterile silt, was extremely loose and showed no sign of compaction. Neither was there any trace of decayed wood within the posthole strongly suggesting that the post had been deliberately removed. This almost certainly occurred soon after another flooding event as the loose fill (90) would seem to have quite simply slid into the void left by the departing post, and was presumably in a semi-liquid state.

Discussion

The fact that the only remaining evidence for this entire building and occupation phase survives partially intact along the southern limit of excavation within Area III is an indication of the devastating effect that flooding was having within the town during the 14th century. The interior surfaces, and presumably also parts of the building fabric and structure, would seem to have been swept away by the power of the receding floodwaters.

Phase 5ii: Flood deposit sealing Building E

Layer 86 was a light yellowish brown silt containing occasional fragments of coal, brown clay and cess. This deposit increased in depth from west to east across the area, to a maximum of 0.12m adjacent to the eastern limit of excavation. The presence of coal fragments may indicate that the metalworking activity witnessed within Area II during phase 6 was already underway at the time of this flood.

PHASE 6

Given the level of data recovered from both excavation areas from phase 6 of the developmental sequence, Area II and Area III will be described consecutively rather than concurrently as in later phases. Due to time constraints excavation within Area II ceased with the excavation of deposits associated with metalworking activity during phase 6. Extracts from the important analyses on metalworking and ceramics are also included within the present section to assist with the interpretations given within phase 6.

Phase 6i: Commercial metalworking activity within Building G, Area II

Unexcavated surface 122, a compact dark greyish brown silty clay represents the limit of excavation within Area II and was probably lain at the same time as floor 44, to the west within Area III.

Sealing surface 122 were at least three distinct phases of activity associated with the use of Building G for a variety of processes necessary for different forms of metal working. This provides us with the clearest identifiable evidence for what can be considered commercial / industrial, rather than domestic, activity from the whole of the excavated sequence.

Description of Contexts

Layer 111 was a heavily compacted floor 0.13m thick, made up of a series of discrete episodes of dumping. These partially cemented dumps were composed of a mixture of coal, copper alloy waste, ferruginous concretion, ironworking slag and hearth lining. Discrete dumps of coal, slag and lenses of riverine silts were observed during excavation, although the separate sampling of these deposits was not possible due to the time constraints placed on the excavation. Clearly this compacted working surface was built as a result of certain, as yet unidentified, processes. In an attempt to gain a clearer indication as to the range of metalworking activities taking place this layer, along with all later deposits of this type, were extensively bulk sampled. Fragments of copper alloy and ironwork present within this deposit suggested that the re-use of scrap metals was taking place within this building. A semi-complete barrel lock was also retrieved from this context. It seems highly likely, given the rather wet conditions (highlighted through thin section analysis within Area III) that every available waste product from recycling was retained on site to be utilised as valuable flooring material.

Phase 6ii: A wood lined feature within Building G, Area II

Cutting through surface 111 was a linear feature described alternately as a possible drain, water channel or trough. Any of these interpretations may be

correct, however further excavation is required to reduce the current uncertainty regarding the function of cut **112**, and associated lining (113).

Description of Contexts

Drain cut **112** was aligned east-west, of depth 0.38m, and extended into the northern limit of excavation. This drain or water channel was sealed firstly with clay and then lined with wood. No trace of a lining survived along the base of the cut, although the decayed remains of wooden planking preserving disturbed fragments of the underlying clay (113) was present along the southern side of cut **112**. In addition a line of stakeholes, parallel to the edge of the cut, indicate that stakes were driven into the clay lining of the drain at intervals of between 0.15 and 0.20m. These stakes were presumably intended to stabilise the clay and perhaps provided a means for holding the wooden planking in place.

Figure 11 *Ely Ware Jar under excavation in fill (97) of wood-lined drain* ***112***

Discussion

That this apparently linear drain does not appear to continue within Area III, less than 5m to the west would seem to suggest that this feature was localised and associated with a specific structure or process. This feature was not only cut through a dense concentration of metalworking debris but was also backfilled by material from the same types of process and was undoubtedly used during the production of varying types of metalwork. To call this feature a drain is perhaps a little misleading. The true function of this feature is open to speculation due largely to the limited excavation area. If the feature does not extend to the west then why, other than the fact that the river lies in that direction, should we expect a continuation of the cut to the east? It is equally

likely that this feature is simply a holding tank for water or some other liquid and that the two complete ceramic vessels (Spoerry, Appendix VI, phase 6) recovered from the backfill (97) of the cut were in fact buried *in situ (see Figs. 11, 12 & 13)*.

Phase 6iii: Backfilling of wood lined feature 112, Building G, Area II

Description of Contexts

Drain, channel or trough **112** was backfilled (97) with a wide range of metalworking and associated debris. This is perhaps an indication that metalworking continued after the infilling of this particular feature, although the backfill could potentially be derived from debris displaced by the cutting of the drain. Analysis of the materials shows us that the range of processes represented whilst the feature was in use were the same as those indicated from the backfill.

Discussion: The material

By Dr C Mortimer

A large amount of the material recovered was furnace/hearth lining or vitrified furnace/hearth lining. From the evidence of the hearth found in context (113) (see below), it may be that the structures at this site were more likely to have been hearths (pit-like) rather than furnaces (with superstructures, generally related to smelting). During many high-temperature processes, especially amongst metalworking activities, clay may be fired so strongly as to cause the lining to react with the fuel, and then partially or completely melt. The clay used for linings may have been less refractory (able to withstand high temperatures) and less carefully prepared than that used for the manufacture of crucibles and thus more vulnerable. The lining may have kept some of its form, preserving some areas as fired clay (either reduced or oxidized), despite heavily slagging on the other side. Where the hearth lining was heavily vitrified, it may have run off or been raked out as separate dribbles of dark, glassy 'slag'.

Many of the pieces of hearth lining had traces of corroded copper alloy on them, which suggests that they were used in connection with melting copper alloys. In most cases, the form of the lining fragments means that they may well have come from structures similar to the small, near-complete bowl-shaped hearth found in context 113, which was heavily slagged and had copious amounts of copper alloy deposits. This is an unusual find. Amongst the interesting features are the rough, irregular clay walls (13-20mm thick), suggesting that a small pit (diameter about 110mm, 80-90 mm deep) was dug into the ground and then clay was used to line the pit. The irregularity of the walls strongly argues against this being a crucible as such, since most metalworkers would strive to minimize stresses and strains within the crucible walls by making them of an even thickness. On the outside (the side in contact with the soil), the clay was reduced-fired in most areas although there was a

hole through the side around which the clay was oxidised. There was no evidence for the intense vitrification of the clay in the area of this hole, which would be expected if this was the tuyère (bellows nozzle) position. Instead, the hearth was clearly subject to very high temperatures directed in from above, as the entire preserved length of the rim is very strongly vitrified; most medieval crucibles are heated from the outside and are thus vitrified both outside and inside. Possibly the copper alloy to be melted was held in a crucible placed within the hearth, although there is no evidence of any crucible fragments at the site; presumably, if a crucible was used, the melt must have been partially or totally unsuccessful, given the substantial amounts of copper alloy on the hearth itself. Alternatively, it is possible that the copper alloy was melted directly in the hearth, under a layer of charcoal (some of which can still be seen within the vitrification and copper alloy deposits) and then tapped off into a mould or moulds lying downslope from the hearth. It is extremely unlikely that the hearth was used for primary copper alloy smelting, as the nearest copper sources are far away, and ores were rarely transported long distances in an untreated form.

As some of the hearth lining and vitrified hearth lining had no copper-alloy deposits, some of this may relate to ironworking rather than copper-alloy working.

Small amounts of copper alloy waste were found, some of which clearly show that they were molten when they hit the ground.

Another common material at the site was ferruginous concretion. This is iron-rich material, which contains a variety of inclusions - pieces of fuel, stones, pottery, fired clay, hammerscale, slag, pieces of copper-alloy and iron objects - bound together by iron corrosion products. This material would have been formed in a damp and iron-rich environment. It can therefore be seen as the man-made equivalent of iron panning, and ironworking deposits laid down in an area which was prone to flooding would presumably be more likely to form ferruginous concretions than they would in dry areas.

The amounts of true ironworking slag (rather than iron-rich vitrified hearth lining) are relatively minor compared to many other sites, but they do indicate iron was worked at, or near, the site. The precise nature of the ironworking involved is not immediately clear, as much of the material is non-diagnostic. Certainly none of it is tap slag (which would have indicated making iron from ore) and much of it can be classified as smithing slag, albeit with small areas of 'runnier' material. One fragment from context 111 may have been part of a smithing hearth bottom, a small plano-convex block of ironworking slag, formed in ironsmithing. The spherical hammerscale recovered from the environmental sample and some of the 'industrial' samples from context (97) suggest that at least some of this ironsmithing involved primary working (*eg* removing slag particles from iron billets) rather than secondary working (*eg* making iron artefacts by forging), which would normally have produced flake hammerscale. Many of the iron-rich objects found in, or with, the ferruginous concretion corroded into small flakes, which may mask the presence of some

flake hammerscale. The relatively large quantities of ferruginous concretion (nearly 2kg) is also evidence for ironworking being carried out in the area.

Minor material types included within the 'industrial debris' samples are fuel ash slag (formed by the reaction of clay with plant materials at high temperatures), fired clay, iron objects, fuel (apparently both charcoal and coke), pottery and organic material (probably cess). One of the small pieces of fired clay from context (93) had a surface which may have been prepared to give it a smooth finish, possibly as a mould. Two unidentified samples may be pieces of fuel and ore.

Conclusions

Over 12kg of material from high-temperature processes was examined. Evidence of melting copper alloys was examined, although the lack of any identifiable crucible or mould fragments means that it is difficult to say exactly what happened to the metal after it was melted; the alloys indicated by XRF analysis are not characteristic of any particular artefact types. Although it was clearly connected with copper alloy working, the hearth from context (113) remains rather a mystery, and further parallels should be sought for this material. Besides melting copper alloys, ironworking, probably smithing, was also carried out at, or near, the site.

In addition to the variety of metalworking and associated debris a number of other artefacts were recovered from these contexts that add further detail to this particular phase in the development of the site. Whilst the majority of the metal work consisted of small unidentifiable fragments of copper alloy vessels and iron nails, a semi-complete bell was recovered from within a large storage jar that had been deliberately buried within the drain (see below).

The ceramics

By Dr P Spoerry

Two complete ceramic vessels, a storage jar and a jug were recovered from the backfill (97) of wood lined feature **112**. The (Ely ware) storage vessel was found upright but crushed by the pressure of the surrounding compacted metalworking debris. The jug (Grimston ware) was found intact, lying on its side within the larger vessel.

Whilst both types of vessels are common in domestic contexts the discovery of these vessels within the backfill of **112** suggests that they may in this instance have performed a more specialised function. The Ely ware storage vessel shows no evidence of use, or exposure to, chemical processes or heating. The only use-related information is a thin, partial, covering of limescale in the base of the jar, consistent with water storage. The Grimston jug, however, is completely oxidised when such vessels are most commonly reduced and has its surface glaze heavily altered, most probably due to exposure to heat. There is a

complete absence of internal deposits but externally the glazed portions of the surface are rough and scaled with burnt lumps of overfired glaze. Under this only a very thin, partial, light green glassy layer survives.

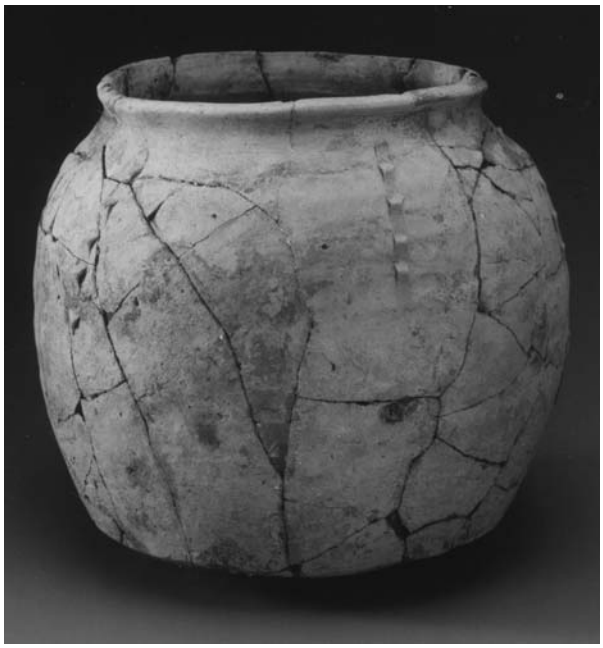


Figure 12 *The Ely Ware Storage Vessel*

The rather irregularly shaped rim of the jar provides an aperture of around 0.24m, wide enough for the Grimston jug to be placed easily within. It seems highly likely that the jug was used in conjunction with the storage vessel, the former acting as a ladle removing water from the latter, a cistern. The burnt surface of the Grimston jug, indicating repeated contact with heat, can be seen as further evidence that these vessels were directly employed to provide small quantities of water during a range of metalworking processes.

It is entirely possible that the discovery of these vessels within **112** suggests that all three elements were part of the same process. Perhaps **112** is the primary reservoir for the storage of water, with the Ely ware vessel providing a more portable secondary cistern.

Environmental remains

By D Schlee

In addition to metal working debris, sample 19, (Schlee, Appendix II) consisting of the contents of the Ely Ware jar, was found to contain low quantities of bone, mussel and egg shell fragments presumably representing surviving evidence of meals taken during working hours in the metalworking shop. This sample and associated sample 21 (from floor 111) also contained the only non-charred specimens from the site, a pea and hulled oats, surviving through their proximity to the metalworking debris.

Figure 13 *Fragments of the Ely Ware jar and its contents*

Discussion: General

Despite the proximity of the two excavation areas, coal, slag and other metal working debris from contemporary floor deposits in Area III (44) are virtually non existent. This clearly indicates the presence of a division or physical boundary at some point between the two areas. For many metalworking tasks shelter is required not only to provide shelter from the rain, a potential hazard when working with metals at high temperature, but also to control lighting levels. Low lighting is essential for the effective estimation of temperature when working with iron and other materials. It is undoubtedly some form of structure or metalworking shop which effectively prevents the spread of waste materials to the west. Whether the surfaces present at this time within AIII are part of the same, or a separate building, is unfortunately beyond the scope of the current evidence. It is worth noting at this point that the residues of metalworking are the only readily identifiable evidence for potentially commercial, rather than domestic, activity throughout the excavated sequence. If we are to examine the range of activities being carried out within the New Market, or the town as a whole, then on this evidence, larger excavation would be needed for anything approaching a full understanding to be gained.

Phase 6i: Domestic activity and drainage within Building F, Area III

Despite the wealth of detail concerning the build-up of contemporary floor surfaces within Area III afforded us by virtue of thin section analysis there appears to be surprisingly little indication that a range of specialised

metalworking activities were taking place only metres to the east. It is unknown whether these activities took place within different rooms of the same building or, (most likely, given the absence of metalworking debris) within entirely separate structures on separate plots of land.

Description of Contexts

Floor layer 44, 60mm thick, consisted of a series of finely laminated very dark grey-black occupational deposits interspersed with lenses of sterile light brown riverine silts. It is not known whether the silt lenses represent occasional flooding episodes, were deliberately lain floors, or were wind-blown accumulations. Environmental samples 12 and 13 taken from this context contain a variety of weed seeds in addition to a low presence of charred cereals and chaff fragments along with fish bones, egg shell and fly pupae, suggesting a domestic context. A group of eight stakeholes was observed cutting into the floor within the north east quadrant of the excavation area. The function of these stakeholes remains unknown. In addition to the ubiquitous scatter of broken pottery and animal bones trampled into this floor a single silver coin was recovered. Despite being heavily worn an examination of the X ray clearly shows the characteristic design of the long cross penny. First minted in Durham and Bury St Edmunds in 1272, during the reign of Edward the First (1272 - 1307), these coins were later also minted in London. Despite the production of a new coinage in 1279, which introduced the halfpence piece, farthing and fourpenny 'groat' into our currency this type of penny continued to be manufactured, although in fewer numbers, through the reign of Edward the Second (1307 - 1327) and into the reign of Edward the Third (1327 - 1377) with only minor differences in detail (C Montague pers. comm.). These coins remained in general circulation into the early fifteenth century. Precise dating of the coin from floor 44 is not possible. The legend giving detail of the mint has been completely worn away as a result of prolonged use. It is worth considering that this particular coin could easily have been in circulation for over 100 years before being lost.

Drain **80**, was 0.80m wide, 0.60m deep with vertical sides and a flat base. The cut was aligned east-west and extended 2.40m into the excavated area. The western terminal end of the cut was squared, cutting through and broadly contemporary with floor 44. The fact that this cut does not appear to be present further to the east within Area 2 may be explained by the presence there, of erosion gully **99** (Phase 7ii) which had perhaps removed all trace of the original continuation of the drain. It is interesting to speculate about the purpose of this drain. Flood deposits sealing this feature indicate that the weather was about to take a previously unprecedented turn for the worse. It is possible that this drain was intended as a temporary feature cut within Building F at the onset of flooding in an attempt to direct the rising waters out of this property.

The drain fill (85), a brown silt, became noticeably darker and wetter towards the base of the cut, with an increasing frequency of mid brown clay fragments thought to represent portions of a disturbed lining.

Phase 6iv: Severe flooding sealing metalworking and domestic surfaces within Area II and Area III

Description of Contexts

Within Area II this flood deposit was recorded as layer 98, a pale light brown sandy clay silt, 0.40m deep. This layer completely sealed the underlying phases of metalworking activity and marked the end of phase 6 and a distinct change of use for the area.

Within Area III flood deposit 43, 0.38m in depth, sealed floor 44 and partially filled associated drain **80**.

Discussion

Although layer 43 is the deepest deposit of flood-lain silt yet encountered the severity of the event that it represents is not immediately apparent. The steeply sloping contours of this deposit indicate the presence of a naturally formed drainage channel exiting from the south east of the excavation area. This channel was thought to have formed as water levels receded, which undoubtedly truncated silt layer 43 within the immediate area of the excavation. The direction of flow of these receding waters may once again have been influenced by the presence of existing features within the immediate area. In this instance it seems likely that a building (Building G, with its metalworking evidence) within Area II was obstructing the flow of flood waters directly to the east.

Clearly a major flood occurred at this point in time. The lack of any visible evidence for abandonment deposits (collapse or even debris from robbing) of those surfaces exposed upon the archaeological removal of these silts suggests that flooding occurred rapidly and possibly without any significant warning. Perhaps the cutting of features interpreted as possible drains within both areas prior to this major flood reflects the experience of the local inhabitants in dealing with the consequences of less severe, but expected, inundations. It is necessary to ask whether the inclusion of the bell and the jug within the jar (Area II) is the result of simple chance, or was the burial of these items driven by necessity and undertaken prior to the forced abandonment of the property due to flooding? Perhaps it was the intention of those working within Building G to return to this property and recover these items at some future date. In both areas there appears to be no visible evidence of the build-up of occupation deposits after the cutting of drainage features, which may be an indication of forced abandonment. The depth of flood silts over the floors of buildings G and F are certainly the most extensive yet encountered within the sequence. The retention of such a depth of flood-deposited silts may once again be

attributable to the presence of buildings and other structures acting as silt traps within the immediate area. Not only do these deposits effectively bury the apparently well-established metalworking areas but they mark a notable change in the pattern of construction within the area. Prior to this particular flooding event the depth of occupational build-up over individual floors, and the extensive remodelling of the internal spaces within individual structures, point towards relatively lengthy periods of stability within this area of the town. Whilst flooding is clearly an ever present problem, major disasters requiring complete rebuilding appear to be relatively infrequent up until this point in time.

If the evidence from this single small excavation can be seen as representative of the fortunes of the town in general then at some time during the 14th or 15th centuries it would seem that the forces of nature conspired in a final attempt to obliterate Wisbech from the face of the earth! If the depth of the silts deposited during the end of phases 6 and 7 can be taken as an indicator of the severity of flooding then this is truly the towns darkest (and wettest) hour. Further excavation within the town may well allow us to tie historical flood events to particular deposits within the stratigraphic sequence. A particularly severe series of storms and floods are known to have occurred in the mid-14th century. On January 24th, 1362, one of the worst storms on record swept across south-eastern England, which it appears, is comparable in terms of force with the great storm of 1987 (Kington pers. comm.). Only two years later in 1364 sea floods along the east coast destroyed the port of Ravensburgh on Humber and several other towns in Holderness were also lost. These events undoubtedly took their toll on Wisbech but the low lying position of the town within the fens and its proximity to the Ouse and Nene meant that prolonged periods of wet weather could pose a similar threat to these severe storms. In 1437, for example, the decay of Wisbech Fen Dyke caused a fresh water breach in which it is recorded that 4400 acres of land in Wisbech were drowned (Watson 1827), followed in 1438 by a particularly wet summer. The archaeological record has already shown the frequency with which the New Market area was prone to inundation and deposits related to all of the above-mentioned events may be preserved within the excavated sequence. Caution should however be exercised, in linking specific deposits to known historical incidents until a tighter dating sequence can be established. A chronological list of severe weather events compiled using data supplied from The Climactic Research Unit and various documentary sources is included in Appendix VII.

PERIOD 3: 1450 to 1500

This period includes all features attributed to phases 7 to 10 which were excavated within Area II and Area III. Three separate buildings were identified within the period (buildings H, I, and J). Flooding would appear to reach new heights of destruction at the beginning of the period, depositing previously unprecedented depths of water bourne silts across both excavation areas. It is worth repeating the comments of Hallam here, (p.4, this report)

who states that 'the higher the tide comes, the higher the deposit that they leave; the more dangerous they are at their fiercest, the safer the deposit that they leave'.

PHASE 7

The key change in the ceramic assemblage from that of previous phases is the presence of Late Medieval Transitional pottery (LMT), although this is mostly derived from one large bowl sherd with an internal glaze under thick limescale (see Spoerry, Appendix I). This type, present towards the end of the phase sequence, may indicate a mid-fifteenth century date, but the rest of the assemblage does not necessarily support that. Bowls are more prevalent than in any other phase, which appear to be both 13-14th century and 14th-15th century in date reflecting the rather mixed nature of the phase assemblage in general. A clear date for the deposition of many contexts within the phase remains uncertain due in part to the small size of the assemblage which in the main could sit comfortably within the preceding period.

Phase 7i: Surviving traces of a flood-damaged structure, Building H, Area II

Description of Contexts

Layer 88, a mid-brown clay layer 70mm thick, survived adjacent to the southern limit of excavation within Area II. This layer was thought to represent the last surviving trace of flooring associated with a distinct phase of construction, Building H. The build-up of a thin layer of occupational debris within Area III (73) is thought to be contemporary with this structure.

The western wall of Building H was composed of a beamslot supporting a number of upright posts. Beamslot **74** was aligned north-south with near vertical sides. The base of the cut was irregular, retaining the impressions of three roughly circular posts **81**, diameter 0.26m, **82** and **84**, 0.15m in diameter.

'Posthole' **76**, (77), diameter 0.17m was located along the same alignment as 81 *et al*, however this feature was visible higher within the stratigraphic sequence. Fill (77) probably represents secondary infilling of the robber 'impression' resulting from the removal of **81** which it directly overlies.

Phase 7i: Occupational build-up within an erosion gully, Area III

Description of Contexts

Layer 73, a fine brown clay silt layer containing occasional pottery sherds, daub and unfired clay fragments varied in depth from between 5mm - 10mm. This deposit mirrored the underlying contours of flood-lain silt 43.

Discussion: Phase 7.i

The make-up of layer 73 is consistent in form and content with occupational build-up over newly lain floors. The major differences here are the thinness of the deposit, which implies a short period of usage, and the fact that this trample built up within the erosion gully implied by the depositional nature of 43, indicating that this was an external surface. As with underlying deposit, layer 43, and unlike all previously identified floors, surface 73 sloped steeply downwards from north to south. Given that the weather had yet to do its worst this deposit almost certainly represents a brief respite from the flood waters and a chance to take stock of the extensive damage already caused. Analysis of sample 8 (Schlee, Appendix II) indicates a low environmental content suggesting a lack of intensive occupation, supporting the excavator's interpretation. Quite what length of time is represented by the presence of layer 73 is uncertain although, the presence of contemporary floor 88 within building H indicates sufficient respite for reconstruction. Given the high degree of uncertainty regarding the dating of the artefactual assemblage it is very tempting to consider the period between the floods of 1362 and 1364 (Appendix VII) given the extensive nature of the flood deposits underlying and sealing this phase of activity. It is possible that a period of only a few weeks is represented here, although the degree of truncation caused by subsequent flooding is unknown. Without any further information it is not possible to refute the possibility that this layer built up over a more extended period, possibly several years.

Establishing what would appear to be the most plausible explanation for the events leading to the destruction of Building H was the most difficult part of the whole sequence to collate, and admittedly, it remains somewhat tenuous. The main reason for this is the sub-division of the site into two separate areas during the excavation of this building.

Prior to sub division of the area, we were convinced that we had come to a logical halt in proceedings at the end of a phase of building, to allow for the installation of shoring. However we had failed to take into account the significance of up standing post impressions higher in the stratigraphic sequence. It appeared, from a conventional reading of the stratigraphic matrix 'as dug', that all other contemporary floors and structural elements associated with Building H had been literally cut away by the action of flowing water. This is almost, but not entirely, the case. Rather than cutting through flood deposit 83, as was originally thought, it would appear that the western wall of

Building H, represented by beamslot **74** *et al*, was in fact up-standing and partially survived the flood event evidenced by silt layers 42 and 83. What appears to have occurred as the floodwaters receded is that an increasing depth of silt accumulated around the building until the pressure of this build-up simply swept away the greater part of the structure.

The Section (Fig 6) clearly shows the greater depth of the western edge of cut **74** compared to the eastern edge. It is thought that the western wall of Building H, represented by this impression, presented an obstacle to the flow of receding silt-laden flood waters, and in conjunction with other (assumed) structures in the immediate area formed an effective silt trap. The slight angle of inclination of the impression of this wall from the vertical plane is perhaps explained by the pressure placed on the exterior of this building by the build-up of silt layer 42, Phase 7iii. The presence of this wall may explain the severe erosion, caused by the receding flood waters, which affected the immediate area. As a barrier it is probable that **74** *et al* served to increase the *scouring* effects of the floodwaters on other parts of the structure and surrounding deposits. Building H cannot have survived the severe flooding that marks the end of Phase 7 with any structural integrity, thus leading to the salvaging of the supporting posts from the western wall and no doubt any other parts of the structure remaining after the flood (phase 8i).

Phase 7ii: Flood damage relating to the destruction of Building H, Area II

Description of Contexts

Cut **99**, *c* 0.60m deep, was aligned east-west and extended into the northern, western and eastern limits of excavation. The southern edge of the cut was irregular, sloping gradually towards a concave, but irregular, base. The deepest visible extent of this cut was positioned directly above earlier drain or water tank **112** (Phase 6ii). The irregular nature of this cut, which appears to have partially truncated possible floor/sill 88 (Phase 7i), suggests that it formed as a result of water cutting through earlier deposits during the process of drainage. The direction of flow for these receding flood waters may have been influenced by the presence of standing structures, and previously buried features, in this instance cut **112**. The fact that water will follow the path of least resistance whilst draining could perhaps be seen as evidence that cut **112**, although backfilled at this time, is more likely to have been a drain than a water tank. The inability to present a definitive interpretation here is again due to the limited size of the excavation and the lack of parallels from previous excavations within the town. The most important point raised by the presence of this drainage gully is that it illustrates the power of these floodwaters to truncate partially, and potentially to completely remove, whole phases of occupation from the archaeological record and this should be considered in the findings of all future excavations.

Erosion gully **99** contained a series of fills numbered (87), (95), and (93), in order of deposition. Two of these fills (87 and 93) were found to contain significant quantities of metalworking debris, including both fuel and ore which had clearly been redeposited, having derived from the earlier metalworking area within phases 6i and 6ii. Fill (87) also contained two small general purpose whittle tanged knives. One of the small pieces of fired clay from context (93) has a surface which may have been prepared to give it a smooth finish, possibly as a mould (Mortimer, Appendix IV). This small fragment was sadly not of sufficient size to suggest the type of object being cast. Fill (95), a mid yellowish brown clay, is again redeposited and perhaps represents the redeposition of portions of clay floor (88) from Phase 7i.

Area II and Area III become Area I

Prior to the sub-division of the excavation as a result of time constraints and health and safety considerations, it was possible to excavate several phases of buildings within a slightly larger open area, Area I. The pattern of building observed within this area has influenced the interpretation of events seen on a reduced scale within preceding phases.

Phase 7iii: A severe flood

Description of Contexts

The single most extensive evidence for flooding is represented by layer 16 = 42 = 83 consisting of sterile flood-lain light yellowish brown silt. This silt survived to in excess of 1.00m in depth, far exceeding the previous extreme conditions indicated by the presence of layer 43 in phase 6iv. Finely laminated streaks were observable within the silt which are presumed to be the decayed remains of reeds and other organic matter torn from the beds of the rising rivers and mixed into the silty suspension. Although largely devoid of artefacts this layer did contain occasional sherds of pottery and the articulated lower limb of a sheep. The build-up of this deposit against the western wall of Building H, and its effect on this structure, has already been described.

PHASE 8

It would appear that the severity of the flooding events noted in phases 6 and 7 mark a *watershed* in the development in the town. After the subsidence of the floodwaters there followed a period of salvage wherein the intact elements of Building H were removed, presumably for re-use in the construction of Building I.

Phase 8i: Occupational build-up within Building I

Description of Contexts

The infilling (75) of the void left after the removal of wall **74** (Building H) was a loose yellowish brown silty clay which may be a deliberate attempt to backfill the robbed out foundation trench, or as in previous phases silt in a semi-liquid state may have simply flowed into the newly created void during salvage.

Layer 79, a compacted pale brown silty clay layer less than 10mm thick, was certainly a trampled surface but seems a little too insubstantial to constitute a floor within a building. Despite the thinness and patchy nature of this layer a considerable quantity of pottery (43 sherds) was recovered from this deposit. This layer is reminiscent in terms of make-up and thickness of surface 73, present within Area 3 during phase 7. Once again this surface would appear to represent a relatively short period of use, and is perhaps derived from activity associated with the salvaging of materials from the storm damaged Building H or perhaps as part of the construction preparation. Prior to the laying of a timber beam, or 'sill', the ground may first have been leveled and compacted, a process known as 'groundsilling' (Salzman, 1952, 202). Spoerry (Appendix I) notes that the average sherd size of the ceramic assemblage from context 79 is somewhat smaller (9g) than that of the assemblage as a whole (12g-13g). This is almost certainly a direct result of trampling.

Clay sill 137 was visible within the north facing section *A-B* (*Fig. 6*) but did not extend into the area of excavation. Although unexcavated this sill was thought to be contemporary with layers 79 and 31, representing evidence for an internal division within Building I

Floor 31 was a compacted dark greyish brown silty clay layer 0.13m thick, containing occasional lenses of charcoal and daub. This surface, delimited to the west by the line of earlier wall **74**, was noticeably uneven in contrast to all floor deposits from previous phases which appeared to be quite flat. Certain similarities in the content of sample 1, taken from floor 31, with sample 7 from later floor 23 may suggest continuity of use within individual rooms in buildings I and J in both phases (see floor 23 Phase 9i). The differences in make-up between surfaces 31 and 79 provides further evidence that the divisions between previously extant rooms had at least partially survived the flood and were redefined prior to re-building.

Phase 8ii: Further occupational build-up within Building I.

Description of Contexts

The interpretation of layer 34, a brown clay silt deposit 0.10m thick, is not clear. Situated adjacent to the near-vertical face of flood deposit 42 this layer obscured the position of the underlying foundation trench **74** (Building H) and may possibly represent an attempt to compact the loose backfill of the trench

(75), prior to a new phase of building. Interestingly this layer contained several fragments of hinge plates and latches from windows and/or doors as well as a wall hook. These items could be part of the debris from the preparation of salvaged timber prior to its re-use in the new building.

Layer 36, a pale brown deposit of riverine silt 0.10m thick, may represent another minor flooding event although equally it could represent a deliberately deposited levelling layer, laid in preparation for the construction of Building I, or even a natural accumulation of wind-blown silt particles.

Floor layer 30 was a compacted, dark greyish brown silty clay floor 40mm thick containing lenses of silt, charcoal and clay. This thin, patchy, poor quality surface was bounded to the west by the near vertical face of flood deposit 42 and terminated to the east along a straight north-south line. It is highly likely that this represents the limit of a particular room within Building I. Within the subsequent phase the impression of a heavy linear object, presumed to be a ground beam, was positioned directly over the eastern terminal line of floor 30.

Layer 69, a dark brown silty clay floor surface 0.10m thick, was bounded to the west by floor 30 and extended into the north, south and east limits of excavation. Although similar in terms of make-up and consistency, floor 69 is thought to represent the surface of a different room within the same building.

Phase 8iii: Flooding prompting a new phase of building

Description of Contexts

Layer 24, a pale brown deposit of riverine silt 0.15m thick, seals earlier floor 30 although in this instance the nature of deposition is unclear with flooding once again offering the most likely explanation.

PHASE 9

Rebuilding on the same ground plan is indicated by the presence of beam impressions delineating the eastern and western extent of floor 23. These beam impressions have been interpreted as evidence for the position of the baseplate of a free-standing timber framed structure, Building J.

Phase 9i: Differential deposition within two separate rooms in Building J

Perhaps the clearest illustration that we are dealing with separate rooms within the same building comes from the excavation of Building J. The rooms measure between 2.70m and 2.80m from east to west. If the building is assumed to face onto a precursor to Market Mews then the total width of this building would be less than 6.00m which is perfectly reasonable for a structure

within a long, narrow medieval urban tenement. The individual rooms are defined, not only by differences in make up, but also by the presence of the impressions of timber beams along the southern extent of floor 23, over the intersection of floors 23 and 15 and the presence of a possible beamslot on the eastern limit of excavation.

Also of interest is the apparent difference in interpretation of the most substantial of these deposits (Layer 15), stemming from excavated evidence as opposed to micromorphological analysis. In fact it was found that the deposit as excavated was not the same as the deposit taken for thin section analysis but the results are included here as a cautionary tale.

Description of Contexts

Floor 23 was a moderately compacted greyish brown silty clay layer 80mm thick containing occasional flecks of daub and charcoal. The surface of this floor was uneven as with those surfaces within the preceding phase. The floor was *c* 2.70m in length and appeared to be delineated both to the east and west by slightly raised and level strips 0.20m to 0.30m wide, aligned north south. These flattened areas were identical in terms of their makeup with the remainder of the floor surface and were thought to mark the presence of beams (subsequently removed) from a timber framed structure. The marked differences in character between floor 23 and the more substantial but contemporary floor 15 adjacent to the eastern beam impression, indicates the presence of a structure with at least two separate rooms. That the beam impressions clearly overlie the floors is a clear indication that the floor surfaces must have been prepared prior to construction of Building J.

Floor 15, *c* 2.80m in length, was a compact dark yellowish brown silty clay layer 0.15m thick. This surface was uneven, as was floor 23 to the west, although it was noticeably more compacted and had a lower charcoal content. The uneven surfaces within these two rooms are attributable, partially to wear through usage and, perhaps also, through differential compaction for the same reasons. This would tend to imply a relatively short period of usage for these floors as they have not had time to settle as have floors in the earliest phases excavated. The difference in thickness and make-up of Floors 15 and 23 tends to imply that each of the two rooms performed a separate function. The greater thickness and degree of compaction of floor 15 may suggest a higher level of activity was taking place within this portion of the building.

Environmental samples were taken in an attempt to identify possible differences in use for the two rooms from the content of their floor make-up (see Appendix II). Sample 6 was taken from the thickest floor (floor 15) whereas sample 7 came from the less substantial floor (23). Both samples produced the same range of charred cereals and pulses in low quantities. In addition sample 6 contained small quantities of bone and egg shell which may be taken as slight evidence for a difference in use between the two areas. It is worth mentioning sample 1, taken through floor 31 in phase 8. This floor, occupying the same

area as later floor 23, is similarly insubstantial and sample 1, although not identical to sample 7, shares a similar lack of the inclusions found in sample 6. This could potentially indicate a continuity of use of space between the buildings of phase 8 and phase 9. Small quantities of coal and slag were also recovered and, whilst the quantities present are insufficient to indicate metalworking activity in the immediate vicinity, this may suggest that activities similar to those previously noted within phase 6 were still occurring somewhere nearby during the current phase, although this material is probably residual.

In addition to the environmental samples, floor 15 was also sampled for micromorphological analysis (see Appendix V). Profile 2 consisted of two thin sections taken adjacent to one another in the north facing section of AI. They were staggered so that the lowest horizon in thin section 2 (contexts 15.3-15.5) overlapped with the uppermost horizon in thin section 3 (contexts 15.6-15.7), thereby producing a continuous profile over a depth of 0.24m.

Context 15 is represented by a series of alternating layers of clay and very fine sandy clay loam, originally interpreted as a deliberately laid floor. The clay layers are nearly identical in composition, consisting of 60% clay and 40% very fine sand and very coarse silt, typical of mud that accumulates on the bed of a swamp, ditch or a river pool where the current velocity is so low that the fine material is permitted to settle out of suspension (Reading 1996). The structure of the clay layers along with the high frequency of iron nodules, indicates that these layers were deposited on the site in a wet plastic state. Milek states that there is no evidence that these layers were deliberately constructed mud floors (Appendix V), since they do not contain the crack structure typical of trampled surfaces, and none of them are superseded by an accumulation of occupational debris. On the contrary, the layers of very fine sandy loam that are characterised by very few, randomly distributed anthropogenic inclusions, were more indicative of activity in the general locality rather than in the sampling location. Thin section analysis suggests that this deposit could have developed due to the presence of a pool next to a tidal creek, which occasionally received an in wash of fine sand, silt fragments and any anthropogenic material that happened to be in the vicinity.

Discussion

We have what would appear to be two rather contradictory sets of findings resulting from excavation and thin section analysis. Excavation seems to show that this deposit was clearly used as a floor, whereas micromorphology seems to shows us that this cannot be the case. There does appear to be a perfectly plausible explanation for this disparity in our findings and it can be attributed to the working conditions and recording methods on the site on the day of sampling (*Fig. 14*). The positioning of micromorphological samples 2 and 3 was opportunistic and determined by gaps in the shoring. The explanation is one that will prove familiar to the field archaeologist and has been observed for many years and is in fact the main reason for the development of single context recording. Quite simply, what appears to have been sampled in the section did not appear in plan. A re-examination of the photographic record of the section

prior to shoring, during sampling and after sampling, shows that the thin section is not representative of the deposit sampled in plan. This highlights the importance of detailed recording on site of the exact position of samples for thin section analysis with regard to associated contexts. The nature of the recording techniques and descriptive terminology used should also be fully discussed by the members of the project team.

The evidence gained from thin section analysis that a pool, puddle or similar water source was present adjacent to Building J is interesting. It has already been suggested within this report that the post depositional movement of stratified deposits within Area III (*Fig 8*) inferred the presence of a drainage gully or channel below the current line of Market Mews. Milek's findings may be seen to support this interpretation and provide further evidence that buildings within the town were constructed on islands or banks which rose over time above the flood prone 'streets' of the town (see conclusions).

Figure 14 *Taking samples for thin section analysis*

Features associated with the structure of Building J

Posthole impression **70** (71), of diameter 0.20m was located at the western limit of Building J. This post impression was inclined to the east at an angle of *c* 40 to the vertical plane. The angle of this post would suggest that whilst *in-situ* considerable pressure had been exerted from the east.

Posthole impression **62** (63), of diameter 0.38m was also located at the western limit of Building J and was an additional element in the western wall with contemporary post impression **70**.

A number of structural features relating to the development of Building J only appeared in section. Posthole **27** (28) and stakehole **37** (38) (not illustrated) were observed in section during the evaluation phase of the project and may relate to internal features within Building J.

Po sthole **142** may represent additional support for the interior of the western wall of the building. It was not possible to state with any degree of certainty whether postholes **142** or **186** formed part of the primary construction phase of Building J but they were probably broadly contemporary with floors 15 and 23. The tapering shape of **142**, visible in section (Fig. 6) and the post-shaped void (the continuation of **186**) observed within floor 15 indicate the deliberate removal of these posts prior to the deposition of layer 11 (Phase 11). A conventional stratigraphic interpretation initially led to the conclusion that these posts had been cut through flood deposit 12 = 22, although as already seen within earlier phases, they were in fact buried as a result of these floods, prior to removal. As with earlier phases, therefore, the interpretation of the construction of buildings, and the reliable phasing of whole strands of the stratigraphic sequence, cannot rely on conventional readings of the site matrix '*as dug',* but is determined here by the nature of the assumptions underpinning these interpretations. Further excavation will undoubtedly serve to resolve these problems.

Layer 13, a compact mid brown silty clay 80mm thick, appeared to be similar in terms of make-up to underlying floor 15. Layer 13, however, was rather more limited in extent and as a result was not encountered within the main body of the excavation area. This deposit was only revealed within a small test pit excavated during the evaluation phase of the project and appeared to be a floor surface. The top of the layer was dark grey-brown in colour and contained a small amount of horizontally bedded domestic debris normally associated with occupation/use. This layer appears to have been delimited to the east by robbed out wall foundation **184** (187), and 0.75m to the west by post hole **186** (185) (*see Fig. 14*). The limited east-west extent would seem to challenge the interpretation of this deposit as a floor. Despite rather limited evidence, it is suggested therefore, that 13 and underlying deposit 14, represent an attempt to strengthen a robbed out wall (187) within cut **184**. This re-enforcement of wall (187) would appear (and function) as a low (c 0.30m) internal dwarf wall or buttress within Building J. It seems likely that posthole **186** represents surviving evidence for additional support and is one of a series of internal studs inserted at this time. The presence of internal posts is required within this interpretation as the means of attaching the framework needed to contain packing 14 and capping layer 13.

Phase 9ii: The replacement of the eastern wall of Building J

Prior to the final destruction of Building (J), due to flooding 12 = 22, wall (187) was replaced by clay and brick foundation wall **66** (65). The bricks were unfrogged, red, and handmade, measuring 10¼x 5¼x 2½ inches (0.26m x 0.13m x 65mm). This is the first clear example of a structure with such a foundation and the strengthening of this building may well have been intended to allow for

the addition of an second storey. This is also the earliest observed use of brick as a building material from this stratigraphic sequence.

Phase 9ii: Structural activity at the western end of Area I, Building K

The presence of a possible structure, visible in section towards the western limit of Area I, became increasingly apparent during the initial stages of the excavation due, in the main, to the effects of differential drying within what were previously considered to have been a single uniform silt deposit. Little information is available concerning the nature of this structure, however, it would appear to have been delimited to the west by post impression **146**, with construction occurring after levelling **151**. The eastern end of the structure was not visible in section, having been truncated by later pitting, **68**. Layers 147 to 150 may be seen as alternate make-up dumps and floor surfaces within this structure.

The significance of a number of postholes (**170** to **175**, not illustrated), apparent on the surface of make-up dump 150 is unclear. They may however, form part of the internal structure of this building.

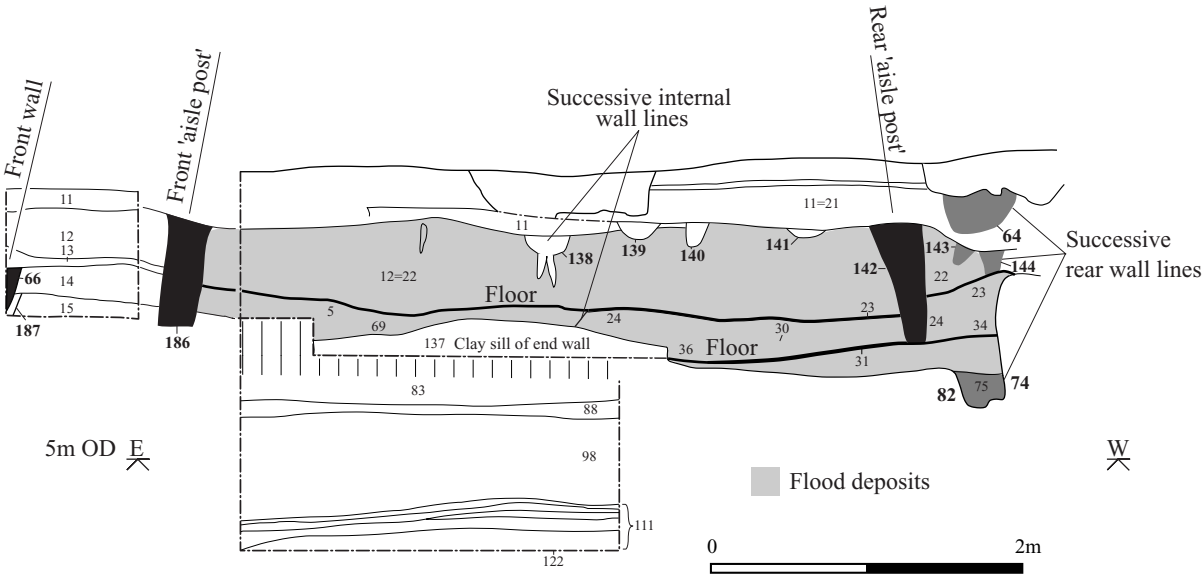


Figure 15 *Section showing the interpretational development of Building J*

Phase 9iii: The destruction of Building J through flooding

Description of Contexts

Layer 22 was a pale brown silt deposit 0.35m thick which is thought to have been flood lain rather than deposited as a deliberate make-up layer, due largely to the similarity of this layer to flood silts in previous phases. This same deposit was identified and numbered as layer 12 during the excavation of a small test pit towards the eastern limit of Area I. It was defined by the presence of layer 11, (a floor) above and layer 13, (a floor) below.

Micromorphological analysis of Context 22 (thin section 2) proved to be inconclusive due to the lack of microstructure within the limited sample size (7mm) available for analysis. However Milek notes that the nearly perfect sorting of this layer and the lack of a fine mineral component, offers us two potential avenues of interpretation. The material could have been wind-sorted, having originally derived from coastal sand dunes, or it could have accumulated on the bed of a fairly slow moving river moving at a uniform velocity which had carried its bedload of sand over a long distance. Deposition on the site may have been due to human dumping, in order to elevate the ground surface. The alternate scenario is that context 22 is an entirely natural deposit, and represents a river channel infilled with a fine sandy bedload. A greater degree of sampling is required here in order to gain a more reliable interpretation and would be highly desirable in this instance. It is highly likely that context 22, as recorded during excavation, represents more than one single event. The sample taken for thin section analysis may well contain material from an infilled channel (see Discussion, context 15, phase 9i) or 'street'. Future excavations should consider the potential of micromorphological analysis as an aid to enhancing, or possibly even determining the interpretation of specific, and apparently naturally lain deposits.

What is also of interest here is that during full excavation of this area it was not possible to distinguish layer 22 from earlier deposit 14. This appears to be wholly due to the absence of floor 13 within the main body of the excavation area. This is included primarily as a note of caution for future excavators. We have already seen how the presence of internal modifications within existing structures serves to highlight otherwise 'invisible' sub-divisions within floor layers (clay sill 118 within floor 114 Phase 2iii). Similarly then, it would seem that we cannot always rely on the naked eye alone to determine phasing within apparently uniform riverine silts. A close examination of the photographic records of these particular deposits in section suggests that differential drying may, given time, highlight certain differences within such deposits. Larger scale excavation may help to resolve this problem and perhaps consultation with experienced sedimentologists and geo-archaeologists may also prove advantageous. Whatever solutions may be sought it is worth remembering that when identifying specific phases of activity, apparently uniform flood-derived deposits do not necessarily represent single stratigraphic episodes.

PHASE 10

Prior to the raising of the ground level indicated by the presence of layer 21, fragmentary evidence, in the form of two small pits, suggests a change in use for the western end of the site.

Phase 10i: Disposal of domestic waste in pits

Fragmentary evidence for the use of rubbish pits.

Description of Contexts

Pit **41**, width 0.35m, depth 0.33m, was revealed and partially truncated during the installation of shoring at the western end of the site. The single fill (40), a light brown clay silt with frequent light brownish green mottling contained the remains of a single orange sandy ware jug decorated with a yellowy green glaze. The mottling within the fill was assumed to indicate the presence of cess deposits although this feature is obviously too small to have functioned as a cess pit. The jug may possibly have been used for the transportation of night soil, although no cess-like concretions were found adhering to this vessel.

Pit **68** was revealed during the preparation of the western end of the site to receive shoring. Only a portion of the north western quadrant of this feature was exposed during the definition of Area III. Pit fill (67), 0.35m deep within the area of excavation, comprised a series of finely banded clays and silts. The presence of domestic pottery and occasional animal bone may indicate that this pit was used primarily for the disposal of domestic rubbish which, if correct, is the first evidence for rubbish pitting in the excavated sequence. In all preceding phases almost all waste products appear to have been incorporated into the occupation surfaces within individual structures in the constant struggle to raise these surfaces out of the water.

PERIOD 4: 1500 TO 1600 AD

This period includes all features attributed to phases 11 and 12 which were excavated within Area I. Two buildings were identified within the period (buildings L, and M). A change in land use from previous phases is indicated by the presence of a series of intercutting rubbish pits towards the western end of the site. These pits contain a variety of domestic refuse including the faunal remains of a range of fenland species.

PHASE 11

The rather shallow depth of the features from the preceding phase may indicate a degree of truncation, probably caused by levelling the site prior to building. This would be the first time in the history of the site that the inhabitants deliberately lowered the ground level, however slightly this may have been, prior to re building. The depth of imported floor make-up, use of new building

materials and subsequent occupational build-up within phase 11, suggests a new-found optimism. Perhaps the weather was improving or the perceived threat of flooding was reduced through the implementation of new drainage schemes. The apparent stability implied by the continual accumulation of occupational debris within phase 11 has not been seen within the archaeological sequence since the earliest phases reached during excavation. It is possible that this re ordering took place during the 1530s -1540s at the time when documentary sources (session of sewers, 1570, see section 5.4, this report) indicate that Bishop Goodrick had allowed the landscaping of the market place using 'crab mersh bank'.

Phase 11i: Construction and use of Building L

Description of Contexts

Layers 11 and 21 consisted of a light yellowish brown silty clay up to 0.35m thick, extending across the whole of Area I (*Fig. 16*). These two deposits both contained small fragments of red brick, possibly derived from the demolition/destruction of wall 66 due to flood damage. Although thought to represent parts of the same uniform layer, both deposits were given separate numbers during excavation as initially no direct physical link remained between them in plan, due to the effects of later truncation.

Layers 11 and 21 were clearly contemporary and almost certainly constituted a single uniform depositional event. These layers were deliberately dumped at some time after the potential flooding episode highlighted within phase 9iii, the intention being to raise the ground level yet higher and provide a stable surface for renewed building activity. During excavation it was not possible to determine any clear differences between these layers, other than that towards the eastern side of the excavation the presence of horizontally-bedded pottery and animal bone fragments indicated that we were dealing with trampled floor surfaces. This artefactual material was absent towards the western limit of excavation, giving the impression that this stratigraphically continuous deposit was no longer functioning as a floor. The explanation for this perceived difference may be attributed to the post-depositional modification of the original make-up dump towards the eastern end of the site, due to the construction and use of a new building (Building L) in this location. What was originally the same deposit to the west remained outside the building and presumably received less intensive usage. That an originally extensive, and apparently uniform, deposit experienced differing use histories serves as a useful example of how much care is needed in the siting of micromorphological column samples.

The first of a series of micromorphological samples from the excavation was taken from the eastern part of context 21. Analysis of this sample (thin section 1) revealed a wealth of information indiscernible to the naked eye. Milek (Appendix V) notes three main horizons within this context. The lowest of these horizons contained randomly deposited fragments of anthropogenic

materials such as bone, egg shell and also, lime plaster and clay. The random distribution of this material is seen by Milek as being indicative of building activity in the immediate vicinity. Also present within this deposit were two fine, horizontal layers of articulated phytoliths (the silica 'skeletons' of decayed plants) in an extraordinary state of preservation due to their rapid burial. These plant remains are evidence for the laying down of whole herbaceous plants and grasses during the initial stages in the construction of Building L. Horizon 21.2 was composed of a virtually sterile clay loam just over 10mm thick, and was laid over the second layer of plants and grasses. The upper surface of this deposit was compacted in a manner characteristic of trampling and may be interpreted as the newly lain floor within Building L. Above this floor the third main horizon was composed of a mixed accumulation of domestic debris including pottery, bone, and coarse lime plaster, presumably from the internal walls of the building. Thin section analysis has illustrated the complex development of an apparently uniform deposit from construction through to the usage of Building L. With additional sampling it may therefore have been possible to contrast the differing developmental processes affecting different areas of this fairly extensive deposit.

Building L

Due to later truncation it is not possible to link, a number of features which cut into the upper surface of layer 21, with any degree of confidence, to the usage of Building L. The majority of these features are therefore discussed and illustrated within the subsequent building phase (12). The description of Building L will concentrate on the make-up of the internal surface 21 and the western wall of the property as defined by the presence of beam slot **64**.

The western limit of Building L was marked by the presence of beamslot **64**. The impression left after the removal of this beam was filled with fine light yellowy brown silt. No indication that the beam had decayed *in-situ* remained and so it seems highly likely that once again this particular structural element was salvaged for re-use. The beam slot was positioned and aligned in exactly the same spot in the horizontal plane as the back walls of buildings H, I and J, indicating continued definition and perhaps ownership of the same plot of land. It is highly probable that this definition of the plot boundary existed further back in the archaeological sequence and is the reason for the markedly different nature of those remains present within Area's II and III. The apparent absence of a building on the western part of the site at this time could indicate that the owners of Building L had acquired the adjacent plot formerly occupied by Building K. Equally, both plots of land could have been held by a single owner but the provision of what appears to have been a yard at the western end (back?) of Building L would indicate a change in status for the area. The potential here for documentary sources to add significant detail to the archaeological record is clearly very high. The nature and extent of surviving historical records relating to Wisbech has yet to be assessed and it is, however, well beyond the resources of this particular project to address this gap in our knowledge.

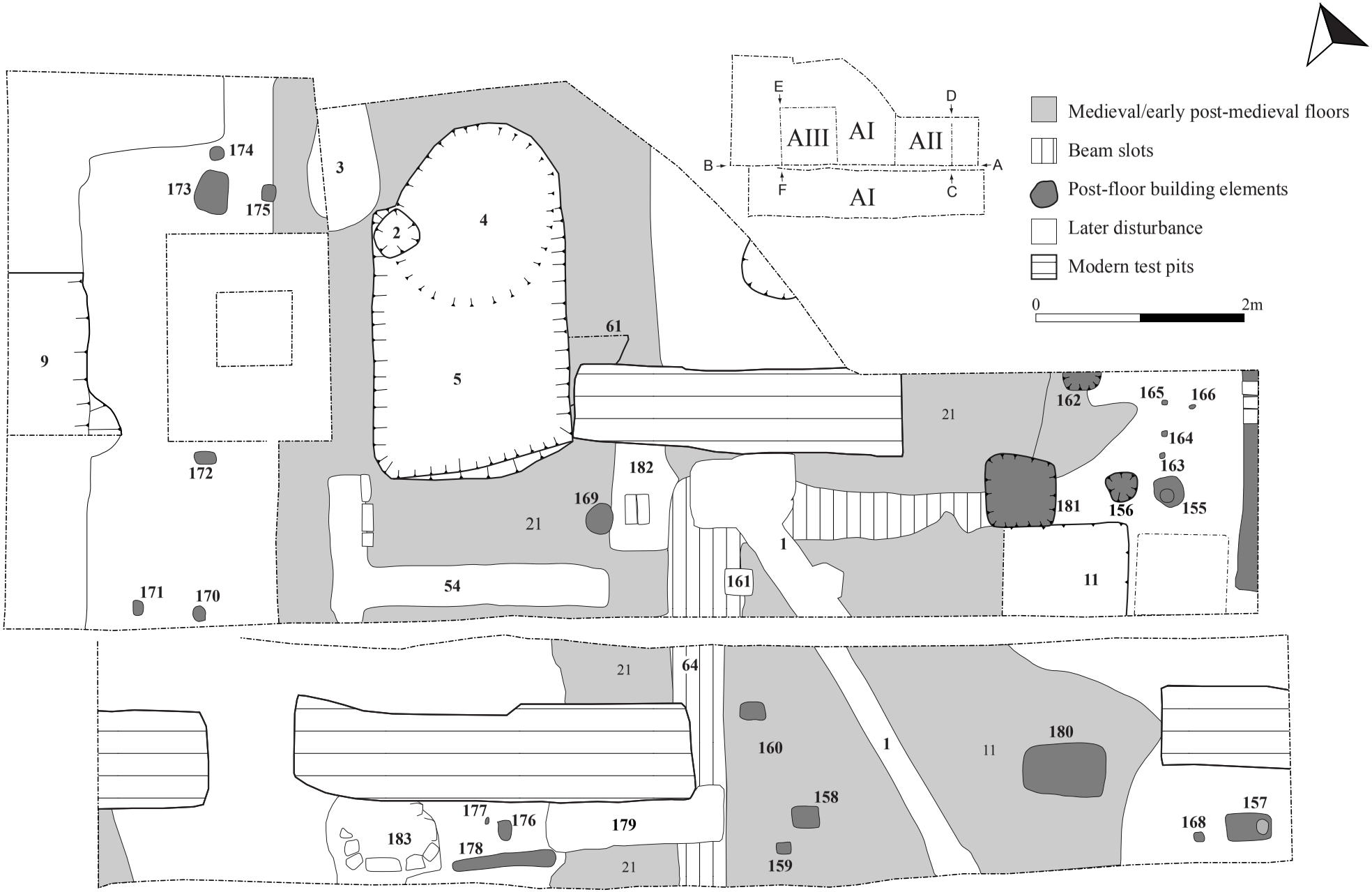


Figure 16 *Plan of excavation*

Phase 11ii: Pits for the disposal of domestic refuse

At some time prior to a new phase of construction a series of pits were excavated towards the western end of the site within what is assumed to have been the back yard of Building L. These pits were restricted to a relatively small area of the site and were used for the disposal of a variety of domestic rubbish. It is highly likely that this material was deposited by the later inhabitants of Building L. These features are described below in the order in which they were originally cut and filled.

Description of Contexts

Rubbish Pit **61** was probably roughly circular in plan although it was subsequently truncated to the west by later pit cuts **4** and **5**. Fill (60), a very dark grey clay silt with orange-red flecks, contained frequent ash and charcoal and occasional red brick and tile. The flood-derived silts, 42, into which the base of this pit had been cut were discoloured, the light pinkish brown colouring indicating that hot ashes were dumped here.

Rubbish Pit **5**, was sub rectangular in plan, length 1.70m x width 1.50m x 1.20m deep with vertical sides and a concave base. Fill (50), a moderately compact dark grey clay silt, contained a mixture of domestic debris including two goose radii which had been part sharpened, perhaps for use as styli.

Rubbish Pit **4**, was roughly circular in plan, diameter 1.60m, with near vertical sides and a concave base. Fill (17) was a dark brown silty clay containing occasional red brick fragments, tile, animal bone, pottery, oyster and mussel shells. In addition a dagger quillon of 15th century date (C. Montague, pers. comm.) was recovered from this pit, along with a number of iron nails.

Also part of the same sequence was Pit **3**, planned and numbered during the evaluation but left unexcavated.

Apart from cattle, sheep and pig the faunal assemblages from pits **4** and **5** are of particular interest due to the presence of a range of bird bones. These include brent goose, mallard, heron and kittiwake which would seem to provide direct evidence for the exploitation of fenland species, evidence for which is surprisingly rare not only from this site but from excavations of all periods within the area.

PHASE 12

Phase 12i: Structural features associated with Building M

As with the preceding phase of development a degree of truncation and levelling of underlying deposits occurred prior to construction. As a result no

evidence for the destruction, through demolition or otherwise, of Building L survived within the archaeological record. In turn, the final phase of construction within the excavation area removed all traces of floors and upstanding walls associated with Building M. The only features to survive were intrusive, such as postholes, stakeholes, drains, post and wall foundations cut into the surface of layer 21. It is highly possible that some of the features included within figure 15 were associated with the earlier Building L. Although the footings to this building were fairly shallow, the use of foundations does in itself mark a change in construction technique and the use of bricks and mortar in these foundations a change in emphasis in the type of materials being used. Certain features visible and recorded in section A-B (*Fig. 6*) have been omitted from the body of the text as information concerning their form and function is limited and has a relatively low priority within the current project resources.

Description of Contexts

Dr ain **1/20** (19) constructed using red brick and glazed ceramic piping, appeared, stratigraphically, to be one of the latest surviving features on the site but was similar in every other respect to drain **183**. Both features had clearly become redundant due to blockages. The fills of both drains contained considerable quantities of lime, presumably used in attempts to clear obstructions.

W all foundation **54** (55), contained a single north-south line of red unfrogged bricks (L 11 ½ x W 4¼ x T unknown). It is assumed that given the rather unusual dimensions of these bricks that they were probably locally made.

W all footings **179** and **182** and post pads **180** and **181** are thought to have been contemporary and they therefore describe part of the same building in plan. Post and stakeholes **155-169** and **176-178** can also be considered as internal features within Building M. Further discussion of this building or investigation of historical records relating to the use/ownership of this building are unfortunately beyond the current resources of this project.

The author is unaware of the current level of knowledge concerning ceramic building materials from the area during the medieval and post-medieval periods. An assessment of currently available information would be highly desirable in order to inform future sampling strategies for these materials.

Po sthole **2** (6) provides stratigraphic evidence for a new phase of building truncating earlier rubbish pitting within phase 11ii.

The function of cut **9** to the west of Building M is uncertain. Partially excavated during the evaluation stage of the project this trench was seen to extend across the whole of the western end of Area I. Within fills (7) and (8), steep, alternating tip lines of sandy clay silt and clay silt indicated that this feature was cut to a substantial depth, although excavation by hand ceased after 0.50m. The size of this feature is not comparable with the cluster of domestic rubbish pits (**3**, **4**, **5** and **61**) immediately to the east, and the domestic debris

within fills (7) and (8) is not thought to be indicative of function in this instance. It may be possible that this was the eastern side of the construction cut for one of the many brick-built culverts known to run beneath the modern town but this is only speculation. Once again an examination of potential documentary sources may confirm this interpretation.

PERIOD 5: 1600 to Present

The distinction between features attributable to the end of period 4 and the beginning of period 5 is not particularly clear and reflects the strategic use of limited resources which had to be targeted towards understanding the sequence of earlier deposits as this was the primary aim and importance of the current work. Whilst the description of the developmental sequence following the deposition of sub-floor and flooring deposits at the beginning of phase 11 is accurate, this is very much a simplified outline of a rather complex series of events. It would be highly desirable to explore the potential of available documentary sources to add detail to these final phases in the development of the site.

PHASE 13

Phase 13i: A Victorian tiled floor and concrete foundations associated with Building N

The final phase of construction within the archaeological sequence on the site was in fact represented by a standing building which had been demolished prior to the proposed development of the site for its current purpose. The foundations of this building consisted of a series of reinforced concrete blocks supporting a raft present within the south eastern corner of the development. A tiled floor, of probable Victorian origin, survived on this raft and local residents recalled the use of this building as a fishmongers. The absence of documentary evidence to add depth and interest in particular to the latest phases in the development of this part of the town is attributable to the wide number of demands placed on the budget of this project due to the superb preservation of archaeological deposits encountered here.

Immediately following the successful conclusion of the fieldwork element of this project, work began on the construction of a new phase of buildings, now complete,initially occupied by John Menzies and subsequently, in 2000AD by the Iceland supermarket chain.

8 CONCLUSIONS

The 1996 Market Mews excavation was undertaken at very short notice, within a severely restricted area and was completed within a period of only 21 days. The results of this project reflect the unprecedented level of preservation of archaeological deposits encountered within this important Fenland town.

The stratigraphic sequence contained evidence for thirteen distinct building phases, spanning the thirteenth or fourteenth to sixteenth centuries. Despite excavation in excess of 3.00m below the current ground surface archaeological deposits were seen to continue well below this level. No underlying natural geology was encountered.

Floors within buildings were clearly distinguishable as dark, finely laminated organic bands sealed by extensive accumulations of fine silts deposited during episodic flooding. Organic preservation throughout the sequence was good with the best preservation seen towards the bottom of the excavated sequence.

The nature of the remains uncovered through excavation suggests that activity throughout the majority of the sequence is domestic in character despite the well documented position of the site within the New Market. Taylor (1977) has suggested that the original layout of the New Market was somewhat larger than its present size. Excavation has shown that infilling of the Market Square as defined by Taylor is clearly well established by the beginning of the 14th century and may have been brought about by a shortage of habitable land as a result of flooding. The problem of identifying commercial, as opposed to domestic, activity with reference to surviving artefactual materials is an ongoing problem for archaeologists and can only be addressed through further excavation.

The only readily identifiable evidence for commercial/industrial activity was a range of metalworking processes, present within phase 6. The presence of metalworking within the area of the New Market raises a number of questions. Where then was this activity taking place in relation to the medieval town plan? Metalworking is generally considered to be a fairly anti-social activity often located on the periphery of a settlement, due to the range of noxious or toxic by-products of the various processes that are generally produced. Is the location of this activity influenced by the proximity of the site to the river Ouse, undoubtedly the supply route for the majority of bulk materials including coal and possibly iron ore being traded down the east coast of England at this time, or simply by a chronic shortage of suitable land on the periphery of the town? What is the extent or scale of the industry occurring near to the bank of the Ouse at this time? Clearly we are once again constrained by the small scale of the excavation, however the potential to address these questions through further work in the area is likely to be very high indeed.

Analysis of the origins of coals from the site, used in the production of metal objects, was beyond the resources of this project. It is interesting to note

however, that in Norwich, coal was being imported from the Durham area to fuel a range of industrial metalworking processes until the end of the 14th century (Atkins *et al*, 1985, particularly Period 4). It is also interesting that on those sites excavated in Norwich this type of industrial activity had all but died out at some time prior to 1400AD, which is reflected in the stratigraphic sequence from the Market Mews excavation.

Within the earliest phases of the excavated sequence evidence for flooding was not always as immediately apparent amongst flooring and occupation layers as in later deposits. The level of detail obtained from contexts selected for micromorphological analysis however has illustrated that flooding was a relatively frequent occurrence. Periodic abandonment of buildings due to flooding is indicated and there is conclusive proof from both thin section and environmental analyses that the changing level of the water table would have kept these floors damp for prolonged periods.

Moving up through the sequence the decreasing thickness of the floor deposits combined with the increased depth of silts between phases is taken to indicate an increase in both the frequency and severity of flooding. The worst floods should be represented by the greatest depths of silts and it is the case that the deepest deposits within the Wisbech sequence represent the most destructive episodes within the towns archaeological record.

The deposition of huge quantities of water-borne silts within the town appears to be responsible for the extraordinary levels of preservation of phase after phase of medieval and post-medieval buildings. Silts deposited during successive flood events partially buried individual structures until eventually it became necessary to re-build using materials salvaged from preceding phases of development. As a result, the impressions of upstanding walls and other internal features were often preserved, encased within these silts. The accumulation of deposits in this manner is to the knowledge of the author, unique in Britain, although the results of recent excavations in South Square, Boston, (Palmer-Brown, 1998), are similar. It is important that future excavators are aware of the manner in which deposition is thought to occur and to test the results of the 1996 excavation. To address the problems experienced with interpretation of certain features and structures every effort should be made to maximise the area of future excavations.

It is worth considering the implications of the apparent tendency of buildings within the sequence to act as silt traps, within the wider context of the town. The current ground level, adjacent to the excavation, on the surface of Little Church Street is roughly 7m OD. The benchmark on the entrance of the church of St Peter and St Paul which lies to the south east of the excavation area is 5.10m OD, and is well over a metre above the floor level within the church itself. The church was built in the late 12th century, with considerable additional construction work taking place in the 14th century. During the excavation we wondered why the church, a stone-built structure erected at considerable expense, was built on low lying ground in an area known to suffer from extreme flooding at least as early as the 13th century. In fact for a time it

was customary to mark the level of the floodwaters from successive inundations on the outer wall of the church. We have already observed the tendency of the inhabitants of the town to salvage surviving building materials from their properties after successive waves of flooding and to re-establish new structures on what is assumed to be roughly the same ground plan on top of each newly deposited layer of flood-borne silt. It seems likely that the tendency for built-up areas to act as silt traps, combined with repeated rebuilding within individual plots, has significantly altered the topography of the town from the time that the New Market was established. Rebuilding of the church was unnecessary as it appears to have withstood a long history of inundation, and the floor levels within the church are a good indication of the 12th century ground surface. Almost certainly the low ground level around the church is due to successive generations of the townsfolk digging this building out of the mud combined with the effects of *scouring* as successive floods receded. In direct contrast, within the town we may expect that clusters of buildings would begin to rise, over time, above their associated streets and lanes with each successive flooding episode. Erosion is likely to be most severe within the thoroughfares between buildings which at times of high water would tend to form natural drainage channels. I imagine that this would accentuate the impression of buildings built upon banks or even islands within the town centre. Perhaps the continued need to 'infill' the new market area, could be seen as supporting evidence for this theory. Corporation records covering the later development of the town make mention of events such as the redeposition of 'Crab Mersh Bank' within the New Market in the time of Bishop Goodrick to form a level foundation. Hoyland (1992) notes the potential of such events for effectively sealing and therefore preserving earlier archaeological remains and the consequent effect on the local topography. Further excavation would be required to investigate what, given the scale of the Market Mews excavation, must at the present be viewed as little more than speculation. If the disparity in ground levels between that of the church and the New Market area in general was caused by a continual cycle of rebuilding and occupation since at least the 12th century then it is clear that the town possesses an incredibly well-preserved record of its past beneath the level of the modern streets. The potential of this resource for future research is very important considering the likely state of preservation of these earlier incarnations of the town.

The discovery of such a significant archaeological resource is extremely important regionally, and potentially at the national level. The implications of this discovery for future research within the town are extremely far reaching and will require careful consideration and planning.

9 RECOMMENDATIONS

Due to the quality and depth of the archaeological deposits encountered on the Market Mews site it has not been possible, within the available resources, to fully explore all of these implications or to assess the potential of documentary

records and historical references to enhance our understanding of the excavated remains. It is possible, however to highlight a series of issues in anticipation of future work within the town. These include observations, based on insights gained throughout the duration of this project, which include excavation and sampling methodologies, mitigation, excavation funding and the need to fully recognise the importance of this resource within the planning process.

9.1 Excavation Methodolgy and Interpretation

Flooding

Flooding undoubtedly had a widepread and profound effect on the town. The single most extensive evidence for flooding (layer 42 *et al*, Phase 7iii) consisted of sterile flood-lain light yellowish brown silt which survived to in excess of 1.00m in depth. This deposit more than any other highlights the complex and unusual character of the stratigraphic sequence preserved at Wisbech and serves to illustrate how the relationship between the cycle of urban activity and the struggle against the natural elements is key to our understanding of the development of the town.

The apparent uniformity of composition of this and other flood deposits, restricted space and an oversimplified view of deposition combined to present a series of challenges both during and after excavation.

At face value these layers of silt were immediately identifiable as single 'contexts' presenting a seemingly uniform deposit with a readily definable face, boundaries and upper surface, attributes shared with floors and other deposits laid down deliberately by human action. Difficulties arose however, when trying to reconcile the evidence remaining from the range of dynamic forces at work during inundation and the resultant accumulation of flood borne deposits within the remarkably undynamic layer of silt, the physical remains of which were each recorded as single contexts in their '*present state*' (*cf* Harris, 1992) as encountered during excavation.

Harris states that: '*the archaeological stratigrapher is only interested in what is found today as the stratification of the site. To interpret this and compile a stratigraphic sequence, it is not necessary for the excavator to be a specialist in the ... processes of forming deposits'*.

This is not strictly true at Wisbech, the main reason being the difficulties in defining the bounds of single contexts, which becomes particularly problematic within the thicker flood deposits. The results of the Market Mews excavation indicate that inundation produced a variety of localised phenomenon influenced by and affecting buildings and other features within the town.

Within a larger open area it is probable that elements of the stratigraphic sequence such as the floors of individual buildings may be encountered in apparent isolation, cocooned within seemingly uniform silts.

Excavation results seem to support the idea that the severest floods were marked by the greatest depth of deposited silts (*cf* Hallam) and could preserve the clearest evidence for the range of processes at work during and following the period of inundation.

The single most extensive evidence for flooding from the excavated deposits sealed the seventh phase of building activity. This layer survived to in excess of 1.00m in depth, seemingly indicating far more extreme conditions than those evidenced by the 0.40m of silt sealing the previous phase (*6*). Finely laminated streaks were observable within the silt which were the decayed remains of reeds and other organic matter which had been torn from the beds of the rising rivers and mixed into the silty suspension.

Prior to these particular floods the depth of occupational build-up over individual floors, and the extensive remodelling of the internal spaces within individual structures, pointed towards lengthy periods of stability within this area of the town. Whilst flooding was clearly an ever present problem, major disasters requiring complete rebuilding appear to be relatively infrequent up until this point in time.

During the deposition of these layers a range of events were taking place as a result of the movement of the silts in suspension. The flood waters would have covered the town to a uniform depth and the physical remains of this process - *the layer of silt* - represents a single event only on the broadest scale. Flooding was clearly a highly destructive process exerting a relentless pressure on the town. Silts in suspension accumulated both within and against the buildings enclosing and burying some whilst currents passing through the streets pulled on exposed walls sweeping away elements of other progressively weakened structures.

It would appear that following the more severe episodes of flooding the inhabitants of this area quite literally 'upped sticks' i.e. pulled any surviving building materials out of the ground and built a new structure on the same plot of land. Of course this too was not an instant or simultaneous process. Whilst many of the surviving timbers were salvaged during extremely wet conditions it would appear that as the flood waters receded the newly deposited silts began to dry quite rapidly. As old timbers were hauled out of the mud these silts would have readily slumped into the voids created by their removal, easily at first but more sluggishly as more of the waters drained away. The earlier that timbers were salvaged the less likely it would be for any immediately visible trace of that particular building element to survive. However due to drainage it seems that these silts rapidly 'stiffened' preserving the impressions -sometimes as voids- of posts, wall lines and other previously up-standing features. Although restricted by the limited size of the excavation we were eventually able to identify, positive structural elements of a number of free-standing timber buildings following their wholesale robbing or salvage. The identification of upstanding walls and other positive features is of obvious importance and combined with the fact that many of the buildings preserved within the stratigraphic sequence do appear to have been free-standing, without

substantial foundations, led to a re-ordering of sections of the site matrix 'as dug'.

The apparent uniformity of composition of this and other flood deposits, restricted space and an oversimplified view of deposition combined to present a series of challenges both during and after excavation.

How best then should we approach the excavation and recording of the rather fluid processes encapsulated within this '*liquid stratigraphy'* in order to maximise the recovery of data from these kinds of deposit within which lie preserved the impressions of free-standing buildings despite their removal for re-use?

9.2 Formation processes and the stratigraphic matrix.

An awareness and understanding of the type and range of formation processes is essential and every means should be sought to define separate elements of the flooding process within silt layers during any future excavations within the town. A number of steps may be required not only to enable us to 'see' and therefore define the limits of individual contexts but also in order to break down and reveal something of the once dynamic nature of the formation processes which resulted in the deposition of these now static and apparently uniform silts.

Detail from the excavation is illustrated with reference to section drawing 6. The sequence of events leading to the destruction of timber framed buildings has been summarised within fig 17.

During excavation we had revealed the upper interface of a seemingly uniform deposit of flood borne silt overlying another (the seventh) phase of building. We were convinced that we had come to a logical halt in proceedings, to allow for the installation of shoring. However we had failed to take into account the significance of a line of shallow post impressions higher in the stratigraphic sequence and seemingly set into the top of the silt. It appeared, from a conventional reading of the stratigraphic matrix 'as dug', that all other contemporary floors and structural elements associated with Building H had been literally cut away by the action of flowing water. This is almost, but not entirely, the case. Rather than cutting through flood deposit 83, as was originally thought, it would appear that the western wall of Building H, represented by beamslot **74** et al, was in fact up-standing and partially survived the flood event evidenced by silt layers 42 and 83. What appears to have occurred as the floodwaters receded is that an increasing depth of silt accumulated around the building until the pressure of this build-up simply swept away the greater part of the structure.

The Section (Fig 6) clearly shows the greater depth of the western edge of cut **74** compared to the eastern edge. It is thought that the western wall of

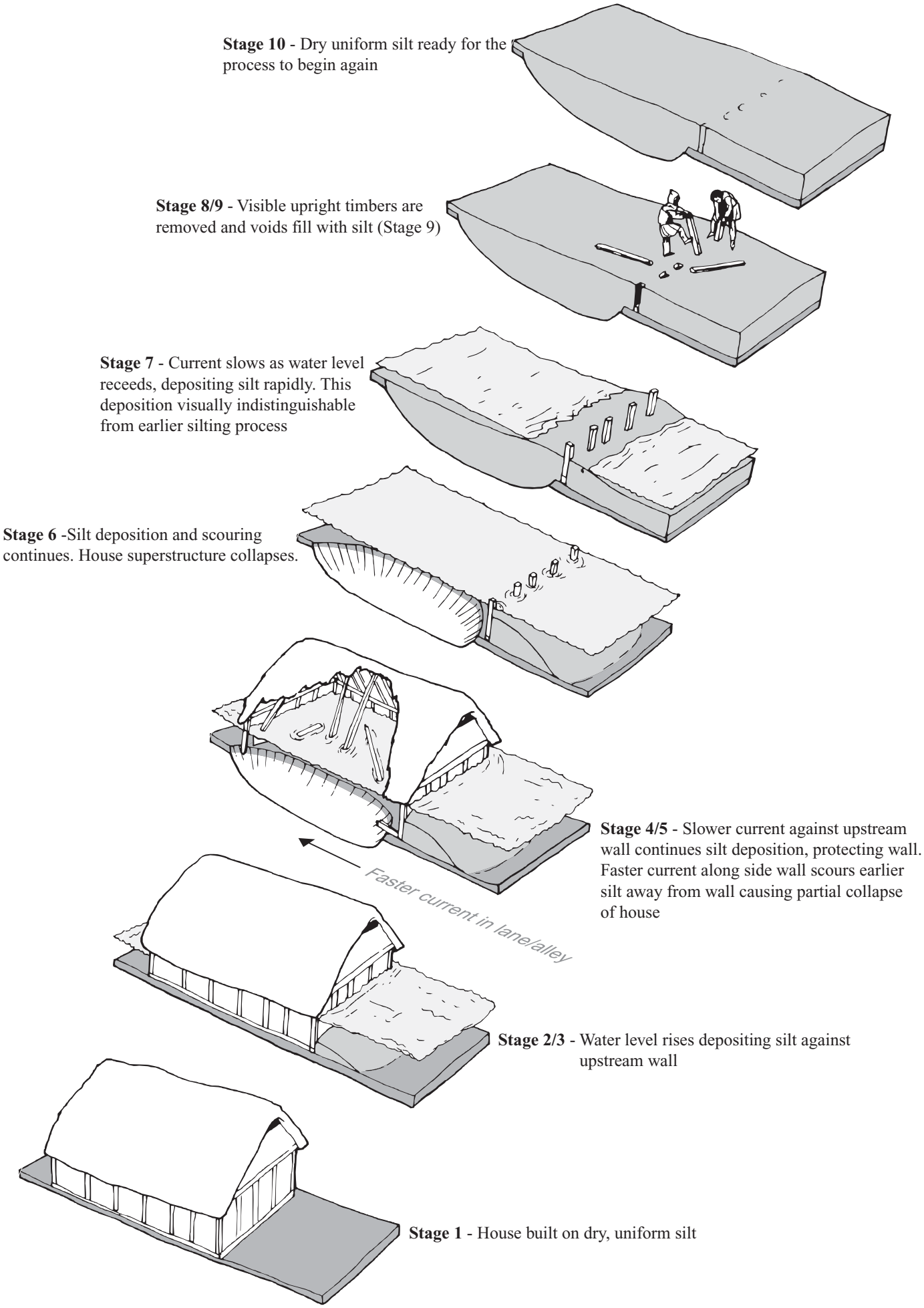


Figure 17 *Interpretive depositional sequence*

Building H, represented by this impression, presented an obstacle to the flow of receding silt-laden flood waters, and in conjunction with other (assumed) structures in the immediate area formed an effective silt trap. The slight angle of inclination of the impression of this wall from the vertical plane is perhaps explained by the pressure placed on the exterior of this building by the build-up of silt layer 42, Phase 7iii. The presence of this wall may explain the severe erosion, caused by the receding flood waters, which affected the immediate area. As a barrier it is probable that **74** et al served to increase the scouring effects of the floodwaters on other parts of the structure and surrounding deposits. Building H cannot have survived the severe flooding that marks the end of Phase 7 with any structural integrity, thus leading to the salvaging of the supporting posts from the western wall and no doubt any other parts of the structure remaining after the flood (Phase 8i). The Phase 9 post impression **142** (one of a number of posts within Building J) shown in section to the west of **74** illustrated the tendency to remove surviving timbers following severe floods. Additional evidence for Building J survived as a series of impressions and the partial voids left by the removal of structural posts.

The silt layers represented the key surviving evidence for material carried into the town in suspension within the floodwaters. This material was deposited in a dynamic and liquid state wherein it had the localised potential to preserve through burial or truncate through water action in its liquid state. These layers appeared uniform in terms of make-up with the depth of each deposit representing the degree of severity of particular floods.

To examine the events represented by the individual layer of silt we must consider its upper and lower boundaries.

The lower interface preserved evidence of erosion caused at the onset of flooding, during flooding and as the floodwaters receded. Damage caused at the onset seemed to have been exacerbated by the presence of extant or disused drainage channels, including gaps between buildings, which forced the rising waters to back up. The localised currents generated could remove the walls of buildings and cut through earlier deposits within the stratigraphic sequence. Certain deposits disturbed in this manner were subsequently redeposited as horizontally lain strata within newly formed gullies as the waters rose.

The upper interface represents the transition from liquid to solid, dynamic to inert and identifies the moment when the deposit achieved its present static state as excavated. Disproportionate erosion may also be seen as the receding waters followed the path of least resistance represented by extant or disused drainage channels, gaps between buildings and roadways. Scouring and cutting caused by receding floodwaters seems to have been exacerbated by the presence of barriers such as surviving buildings or walls and this dynamic process may be preserved within both the upper and / or lower interface of the individual silt layer.

9.3 Field Methodology and Specialist Support

The single context system may still be applied to the recording of future excavations but should include a consideration of the upper and lower boundaries or interfaces of flood deposits. Initially the excavation methodology for such deposits may appear somewhat *traditional* requiring the setting out of a Wheelerian style box-grid. This would define a series of areas separated by temporary baulks and should be established upon reaching the upper interface of any major flood deposit. I believe that this step is an essential control maintaining a physical (albeit temporary) link between islands of visibly distinct stratigraphy. These baulks should provide ample sampling locations for thin section and x-ray analysis (see below) prior to removal.

It is suggested that as a first step in the on site recording the upper and (following excavation), lower interfaces of the individual flood deposit should be planned. These drawings would have the appearance of composite or multi phase plans, depending on the degree of truncation caused by flooding. Careful consideration of the micro topography of both the upper and lower interfaces of the silt layer may permit the identification of areas affected during the different stages of flooding. It is important to remember the range of factors effecting the upper and lower interface during the period between the onset of flooding and the departing waters.

When such areas have been adequately defined then it should be possible to describe individual events and ascribe a broad chronological position to each event during a flood as preserved topographically. The direct involvement of a geoarchaeological specialist at such points during future excavations would be highly desirable as an aid to defining contexts and also to provide appropriate terminologies.

9.4 Column Sampling as an aid to stratigraphic analysis

Excavation has shown that separate episodes of deposition cannot necessarily be distinguished either by the naked eye or the pointing trowel. On occasion this applied not only to layers of flood borne silts but also to accumulations of floor deposits. Careful consideration should be given to sampling strategies designed to illustrate the physical evidence for differences within such deposits and therefore enhance our understanding of the stratigraphic record.

9.4.i Micromorphology

The effectiveness of thin section analysis in illustrating the complexities of the micromorphological sequence and the potential for identifying differences within apparently uniform layers have been clearly demonstrated during this project.

Milek, when commenting on suggestions for future work, states that each thin section represents only 50mm to 60mm horizontally and is not a representative

sample. She goes on to note that occupation surfaces, in particular, frequently contain a great deal of lateral variability. When a structure or floor surface is identified excavation should be conducted in such a way that micromorphology samples can be taken from several locations.

Two main factors govern the application of this type of sampling. Cost could rapidly become a major issue as the commercial application of thin section analysis is potentially extremely expensive. Careful consideration should be given to the reasons for, and expectations of, this type of sampling which should be identified specifically and adequately reflected within project resources.

The second factor is time. Sampling, thin section preparation and analysis is a lengthy process and as such can offer no supporting information to the excavator during the tight timescales associated with most development led sites at the current time.

9.4.ii X-Ray Analysis

A potential aid to breaking down the apparent uniformity of flood silts has been suggested by the English Heritage Regional Scientific Advisor, Peter Murphy during discussion with the author. Sections of plastic piping cut in half lengthways are cheap and effective containers for column samples. Recent experimentation by Murphy during the excavations at 'Seahenge' (Holme next to the sea, Norfolk, Brennand M. forthcoming) suggests that if such samples are subjected to X-radiography crude but significant contextual differences may be discernable within otherwise uniform deposits. The use of X-rays should not be used in place of disciplines such as micromorphology but given that results can be obtained very quickly and at relatively low cost this method of sampling should be tested both for its potential to guide the excavator and also perhaps as a means for targetting more sophisticated sampling tecniques.

9.5 Environmental Sampling

During the Market Mews excavations a number of different sampling techniques were employed in an attempt to maximise the level of data recovery from individual contexts. These techniques produced varying results but serve to emphasise the desirability of a flexible, multi-faceted sampling strategy for future excavation.

9.5.i Block Sampling versus Flotation

Due to the known, high non-carbonised organic content of floor 92 a block sample of this deposit was taken for micro-excavation and peroxide flotation along with the more familiar bulk environmental samples. This was intended to establish the level of information being lost through conventional bulk processing (Schlee Appendix II). The yield of identifiable charred and waterlogged plant material recovered using a standard flotation machine was

not great, producing limited evidence for charred cereals and pulses. Micro excavation of the block sample by Schlee confirmed the presence of cereal straw and rush stems within the compact, laminated make-up of this floor. These were interleaved with laminations of fish bone (including articulated fish skeletons), and eggshell. The bulk of the rest of the material recovered by peroxide flotation proved to be compacted, unidentifiable, decomposed organic material. The traces of straw and rushes were themselves sufficiently decomposed not to survive further processing.

9.5.ii Palynological Monoliths

In addition to bulk sampling and micro excavation a monolith sample was taken through floor 92 to examine the state of preservation of pollen. Sampling was restricted to the upper 150mm of the monolith, simply to assess the potential of these deposits for palynological analysis. Samples were taken from each distinct horizon within the sequence and subjected to standard processing for concentration of palynomorphs (Wiltshire, Appendix VI).

An assessment of the material by P Wiltshire identified the dominant taxa to be those of cereal type grasses and heather. The lower layers appeared to have more heather and taxa derived from damper soils including sedges, sphagnum moss, bracken and other ferns. The upper layers appeared to contain a higher proportion of cereal type grasses, and herbs characteristic of weedy grassland or meadows. The most abundant woody taxon was hazel, although alder, birch, pine and oak were also recorded. All of the tree and shrub taxa recorded in the deposits are wind pollinated but were probably growing in the catchment area.

As Wiltshire points out the taphonomic processes affecting the pollen assemblages here must have been very variable. Because of mixing they cannot be taken as indicative of specific habitats around the site but do give an indication of the types of plant communities available in the vicinity.

Whilst detailed palynological analysis of such domestic floor deposits cannot give detailed information about surrounding landscapes or specific habitats this brief assessment highlights the potential for illustrating variation in flooring materials that is not apparent through standard bulk processing. Wiltshire suggests that more detailed analysis might also yield information on crops other than cereals and also identify the broad range of habitats from which materials were collected.

9.5.iii Dendrochronology

The application of dendrochronology is likely to play a key role in the dating of deposits from future excavations, particularly if quality of preserved organic materials continues to improve within the earlier phases of the towns archaeological record.

9.6 Mitigation

Consideration should also be given to the type of construction techniques used within future developments within the town, especially where preservation *in-situ* is the preferred option. The presence of a modern borehole within the western limit of excavation was considered an inconvenience at the time of excavation. However, it is worth noting the effect of this feature on the deposits within the immediate area (*Fig. 18*).

Figure 18 *Detail of borehole distorting surrounding stratigraphy*

It would seem that through the action of the auger the various floors and other deposits have been drawn downwards and severely distorted within a 50 cm radius around the hole. Information of the effects of modern construction techniques upon deeply stratified archaeological deposits is to date rather limited. What this particular example illustrates is that the use of piling or micro-piling as a means of preserving this type of deposit will result in damage to these fragile archaeological deposits, possibly destabilising any preservation friendly microclimates and is likely to pose a serious threat to stratigraphic integrity where these techniques are used. Although further recorded examples of this type of phenomenon are highly desirable in the meantime this provides a useful warning of a potential threat to the archaeology, not only of Wisbech, but to other similar deposits elsewhere in the county such as at Ely.

Funding

The nature and type of deposits present within the town will mean that in order to maximise the potential of future excavations a wide range of specialists will be required, not only from various archaeological disciplines but also from the

construction industry to ensure the provision of a safe working environment. Such excavations tend to be extremely expensive and consideration might be given to the nature of alternative sources of funding in support of Developer contributions to ensure the full resourcing of new projects.

Within the Cambridgeshire Structure Plan (*Part Three District Policies, Chapter 14: Fenland*) the market town of Wisbech has been identified as a priority area for the stimulation of economic activity *(Policy SP3/1)*. It may be possible to explore potential avenues of archaeological funding by reference to this plan. The archaeological deposits identified through the 1996 excavation may be impacted on by those parts of the plan concerned with **housing** and **economic development** where new construction is required. In the case of **urban conservation** (*The Town Scheme at Wisbech has been in operation for some time. Wisbech is one of Britain's historic towns and was listed by the Council for British Archaeology (1965) as being of national importance*) and **tourism** (*The local authorities will encourage tourism in Wisbech and throughout the District. An expansion of the tourist industry is to be encouraged as part of the strategy for economic development (see Policy SP13/1)*) and perhaps **employment** the discovery of these remains could represent a significant resource if appropriately funded.

Fenland is in that part of the East Anglia intended by RPG6 *Regional Planning Guidance for East Anglia (1991)* to benefit from the targeting of investment in job growth and relates development. Fenland is also within the north and east area of the County, identified in the Cambridgeshire Strategy for improvement in job opportunities and the maintenance or improvement of services *(Chapter 2 - Guiding Principles 2 and 3)*. Priority is to be given to promoting economic and employment growth in the north and east of the County *(Policy SP5/2)*.

Wisbech has also been identified as primary target centre for employment generating development, and other job related investment *(see Policy SP5.3)*. The Wisbech Travel to Work Area has had Intermediate Area Status since 1993, and most of Fenland was given "Objective 5b" status under European Union legislation in 1994, which was intended to bring new sources of grants to industry *(see Paragraphs 5.30 & 5.35)*.

The Fenland Plan states that '*In reviewing Local Plan policies for these areas and in preparing detailed programmes to implement the target centre approach, the local authorities will seek to involve a full range of agencies...*'

It is hoped this report may stimulate the consideration of the important archaeological resource present at Wisbech in any future development proposals within the town. Key issues such as funding and the potential for increased tourism need to be addressed within the planning process. The realisation of the full potential of the town's unique archaeological resource and the effects of managing, preserving and investigating this resource and on the financial viability of development are complex problems that require strategic consideration. The author and the Archaeological Field Unit are willing to provide support and advice to the Fenland District Council and the County

Council's Planning Departments and the County Archaeological Office where appropriate.

APPENDIX 1

THE POTTERY

Paul Spoerry

1 INTRODUCTION

Excavations in 1996 at Market Mews in Wisbech resulted in an assemblage of 1,485 sherds, totalling 17,097g of ceramic. These were recovered from contexts throughout a sequence of, alternatively, occupation and flood deposition, that spans several centuries. The sequence was investigated in three areas within close proximity to each other and direct associations between the episodes in each area have been made.

2 METHODOLOGY

The ceramics from this site were initially spot-dated using paper pro-formas, to aid stratigraphic interpretation, and following that a post-excavation assessment identified a need for further work on this assemblage. The pottery was thus quantified, with data being inputted onto custom-designed database forms (Dataease for Windows) and ware descriptions compiled for all new fabric types. The data was then analysed using Dataease for Windows and Microsoft Excel 5.0.

Pottery type identification is based on accepted common names for the identifiable products of known producers, and known/common vessel types.

Data regarding quantities of ware and vessel types within key stratigraphic units was analysed and in addition specific formal and decorational traits were described. A number of complete and almost complete vessels were described in detail, illustrated and photographed. Other vessel fragments were illustrated for archive.

Pottery data has been collected and analysed with particular attention to its potential to illuminate both a) activities occurring on or close to the site, and b) trade/distributive contacts in medieval Wisbech.

The archive report is currently held by the AFU, CCC, with a long-term storage location yet to be agreed but expected to be either Wisbech Museum or the County Archaeological Store at Landbeach.

3 DATING THE SEQUENCE OF ACTIVITY

For the purposes of this report the ceramics have been grouped according to phase as defined in the site stratigraphic report. These divisions are listed below in Table 1. It is immediately apparent that the Phase assemblages vary in size quite considerably. In general it is not considered worthwhile studying the statistics for groups of pottery derived from less than 50 sherds (50 individual pieces of data) and on that criterion Phases 1, 2, 3, 5 and 10 are liable to provide data with too much inherent bias. To counteract this problem of division into small sub-units, study of pottery types and styles has been used to differentiate

between groups of phases that have different *assemblages*. The pottery from these groups of phases has been analysed as representative of individual, and roughly dateable, *Periods* within the sequence.

Phase	Contexts with pottery	Sherds of Pottery	Grammes of pottery
1	126	1	6
2	114 115 119 124 125	33	175
3	47 48	34	230
4	45 46 92	119	316
5	86 89	2	8
6	43 44 87 97 111 113 122	416	7967
7	16 42 73 83 93	142	1169
8	24 30 31 34 69 75 79	240	1660
9	13 15 22 23 62	200	1559
10	40	35	672
11	11 17 21 50	135	1875
12	6 7 8 59	105	1098

Table 1 *Contexts with pottery in each phase*

The amount of pottery by fabric type is presented for each major Phase in Table 3, statistics being calculated based on weight of pottery in grammes (all subsequent percentages in this report are based on calculations of grammes of pottery, unless stated otherwise). It is evident from this table that three fabric types are present throughout all major phases and that these represent the majority of the assemblage in all those phases except for the last two (Phases 11 and 12). These three pottery types are Grimston ware (GRIM), Local Medieval Unglazed ware (LMU) and Ely Ware (MEL). Grimston ware is in almost all cases glazed and the definition used here is that adopted by Little (1994) for both Glazed Grimston A and B wares, but with the majority of the pottery from Wisbech being of the finer A type. LMU, as originally defined by Jennings at Norwich (1981) and called Local Unglazed ware by Little (1994), is likely to have been produced at several centres, initially suggested as being in east Norfolk (Jennings op. cit. 41). This type is very similar to Early Medieval Ware (Wade 1980, 443), although a little later, and as the probable production sites for that type are much closer to Wisbech, they could represent the most likely source for LMU in this assemblage. Ely ware has only recently been defined, it being previously attributed to both Grimston (so-called 'software' in Clarke and Carter 1977, 186) and Cambridgeshire (Little 1994, 86). Wasters from Potters Lane, Ely confirm that as a source, although others may also exist (Spoerry forthcoming a).

The phases have little dating independent of pottery identification. Individual context groups were provided with 'spotdates' during the post-excavation assessment phase of work. Quantification has resulted in a little variation being provided, but in essence the dating framework has not changed. Consideration of all the pottery present within each phase has resulted in the provision of more general phase dates, as shown in Table 2, which also identifies change points within the pottery assemblage on the site. It is apparent that the whole sequence can be compressed into little more than 250 years up until Phase 11, with the latter adding another century and containing no material definitely later than 1600. It is interesting to note that there are several phases dated within the fifteenth century, perhaps implying a great need or desire for construction during this time. This may be a result of frequent flood events during this period. It is necessary to consider whether these phenomena can be identified in the documentary record during the period in question.

Phase	Pottery Assemblage Date-range	Main Identifiers	Key dating horizons
1	One sherd only	After 1200	
2	1250-1350	LMU cooking pots Highly decorated Grimston glazed ware jugs Some calcareous Ely ware	After 1250
3	1250-1350	As 2 but with both decorated and undecorated Grimston jug sherds	
4	1350-1450	LMU cooking pots dominate Less Grimston and Ely, and jugs not highly decorated OSW jug sherds appear	After 1350
5		Two sherds only	
6	1350-1450	Grimston jugs more common (one complete) and fewer LMU cooking vessels. More Ely ware including a whole storage vessel.	
7	around 1450?	Ely ware bowls of both medieval and late medieval style Bowls in other fabrics (ESMIC, LM)	After 1450
8	around 1450?	Less Ely ware More Grimston glazed jugs and LMU cooking vessels Bourne D	
9	1450-1500	Grimston ware drinking jug LMT bowl Ely ware almost absent LMU	
10	1350-1500	One Orange Sandy ware vessel	
11	1470-1600	Bourne D ware Cistercian ware Imports	After 1470
12	1450-1550	More parochial version of 11	

Table 2 *Phase dates and key dating horizons*

4 PHASE ASSEMBLAGES

The phase assemblages have been considered independently of each other but, as discussed above, many are too small on their own to provide valuable statistics. To allow for more valuable analysis the Phases have also been grouped into 'Periods' which derive from the approximate date-ranges as defined in Table 2, these are discussed in the section after this.

All phases and periods have been analysed with regard to the presence of both fabric and vessel types. In addition individual pieces of more than general significance are discussed within each phase.

Phase 1

One sherd only of LMU.

Phase 2

This group is too small to provide data of statistical value other than in the broadest sense. The tripartite division between Grimston, LMU and Ely wares is a characteristic of the whole sequence (Table 3 and Figure 5 for this and all other phases), but here Grimston includes only glazed jugs, some with highly decorated designs using applied strips, pellets and scales and with an iron-rich painted wash under some areas providing a brown contrast with the usually olive green lead glaze. The presence of Early medieval ware (EMW), a probable precursor to LMU but ceasing to be produced by 1200 or a little before (Milligan 1982, 224), indicates that an early thirteenth century date may be appropriate for the initiation of the sequence.

Fabric	Phase 2	Phase 3	Phase 4	Phase 6	Phase 7	Phase 8	Phase 9	Phase 11	Phase 12
BOND						3		37.1	27
CSTN								14.2	
DUTR								2.2	
EMW	14.3								
ESMIC					8.9				
GRIM	37.1	47	7.3	20.6	14.3	26.9	40.5	33	11
HEDI						0.7			1.2
LANG								0.9	
LINCS			3.8						
LMR								0.5	
LMT		4.3	2.8	0.1	14.6		4	6.2	26
LMU	34.9	21.7	68.7	9.8	31	44.8	52.7	1.3	32.3
MEL	13.7	24.3	15.5	69.2	31.2	19.9	2.8	2.3	2.2
OLIVE						2.1			
OSW			1.9	0.1				0.1	
SCAR		2.6						0.2	
SSHW									0.3
TUDB								1.1	
TUDG								0.1	
UNK				0.3		2.7		0.8	

Table 3 *Amount of pottery fabrics in major phases (by weight)*

Vessel	Phase 2	Phase 3	Phase 4	Phase 6	Phase 7	Phase 8	Phase 9	Phase 11	Phase 12
A Bowls, dishes etc.		22.6	9.5	2.6	52.9	18	4.5	3	14.7
B Cooking vessels	56.2	14.6	76.1	9.8	23.5	48.1	55	3.2	34.4
C Jugs, pitchers	43.8	62.8	14.4	20.9	23.6	29.8	32.7	40.7	18.6
D Storage jars & cisterns				66.6		4.1			
C or D jug/cistern								37.1	32.3
Cups & mugs							7.8	16	

Table 4 *Amount of vessel types in phases (by weight): see also Figure 2*

Phase 3

Similar to Phase 2, this group is also mainly composed of the three key fabric types and again Grimston ware is most common, although mostly in plainer glazed jug fragments but with highly decorated sherds also present. Local medieval unglazed ware (LMU) is exclusively present as cooking pots whilst Ely

ware appears as glazed jugs and one internally glazed calcareous bowl fragment. One piece of buff pottery with a thick green glaze and partially covered in a tarry deposits has been tentatively identified as Scarborough ware. The presence of one sherd of Late Medieval Transitional (LMT) ware is undoubtedly the result of error or localised intrusion.

Phase 4

This medium sized group is dominated by sherds from several LMU cooking pots, with Grimston jugs and Ely ware jug and bowl sherds also present. A few sherds from glazed Orange Sandy ware jugs may suggest a date after the mid-14th century, a point that may be reinforced by the lack of highly decorated Grimston jug sherds, although the small numbers involved demand extreme caution. A highly decorated sandy jug sherd may be from a Lincolnshire source.

Phase 5

Two sherds only

Phase 6

This group contains two complete vessels a jug and storage jar (Figure 12), superficially of similar fabric but in fact the former has been attributed to Grimston whilst the latter is probably Ely ware. The presence of these two vessels has skewed the quantification figures for this phase, but it is worth noting that the three most common fabric types have not changed. There are rather more highly decorated Grimston jug sherds than in the previous two phases. This does not preclude a late medieval date, but may indicate more residuality. Other pottery types are only present as single, or occasional, sherds. Vessel type data is even more skewed by the presence of the two whole vessels and cannot be used satisfactorily (Table 4, Figure 2).

The Ely ware storage vessel was found upright, but crushed, with the Grimston jug lying on its side within it and complete. In addition several metallic objects were found also within the larger pot, these being a copper alloy bell, a composite barrel padlock and part of a copper alloy vessel. These had all been dumped, or placed, within a wood-lined drain which had also received large amounts of the waste products from various metalworking process including iron smelting, smithing and, most commonly and most interestingly, secondary copper alloy smelting, and casting (Mortimer, this volume). These waste products also characterised the floors through which the drain was cut. These is no reason to suspect that either vessel was primarily an industrial type, both are common other contexts elsewhere. In addition the Ely ware storage vessel shows no evidence of use, or exposure to, chemical processes or heating. The Grimston jug, however, is completely oxidised, when such vessels are more commonly reduced, and has its surface glaze heavily altered through, most probably, the effects of heat. There is a complete absence of internal deposits but externally the glazed parts of the surface are rough and scaled with burnt lumps of overfired glaze. Under this only a very thin, partial, light green glassy layer survives. The vessel is a standard late-medieval Grimston type with externally-thickened rim, wide strap handle with joining thumbprint decoration at top and bottom, straight, tapering neck and pear-shaped body with sagging base (Figure 12). The Ely ware vessel has been broadly categorised as a storage vessel but, in this case there is reason to suspect it may have performed the function of cistern. It is oxidised

externally, although that is the more usual finish for such products, and has a fabric that contains much larger quartz temper than that seen in the typical Grimston fabric of the jug. A simple, rounded, out-turned rim sits above a very short neck that gives way to the rounded shoulders of a globular body above a sagging base. It has an internal covering of olive green glaze restricted to the very bottom of the walls and the base itself and externally there are four thin, thumbed vertical strips. The only use-related information is a thin, partial covering of limescale in the base and ferruginous concretions where a deposit of iron slag was located during burial. The rather irregularly-shaped rim of the pot provides an aperture of around 24cm and this, from experimentation, appears wide enough for the Grimston jug to be easily placed within. It is therefore suggested that the Grimston jug may have been used in conjunction with the Ely ware vessel, the former acting as a ladle removing water from the latter. The burnt surfaces of the Grimston vessel also suggest that it was used during the metalworking processes that characterise this area of the site, repeatedly coming into contact with external heat sources and providing immediate access to small quantities of water, the Ely ware storage vessel being the secondary supply 'reservoir'.

Phase 7

The key change in this assemblage from that which went before is the presence of LMT, although this is mostly derived from one large bowl sherd with an internal glaze under thick limescale. This type may indicate a mid-fifteenth century date, but the rest of the assemblage does not necessarily support that. Bowls are more prevalent than in any other phase, with sherds from perhaps nine in Ely ware, including types that, from the small amount of work executed on the kiln site assemblage, appear to be both 13-14th century and 14th-15th century in date. Cooking vessels, all in LMU ware, and Grimston ware jugs are also present. Fragments of a jug and bowl in smooth Essex micaceous redware Fabric 40 (Cunningham 1985) may point to a date after 1450 for the last deposition in this phase which otherwise appears rather mixed.

Phase 8

The presence of a small amount of Bourne D type ware, believed to be first manufactured around 1450 (Healey, unpub.) characterises Phase 6. The five sherds from, perhaps, three vessels are all from one context and the security of this deposit must be considered carefully as the dating of this and the subsequent phases currently rests on the presence of these few pieces. A few sherds of a Spanish Olive jar are the first imports seen in the site assemblage. Vessels are again mostly LMU cooking pots and Grimston jugs, with Ely ware and LMU bowls also present. This assemblage is likely to date from the mid-to late fifteenth century.

Phase 9

A virtual absence of Ely ware in this phase assemblage is the main change to that which preceded it, although this may continue a trend already started in Phase 8. Almost all of the pottery is from LMU cooking pots and Grimston glazed jugs, but with a little LMT also present. This group does not look very different in date to that of Phase 7. The complete base of a small drinking jug in a Grimston fabric is a type not seen elsewhere on the site.

Phase 10

This constitutes thirty five sherds from one Orange Sandy ware jug, dating broadly to the period 1350-1500, but perhaps, on stratigraphic grounds, to the second half of the fifteenth century. This fabric type is of uncertain source (see Spoerry in press p72-3) but may well derive from kilns in the Rockingham Forest industry, and/or from further afield, perhaps from Essex. The jug has a rilled body under clear glaze with thumb impressions at the handle join; all of which are traits seen in the period in a number of producers in eastern England (in Humber wares and at Grimston, for example).

Phase 11

The sudden appearance of Cistercian ware (1470 plus, but usually a little later) alongside much Bourne D ware (post-1450) and Orange Sandy ware (a 'transitional' type at several locations in the eastern counties) points to not only a later date but a change in ceramic supply, and possibly use or in the activities taking place on the site. The storage and consumption of liquids, mostly ale, seem to be well represented in this phase and not before, although this is symptomatic of general changes in habits in society and may not be site-function specific. A date shortly before 1500 is the earliest possible with the 'Phase' including types dating to the sixteenth century but no later. The appearance of cisterns is the main change in vessel type, these being almost all of Bourne D type ware, whilst cups and other drinking vessels are mainly in Cistercian ware but with a small amount of Langerwehe from the Rhineland also present. A comparative absence of cooking pots is not just a function of the demise of the LMU industry, but echoes the general trend in late medieval to post-medieval assemblages. Here it is rather later than in some other regions, although the results correlate well with those from Peterborough (Spoerry in press) which is upstream of Wisbech.

Phase 12

Phase 12 has a more parochial pottery assemblage than that of Phase 11, and would perhaps be dated slightly earlier on this data only there being none of the characteristically 16th century pieces seen in the preceding phase. LMU and LMT, including cooking vessels in both fabrics, are common with fragments of Bourne D cisterns making up the other main component.

5 PERIOD ASSEMBLAGES

Period 1 1250-1350 Phases 1-3

When viewed together these three phases provide an assemblage of 411g, 68 sherds. This is dominated by the three key fabrics types, Local Medieval Unglazed, Grimston and Ely, wares with Grimston most common (Table 5, Figure 3 for this and subsequent Periods). As the latter is most commonly present as glazed jug sherds, both here and elsewhere, it is no surprise that over 50% of the pottery from Period 1 derives from jugs (Table 6, Figure 4). This assemblage is generally in keeping with what one would expect of domestic material, although often in assemblages of this period cooking vessels are more common than jugs. A little Early Medieval ware (EMW) is also present which, with a demise before the start of the thirteenth century (Milligan 1982, 224), repre-

sents the only fabric type from the site possibly dating to the period prior to the changes in the Fen river system (Darby 1983, 31-4) that may have had such a profound affect on both the economy and topography of the town. The Period 1 assemblage, as a whole, is characteristically mid-thirteenth to mid-fourteenth century in date on the basis of the presence of highly decorated Grimston products.

Period 2 1350-1450 Phases 4-6

The period assemblage constitutes 537 sherds, 8291g. The period statistics (Tables 5 and 6, Figures 4 and 5) demonstrate that the skewing affect of the presence of two large vessels is less than for Phase 4 only, but it is still evident in the enhanced presence of both Ely ware (MEL) and Storage Vessels. It is likely that the trend in Period 2 would otherwise demonstrate no change in the importance of Ely ware in the assemblage, and possibly of LMU as well. If the large Ely ware storage vessel were removed from the figures shown in Table 6 and used to produce Figure 4, then the proportions of other vessel types would be very comparable to those in Period 1. This may suggest that there is no great difference in the functional assemblage as well as the production origin of these two phase assemblages which implies continuity of ceramic supply and the activities conducted on the site over some considerable time. The two complete vessels are discussed in more detail in the Phase 3 section, and are also illustrated in a photograph (Figure 12). The possibility that these vessels may relate to the substantial evidence for metalworking that can be dated to this period on the site has been considered and in conclusion it seems probable, but not proven that they were used in such processes.

Period 3 1450-1500 Phases 7-10

The period assemblage constitutes 617 sherds, 5060g and LMU is the most common fabric type, replacing Ely ware in respect of Period 2 and Grimston ware in Period 1. As before, LMU is mostly present as cooking vessels, however, sooted bowl sherds are also present indicating that these were also used on the fire, perhaps also in food preparation. The tripartite medieval assemblage is supplemented here by pottery types characteristic of the end of medieval, and transitional, periods. LMT, a Norfolk product from, perhaps 1450 onwards (Jennings 1981, 61) is the most common arrival, but there is a little Bourne D type ware as well. In addition there are several sherds of a Spanish Olive jar, not a particularly dateable type but the earliest foreign import recorded at the site (Hurst *et al* 1986, 66). The high incidence of LMU and hence, but to a lesser extent, cooking vessels, in this period assemblage is rather surprising as the diversification of pottery types and decline of the ceramic cooking vessel are well known phenomena the end of the medieval period (McCarthy and Brooks, 1988, 90). The persistence of these types at Wisbech is in keeping with the picture seen at Peterborough (Spoerry in press). The amount of Ely ware in the Period 3 assemblage is similar to that seen in Period 1, and may not very different to that in Period 2 after removal of bias derived from the presence of one large vessel. Whilst extrapolating data from one site only is dangerous, it may well be that Ely ware was consistently the third most important bulk ceramic product found in Wisbech during the whole of the period in question. This point needs consideration when a medieval assemblage from the town is next analysed.

Period 4 1500-1600 Phases 11 and 12

The marked difference between this group and all preceding assemblages is

obvious, stemming from both pottery fabric types and vessel categories. Unlike the preceding phase, this does mirror expected changes in the general ceramic assemblage by the end of the medieval period. The persistence of medieval types such as LMU and Grimston ware is, however, surprising, but this cannot be entirely blamed on residuality as Ely ware does not show the same trend. If there were a major medieval residual component then all three common medieval types would be expected to be represented. Late medieval/transitional (LMT), Bourne D ware, particularly cisterns, and Cistercian ware cups are the key new types in this period, affecting both fabric and vessel statistics. The first two of these were present in Period 3, which befits their mid-fifteenth century start dates, however, it seems that neither was a major component in this assemblage until after Cistercian ware was also present; the key change defining the start of Period 4. Cistercian ware was probably produced from as early as 1470, but may have been uncommon in this region until some decades later.

Fabric Type	Period 1	Period 2	Period 3	Period 4
EMW	6.1			
SCAR	1.5			0.1
LMU	28.5	12.2	38	12.7
MEL	19.5	67.1	14.6	2.3
GRIM	42.1	20	24.6	24.9
LMT	2.4	0.2	4.6	13.5
OSW		0.1	13.3	0.1
BOND			1	33.4
ESMIC			0.2	0.4
IMPORTS			0.7	2
CSTN				9

Table 5 *Percentages (by weight) of fabric types in period assemblages*

Vessel	Period 1	Period 2	Period 3	Period 4
A Bowls, dishes etc.	12.6	2.9	18.3	7
B Cooking vessels	33.8	12.2	38.3	14
C Jugs, pitchers etc.	53.6	20.7	39.6	33
D Storage jars		64.3	1.3	
C or D jug/cistern				35.5
E Cups & mugs			2.6	10.4

Table 6 *Percentages (by weight) of main vessel types in period assemblages*

6 CROSS FITS AND CONTAMINATION BETWEEN PERIOD ASSEMBAGES

A number of possible and certain cross-fits were identified in this assemblage which are of concern and interest where they span two contexts in different phases. As the episodic nature of the inundation ought to preclude most cross-contamination, the stratigraphic integrity of the contexts involved needs consideration. Although none are actual joining sherds, which lessens the possibility of direct association between two deposition occurrences, there is still need to explain the data.

Phase	Context	Fabric	WITH	Context	Phase
Certain					
4	92	LMU		42	7
7	93	MEL		79	8
6	87	MEL		79	8
Possible					
2	125	GRIM		111	6
4	46	MEL		93	7
4	92	?OSW		42	7
4	92	OSW		40	10
8	34	OLIVE		75	8

Table 7 *Possible and certain cross-fits between phases*

The most concerning is the definite link between Phases 4 and 7 (contexts 92 and 42). The possible link between sherds in contexts 92 and 40 (Phases 4 and 10) is not proven.

7 AREA ASSEMBLAGES

Table 8 shows the contribution of the key pottery fabric types to the three site area assemblages. The main variation appears to be in the much greater variety of types present in Area 1, but this is in fact entirely a result of this being a larger assemblage dating to a later period than is the case with Areas 2 and 3. The presence of post-medieval pitting in Area 1 may provide some evidence for a change in use, but again this is temporally-related as Area 1 includes later deposition and feature creation spatially and stratigraphically above Areas 2 and 3.

Fabric	All	Area 1	Area 2	Area 3
BO	6.6	15.1		
CSTN	0.6	3.9		
DUTR	0.2	0.6		
EMW	0.1			1.5
ESMIC	0.6			6.3
GRIM	24.0	26.5	20.5	18.1
HEDI	0.1	0.2		
LANG	0.1	0.2		
LINCS	0.1			0.7
LMR	0.1	0.1		
LMT	3.9	6.8	2.1	1.6
LMU	20.5	28.6	8.9	44.3
MEL	37.7	6.4	68.1	26.4
OLIVE	0.2	0.5		
OSW	4.0	9.8		0.5
SCAR	0.1	0.1	0.1	0.4
SSHW	0.1	0.1		
TUDB	0.1	0.3		
TUDG	0.1	0.1		
UNK	0.50	0.9	0.3	0.2

Table 8 *Amount of pottery in areas (by weight)*

If Phase 11 and 12 pottery is removed from the figures they become more comparable with Area 1 representing the later part of a continuum of occupation between flood deposition episodes that span the other 10 phases. Variation in the type of activities taking place in each area and over time may be identified through study of the relative quantities of the types of vessel present. The quantification figures are, as before, skewed by the presence of the very large Ely ware storage jar in Area 2 which, in these Phases, represents almost all of the weight of vessels not in type categories A to C (bowls, cooking pots and jugs). If storage jars are removed from the quantification statistics then a good comparison can be made between the presence of these three key vessel types in the three site Areas (Table 9).

The figures in Table 9 confirm that Areas 2 and 3 are essentially two samples from the same population which fits their proximity spatially and temporally. They differ from Area 1 only in that there are less bowls in the latter assemblage and commensurably more of the other two types. In Areas 2 and 3 bowls are mostly present in Ely ware which is rather more common there than in Area 1. The differences here are probably temporal. Ely ware appears to have been specifically chosen, or marketed, in Wisbech for bowls but with other vessels also present (such as the storage jar and some jugs). As Ely ware declined in importance from Phase 8 onwards (1450 and later) bowls, if needed, must have been used in the, still available, LMU and newly arriving LMT fabrics amongst others. Thus the lack of bowls in Area 1 is more likely to mean that they were not needed for the processes occurring on site. This could mean a change in food preparation practice or a slight change in the 'functional' type of ceramic assemblage.

Vessel type	Area 1	Area 2	Area 3
A Bowls etc.	11.9%	27.6%	26.9%
B Cooking vessels	54.9%	44%	47.7%
C Jugs etc.	33.2%	28.3%	25.5%

Table 9 *Percentage of Phase 1-10 assemblage attributable to key vessel categories after removal of Vessel Category D (storage jars etc.)*

8 VARIATIONS OVER TIME OF KEY POTTERY FABRIC AND VESSEL TYPES

Variations in the contribution of individual pottery fabric types and vessel categories have been discussed in, or a recoverable from, the sections above concerning individual phases and periods. Some trends that are exhibited over time are, however, worth more direct comment.

Figure 5 shows trends in the contribution of the three most common fabric types to the Phase assemblages. These figures have been adjusted to account for the large bias that is introduced into the data as a result of the presence of two complete vessels in Phase 4. This figure therefore represents a more true picture in terms of the trends exhibited, but not in the actual numbers themselves. Local medieval unglazed ware (LMU), Grimston ware (GRIM) and Ely ware (MEL) constitute at least 80%, and usually more than 90%, of all phase assemblages 1 to 9, although by the last of these phases Ely ware had declined substantially but the other types had not. In Phase 11 their combined contribution was much less (see Table 3). During the two and a half centuries or more represented by these phases, however, trends and changes are evident, most notably in the presence

of Ely ware and Grimston ware. The former increased in quantity to a peak around Phases 6 and 7, but then steadily declined in importance in the all assemblages from then on. Grimston ware was the most abundant type at the start of the sequence, highly decorated jugs being particularly noticeable at that time, but it dropped in importance in the site assemblage after 1350, becoming more common again in the Period 3 phases (peaking in Phase 9). LMU was generally the most common ware and it held up well in the late medieval sequence, but later on (Phase 11) it was perhaps replaced by newer types such as Bourne D and LMT, suggesting that this unquestionably 'medieval style' unglazed coarseware fabric was less favoured once more modern alternatives were available. Ely ware, although provider of both glazed bowls and jugs during the middle part of the sequence, ceased to be even as secondary supplier to this assemblage by Phase 9. Grimston pottery slumped throughout the period when Ely ware was most common, and this coincides with the end of highly decorated pottery production in the fourteenth century which Grimston was initially a specialist supplier of. It appears to have become more common during the latter part of the fifteenth century, however, and this may suggest that it was more resilient in the face of a changing market than the more coarse, and 'medieval', Ely product.

9 CONCLUSIONS

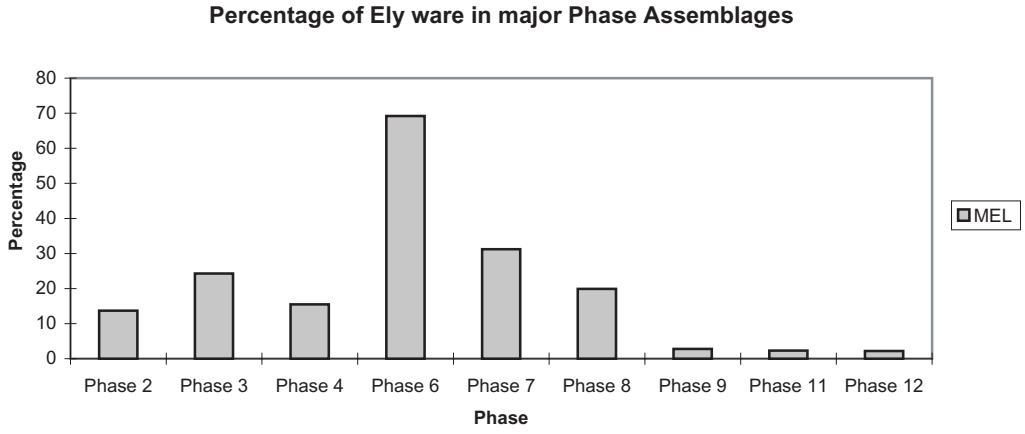
Although not large, the specific nature of this assemblage, being a snapshot of episodic inundation and occupation, allows valuable temporal analysis. It is evident that the assemblage is mostly domestic in character, but that in Phase 6 the suggestions that metalworking is occurring may well provide a reasonable explanation of the function of the pair of complete vessels. Although metalworking is the sort of anti-social activity that could be banished to the edges of medieval settlement, this was not always the case. Our knowledge of medieval craft production does not preclude domestic and industrial activities taking place together, rather it specifically suggests that to be the case within individual properties. Thus the assemblage from this site could easily represent the general ceramic assemblage from urban edge 'industrial settlement'.

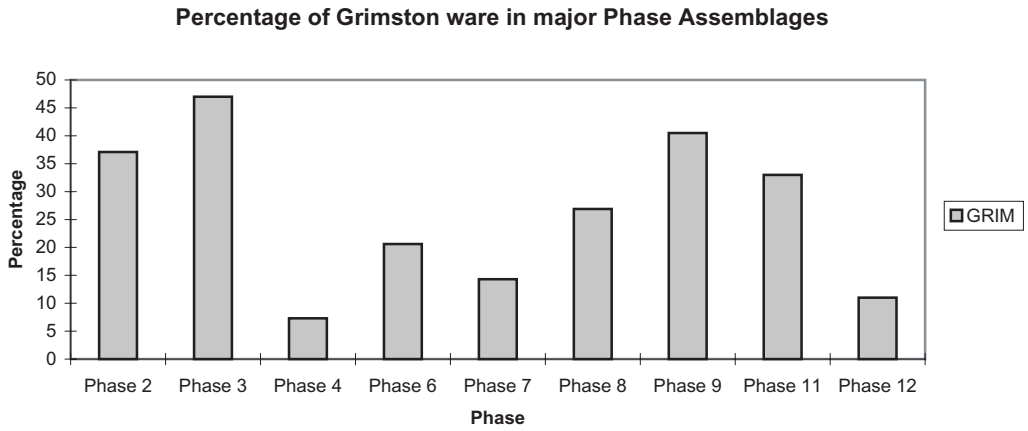
The ceramic sequence provided here may be only representative of one part, or even one property, of medieval Wisbech, but it still represents an enormously valuable temporal progression against which other work in the town can be compared. The identification of the contribution to the ceramic assemblage of producers from, in particular rural Norfolk and Ely, is significant as it fills a geographic gap between urban ceramic data from sites in the medieval Fenland ports of Ely (Spoerry forthcoming b), Peterborough (Spoerry in press) and Cambridge (D.Hall pers. comm.), and large ceramic groups from the other outfall of this river system at Kings Lynn. The decline in importance of Ely ware in the Wisbech assemblage after 1450 is significant, as is the late date of change away from ceramic cooking vessels and towards the provision of ceramic cisterns and drinking vessels. The circa 1450-1500 date for this development mirrors that seen at Peterborough (Spoerry op. cit.) and points to a conservatism in ceramic manufacture and use which may seem surprising on the eastern seaboard and thus within easy reach of changes occurring across the North Sea. It may well be that the everyday ceramic market was driven more by internal factors than through contact via the Fenland hithes with new ideas from abroad.

Grimston and LMU ware were produced in rural sites in North Norfolk and presumably were carted overland to Kings Lynn and then upstream to Wisbech on barges, this being one of the major routes for Fenland traffic. Ely ware was made close to the waterfront on the edge of the city (Spoerry forthcoming a) and it would have been very simple to transport such products downstream along the Ouse and Wellstream to Wisbech, especially to a riverside location such as this. Lincolnshire and Yorkshire glazed wares appear as occasional types throughout

the medieval assemblage but it is only with the growth of Bourne D production after 1450 (Healey unpub.) that any product from areas to the north becomes common in this assemblage. This was transported to Wisbech either overland to Peterborough and then down the river Nene, or via the river Glen and the Wash.

The only medieval import is pieces of perhaps two Spanish olive jars, with Rhenish stonewares and Dutch redwares conspicuous by their absence until Phase 11, when they are still rare. A little late medieval Essex redware suggests more coastal contact but, in general, the assemblage is local or even parochial and conservative in character.





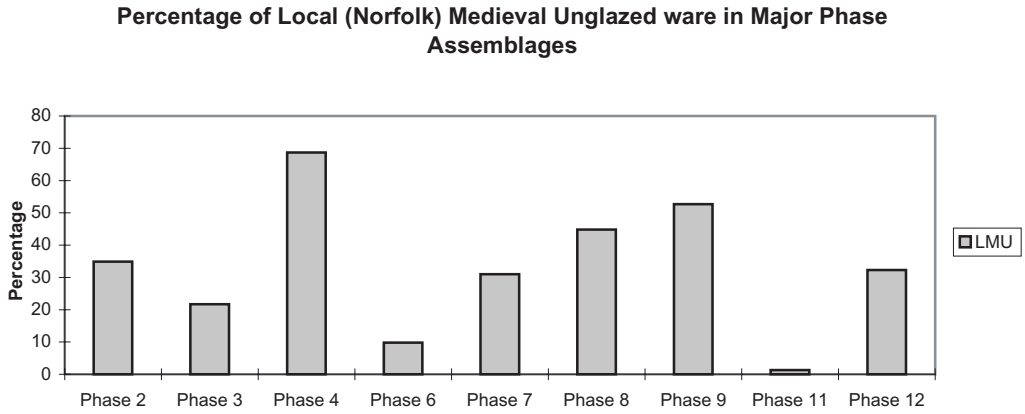


Figure 1 percentages of major fabric groups by phase

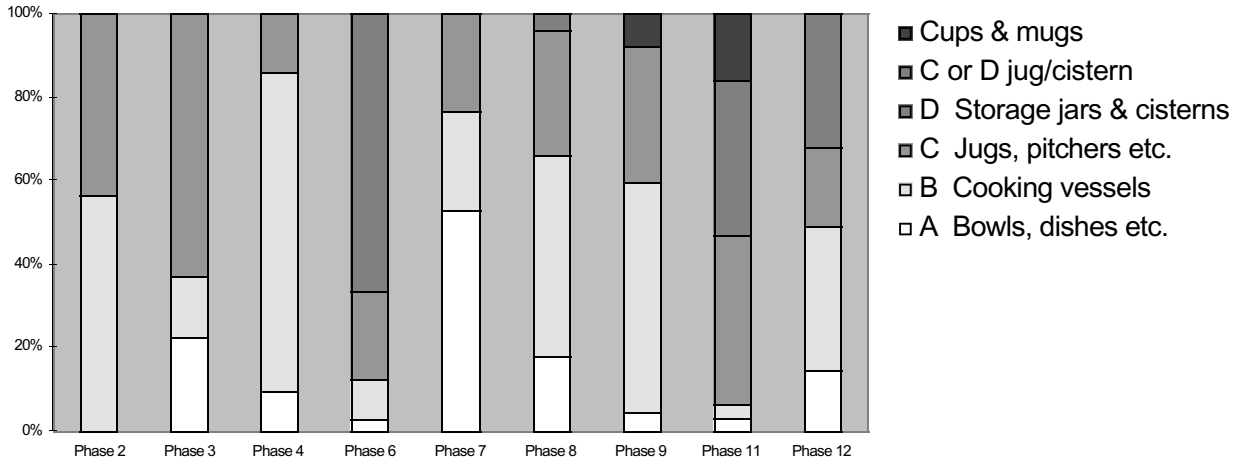


Figure 2 Vessel Types in Phases

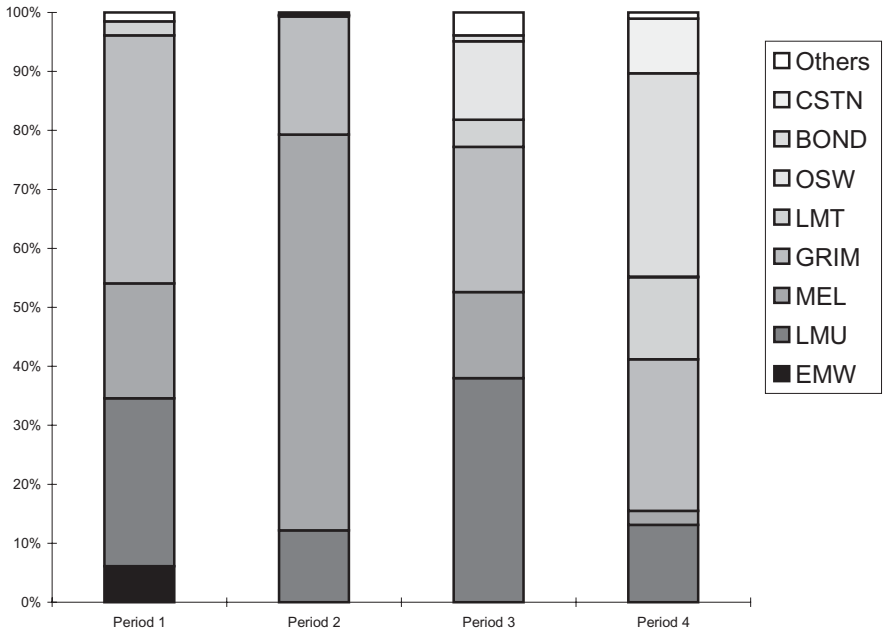


Figure 3 Fabrics in Periods

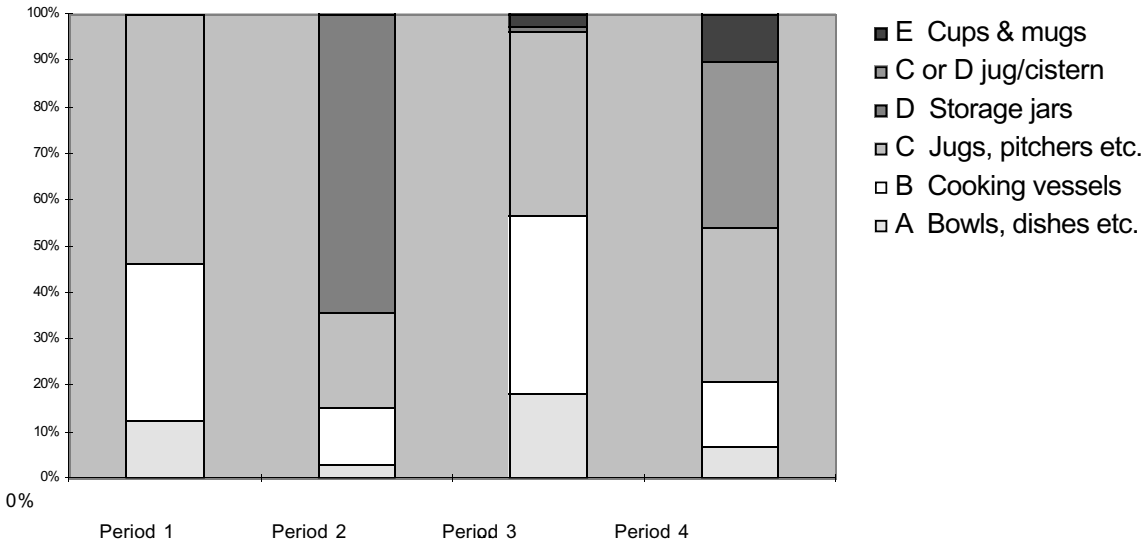


Figure 4 Vessels in Periods

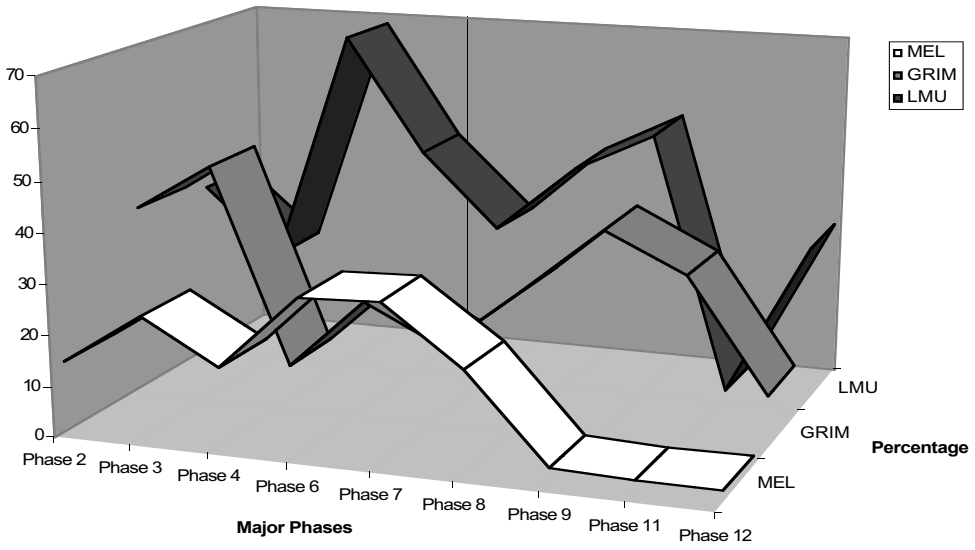


Figure 5 Percentage of major fabric groups by phase

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APPENDIX II

FLOTATION SAMPLES

D. E. Schlee.

Twenty one flotation samples of ten or 20 litres were processed. The samples were taken from a variety of surfaces and associated cut features from the major occupation phases encountered during the excavation. These deposits ranged in date from 1230-1350 AD at the base of the excavation to 1450-1500 AD at the top. The aim of this sampling was to attempt to characterise the nature of the occupation in each phase, and to identify any changes in economic and domestic activities, both in relation to changes in the associated structural features, and in relation to the repeated flooding events of varying severity which occurred throughout the occupation sequence.

1 PROCESSING

Most samples were processed using a standard flotation machine collecting flots in a 0.5mm mesh and heavy residues in a 1mm mesh. Subsamples from layers 46 and 92 were processed using peroxide flotation to ascertain whether significantly different results were obtained by this method. Heavy residues were sorted for the recovery of all archaeologically significant inclusions. All charred items were sorted from the flot fractions, while sufficient waterlogged specimens were recovered from each sample to identify the range of plant species represented. Identifications were carried out using reference material and with the assistance of Alan Clapham at the McDonald Institute, Cambridge.

2 PRESERVATION AND CHARACTERISTICS OF DEPOSITION

The stratigraphic preservation on the site was excellent, with a continuous sequence of apparent occupation surfaces and associated structural features, interleaved with fine clay silts deposited during flooding events. The flood deposits varied in depth from 1mm to more than 30cm. Depending on their depth, thickness (intensity and longevity of occupation), and composition, the occupation surfaces were compacted to different degrees, varying in thickness from a few millimetres to more than 5cm. This compaction, combined with periodic flooding, has generally resulted in good organic preservation. Ground water conditions have not, however, remained sufficiently or consistently waterlogged to prevent degradation of the organic remains. As a result, some evidence such as straw, seeds and reeds, which were observed within compacted floor surfaces during the excavation, were only preserved as impressions and pseudomorphs in the fine silts. These did not survive either excavation or processing.

Plant material was preserved both by charring, and through the relatively anaerobic ('waterlogged') conditions created by the fineness of the flood deposits, compaction, and ground water conditions. While the charred material is generally confined to cultivated food crops and weeds associated with agriculture, the waterlogged seeds tend (though not exclusively) to consist of plants representing the prevailing local environment. It is likely however, that at least some of the uncharred material has been introduced onto the site from further afield during the flooding episodes.

Not all the deposits were found to possess the same degree of preservation.

Some samples contained large numbers of a wide range of different plant species, while others contained fewer specimens or a much smaller range of species.

Broadly speaking, the density and quality of both charred and waterlogged material increased with depth. This partly reflects an improvement in preservation conditions with depth, but may also reflect a change in the intensity and character of occupation in the light of apparently increasingly frequent and severe flooding events further up the stratigraphic sequence.

Other evidence of domestic or economic activity and dietary resources was recovered in the form of animal bones (especially fish), marine molluscs (mussels and cockles), bird egg shell, coal and slag. These often formed distinct laminations within compacted floor deposits. These more robust items help to give an idea of the intensity of occupation, where plant material is less well preserved.

Micromorphological analysis of some of the deposits has indicated that there were often several interfaces within floors, and more surprisingly within the flood deposits, that were not always visible during excavation (Milek, Appendix V). These interfaces may represent different phases of deposition within a flooding event, where the silts have stabilised (and small quantities of organic matter and other rubbish have been deposited) before further silts were laid down. These deposits would thus represent periods of abandonment. Alternatively, they may represent continuous occupation but with repeated flooding preventing sufficiently long-lived or intensive activity to allow more substantial floor deposits to develop.

The tight time restrictions within which the excavation occurred, combined with the complexity and fine stratigraphic resolution of the deposits, often made it impossible to separate individual layers within a phase for the purposes of excavation and sampling. The clay silts deposited during flooding episodes did however enable the separation of major occupation phases.

Interpretation was also hampered by the limited area that it was possible to excavate. Since only small parts of buildings could be excavated, it is difficult to ascertain whether differences in the characteristics of the floor deposits were due to changes in the activities undertaken within the buildings, or whether the same activities were undertaken, but that individual rooms underwent changes in use and deposition patterns.

3 RESULTS

Below is a summary of the range of crop and weed species represented at the site, and the environmental conditions they indicate. This is followed by descriptions of the assemblages from individual samples and the deposits they represent.

Cereals

Charred cereal grains are present in most of the samples, but generally in small quantities (with the exception of samples 22, 23, and 24). Bread wheat is the most prevalent, generally occurring alongside oats. Barley is only occasionally represented by one or two grains in an assemblage. Rye is present only in samples 22 and 24.

As would often be expected in an urban situation, there is little evidence for crop processing. The low presence of rachis fragments but absence of other chaff fragments in samples 4 and 5 (and occasionally, other samples), suggests that these are more likely to be impurities picked out of cleaned grain, or that straw or chaff was used as fuel. Traces of cereal straw were found within compacted floor deposits, presumably used as floor or roofing material, and would thus have been readily available for use in hearths.

Although samples 22, 23, and 24, contain larger quantities of chaff and straw fragments, these too are most likely to be through the use of whole straw for fuel. Apart from their association with a domestic hearth, the fragments are sufficiently large and few in number to represent single ears, indeed, the rye chaff is represented by an intact ear (from which the rye grains may well have been derived). Many of the oat grains in these samples are also still contained within their awns, suggesting they were from a complete plant, or were for use as animal fodder rather than human consumption.

Pulses

Peas and beans were recovered from several deposits, although only in small quantities. As with wheat and oats, they are present in all the main occupation deposits throughout the excavated sequence.

Fruit and nuts

Hazel nut shell fragments were the recovered from the earlier floor deposits, both in charred and uncharred states. A single apple pip, and two cherry stones were also recovered. Uncharred seeds of bramble fruit and elderberries were also occasionally present. While these may have had dietary significance, they are most likely to derive from plants growing in the vicinity.

Miscellaneous

Many of the samples contained varying proportions of decomposed and degraded organic debris. This was presumably deposited on and trampled into floors during occupation phases. It is also possible that some of it originates from organic matter washed in during flood events. The bulk of this material was too degraded for identification and its origins can only be inferred from the weed seed assemblage and impressions of straw and reeds in floor laminations.

A charred fragment of possible bread or dung was recovered from sample 4. A few fragments of what may have been apple peel were recovered from sample 24.

Fish bones were frequent in many samples, often forming distinct laminations within floor deposits. During excavation, some fish skeletons were found to be articulated.

Bird egg shell was also common often forming laminations within compressed floors.

Fly pupae were recovered from several samples. In sample 4 this would support the interpretation of the pit fill as being cessy. Fly pupae were, however, also

recovered from floor deposits, reflecting the presence of fish bones and other organic debris on the floors.

Weed seeds

Weed seeds were recovered in varying quantities from the samples. The overall assemblage suggests three main environments from which plant material was coming onto the site: wet land, waste land ,and cultivated land. While charred seeds are generally more likely to have had economic, industrial, or agricultural significance, it is less easy to ascertain if waterlogged seeds have been introduced by human or natural agencies (and therefore what their significance might be).

The likely proximity of the site to a wetland environment, coupled with the evidence for repeated flooding strongly suggests that much of the weed flora is present through natural means. Such environments are, however, the source of many useful plant resources, which may have been intentionally brought on to the site with animal fodder, roofing, or flooring material. The weeds of arable cultivation which are not charred may still have come in with cultivated crops, but could also have been washed in during floods.

Material from other environments, represented by non charred weed seeds, may also have been washed in from further afield, but these species are often sufficiently broad in their habitat requirements to have been growing in or around the immediate vicinity.

4 ENVIRONMENTS

Wet places

Polygonum hydropiper (Waterpepper), Schoenus negricans (Bog Rush), Cladmium mariscus (Common Sedge), Menyanthes trifoliata (Bog Bean), Alisma ranunculoides (Lesser Water Plantain), Ranunculus flamula (Lesser Spearwort), Ranunculus scleratus (Celery Leaved Crowfoot), Ranunculus aquatilis (Water Crowfoot), Scirpus maritimus (Sea Clubrush), Cladium mariscus (Common Sedge), Juncus sp. (Rushes), Potamogeton sp. (Pondweed), Cladoceran eggs (Waterflea eggs).

Plants associated with a variety of wet environments are well represented. Bearing in mind the archaeological evidence for flooding and the presumed close proximity of the river Ouse, it is likely that many of these plants would have been growing nearby. It is also likely that the Sedges and Rushes would have been utilised for fuel and roofing material. The presence of Pondweed and Waterflea eggs suggests standing water. Although it may be an accident of differential preservation, both were only present in samples of well compacted floors, suggesting that conditions were far from dry even during periods of more intensive occupation. Bog-bean seeds, occasionally present, and indicating a fen environment, may reflect the use of the plant in brewing, but are most likely to be present coincidentally.

Cultivated/ wasteland

Lapsana communis (Nipplewort), Carduus sp. (Thistle), Fumaria officinalis (Fumitory), Galeopsis tetrahit (Hemp Nettle), Stellaria media (Chickweed), Hyo-

scyamus niger (Henbane), Chenopodium album (Fat Hen), Polygonum persicaria (Red Shank), Polygonum Aviculare (Knotgrass), Polygonum convolvulus (Black Bindweed).

These are all common in disturbed, cultivated or wasteland, and are likely to have been growing in open areas nearby. Henbane is associated with stony ground, often near the sea, and around human habitation. Chickweed and Red Shank could be associated with stream or bank side habitats.

Hedges/woodland

Sambucus nigra (Elderberry), Rubus fruticosus (Bramble), Corylus avellana (Hazel), Torilis japonica (Upright Hedge Parsley), Stellaria nemorum (Wood Stitchwort).

Although possibly representing woodland, these species are also likely to have been growing on nearby waste ground or hedges.

Pasture/meadow

Taraxacum officinale (Dandelion), Rumex acetosa (Sorrel), Rumex acetosella (Sheeps sorrel), Silene otites (Spanish Catchfly).

Bearing in mind the absence of other species that might be expected if these environments were strongly represented, it seems likely that these too were growing in a suitable locality nearby.

Weeds of crops

Anthemis cotula (Stinking Mayweed), Centurea cyanus (Cornflower), Ranunculus arvensis (Corn buttercup), Scandix pecten-veneris (Shepherds Needle), Chrysanthemum leucanthemum (Ox-eye Daisy), Vallerianella dentata (Narrow Fruited Cornsalad), Anagallis arvensis (Shepherds Purse), Papaver rhoeas (Field Poppy), Lithospermum arvense (Corn Gromwell).

These species are more specifically associated with arable agriculture. Since they were generally not preserved by charring, and were not found in association with cereal chaff fragments, it is unlikely they represent the residue from sieving grain to remove impurities. The relatively large size of some of the seeds may suggest that individual weed seeds were hand picked from the grain before it was processed further. Alternatively, they may have been associated with straw used for fodder, flooring, or roofing.

5 DESCRIPTION OF SAMPLES

For the purposes of description, sampled deposits have been separated and grouped by excavation area, pottery spot dates, association with building phases, and major flooding events (as presented in the site matrix for the preliminary excavation report). Where clearly associated, samples are discussed as a group. Where phasing is uncertain or has not been finalised, samples are discussed separately.

Area 1

Samples 4 (17) and 5 (50)

These two pit fills contained low quantities of cereal grains and rachis fragments. A charred fragment of possible dung or bread was recovered from sample 4 and a charred fragment of a probable cherry stone. During excavation it was suggested sample 4 might contain cessy material. The presence of fly pupae may support this idea, though no other evidence suggesting cess (typically mineralised seeds) was recovered. Sample 5 contained a wider variety charred cereals, chaff and pulses than sample 4, perhaps suggesting that this sample contained more general domestic cooking debris (including eggshell) than did sample 4 with its possible cess pit function.

Samples 6 (15) and 7 (23)

These samples were taken from two contemporary surfaces separated by a partition. They may represent front and back rooms. Sample 6 came from a thicker floor deposit possibly indicating more intensive use at the front of the building, while sample 7 was from a less substantial floor. Both samples produced the same range of charred cereals and pulses in low quantities. In addition, sample 6 contained small quantities of bone and egg shell suggesting a domestic context and a difference in use to sample 7. Although fragments of coal and slag were recovered, there were not sufficient quantities to suggest industrial activity in the immediate vicinity. It may, however, suggest that industrial activity similar to the metalworking present in samples 16 and 21 was being practised somewhere nearby in this phase. The very limited weed flora is not indicative of wet conditions.

Sample 1 (31)

An earlier floor deposit below sample 7. A low presence of charred cereals suggests a domestic environment. The majority of the weed flora does not suggest a wet environment. Although not identical to sample 7, both share a lack of the inclusions found in sample 6, suggesting a continuity in the different activities carried out in each room from one phase to the other.

Area II

Samples 10 (83) and 15 (93)

These samples were taken from deposits derived from flooding. Both, however contain inclusions derived from domestic or industrial activity. Sample 10 produced a small quantity of charred cereals and a small quantity of weeds consistent with other domestic surfaces. Sample 15 contained virtually nothing other than small quantities of fish bone and mussel shell fragments and large quantities of slag and coal. It seems likely that this material was washed in during the flood event, though it may also be possible that the material in sample 10 derives from a short lived occupation surface within the silts.

Samples 16 (97), 19 (97) and 21 (111)

These samples were taken from a floor layer with an associated drain. Sample 16 was taken from a deposit consisting largely of metalworking debris dumped into the drain. Sample 19 was the contents of a large pot also found within the

drain. Sample 21 was taken from a layer of metalworking and occupation debris above the floor. In addition to metalworking debris, samples 19 and 21 contained low quantities of bone, mussel shell fragments and egg shell associated with domestic occupation. Sample 16 did not contain occupation debris, so may have been dumped directly into the drain. Non-charred specimens of a pea and hulled oats were recovered from samples 19 and 21. These are the only such specimens surviving on the site, possibly preserved by their proximity to the metalworking debris.

Area III

Sample 8 (73)

Very little at all was recovered from this sample. This suggests either that it was a very short-lived surface, or perhaps that the room or area it represents was not an intensive occupation surface. Alternatively, it may not represent a surface at all, or the original surface may have been eroded away by a subsequent flooding event. The limited weed flora represented in this sample is not particularly indicative of wet conditions.

Samples 2 (44), 11 (85), 12 (44), 13 (44)

This group of samples was taken from an occupation surface and the fill of an associated drain. Sample 2 was taken during the evaluation excavation, while samples 12 and 13 were taken from the floor deposit to the north and southwest of the drain. Sample 11 was taken from the drain fill. Although samples 2 and 11 are virtually sterile, samples 12 and 13 contain a variety of weed seeds in addition to a low presence of charred cereals and chaff fragments along with fish bones and egg shell and fly pupae suggesting a domestic context.

Sample 14 (46)

This sample was taken from an occupation layer. The surface numerous fish bones were recovered along with low quantities of charred cereals and fly pupae. The weed flora represents generally dry conditions, but also with some wetland indicated.

Sample 17 (92)

This sample was taken from a compact and laminated occupation surface. Although the yield of identifiable charred and waterlogged plant material was not great, a sample of this floor was taken for more careful excavation and peroxide flotation to check whether significant data was being lost. This revealed compact laminated layers of probable cereal straw and rush stems which was presumably used as flooring (or possibly roofing) material. These were interleaved with laminations of fish bone and egg shell. The bulk of the rest of the material recovered by peroxide flotation proved to be compacted unidentifiable decomposed organic material. The traces of straw and rushes were themselves sufficiently decomposed not to survive further processing.

Sample 20 (48)

This was a soft silty layer interpreted during excavation as occupation debris, or possibly sub-floor make-up. In addition to a small quantity of charred cereals and pulses, hazel nut and cherry stone fragments, a few fly pupae were recovered.

Sample 22 (114)

This deposit was a compacted silty organic rich floor layer. In addition to fish bones and marine mollusc fragments there was a significant quantity of charred cereals, chaff and straw fragments. Other food plants included field bean and hazel nut. The sample also contained a wide range of non-charred weed seeds, likely to derive from a variety of sources. This deposit appears to seal a backfilled hearth [120] immediately below (samples 23 and 24). The range and quantity of crops and weeds represented in all these samples appears very similar. This suggests that, if not derived from the same hearth [120], the sample 22 assemblage is derived from another hearth beyond the area of excavation, indicating continuity in an almost identical domestic activity (probably based on the same resources) between the deposition of the two floors. It can therefore be assumed that there is no great temporal gap between these deposition events.

Samples 23 (119) and 24 (123)

Both these samples were taken from the fills of a hearth or oven sealed directly below layer (114). Sample 23 appears to be a mixed backfill deposit, while sample 24 is an undisturbed primary use deposit. Despite the intensity of the occupation, there is still plenty of evidence from the weed assemblage that local conditions were consistently or periodically wet, with pondweed and water flea eggs indicating the presence of standing water.

These last three samples are by far the richest in quality of preservation and range of species represented, of all the samples from the site. While this is in part due to their association with the only hearth encountered during the excavation, the fact that the same density and range of plant material is not encountered in other samples may suggest that in later phases, similar domestic activities were either not being undertaken, or were carried out elsewhere (beyond the limits of the excavation). This may be due to changes in the status, function or layout of the buildings as a whole, in response to the impact of flooding.

5 DISCUSSION AND INTERPRETATION

The range of wild and cultivated plants recovered from the samples does not offer up many surprises. Evidence of the range of foodstuffs available to the inhabitants appears to be essentially consistent throughout the excavated sequence. There is a basic range of cereals, with wheat and oats being more prevalent than rye and barley. Other staples are field beans and peas. With the exception of a few fruit pips, there is no evidence for other plant foods, and nothing that might suggest access to dietary resources from elsewhere, or any high status or exotic foods.

Although in some cases relatively good, the organic preservation of non-charred items appears to be limited to plants that were growing in the immediate vicinity or are likely to have been washed in during floods. These were earlier (above) divided more or less into the environments that they favour, to suggest possible habitats from which resources may have come onto the site. Many plants will grow under a range of conditions, so may not have originated from the proposed habitats. While these plants supply environmental background data, they do not add to the range of dietary or economic plant resources available.

The shortcomings of the organic preservation are illustrated by the range of plants identified from pollen in floor (92). While it is possible that some of this pollen has been washed in during floods, the cereals, grasses, bracken and heather,

are highly likely to indicate imported floor or roofing material. Although traces of this material were observed during excavation, the plant material had essentially decomposed, leaving nothing but impressions in the floor laminations.

Samples from less well preserved floors only produced very small quantities of seeds. In many cases the species represented were not particularly representative of wetland environments. This may be a result of differential seed preservation (the wetland component has not survived in the less well preserved floors), or may indicate dryer conditions when the surfaces were actually in use.

There is little available environmental material from similar sites elsewhere in Cambridgeshire with which to compare this assemblage. Excavations at Ely Forehill (Alexander, 1998) revealed urban occupation stratigraphy covering a wider range of dates than it was possible to excavate at Wisbech, but including deposits of the same date range. Deposition and preservation conditions at Ely differ greatly from those encountered at Wisbech, and this is reflected in the range and quantity of weed seeds represented.

Although partly due to differences in taphonomy, the weed assemblage is also likely to reflect differences access to and economic importance of different agricultural and natural environments. Thus, at Ely the wetland component is narrower, but arable, waste ground, pasture and meadow land is more strongly represented.

Plants such as rushes and sedges are present in both assemblages, reflecting their shared availability, but also their use as a resource in domestic contexts.

Although there are similarities in the basic range and emphasis of cultivated and wild food and economic plants, the Ely samples contain a wider range of dietary resources. The presence of walnut, grape, and fig, for example, suggests both access to imported foods and possibly a higher economic status than would appear to be the case at Wisbech. While this may be due to the socio-economic conditions pertaining to the specific properties that were excavated at the two sites, it may also reflect more generalised differences between the socio-economic status of the two urban centres.

The Market Mews excavation had many limitations, but the amount of environmental data that it has been possible to obtain from this small site indicates there is high potential for obtaining useful information on the past economies and environments of Wisbech. The character of the deposits and the degree of preservation in this excavation suggest that there is high potential for equally significant deposits elsewhere in Wisbech. Bearing in mind that the Market Mews excavation did not reach the bottom of the archaeological sequence, it is likely that preservation will be better in the lower (and earlier) deposits. Hopefully in the future there will be opportunities to excavate larger areas within the centre of Wisbech. Environmental sampling should form an important component of any future work. Specific strategies will be required to ensure that a sufficient quantity of appropriate samples are taken to obtain the detailed information required for answering both site specific archaeological questions, and for addressing broader research issues. This will allow the information recovered so far to be put more firmly into its local setting, and the development of Wisbech as a whole into its regional and historical context.

APPENDIX III

FAUNAL REMAINS

Vernon Phillpot

The single box of animal bones was well packed and well presented. Most of the specimens were in a good state of preservation, with little sign of chemical or physical weathering. A few pieces of bone were stained a much darker brown than the majority which suggests the possibility of a small admixture of earlier material. Other specimens had iron accretions on the surface, which may have come from metal contact within the archaeological deposits.The collection comprises 328 identifiable specimens, mainly broken long bones, ribs, vertebrae, mandibles and skulls. The smaller, non-identifiable bone fragments included a small proportion with evidence for charring.Where it was possible, measurements were taken from the more intact specimens and a low intensity microscope was used to assess the existence or otherwise of possible butchery marks and dog gnawing. The collection is dominated by the remains of the common domesticated mammals, though with some birds, fish and commensal species.

Large mammals	92%
Small mammals	3%
Birds	5%

Table I: *Identified bones as percentage:*

1 THE BIRDS

Considering the position of Wisbech on the banks of the River Nene, its past proximity to the sea and the location within the fen basin, the presence of wild birds, in particular waterfowl, may be expected:

Species	Number of bones identified
Domestic Goose *Anser anser*	7
Brent Goose *Branta berncla*	*1*
Domestic Chicken *Gallus gallus*	*3*
Mallard *Anas platrhynchos*	*1*
Teal *Anas crecca*	*1*
Grey Heron *Aredea cinerea*	*1*
Kittiwake *Riss tridactyla*	*2*

Table 2 *Bird species na dnumber of identifiable bones found*

2 THE NON-FOOD ANIMALS

Amongst the bones were a small number from species that were unlikely to have been eaten. These were probably present as pets, commensals or as incidental intrusions. Most come from the samples produced by wet sieving.

Species	Number of bones identified
Domestic Cat *Felis domesticus*	4
Pygmy Shrew *Sorex minutus*	*1*
Rabbit *Oryctolagus*	*1*
House Mouse cf *Mus musculus*	*4*

Table 3 *Species and number of bones from non-food mammals:*

3 THE FISH

The assemblage was particularly rich in fish. Again, from the location of Wisbech significant amounts of fish would have been available throughout the historic period.

At one extreme there were large Cod vertebrae, at the other, again produced by wet sieving, large numbers of very small vertebrae. The quantification of fish remains is problematic except in large samples as only head bones can be taken to represent individual fishes. Most of the bones found were vertebrae, which are numerous within one fish. Accordingly, only a list of species identified is given:

Species

Cod *Gadus morhua*

Plaice *Pleuronectes*

Herring *Clupea clupea*

Thornback Ray *Raia clavata*

Table 4 *identifiable fish species*

Cod - *Gadus morhua:*

The cod is widely distributed and can be found from the shoreline right down to the continental shelf. In the south of its range, which includes the area around the Wash, it is only present in shallow waters in any numbers during the winter.

In common with many other fish of this type, it is often the younger, smaller fish, which live close inshore. A migratory fish (there is a small, commercially insignificant, resident population) it arrives off the East Coast around October and leaves in the spring. Depending upon conditions, it can stay as late as March or even April. It can be caught using fixed shore cod lines, boat lines and nets.

Plaice - *Pleuronectes*

A bottom-living fish that can be found in depths of 0-200m. It is most common between *10-50m.* Some younger fish will inhabit inter-tidal shore pools and larger fish will come close inshore at high tide to feed on sand and mud flats. Spawning takes place between January and March at depths between 20-40m. The fish is commonly caught inshore during the summer months and can be caught by trawl, line, seine and set nets.

Herring - *Clupea clupea*

A shoal swimming fish that migrates according to its spawning requirements. Spring spawning fish shed their eggs close inshore whilst summer and autumn spawning 'races' often spawn on the edge of ocean banks. Young fish form large shoals that are especially common inshore during their first year. Caught most often by net.

Thornback Ray - *Raia clavata*

The most common ray in shallow waters. Found at depths of 280m but most common in depths between 10-60m. Spawning takes place in inshore waters in the spring, from March to April, and a month or so later the mature males also arrive inshore. Also called the 'roker' in East Anglia - a word of Danish origin. It is commonly caught by trawls but can also be caught by line, especially by sea anglers.

Recent work in Boston (LCCM 80.97) found that the most frequent taxa present were sticklebacks and flatfish. The latter were no longer than 150mm, which Alison Locker points out, could have been washed in, or left stranded by tidal floods. There are many similarities in terms of deposition between the excavations in Boston and Wisbech, including the presence of many small articulated fish skeletons within certain of the flood deposits and floor make-up layers. The possibility exists then that some of the fish remains from Wisbech were deposited during episodic flooding. Further study of the fish remains, although highly desirable, was not possible within the time constraint of this investigation.

Shell Fish

Also identified were small quantities of oyster, mussel and cockle shells, which, because of their often fragmentary nature, were not enumerated. All of these species would have been available close to Wisbech.

4 THE MAIN FOOD ANIMALS: CATTLE, SHEEP, GOATS AND PIGS

Of the 292 post cranial bones identified in the assemblage, 51.3% were caprine (sheep or goat) and 31.8% were cattle *(Bos taurus).* The pig *(Sus scrofa)* was only 4% of the sample. All of these mammals were clearly of the domestic form. No obvious pathologies were identified among the bones of these species.

Cattle:

Most of the post-cranial skeleton was present in the assemblage, (Figure 1.) including the main meat bearing bones (humerus, radius, femur, tibia). Besides data on the specific identification of bones, a detailed record of the part of each bone ('zones') was maintained. The sum of zones for each bone then gives a minimum number for each. From this the minimum number of animals for each species in the assemblage can be calculated. For cattle, this calculation suggests that bones from at least 6 different animals were found

The age at which the cattle died was estimated on the basis of tooth eruption and tooth development (Legge 1992) coupled with epiphyseal fusion data for limb bones (Silver 1963; Habermehl 1961).

The two broken left and right mandibles in the collection retained their third permanent molars (M3), the most useful tooth for ageing. These suggest an age at death of between 15 and 26 months. Two further loose M3 came from older cattle which had been killed between 3 and 6 years of age.

Most cattle have completed limb bone fusion by the time they are 3.5-4 years old. The bones in the sample that could be assessed show that limb bone fusion was often incomplete, which suggests that many of the animals died no later than this time. Amongst the post cranial bones were two juvenile metacarpals that suggest the presence of at least one calf.

The age structure of the cattle population, small though the sample is, suggests that these were the product of a specialised meat trade. The age classes are those of young adult animals which are likely to have been raised to the best meat weight before killing. The collection contains few very young or old animals which would be the by-product of some other form of husbandry.

Sheep/Goats

By the usual criteria of recognition, the bones are those of sheep. No specimens of goat were identified. As with the cattle, most of the post-cranial skeleton was present (Figure 2) including the main meat bearing bones. From a summation of the bone zones it would appear that the minimum number of animals present was 9. The small collection of mandibles present indicates a minimum number of 8. The age at slaughter of the sheep/goats was also estimated using tooth eruption (Payne 1973; Simonds 1854) and epiphysis fusion data (Silver 1969; Habermehl 1961, Wolf-Heidegger 1961, Legge *et al*. 1991).

The mandible tooth evidence, again using the MS, suggests that about 7% of the sheep died between 10 months and 20 months, 14% between 20 months and 34 months, 57% between 34 months and 65 months and 21% over 64 months.

The epiphysis fusion data confirmed that most sheep in the assemblage died in their adult years. There was evidence for only one lamb in the collection, an animal aged less than 2 months of age at death.

Where the evidence from these two sources is strong, it suggests most of the sheep died between the ages of 3 years and 5 years+. This does not suggest fattened lambs or hoggets but older sheep eaten as mutton, culled as barren or redundant ewes, or possibly from animals as by-products of the woollen trade.

Pigs:

Unlike the two other species, the pig was represented in the assemblage by a low number of post-cranial bones. Apart from one fragment of a humerus shaft, the main meat bearing bones were absent. The minimum number of pigs on the site was two, of which one young and one older animal were represented.

5 BUTCHERY EVIDENCE ON THE BONES

Cattle: 10 specimens have single knife cuts and 5 have multiple fine knife cuts. These are likely to be associated with skinning and dismemberment. Some bones were cut through with a heavy cleaver or similar implement; 3 bones show single chop marks and 6 have multiple chops marks. At least five bones from the leg and foot were also split lengthwise, probably as the result of human intent in order to remove the fatty marrow. Some form of cleaver also split a lumber vertebra and an astragalus.

Sheep: 5 bones showed signs of single knife cuts and 9 had multiple knife cuts. Chop marks were evident on seven sheep bones, 6 having a single chop mark and 1 showed multiple chop marks. At least 10 sheep bones had been spilt lengthwise including one thoracic vertebra. Splitting was found mainly on rich marrow producing bones (humerus, tibia, and metapodials). One foot bone, had been split and heavily gnawed.

Pig: One rib had fine knife cuts.

Birds: Three domestic goose bones had been marked with a knife. One was a left scapula and two were left radii. The latter are discussed below under 'Worked Bone'.

Fish: At least two of the cod vertebrae had been sliced across, indicating the use of some sort of knife or chopper.

6 DOG GNAWING

Dogs were a major cause of bone loss in all bone assemblages. The following incidence of visible gnawing was identified:

12.5% of pig bones had evidence of gnawing

7.5% of cattle bones had been gnawed.

20% of sheep bones had been gnawed. This species showed the greatest evidence of gnawing.

The most commonly gnawed sheep bones were metapodials (28% had been gnawed); these are bones with little flesh covering and, although of some utility as bone artefacts, appear in this instance to have been discarded during butchery.

7 WORKED BONE

1 A net needle, (context 125, sf 11) examined by Craig Cessford. This was made from the anterior surface of a thick cattle bone such as the tibia. This complete, roughly worked needle is 207mm in length, sharpened to a point at one end. The head is 22mm wide, peirced by a regular hole 4mm in diameter. It is closely parralled by an unphased find from Norwich (Margeson 1993, no. 1449 p 187). Such large needles must have been used for coarse work, such as making or repairing sails or nets as the head would have interfered with fine work.

2. The broken needle (context 48, sf 58) was made from an unidentifiable long bone.

3. Two worked goose bones, both radii. One had been sharpened at the distal end, the other had been partly whittled at the same end, having had its ligamental prominence sliced off. It may be possible that these bones had been cut for use as stylii.

4. The find from context 15, (sf 59) was examined by Craig Cessford. This is a roughly worked, double pointed implement 71mm long (incomplete) with a maximum width of 24mm. The function of such tools is unclear. Suggestions include netting tools, thread twisters, arrowheads and tools for eating shellfish. What can be said for certain is that this type of object is frequently found in contexts with strong maritime links which applies to Wisbech. These objects are generally 60-100mm in length and were frequently made from the snapped off ends of bovine nasal bones.

8 COMMENT

The size of the Wisbech faunal assemblage is small, but is informative of the social context represented in the excavated area. The impression gained from its study is that it represents waste from domestic consumption. The age structure of the cattle (mainly early maturity) and sheep (mainly older animals) suggests that these were the product of specialised husbandry systems designed to supply food from the country to the urban centre. The presence of goose and chicken bones in small numbers adds to this impression. Pigs were commonly maintained within cities and fed domestic waste even into recent times. This is the likely source of the few animals represented. The people supplemented their diet by the use of wild fowl and rabbit, and regular exploitation of fish and shellfish. These would also be the produce of specialist activities, though not all need have been outside the urban community. The net needle might well support this. The presence of a cat and possibly a mouse would also not be out of place in a domestic site.

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APPENDIX IV

METALWORKING WASTE

Catherine Mortimer

Evaluation and excavation at three areas of the Market Mews site gave a sequence of medieval and post-medieval deposits relating to at least thirteen building phases. Metalworking evidence came from some of the earliest contexts investigated in Area II, dating from the 14th century, notably from the fill of a wood-lined drain (cut 112), and from the surfaces through which this drain cuts. The nature of the metalworking activities was investigated as part of the post-excavation programme.

1 ANALYSIS

Visual analysis, using a binocular microscope, allowed the identification of the material types (Tables 1 and 2). The material was weighed, using scales which are accurate to 2g (up to 126g) or 5g (up to 2.5kg). A magnet was used to confirm the identification of iron objects and of hammerscale. Further analysis was carried out where necessary to identify the type of copper alloy using non-destructive surface X-ray fluorescence (XRF), which identifies the main metallic components present (Table 3).

2 THE MATERIAL

A large amount of the material recovered was furnace/hearth lining or vitrified furnace/hearth lining. From the evidence of the hearth found in context 113 (see below), it may be that the structures at this site are more likely to have been hearths (pit-like) rather than furnaces (with superstructures, generally related to smelting). During many high-temperature processes, especially amongst metalworking activities, clay may be fired so strongly as to cause the lining to react with the fuel, and then partially or completely melt. The clay used for linings may have been less refractory (able to withstand high temperatures) and less carefully prepared than that used for the manufacture of crucibles and thus more vulnerable. The lining may keep some of its form, preserving some areas as fired clay (either reduced or oxidised), despite heavily slagging on the other side. Where the hearth lining was heavily vitrified, it may have run off or been raked out as separate dribbles of dark, glassy 'slag'.

Many of the pieces of hearth lining have traces of corroded copper alloy on them, which suggests that they were used in connection with melting copper alloys. In most cases, the form of the lining fragments mean that they may well have come from structures similar to the small near-complete bowl-shaped hearth found in context 113, which is heavily slagged and has copious amounts of copper alloy deposits. This is an unusual find. Amongst the interesting features are the rough, irregular clay walls (13-20mm thick), suggesting that a small pit (diameter about 110mm, 80-90 mm deep) was dug into the ground and then clay was used to line the pit. The irregularity of the walls strongly argue against this being a crucible as such, since most metalworkers would strive to minimize stresses and strains within the crucible walls by making them of an even thickness. On the outside (the side in contact with the soil), the clay is reduced-fired in most areas although there is a hole through the side around which the clay is oxidised. There is no evidence for intense vitrification of the clay in the area of this hole, which would be expected if this was the tuyere (bellows nozzle) position. Instead, the hearth was clearly subject to very high temperatures directed

in from above, as the entire preserved length of the rim is very strongly vitrified; most medieval crucibles are heated from the outside and are thus vitrified both outside and inside. Possibly the copper alloy to be melted was held in a crucible placed within the hearth, although there is no evidence of any crucible fragments at the site; presumably, if a crucible was used, the melt must have been partially or totally unsuccessful, given the substantial amounts of copper alloy on the hearth itself. Alternatively, it is possible that the copper alloy was melted directly in the hearth, under a layer of charcoal (some of which can still be seen within the vitrification and copper alloy deposits) and then tapped off into a mould or moulds lying downslope from the hearth. It is extremely unlikely that the hearth was used for primary copper alloy smelting, as the nearest copper sources are far away, and ores were rarely transported long distances in an untreated form.

As some of the hearth lining and vitrified hearth lining has no copper-alloy deposits, some of this may relate to ironworking rather than copper-alloy working.

Small amounts of copper alloy waste were found, some of which clearly show that they were molten when they hit the ground. One piece of sheet copper alloy was found concreted with other materials in a lump of ferruginous concretion (see below) in context 79.

Another common material at the site is ferruginous concretion. This is iron-rich material, which contains a variety of inclusions - pieces of fuel, stone, pottery, fired clay, hammerscale, slag, pieces of copper-alloy and iron objects - bound together by iron corrosion products. This material would be formed in a damp and iron-rich environment. It can therefore be seen as the man-made equivalent of iron panning, and ironworking deposits laid down in an area which was prone to flooding would presumably be more likely to form ferruginous concretions than they would in dry areas.

The amounts of true ironworking slag (rather than iron-rich vitrified hearth lining) are relatively minor compared to many other sites, but they do indicate iron was worked at or near the site. The precise nature of the ironworking involved is not immediately clear, as much of the material is non-diagnostic. Certainly none of it is tap slag (which would have indicated making iron from ore) and much of it can be classified as smithing slag, albeit with small areas of 'runnier' material. One fragment from context 111 may be part of a smithing hearth bottom, a small plano-convex block of ironworking slag, formed in ironsmithing. The spherical hammerscale recovered from some of the environmental samples and from context 97 suggest that at least some of this ironsmithing involved primary working (*eg* removing slag particles from iron billets) rather than secondary working (*eg* making iron artefacts by forging), which would normally produce flake hammerscale. Many of the iron objects found in or with the ferruginous concretion have corroded into small flakes, which may mask the presence of some flake hammerscale. The iron objects include some short lengths of wire or rod. The relatively large quantities of ferruginous concretion (nearly 4kg) is also evidence for ironworking being carried out in the area.

Fuel is also relatively frequently found. There are several large deposits of coal, but charcoal and possibly coke were also present.

Minor material types included within the 'industrial debris' samples are fuel ash slag (formed by the reaction of clay with plant materials at high temperatures), fired clay, pottery and organic material (probably cess). One of the small pieces of fired clay from context 93 has a surface which may have been prepared to give it a smooth finish, possibly as a mould. Two unidentified samples may be pieces of fuel and ore.

3 DISTRIBUTION

The largest amount of material came from context 97 (7.8kg, more than half the total weight at the site), and it included evidence for high temperature processes involving both copper-alloy and iron. This is the fill of the wood-lined drain 112, and the feature cuts surface 111 which comprised 'compacted slag' (actually a mixture of copper-alloy waste, ferruginous concretion, ironworking slag and hearth lining). Also in the drain is fill 113 which contained the hearth and other vitrified hearth lining. The other contexts with notable weights of metalworking material are 93 (which has a mixture of metalworking debris of a rather similar character to that in contexts 97 and 111, so it may be redeposited) and 117 which is mainly ferruginous concretion.

4 XRF ANALYSIS

Analysis was carried out on a small selection of corroded copper-alloy materials (casting waste or deposits on ceramic materials). Surface analysis of corroded copper alloys is problematic, in that corrosion may have preferentially removed or enhanced particular elements. Furthermore, where copper alloys are at a high temperature, metals such as zinc tend to be driven off as vapour, thus reducing the amount detected in metal deposits on ceramics (although at the lips of crucibles zinc levels may be high). However XRF analysis does indicate that the copper alloys at the site included tin-containing alloys (bronzes), zinc-containing alloys (brasses) and some alloys which contained zinc, tin and lead (quaternary alloys). All three types of copper alloy are known to have been used to cast a wide variety of artefact types during the medieval period, so it is not possible to suggest the types of artefacts which were being made at the site.

5 CONCLUSIONS

Over 12kg of material from high-temperature processes was examined; a smaller amount of other material which has no obvious links with high-temperature working was also identified and catalogued. Evidence for melting copper alloys was discovered, although the lack of any identifiable mould fragments or part-formed artefacts means that it is difficult to say exactly what happened to the metal after it was melted; the alloys indicated by XRF analysis are not characteristic of any particular artefact types. Although it is clearly connected with copper alloy working, the hearth from context 113 remains rather a mystery, and further parallels should be sought for this material. No crucible material was identified. Besides melting copper alloys, ironworking, probably smithing, was also carried out at or near the site.

Ctxt.	Material	Sample	Weight	Description
15	fc	6	2	reduced
15	fuel	6	2*	
15	fuel	6	2*	charcoal
15	fuel		6	charcoal?
17	vhl/fl		22	
23	fuel	7	2*	?coke
34	slag fe staining		240	with extensive
44	ca waste	13	2*	flakes/chips
44	fas	12	6	
44	fas	13	4	
44	vhl/fl	13	2*	
48	h/fl		8	incl part of hazelnut shell
48	vhl/fl	20	2	
50	fc		18	
73	vhl/fl		4	
75	fc		6	with slag drips
79	fe conc		22	with CA sheet
79	fuel		2	coal
79	h/fl		14	one piece with trace of CA
83	slag		6	with fe obj?
87	fe conc		14	
87	h/fl		30	with CA traces, charcoal, appears v sim to 113
87	slag		46	dense
93	ca waste		14	casting
93	fc		10	one piece with possible prep surface
93	fe conc		175	incl charcoal, possible fe obj frags, one sheet-like
93	h/fl		66	one piece with trace of CA
93	organic		14	cess?
93	slag		220	
93	unid		8	fuel?
93	vhl/fl		220	incl one frag with CA trace, appears similar to 113
97	ca waste	16	6	casting
97	ca waste		46	casting
97	fe conc	16	505	incl CA staining, stones, charcoal etc.
97	fe conc		669	varied content, incl bits of CA and pot, occ sph hs
97	fe obj?		8	
97	fuel		10	coal
97	fuel		12	with yellow deposit
97	h/fl		34	
97	pot	16	10	
97	slag	16	240	
97	slag		2445	varied appearance, mixed with fe conc
97	sph hs	16	8	
97	unid		32	ore?
97	vhl/fl	16	80	varied incl charcoal and stones
97	vhl/fl		284	tr CA on one bit
111	ca waste		8	casting
111	fe conc		321	
111	slag		390	fe incl ?shb
111	h/fl		485	
111	vhl/fl		178	some very ‘runny’
113	hearth		355	parts of, very slagged, lots of CA
113	vhl/fl		12	
114	sph hs	22	2	
114	vhl/fl	22	26	with charcoal, fe obj, iron-rich slagging
117	fe conc		270	with CA staining
117	fe obj?		46	
117	pot		2	glazed

Table 1 *Identification of material types*

Total weight recorded = 12.638kg. Weights which are marked with an asterisk are nominal.

Ctxt	*ca waste*	*fas*	*fc*	*fe conc*	*fe obj*	*fuel*	*h/fl*	*slag*	*vhl/ fl*	*other*	*Totals*
15			2			10					**12**
17									22		**22**
23						2					**2**
34								240			**240**
44	2	10							2		
48							8		2		**10**
50			18								**18**
73									4		**4**
75			6								**6**
79				22		2	14				**38**
83								6			**6**
87				14			30	46			**90**
92			255								**255**
93	16		10	175	18	46	66	220	270	22	**843**
97	110		34	2513	8	1378	34	2693	896	166	**7832**
111	14			911		190	485	540	393		**2533**
113									367		**367**
114								2	26		**28**
117				270	46					2	**318**
Total	**142**	**10**	**325**	**3905**	**72**	**1628**	**637**	**3747**	**1982**	**190**	**12638**

Table 2 *Find types by context (g)*

Context	SF	Material type	XRF
93	-	CA waste #1 (on vhl)	**Cu** (Pb) (Sn) tr Zn
	-	CA waste #2 (on vhl/fc)	**Cu** tr Pb
97	-	CA waste in ferruginous concretion	**Cu** (Zn) (Pb)
	8	CA waste	**Cu** Pb (Sn)
	8	CA object #1	**Cu** (Pb)(Sn)
	12	CA object #2	**Cu** tr Pb tr Sn
		CA object	**Cu** (Sn) tr Zn tr Pb
111	-	CA waste	**Cu** Pb Sn (Zn)
	21	CA strip	**Cu Sn** (Pb) tr Zn
113	-	CA waste on hearth #1	**Cu** Zn Pb Sn
	-	CA waste on hearth #2	**Cu** Zn Pb (Sn)
	-	CA waste on hearth #3	**Cu** Zn Pb
	20	CA object	**Cu** Pb Sn

Table 3 *Qualitative XRF analysis*

Elements in bold were detected in large amounts, those in ordinary type were detected in small amounts, those in brackets were only detected at minor levels and 'tr' = trace. Cu = copper, Zn = zinc, Sn = tin, Pb = lead. Iron was detected in all samples.

Codes for Tables 1 to 3

ca waste = copper alloy waste
CA = copper alloy
fas = fuel ash slag
fc = fired clay
fe conc = ferruginous concretion
fe obj = iron object
h/fl = hearth or furnace lining
shb = smithing
sph hs = spherical hammerscale
unid = unidentified material
vhl/fl = vitrified hearth lining or furnace lining

APPENDIX 5

SEDIMENT MICROMORPHOLOGY

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Summary

Micromorphological analysis was conducted on the sediments of presumed floor deposits (14th to 16th century) at the site of Market Mews, Wisbech, Cambridgeshire. Because of the finely laminated nature and the variable texture and composition of these sediments, high resolution thin section analysis was used to increase the level of stratigraphic detail, and to enhance the interpretation of natural and human activity on the site. Major differences in the composition of the 14th and 16th century floors indicate changes in the methods of building construction and the use of the area over time, while sediments from the intervening period show evidence for local activity in the region of the site, but an absence of recognisable floor surfaces. Occupation layers are interspersed with over bank flood deposits, reworked river-derived very fine sand and silt, and a thick channel infill (roddon) deposit. This indicates that the site was probably located on the bank of a small tidal river channel which flooded periodically, and which at one point shifted its bed directly over the site.

1 INTRODUCTION

During the excavation at Market Mews, Wisbech, in August, 1996, a sequence of clearly stratified Medieval deposits were excavated to a depth of 4.2 m. In the field, this sequence was observed to consist of finely laminated organic material and occupation debris separated by layers of virtually sterile very fine sand and silt, which occasionally reached depths of several tens of centimetres. On this basis, the site was interpreted to consist of a series of construction/occupation phases interrupted by episodes of flooding. However, due to the restricted area of the excavation (16.5 m^2), architectural features were few and incomplete, making it difficult to evaluate the nature of the structures or the type or extent of human activity. Thin section micromorphology was employed in order to investigate the microscopic composition and structure (the size, shape and arrangement of particles and voids) of key contexts, in order to enhance the excavator's ability to interpret the activities that occurred on the site and to evaluate the hypothesis that the site was periodically affected by flooding.

2 METHODS

Five undisturbed sediment blocks for micromorphological analysis were taken from four locations in the ready-made section faces, following the procedure outlined by Courty *et al.* (1989). From the north-facing section of AI, context 21 was sampled during a site visit by C.A.I. French (1996a) in order to target the finely laminated organic and sand/silt lenses thought to be floor levels of 16th century date (Profile 1, hereafter thin section 1). Profile 2 was taken from the north-facing section of AII, and includes the bottom of context 22, a presumed flood layer, and context 15, which was thought to consist of successive floor deposits (thin sections 2 and 3). Prior to the close of the site, the excavators sampled context 46 on the south-facing section of AIII (Profile 3, hereafter thin section 4), which was thought to be a well-preserved floor layer due to its finely laminated sediments, and has been provisionally dated to 1350-1450 AD. Pro-

file 4 (hereafter thin section 5) was taken by the excavators from the west-facing section of AIII, through contexts 48, 114, 119 and 134. These were also thought to represent floor layers, and context 134 was of special interest due to its thick deposit of carbonised organic material and its association with the an oven immediately to the west of the section.

All sample blocks were taken to the geo-archaeology laboratory at the Department of Archaeology, University of Cambridge, where they were air dried, impregnated with a crystic polyester resin, and thin sectioned following Murphy (1986). Thin sections were analysed at magnifications ranging from x5 to x250 on petrological microscopes using transmitted light (plane polarised and crossed polarised light), oblique incident light and UV autofluorescence. When microstratigraphic layers within a single context were visible under the microscope, they were designated as sub-layers within that context by the use of a number after a decimal point (e.g. context 21.5 is a fine layer within context 21). Micromorphology descriptions were made using the internationally accepted terminology of Bullock *et al.* (1985) to facilitate the comparison of these results with similar work conducted at other sites (e.g. Ely Forehill (Milek and French 1996); Peterborough Long Causeway (French 1996b), London Jubilee Hall (Macphail 1986)). Time did not permit a full mineralogical analysis, but it is recommended that future work carried out on these thin sections include mineral identification and quantification, and sub-microscopic elemental analysis on those features which were not identifiable on the basis of their optical properties alone. The thin sections are currently stored as part of a reference collection in the McBurney Geoarchaeology Laboratory at the University of Cambridge.

3 RESULTS AND DISCUSSION

Thin Section 1 (Context 21)

In thin section 1, it was possible to see that context 21 was in fact composed of 7 distinct layers (contexts 21.1-21.7; see Tables 1 and 2 and Figure 1). On the basis of sedimentary composition, these layers can be grouped into three main horizons. The lowest of these horizons, which contains contexts 21.4-21.7, is a heterogeneous clay loam containing trace amounts (up to 1% only) of anthropogenic material such as small fragments of bone, egg shell and lime plaster, as well as gravel-sized clay aggregates, which should also be viewed as anthropogenic inclusions. All inclusions were deposited randomly through out the layer rather than being concentrated on an occupation surface, which suggests that they are merely the result of local domestic and building activity in an area close to the sampling location. This horizon also has a significantly higher organic component than the sterile horizon above it (contexts 21.2-21.3), and includes two fine horizontal layers composed of articulated phytoliths and plant matter that had decayed *in situ* (21.4 and 21.6; see Figures 3 and 4). The phytoliths are of two types: smooth rods, which are most typical of grass stems, and dendritic rods, which are most common in the suite associated with husks (Arlene Rosen, pers. comm.). It can therefore be assumed that they represent the deposition of entire herbaceous plants, rather than selective parts of them. In addition, the remarkable preservation of the dendritic rods, which are very fragile and prone to breakage by mechanical disturbance, indicates that they had been left undisturbed *in situ* since the time of the deposition of the fresh plant material (Alex Powers-Jones, pers. comm.). It seems likely, therefore, that they were rapidly sealed after deposition. The particle size distribution of the mineral component suggests that it originated as river mud, and it is therefore interpreted as river-derived, redeposited sediment, which accrued fairly rapidly during the course of nearby human domestic and building activity.

The horizon above (contexts 21.2-21.3) is just over 1 cm in thickness and consists of a homogenous, virtually sterile fine sandy silt loam. It is lighter in colour than the layer below due to significantly lower clay and organic contents (see Tables 1 and 2). In the uppermost 2 mm of this horizon, the sediment has been compacted and shows the horizontal crack structure that is characteristic of trampled surfaces (Ge *et al*. 1993). Above this floor surface, context 21.1 contains a mixed accumulation of domestic debris, such as fragments of pottery, bone, and a coarse lime plaster or mortar, all of which accumulated on top of and were trampled into the underlying sediment while the floor was in use (Figure 2). The presence of mortar gives some indication of the materials used in the construction of the 16th century house. Due to the trampling of the upper boundary of context 21.3, and the accumulation of occupation debris above it, it is possible that this unit was intentionally laid down as flooring material. Such a rapid depositional event would also explain the *in situ* preservation of the herbaceous plant material and phytoliths in context 21.4, which is immediately below.

Thin Sections 2 and 3 (Contexts 22 and 15)

Profile 2 consists of two thin sections that were taken adjacent to one another in the north-facing section of AII. They were staggered so that the lowest horizon in thin section 2 (contexts 15.3-15.5) overlapped with the uppermost horizon in thin section 3 (contexts 15.6-15.7), thereby producing a continuous profile over a depth of 24 cm.

Context 22, the uppermost horizon in thin section 2 (see Table 3 and Figure 5), consists of very well sorted very fine sand. Like all of the fine sand and coarse silt in the sediments of this site, it is composed predominantly of quartz (c. 75%), with lower concentrations of carbonate (15%), feldspar (including plagioclase; 4%), biotite (2%), muscovite (2%) and glauconite (1%). In the field, context 22 was originally interpreted as a flooding event due to its depth, homogeneity, and lack of anthropogenic inclusions. However, it is our view that the homogeneity of the layer, which is visible both in thin section and in section photographs, and the near perfect sorting of its mineral component (i.e. the absence of clay) provide evidence against its interpretation as a catastrophic flood deposit. The high degree of size-sorting could be due to one of two physical processes:

i) sorting by wind, which would suggest that the material was originally derived from coastal sand dunes; or

ii) sorting by a fairly slow river of uniform velocity that had carried its bedload of sand over a long distance, a characteristic that is typical of many fenland rivers (Reading 1996).

The deposition of this well sorted material on the site could therefore be due to one of two processes. It could have been intentionally selected and deposited by humans in order to elevate and level the ground surface, an action that has been observed at other low-lying urban sites (e.g. Jensen 1993). It should be noted, however, that the depth and quantity of sand involved would have made this a very labour intensive project. The alternate scenario is that context 22 is an entirely natural deposit, and represents a river channel infilled with a fine, sandy bedload. Context 22 does in fact look identical to the roddon deposits so common in the fens, which consist of fine sand and silt infilling tidal (salt marsh) creeks (Zalaciewicz 1985/86). This interpretation will be explored further below, under the discussion of context 15. It is extremely unlikely, however, that context 22 represents a catastrophic flooding event washing over the floors of a standing structure, since the lowest horizon of such a deposit is more likely to be

mixed, coarse and contain both organic and anthropogenic inclusions. Flood deposits typically contain a "fining up,, sequence, with coarser material at the bottom of the deposit (material that was the first to settle out of suspension when a river overflows its banks), and finer silts and clays at the top, as the flood subsides and the rate of flow decreases (Reading 1996). In the case of context 22, no such "fining up,, sequence is visible in thin section, nor was it visible at the macroscopic scale in the field.

Below context 22, context 15 is represented by a series of alternating layers of clay (contexts 15.1, 15.8 and 15.10) and very fine sandy silt loam (contexts 15.3 to 15.7, 15.9 and 15.11; see Tables 3 and 4 and Figures 5 to 8) which were respectively interpreted as clay floors and flood events. The clay layers are nearly identical in composition, consisting of 60% clay and 40% very fine sand and silt, typical of mud that accumulates in very low energy environments or standing water, where fine mineral material is permitted to settle out of suspension (Reading 1996). The clay layers in thin sections 3 and 4 are massive in structure, save for the channels that were burrowed into them post-depositionally by soil fauna. This structure, along with the high frequency of iron impregnation of the fine mineral material, indicates that these layers were deposited while wet. There is no evidence that these layers were intentionally constructed mud floors, since there are no anthropogenic inclusions embedded within them, and there is no occupation debris accumulated above them. In addition, they do not possess a horizontal crack structure, or any surface disaggregation or compaction, characteristics which are normally thought to be typical of trampled surfaces (Ge *et al.* 1993; Courty *et al.* 1994; Matthews *et al.* 1997). On the contrary, these layers seem to have an entirely natural origin. Section A-B (see section drawing and section photographs) shows dark, clay-rich layers (context 23) interdigitating with the roddon silts at the western edge of context 22 and occasionally intercalating with these channel silts at the base of the deposit, features which could only be a result of natural processes.

The layers of very fine sandy silt loam (contexts 15.3 to 15.7, 15.9 and 15.11), which occur between the clay layers in context 15, are characterised by a high porosity and complex microstructure, including packing voids between sand grains, irregularly shaped vughs and elongated channels. They contain very few anthropogenic inclusions, all of which are randomly distributed and oriented. These layers appear to be composed of reworked roddon silts, while the presence of anthropogenic inclusions indicates nearby domestic activity. It is difficult to interpret the agency of deposition and the source of these deposits on the basis of thin section analysis alone, but a close inspection of photographs of section A-B shows them to be intercalated with the layers of mud described above. For this reason, context 15 is thought to have originated as a pool adjacent to a tidal creek, which occasionally received an inwash of fine sand, silt and fragments of any anthropogenic material that happened to be in the vicinity. At some point the bed of the tidal creek shifted, and context 22 developed as the channel became infilled with very fine sand and silt, forming a typical roddon deposit.

Thin Section 4 (Context 46)

Thin section 4 is composed of a series of 15 finely laminated deposits of variable composition. Four floor surfaces were interpreted (contexts 46.7, 46.9, 46.12, 46.14) on the basis of the compaction of the underlying sediments, the significantly higher concentration of organic and anthropogenic inclusions (see Tables 7 and 8), and the horizontal bedding of the anthropogenic and organic component, particularly the amorphous organic fine material, which is the result of *in situ* decay of plant material (see Figure 9). Unlike the 16th century floor in thin section 1, which contained gravel-sized inclusions of pottery and lime plas-

ter, the floors in thin section 4 are characterised by much finer material (with the exception of the gravel-sized clay aggregate in context 46.9), much higher organic contents, and a broader suite of domestic debris such as different types of bone (including fish), egg shell, charcoal and ash. Neither pottery nor lime plaster are present in the floors of thin section 4. However, context 46.7 contains a gravel-sized aggregate of what appears to be burnt clay, which may represent daubing or hearth-lining material. The floors in context 46 therefore seem to be more indicative of domestic kitchen activities than the floor in context 21.

The sediments separating the floor deposits have variable origins. Situated between floors 46.12 and 46.14, context 46.13 is composed of very well sorted very fine sandy silt, with gravel-sized, horizontally-oriented aggregates of clay making up approximately 15% of the observable area (see Table 7 and Figure 9). The sediment in this layer appears to be redeposited, although it is not possible to determine whether it accumulated gradually during a "stand still,, phase in the life of the structure, or whether it represents a single phase of dumping, in which case it may have been intentionally laid as a smooth, clean floor surface on top of which the debris in floor 46.12 accumulated. Due to the horizontal orientation of the clay aggregates and the fact they have horizontally flattened upper surfaces, it seems more likely that they accumulated gradually and were occasionally trampled.

In contrast, the sediment between floors 46.9 and 46.12 (contexts 46.10-46.11), between floors 46.7 and 46.9 (context 46.8), and above floor 46.7 (contexts 46.4-46.6) consists of laminated silt and silty clay. These layers resemble levee or floodplain deposits, where fine material suspended in over bank floodwater settles in sorted bands of silt and clay when the speed and turbulence of the water has dropped (Reading 1996). In addition, 46.5 contains and is surrounded by iron-impregnated clay and plant remains (iron pans 46.4 and 46.6), indicating that the sediment was deposited while wet. These layers are best interpreted as natural over bank flooding events. Context 46.10, which is above the undisturbed, horizontally laminated context 46.11, and below floor 46.9, appears to have been substantially affected by post-depositional bioturbation. Besides being substantially reworked, faunal burrowing and *in situ* organic decay left vughs (irregularly shaped voids) and channels within 20% of the observable area. There is also a large worm channel (10% of the observable area), that has been infilled with loose sand and anthropogenic debris from the layer above. It would appear, therefore, that following the flood event that deposited contexts 46.10 and 46.11, and prior to the reoccupation of the site, there was a period of time in which unit 10 dried out, and foil fauna were permitted to move in and disturb the upper portion of the flood deposit.

Thin Section 5 (Contexts 48, 114, 119 and 134)

Two occupation surfaces with accumulations of organic debris were identified in thin section 5 (Table 9, Figure 10). The lower surface (context 134.2) is situated on reworked/redeposited river sand, and is characterised by compacted fine silty sand, horizontally bedded, decomposed organic remains, a range of phytolith types, and food preparation debris such as fragments of bone and egg shell, ash and charcoal. Above floor 134.2 is a black, 3.2 cm-thick, horizontally bedded deposit of charred and partially charred wood and plant remains (context 134.1; Figure 13). Material that could be identified due to a good cross-section included oak, alder and birch (including twigs), and herbaceous (grass/sedge/rush) stems and leaves (Alan Clapham, pers. comm.). Plant macrofossil analysis will give a better indication of the range of plant materials in this layer. The mixture of woody and herbaceous materials suggests that context 134.1 was produced by the raking out of a domestic hearth or oven. The twigs and herbaceous remains could be kindling and/or food-processing waste that was added to the fire.

Above the layer of charred organic remains is an horizon of redeposited river sand containing randomly oriented, rectangular aggregates of laminated levee material (contexts 119.1-119.3). The size of the aggregates in context 119.1 (up to 4cm in length), their random orientation, and the lack of disturbance of a fine organic lens (context 119.2), all suggest that the deposit is the result of a rapid dumping event.

This dumping event was succeeded by a sequence of alternating layers of decomposing organic matter and compacted sandy silt loam, each between 1 and 5 mm thick (contexts 114.1-114.6; see Table 9 and Figures 10 and 12). The tight, horizontal bedding of these layers, their heterogeneity, the compaction of the mineral component, the small amount of anthropogenic material (bone and shell fragments) and the variety of clay and marl inclusions all suggest that these layers represent a trampled floor that had fresh plant material strewn on its surface. This floor level is significantly different from all of the other floors in thin sections 1, 4 and 5 that have already been discussed, both in the type and quantity of accumulated debris (e.g. less bone, no ash or egg shell, more herbaceous material). This may indicate a change in the use of space and/or the methods of maintaining the floor, but interpretation can proceed no further based on thin section analysis alone. The artefacts, pollen and macrofossils from this horizon will give a better indication of the use of space in this area.

4 SUMMARY AND CONCLUSIONS

Micromorphological analysis of finely stratified deposits at Market Mews, Wisbech, was able to increase the level of stratigraphic detail available to the archaeologist, and to contribute to the interpretation of natural and human activities at the site. This is especially true of the fine floor levels, which were only 4 to 15 mm thick, making it very difficult to distinguish them in the field and making it virtually impossible to sample them discretely for macrofossil analysis. The microscopic composition of these floors, as seen in thin section, was therefore the only available source of information about the intensity and type of occupation taking place on the site.

At this site, the preferred flooring material was redeposited very fine river sand, which would probably have been soft, well drained and clean. Activities that produced the lowest of the sampled contexts, context 134, caused food processing debris to accumulate in the floor, as well as a thick deposit of charred and partially charred fuel (both wood and herbaceous plants) that had been raked out of the nearby oven. The floor in context 114, above, is very different in character. It is difficult to interpret the activities that occurred on this floor due to the lack of inclusions, but it is possible to propose that either the activities occurring in the room resulted in the deposition and trampling of fresh organic matter, or that plant material was intentionally strewn on the floor as a covering. Context 46 contained four separate floor layers, all of which contained food processing debris. The two lowest ones were situated on redeposited river sand, but the two highest floors were situated on and separated by natural flood events that left clayey levee-like deposits. Increased flooding seems to have changed the pattern of occupation on the site, because the thin sections taken from contexts 22 and 15 do not contain any floor layers at all. Instead, they contain layers of river mud and reworked very fine sand and silt, and are sealed by a thick deposit that probably represents an infilled tidal creek channel. Highest in the sampled sequence, in context 21, the debris that accumulated in the floor layer was significantly coarser, and consisted of relatively large fragments of pottery and plaster rather than microscopic food preparation residues. This suggests that a different range of activities were occurring in context 21 than in the earlier occupation levels.

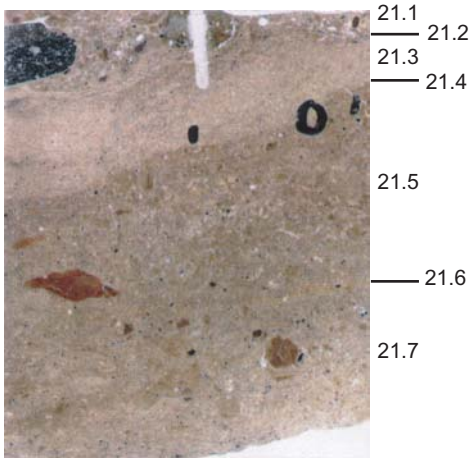
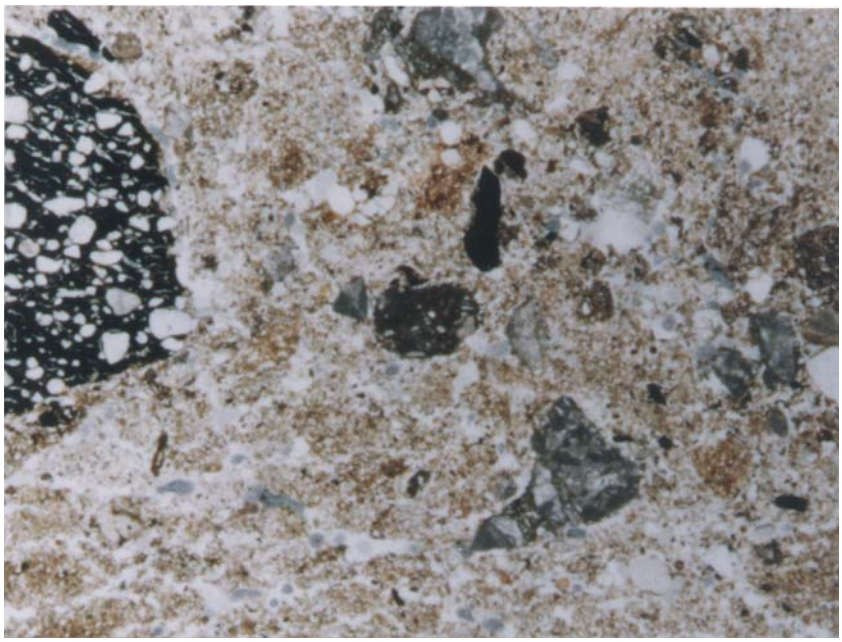
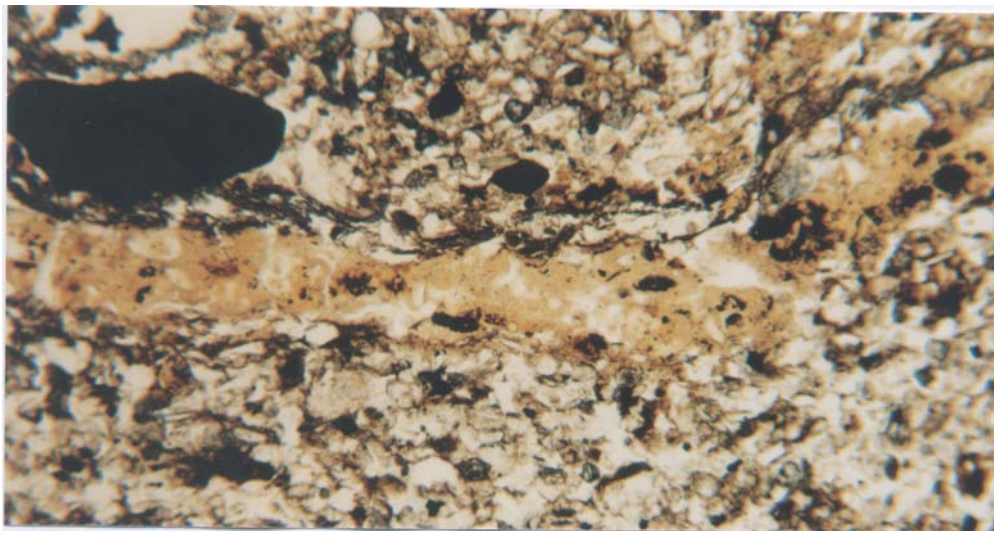


Figure 1 *Thin section. Scale 1:1*



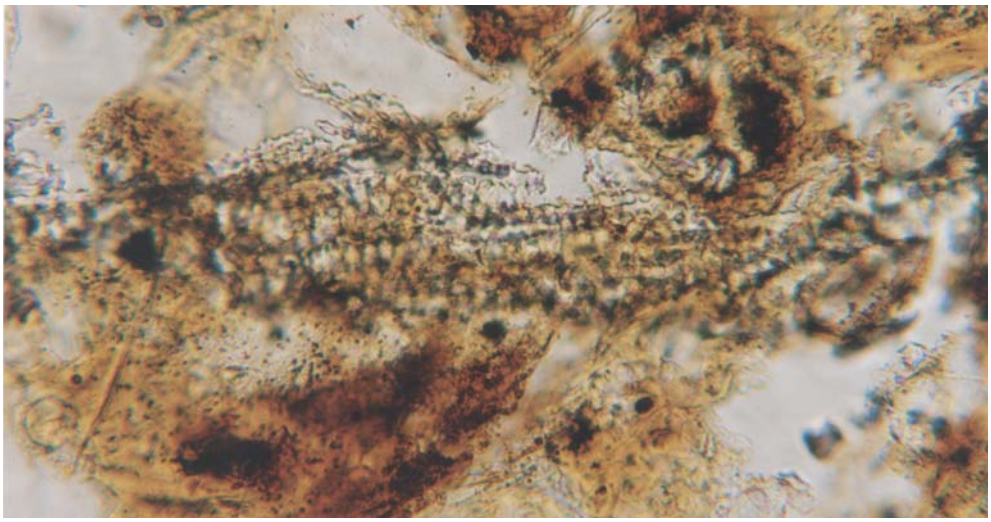
1mm

Figure 2 *(above) Context 21.1 which has been interpretted as a floor. NB its heterogenous composition, a pottery fragment, mortar fragments, and, at the bottom, horizontal planar voids*



100mm

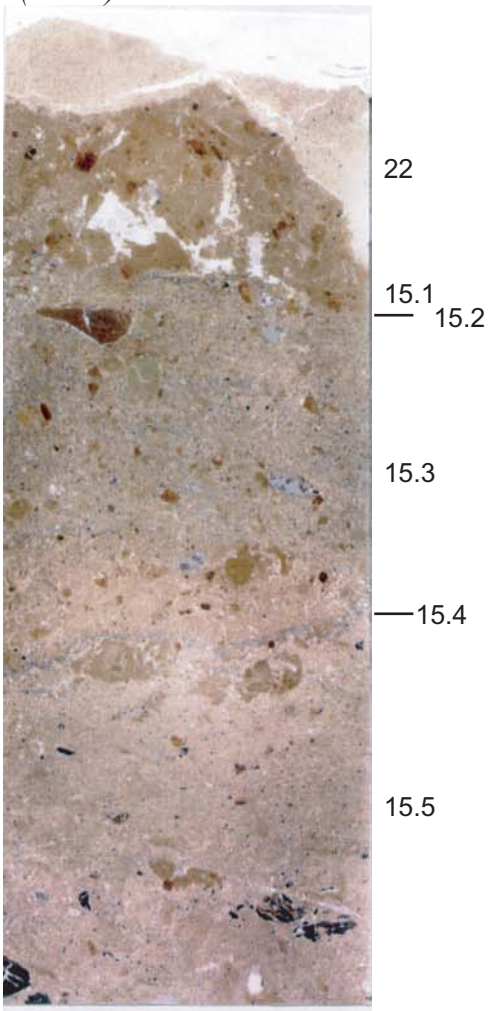
Figure 3 *(left) Context 21.6 (yellow lens), showing yellow amorphous organic material left by the in situ decomposition of plant tissues*



50mm

Figure 4 *(left) Context 21.6 , showing in situ articulated phytoliths left by the decomposition of plant tissues*

Figure 5 *Thin section 2 (below) Scale 1:1*



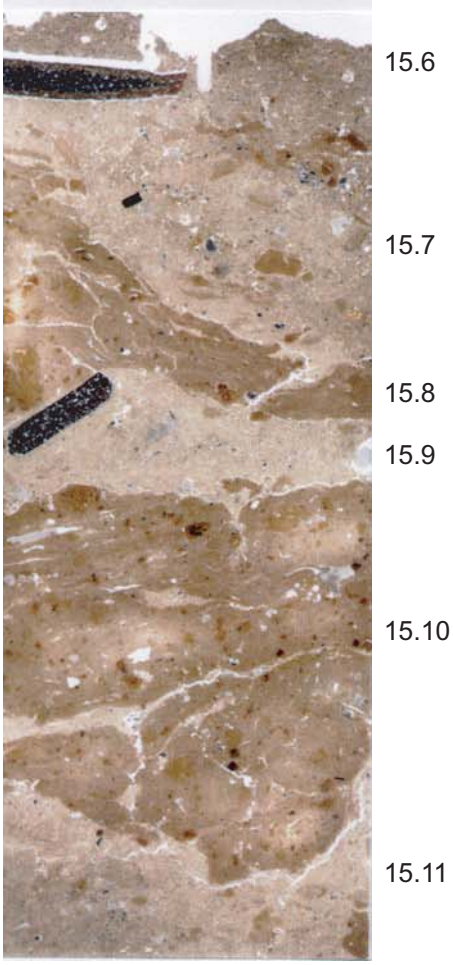


Figure 6 *Thin section 3 above) Scale 1:1*

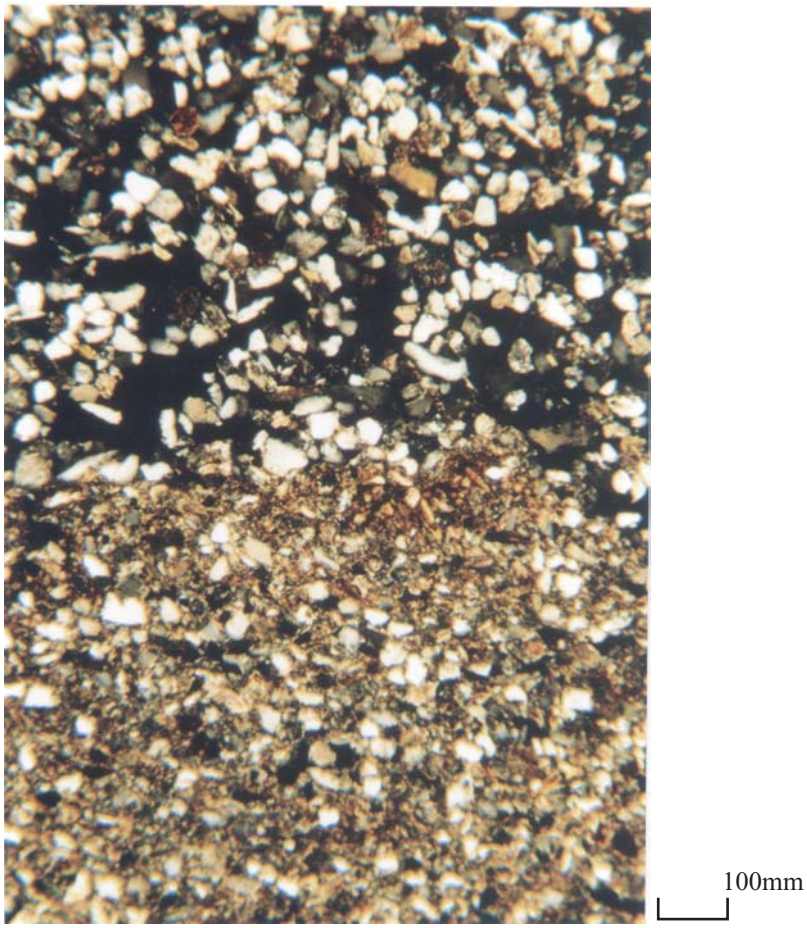


Figure 7 *Boundary between contexts 22 (top half) and 15.1 (bottom half). NB the perfectly sorted very fine sand of context 22. Black zones represent void spaces between sand grains*

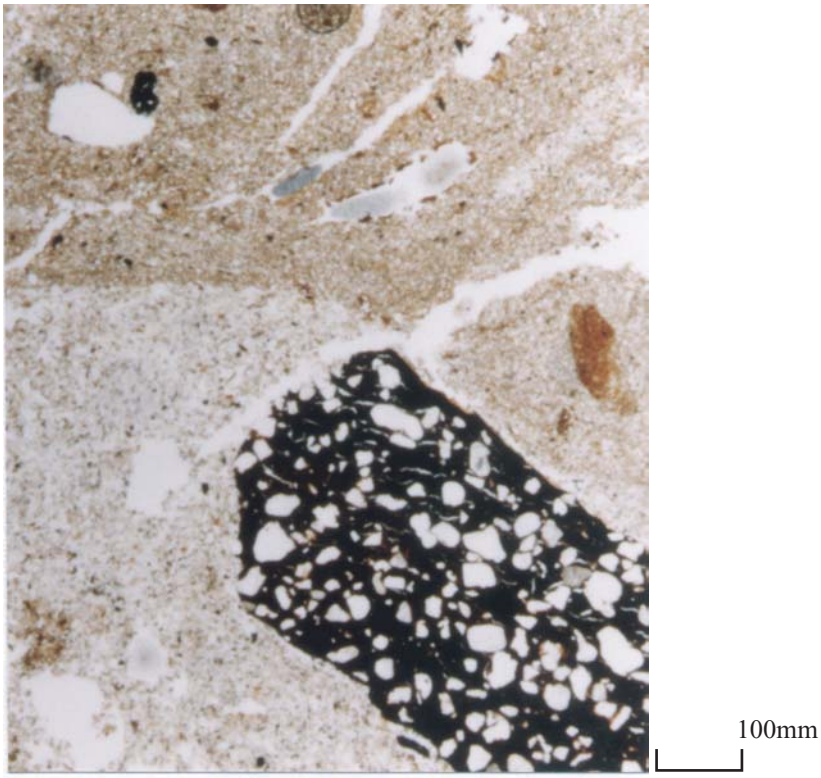
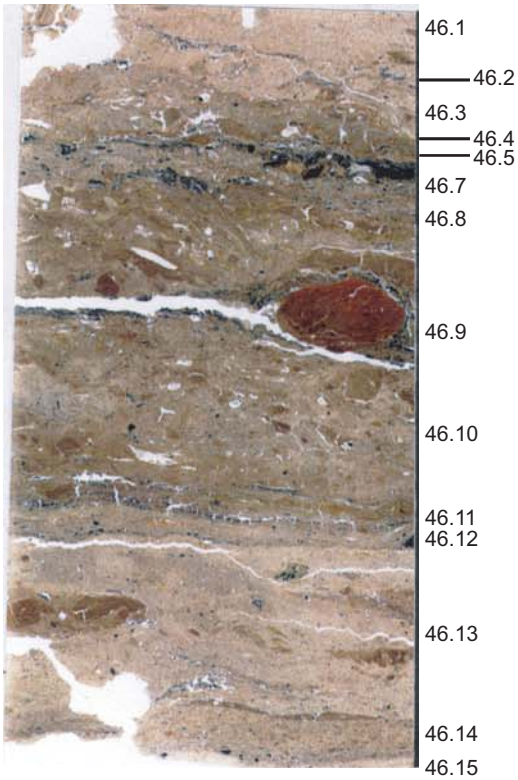


Figure 8 *Boundary between contexts 15.8 (top half) and 15.9 (bottom half). Channel-shaped voids (white zones) and a red iron nodule are visible in 15.8. A pot sherd is embedded in 15.9. PPL*

Figure 9 *Thin section 4 (below). Scale 1:1*



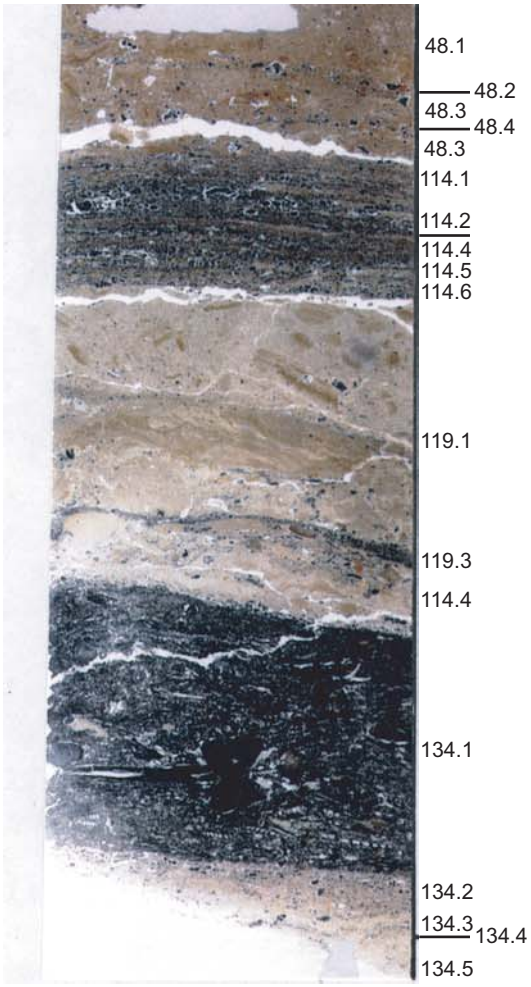


Figure 10 *(above) Thin section 5. Scale 1:1*

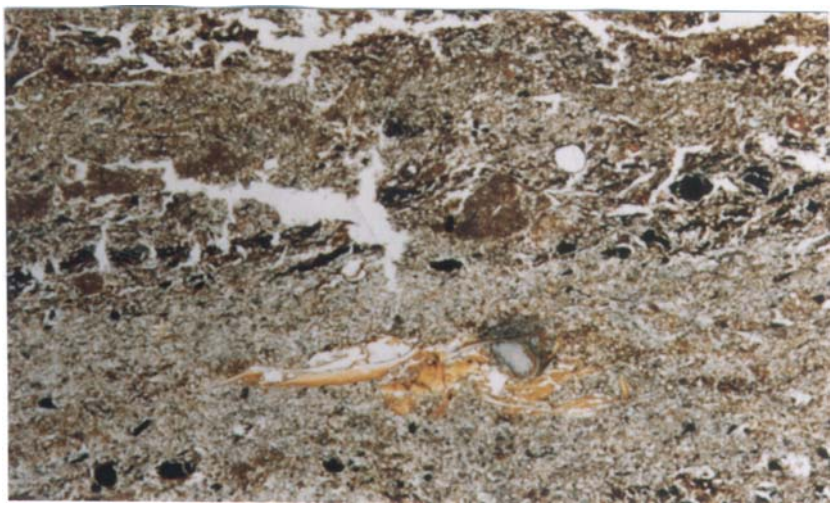


Figure 11 *Context 46.12, which has been interpreted as a floor. NB the horizontal bedding of the organic and mineral components, and the embedded bone that has been crushed in situ. PPL*

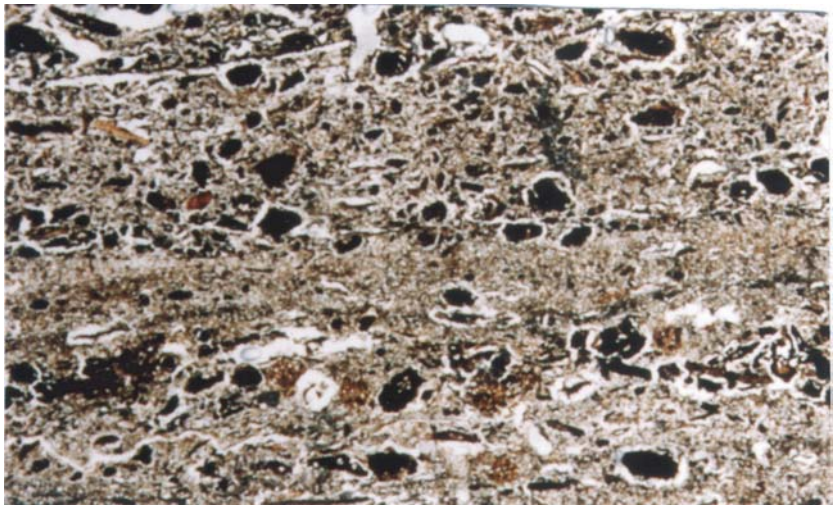


Figure 12 *Contexts 114.2, 114.4, from Sample 5. The horizontally bedded organic matter and organic silt loams have been interpreted as a floor deposit. PPL*

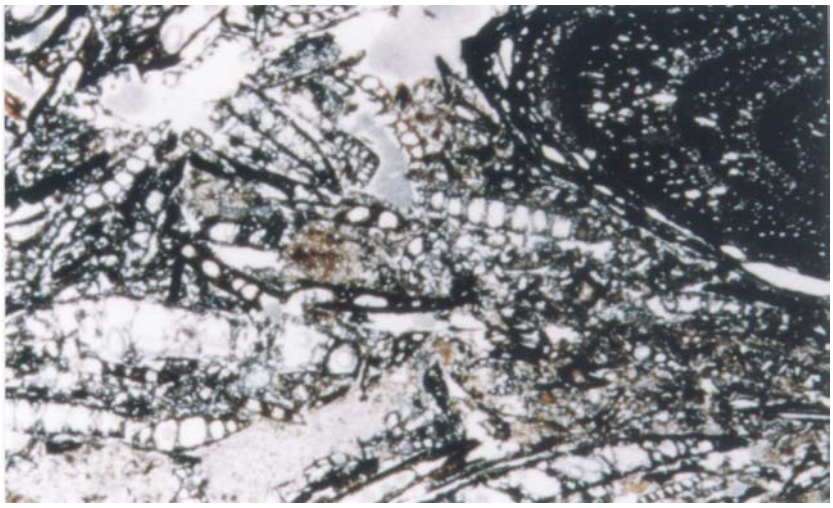


Figure 13 *Contexts 134.1. A layer consisting of wood charcoal (top right) and charred herbaceous plant tissues, which has been interpreted as oven rake-out.*

Suggestions for Future Work

Although sediment micromorphology was able to increase the resolution of stratigraphic analysis and to distinguish between occupation layers, natural flood events and redeposited layers, there are many limitations to this type of analysis when it is done in isolation from other techniques. For example, the organic and anthropogenic inclusions that accumulate within occupation levels can only be semi-quantified on the basis of the area they take up in the thin section, rather than their actual frequency. For this reason, the interpretation of the use of space should be done in conjunction with bulk sampling for botanical, pollen and microrefuse analyses, so that the sample size will be large enough for more significant results. In cases where the floor layers are too fine to be sampled discretely in the field, it is best to remove two adjacent undisturbed blocks, one for micromorphological analysis, and the other for microscopic excavation in the event that a fine floor layer is identified in thin section. This would also permit later subsampling for particle size analysis (to help answer questions about depositional processes), heavy mineral analysis (to answer questions about the source of sediment and whether certain layers are made up of the same or different mineral material), organic content by loss on ignition, and chemical analyses (e.g. phosphates, lipids, fats, oils, waxes).

An additional weakness is that each thin section represents only 5 to 6 cm horizontally and is not necessarily a representative sample. Occupation surfaces, in particular, frequently contain a great deal of lateral variability. When a structure or floor surface is identified, it is best to excavate it in such a way as to provide more than one section face, so that micromorphology samples can be taken from several locations. This may be achieved by the excavation of the structure in diagonal quadrants, on a grid system, or by targeting selected areas by leaving small subsidiary bulks that can be removed as soon as they have been sampled. If several samples have been taken from different areas on a single occupation surface, preliminary analysis could begin with two samples that had been taken at a distance from each other, in order to assess the potential or need to proceed with the manufacture and analysis of the other samples. If, for example, two samples taken from different parts of the same room show very similar characteristics, the excavator could have more confidence that the samples were representative, and it would not necessarily be beneficial to manufacture or analyse the other blocks.

5 ACKNOWLEDGEMENTS

The writers gratefully acknowledge the assistance of Julie Boast, who made the thin sections, Alex Powers-Jones and Arlene Rosen, who identified the phytoliths, and Alan Clapham, who identified the charred organic remains.

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APPENDIX VI

PALYNOLOGICAL ANALYSIS: AN ASSESSMENT OF POTENTIAL

Patricia E.J. Wiltshire

1 INTRODUCTION

A monolith sample was taken through a floor deposit (92) which consisted of layers of occupation horizons intercalated by clays and flood silts. Sampling was restricted to the upper 15 cm of the monolith simply to assess the potential for the deposits for palynological analysis.

2 METHODS

Samples were taken in each distinct horizon within the sediments and subjected to standard processing for concentration of palynomorphs. In each case 2.0 cu3 of sediment were used. Samples were scanned under phase contrast at x 400, and examined at x 1000 magnification where necessary. A minimum of 10 scans per slide were made and all palynomorphs encountered were recorded. A subjective estimation was made for palynomorph abundance and recorded on a five-point scale with 5 being the most abundant. Relative abundance of individual taxa was recorded with "+,, representing presence or moderately low abundance and "+++,, very abundant.

3 RESULTS

The most abundant palynomorphs were found at 1.0 cm and 4.0 cm. None were found at 11.0 cm and they were sparse at 13.5 and 14.5 cm. Microscopic charcoal was present in every sample and was particularly abundant at 14.5 cm along with wood debris and burnt wood vessels.

The dominant taxa were those of Poaceae (grasses), cereal-type, and Calluna (heather). The lower layers appeared to have more heather and other taxa which might have been derived from heathland and possibly damper soils. These include Cyperaceae (sedges), *Sphagnum* moss, *Pteridium* (bracken), and Pteropsida monolete indet. (other ferns). The upper layers appear to contain more cereal-type, grasses, and herbs characteristic of weedy grassland or meadow. The most abundant woody taxon was *Corylus-type* (c.f. hazel) although *Alnus* (alder), *Betula* (birch), *Pinus* (pine) and *Quercus* (oak) were recorded.

4 DISCUSSION

Although palynomorphs were rather sparse in most of the samples, it is obvious that some of the laminations within the sequence contain sufficient palynomorphs to allow fuller analysis if required. Further processing would be necessary to achieve sufficient concentration in samples for detailed pollen counting.

Since these deposits are known to have been floor layers, it is likely that palynomorphs will reflect plant material which was collected elsewhere and laid onto the floor surface for purposes of hygiene and convenience. Thus the

taphonomic processes affecting the pollen assemblages here must have been very variable and, because of mixing, the pollen spectra cannot be taken as indicative of specific habitats around the site. However, these data do give some idea of plant communities which might have been available in the vicinity.

All the tree and shrub taxa recorded in the deposits are wind pollinated and could have been growing some distance away from where the floor material was collected. However, hazel seems to have been moderately frequent and alder, birch, pine, and oak were probably growing in the catchment.

Of the layers examined here, the lower ones seem to have had heather and heathland plants incorporated into them. The presence of weeds and cereal type pollen suggests that cereal straw was also being used. The sample at 13.5 cm had relatively large amounts of heather, sedges, *Sphagnum* moss and bracken. It is likely that heather was being collected from heathy areas to cover the floors.

In the upper layers, grasses, grassland/meadow weeds, and particularly cereal straw seem to have been important although heather was still being used.

5 CONCLUSION

Some layers in the sequence contained sufficient pollen to allow detailed palynological analysis. However, the question must be asked as to whether this is desirable in view of the mixed taphonomy associated with the deposits. Palynological analysis of domestic floors cannot give detailed information about surrounding landscape or precise information on specific habitats. All samples will contain a mixture of assemblages which can only give a crude picture of surrounding environment. However, as is shown by this brief assessment, it is possible to show variation in use of flooring materials and this may provide useful information. More detailed analysis might also yield information on crops other than cereals and also identify broadly the range of habitats from which materials were collected.

The data presented here suggests that emphasis varied in the use of flooring materials. Heather and heathland plants were dominant in the lower layer and probably cereal straw was more important in the upper one.

If further analysis is to be carried out, it should be concentrated on specific occupation layers.

Depth (cm)	0.5	1	3	4	6.5	11	13.5	14.5	English Names
Relative Palynomorph Abundance	2	5	2	3	2	0	1	1	
Wood Debris								+	
Microscopic Charcoal	+	+	+	+	+	+	+	++	
Trees / Shrubs									**Trees / Shrubs**
Alnus		+				N	+		Alder
Betula	+	+				O	+		Birch
Corylus-type	+	+	++	++	++		++	+	Hazel
Pinus						P	+		Pine
Quercus						O		+	Oak
Dwarf Shrub						L			**Dwarf Shrub**
Calluna		++	+	+	+	L	+++	++	Heather
Crops						E			**Crops**
Cereal-Type	+++	+++	++	++		N		++	Cereals
Herbs									**Herbs**
Anthemis-Type	+	++	+				+		eg stinking mayweed/ yarrow
Apiaceae-Type							+		eg hogweed
Aster-Type									eg daisy
Brassicaceae (Sinapis-Type) family	+	++	+				+		eg bitter cress/ cabbage
Chenopdiiaceae			+						goosefoots
Cirsium							+		thistles
Fabaceae (trifolium-Type)		+							eg clover
Lactuceae							+		eg dandelion/ hawkbits
Plantago lanceolata							+		ribwort plantain
Plantago major		+							greater plantain
Poaceae	+++	+++	+++	+++	+++		++	++	grasses
Polygonum bistorta		+	+					+	common bistort
Rhinathus-Type		+							eg yellow rattle
Plants of wet places									**Plants of wet places**
Cyperaceae							++	+	sedges
Sphagnum					++		++		sphagnum moss
Typha angustifolia-type		+							eg bur-reed
Ferns									**Ferns**
Pteridium aquilinum		+	+		+		+		bracken
Pteropsida monolete indet.							+		undifferentiated ferns

Table 1 *Relative palynomorph abundance*

APPENDIX VII

HISTORIC RAINS AND FLOODS IN ENGLAND AD 1300-1550

Meterological Data Compiled by Dr John Kington, U.E.A. Climactic Research Unit.

Notes

1. Calendar dates have been adjusted to the New Style calendar.

2. If river flooding (e.g. March 1947) or sea flooding (e.g. January 1953) cannot be determined, only the term "floods" is used.

1 CHRONOLOGY

1307: c 2 February: wind storm and sea floods affected "all the English coast".

1309: floods (January) following a sudden thaw.

1314: wet spell and floods (harvest).

1315: rains and floods (summer and autumn).

1316: rains and floods.

1326: wind storm (winter); port of Dunwich, Suffolk destroyed. However, Lamb (1997) has suggested that this storm had more to do with cliff erosion than with any widespread sea flooding.

1327: rains and floods (northern England).

1330: rains (summer and autumn). There is a complaint from the Bishop of Ely that in this year certain purloiners have made away with the great part of a Whale which had been cast on shore near Wisbeach, at a spot where he claims all *ureccum maris* as his sole property.

1334: 23 November: sea floods Thames).

1335; wet year; sea floods (the Fens).

1338: rains (autumn).

1339: floods (northern England).

1348: wet year with flood; Rains (mid-summer to Christmas).

1350; wet summer.

1351: wet summer.

1355: wet summer

1356: wet summer with floods. A survey of the manor of Wisbech mentions damage from flooding, in some cases from upland waters. The castle and manor house are valued at only £2 and there are many ruinous houses that would cost more to repair than they were worth.

1357: sea floods (Sussex).

1358: rains and floods (northern England).

1362: 24 January; wind storm and floods. This appears to have been one of the most severe storms on record in south-eastern England comparable to the great storms of November 1703 and October 1987); wet summer.

1364: sea floods (port of Ravensburgh or Ravenspur on Humber mostly destroyed and several other towns lost in Holderness).

l366 wet mid-summer

1370: wet summer

1377: floods, (northern England).

1381: floods (southern England).

1382: floods.

1386: floods (West Country).

1389: wet autumn with floods.

1393: floods (September and October).

1395: wet summer.

1396: wet summer

1398: wet autumn.

1400: wet year; sea floods (Humberside).

1404: 19 November: sea floods (Kent).

1408: floods (northern England).

1409: wet summer.

1413: floods.

1418: north-easterly wind storm; wet summer.

1421: 19 November: sea floods.

1427; rains (Easter to Michaelmas) and floods (southern England).

1428: wet year.

1429: wet summer.

1438: wet summer.

1439: floods (East Anglia); south-westerly wind storm in January; another wind storm in November.

1447: floods on Thames, April.

1450: sea and land floods.

1461: rains and floods (February).

1470: 1 November: sea floods (North sea coasts).

1475: sea floods (towns lost about the Humber).

1477: wet summer.

1481: wet summer and floods.

1482: wet summer.

l483: floods (Wales).

1484: rains (October), with floods on Severn.

1485: floods (Midlands).

1488: floods (Midlands).

1499: wind storm (December).

1500: floods (winter and spring).

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APPENDIX VIII

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Plan of Castle estates and premises, surveyed by J. Watte in 1792 at a scale of approximately 80 inches to the mile. Probably drawn up prior to sale of estate. Held in the Cambridgeshire Record Office (408/E6)

First survey of the whole town of Wisbech by John Wood in 1830. Copies held in Wisbech

Plan of Wisbech by F. Utting in 1850. Held in Wisbech Museum.

Detailed plan of the town part of Wisbech surveyed in 1853 by RH Dobson, under the Public Health Act of 1848. Shows the Market Place in detail. Held in Wisbech Museum.

The town of Wisbech by Charles Mumford in 1867, reduced from the 1853 Public Health and with revisions. Held in the Cambridgeshire Record Office (1040/P1).

Miscellaneous

Accessions Book of Wisbech Museum, photographs and illustrations held in the Wisbech Museum Collection.

APPENDIX IX

LEATHER FINDS

Carole Fletcher

1 SUMMARY

Nine fragments of leather were examined from three contexts. Before they were examined the leather fragments were placed under a microscope and lightly cleaned in distilled water, to remove some of the silt which adhered to their surfaces. This silt masked almost all features present on the leather fragments, with the exception of some of the stitch holes. Most of the fragments were small but showed reasonable preservation, with cut edges, stitching holes and remnants of the leather's grain (revealed after cleaning) surviving. The latter, where it exists should allow the type of leather to be identified. The preservation of the examined leather fragments is good and would be worthy of further study. Cleaning & conservation of the fragments would reveal more detail than it has been possible to extract so far, but is beyond the current resources of the project. These small fragments appear mainly to have been cut from shoes, indicating a possible reuse of the leather, possibly for patching of other shoes, the fragments here may represent the scrap from such reuse. The larger piece of shoe recovered from the site appears to have been abraided due to wear, supporting the theory that this is cobbling waste rather than shoemaking. Illustrations of those fragments detailed below are currently held within the site archive.

2 LEATHER FRAGMENTS

Context (126) Area III.

Three fragments of leather were recovered. Two pieces were joined to form a roughly triangular piece and the third was a thin narrow strip.

The two pieces that form a roughly triangular fragment 56mm long by 36mm high and have knife cut edges on two sides, the third is broken with only a small portion of the cut edge surviving. The fragment is 4-5mm thick, however the degree of cracking and abrasion make it difficult to identify the grain or flesh side of the leather and no stitching holes are evident. The fragment may be a offcut from a hide or other leather used to make shoes. ‘This triangular shape is often considered to be the hallmark of the shoemakers trade’ (Allin. 1981 p20)

The third fragment of leather is a thin tapering strip 15mm at its widest narrowing to 11mm & approx.2mm thick. The grain side is discernible, the two sides and the wide end are knife cut, there are no visible stitching holes and this fragment appears also to be an offcut.

Context (48)

Small find 9
Two fragments. The first is a roughly triangular fragment with knife cut edges on all sides, with the exception of one very small broken point to the elongated triangle, (approx. 70mm long by 20 mm high). At the lower part of the fragment, approximately 1mm from the knife cut edge, is a row of stitching holes. These are approximately 7mm from centre of stitch hole to the centre of stitch hole; the leather curves under at this lower edge and it appears that this fragment has been cut from a shoe. The fragment itself formed part of a closed seam although the type of shoe from which this has been cut is not clear.

The second strip of leather is 79mm and 15mm wide & 3mm thick.. It is knife cut on three sides, straight on the long edges and diagonally at one end, while the other end has broken along a line of stitches. The upper surface of the leather is cracked along the edges, and the area around the broken end is in poor condition. It is difficult to locate stitching holes on the surface because of this cracking and silt still adhering to the leather. There also appears to be a small iron or similar fragment adhering to the surface. Small areas of grain survive on the upper surface of the leather, which should allow the type of leather to be identified. The flesh side of the strip reveals more information and a series of very fine stitch holes or perhaps punched or slashed holes can be discerned. These form a straight line along one edge and looped or curved patterns on the surface. The 'stitches' are approximately 2mm apart and may be decorative rather than functional. It is possible that this strip of leather may be a band from a pattern upper.

Small find 10
The leather is in poor condition with much of it having broken into small pieces, there are however two fragments large enough to examine. The largest fragment is 158 mm long and 60mm at its widest, the grain and flesh sides of the fragment can be identified, but no discernable grain could found on the leathers surface. The fragment is from the sole of a shoe but is irregular in shape with only a short length of cut edge surviving (48mm in length), this section shows evidence of edge to flesh stitching in the form of stitch holes between 1.5 and 2mm wide by 4mm apart. It appears that this surviving portion of sole represents the seat, waist and part of the tread. The tread is the part showing the greatest disintegration and ware. The second fragment, also in poor condition, is approximately 70mm long by 9mm and appears to be a narrow strip of the edge of turnshoe. The fragment is curved, as if from close to the toe or heal of a shoe with what appear to be grain to flesh stitch holes approximately 2mm wide and between 4 and 5mm apart. This fragment may form part of the shoe upper rather than the sole. No discernable grain could be identified on the leather surface.

Context (97)

Two fragments of leather were recovered from this context. The first is a narrow piece of leather is 60mm long and 9mm wide tapering to 5.5mm at its narrowest end and is approximately 1.5mm thick, it is knife cut along its sides and possibly at both ends. The leather is slightly curved and a row of stitch holes is visible along its length, approximately 7mm from centre of stitch hole to the centre of stitch hole. Small areas of grain survive on the upper surface of the leather, which should allow the type of leather to be identified. The flesh side shows an area of fe corrosion product attached to the surface and there also appears to be a small fe or similar fragment adhering to the edge of piece of leather. This fragment of leather is likely to have been trimmed from a shoe.

The second is a narrow, roughly triangular fragment of leather, 43mm long, 6mm wide at one end, narrowing to 4mm and 5mm high. Both ends are broken, though the edges are cut; stitch holes are visible and are edge to flesh. This type of stitching & the shape indicate that is part of a pierced rand for a shoe.

3 GLOSSARY

Closed seam: Two upper sections are stitched together face to face along an edge and then opened out and flattened.
Edge/Flesh Seam: The stitching holes are pierced from the edge of the section to the flesh side; commonly used in the majority of medieval turnshoes.
Grain: The outer surface of a piece of leather originally bearing the hair, fur, wool, etc.
Pattern: Wooden shoe and partial leather upper worn over a leather shoe.
Rand: A long narrow strip of leather of roughly triangular cross-section included in an upper/bottom seam (or elsewhere) to make it more waterproof or decorative.
Seat: The rear end of sole on which the heel of the foot rests.
Tread: The widest part of a sole forepart in closest contact with the ground.
Waist: The part of the sole between forepart and heel

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