

Archaeological Excavations at Wisbech Castle - A Community Archaeology Project



Community Excavation Report



May 2010

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**Archaeological Investigations at Wisbech Castle
- A Community Archaeology Project**

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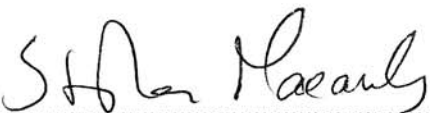
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Summary

The Wisbech Castle archaeological investigation was part of a series of community archaeology events which ran over 2009 and 2010. The excavations at the site ran for fourteen consecutive days from the 16th to 29th September 2009. This was preceded by non-intrusive site surveys – geophysical, ground penetrating radar and building recording of the vaults, which lasted two days from the 2nd-3rd July 2009.

The investigations were run by Oxford Archaeology East and funded by Cambridgeshire County Council through a Your Heritage Grant (Heritage Lottery Fund).

The site occupied by the current Wisbech Castle built in 1816 has been the location of other significant buildings for nearly 1000 years. The first building, a Norman motte and bailey castle is thought to have been constructed around 1097, this was replaced by a palace for the Bishops of Ely in 1478 which was itself demolished and replaced by Thurloes mansion in 1656, elements of Thurloe's Mansion survive in the present building (also known as Wisbech Castle). This aim of this investigation was to find any evidence of the remains of the Bishops Palace or other related structures as little written or documentary evidence remains.

Four trenches and forty 1m by 1m test pits were investigated located in four different areas of the site: the lower gardens, the vaults, the upper garden and in the memorial garden. The trenches were located over targeted areas identified as anomalies and possible walls in the geophysical survey. The test pits were spread out across the site in search of any other archaeological evidence or remains.

The trenches revealed the remains of walls, demolition rubble, large ditches and pits as well as flood silt layers dating to the period of the Bishops Palace. The test pits were used to identify the continuation or absence of rubble layers and structure remains as well as looking for the continuation of the vaults from above ground in the upper gardens and memorial garden. Test pits in the vaults gave an insight into structural techniques as well as potential evidence of an earlier structure pre-dating the vaults. Sequences of flood silts were also recorded in the vaults which are early medieval in date.

1 INTRODUCTION

1.1 Location and scope of work

- 1.1.1 The investigations took place within the grounds of Wisbech Castle and the memorial gardens, located within The Crescent within the core of the historic town of Wisbech (Figure 1).
- 1.1.2 The specific aim of the project was to provide the local community and volunteers with an opportunity to be involved in an archaeological investigation within the historic core of Wisbech. Wisbech Castle was selected partly for its location but also because it gave the opportunity to answer some long-standing research questions into the archaeology and development of the town. The site is owned by Cambridgeshire County Council and permission was sought from Fenland District Council to dig test pits in the memorial gardens and listed building consent was given to excavate test pits in the vaults.
- 1.1.3 Before any investigation was undertaken a Specification was prepared by OA East (Macaulay 2009) and sent to Cambridgeshire County Councils Countryside and Planning Advice (CAPCA) for comment.
- 1.1.4 During the fourteen days of excavation work and two days of survey, 84 volunteers worked on the site, alongside six professional archaeologists from Oxford Archaeology East and Cranfield University.
- 1.1.5 During the investigations, more than 700 children from twenty local schools were allowed access to see the archaeologists at work and to take part in hands-on archaeology activities such as making clay pots and excavating in sand pit boxes.
- 1.1.6 A public viewing area was set up to allow the public to come and watch the excavations taking place and the site was open to the public at all times with additional guided tours at weekends. An special open day was held on the first Sunday in which events such as story telling, historical re-enacting and displays of finds were available to visitors. Guided evening tours were also provided to local scouts and beaver groups as well as to Wisbech Tourist Information.
- 1.1.7 The building survey took place during Wisbech Rose Fair between 2nd and 3rd July. Four volunteers assisted with drawing the floor plan of the vaults. During this two days, the geophysical and ground penetrating radar surveys took place allowing the public a chance to watch and for volunteers to assist.
- 1.1.8 The site archive is currently held by Oxford Archaeology East (OA East) and will be deposited with the appropriate county stores in due course.

1.2 Geology and topography

- 1.2.1 Solid geology in the vicinity of Wisbech comprises Jurassic Ampthill clays, and pre-Flandrian gravels have been observed at below minus 15.0m OD. 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 overlying the solid geology.

- 1.2.2 The Flandrian deposits (deposits since the last Ice Age) covering the whole of Wisbech are Terrington Beds comprising marine clays, silts and sands (British Geological Society 1995), with most Roman and later activity occurring on an upper silt deposit. The silt area of northern fenland is associated with complex environmental change over the past two millennia. There is a relatively high band of silt running roughly west to east, from the estuary at Kings Lynn to the Lincolnshire border, that underlies the town of Wisbech. The entire island lies below 10m OD, and has been subject to repeated flooding episodes. To the south of this island lies the fresh water peat fen and to the north the salt waters of the Wash. The Nene estuary at Wisbech marks a salt water intrusion into the silt island.
- 1.2.3 The area within the town is relatively flat, with an average height of around 5m OD, ranging up to 7m OD at the east end of Hill Street. The ground level on the site itself is at c. 5.2m OD. The benchmark on the entrance of the church of St Peter and St Paul which lies to the east of the evaluation 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 12th century and therefore the floor is a good indicator of the ground level at that time. This is significant in estimating the early medieval ground level.
- 1.2.4 The topography and ground level around Wisbech Castle is hugely varied and the original ground level of the medieval remains is uncertain. As noted above the successions of flooding has significantly altered the ground level which today is significantly higher than when the Norman Castle was constructed. The floor of the medieval church of St Peter and St Paul lies at c4m OD and the recent archaeological investigation at Wisbech Library (Fletcher 2009) and at 4 Ely Place (Fletcher 2010) has revealed a large possible ditch which may be related to the castle moat and would confirm that the Norman castle was probably constructed at c4m OD, which is up to 3m below the modern ground surface.

1.3 Archaeological and historical background of Wisbech

Much of this section has been taken from the Extensive Urban Survey (EUS) carried out by Cambridgeshire County Council in 2002.

Prehistoric

- 1.3.1 Prehistoric remains are almost unknown in the parish, apart from generally unprovenanced stray finds.
- 1.3.2 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 (Waller 1994, 250). The area was almost entirely submerged during the Iron Age, and dry land only began to emerge in the Roman period.

Roman

- 1.3.3 Roman activity in the area is of two main types – salterns and agricultural settlements. The salterns lie on the roddons along the fen edge, and are fairly numerous. While the predominantly urban nature of the parish of Wisbech masks potential archaeological finds, occasional finds of coins and pottery from within the town suggest the possibility of a Roman predecessor to the Saxon and medieval town. Finds recorded in the

Cambridgeshire Historic Environment record include a Roman coin hoard 600m to the south of the castle (CHER 03910), a single coin at the Reason Homes site on the South Brink, 500m to the west (CB 14764), a painted Roman pottery sherd 500m to the south-west (CHER 03891) and two other Roman coin findspots (CHER 03934, 08001). The main Roman communication route across the Fens, the Fen Causeway, lies approximately 12km to the south.

Saxon

- 1.3.4 There is very little evidence of Early Saxon activity which is limited to two brooches found at the Corn Exchange (CHER 04012). However, the island was likely to have been settled throughout the Middle and Late Saxon period - a series of Middle Saxon sites occupied similar sites to the northeast of Wisbech. At some point before the medieval period Wisbech became the primary settlement, probably due to its location at the confluence of the two principal rivers (the Nene or Wys Beck and the Great Ouse tributary known as the Well Stream). The recent discovery of a possibly Middle Saxon defensive site in the area of the later Norman and post-Medieval castle, allied to the Saxon brooches at the Corn Exchange, suggests that this area was a focus for occupation from as early as the 7th century. This point was also the outfall of the two rivers until the beginning of the 14th century when violent storms caused the diversion of the Ouse from Wisbech to its present course via King's Lynn (Hinman 2002).
- 1.3.5 Saxon activity is again little recorded. It is known that by the Norman Conquest the entire silt isle supported around 50 households under the overlordship of the Abbey of Ely. Again the issue of marginal land comes into play, and the construction of the two sea defences either side of the estuary to protect the landscape from water incursions demonstrates the determination of the church to hold onto these fertile lands, and also proves that the island was subject to centralised authority.
- 1.3.6 Again, it is most likely that Saxon settlement is to be found in the north and west of the current town, i.e. into the silt island itself. That this area was noted as the Old Market by the end of the 12th century is suggestive of the antiquity of this area as a settlement centre, as is the establishment of the administrative centre of the manorial estates on this side. It should also be noted that the main access route from Ely to Wisbech would have been along the Old Croft River, through Upwell to the settlement. The best disembarkation point for such a journey would have been the location of the Old Market.
- 1.3.7 Nucleation of Anglo-Saxon settlement into the villages and towns that we see today tends to be a phenomenon associated with the reorganisation of the landscape that took place from the 10th to the 12th centuries. However other factors can take precedence, and it is likely that the island was a network of smaller hamlets and farms, with lands divided by drains and a central focus at the main point of water contact, where the market and manorial centres happened to be.
- 1.3.8 Whether a church existed in this later Saxon landscape is uncertain. Certainly a manor usually had an associated church, yet in Wisbech's case the church is across the river next to the castle. It has been shown above how the church could pre-date the castle, but this would place a later Saxon church effectively on a peninsula over the water from its manor. Whilst not unusual in itself for a Saxon development, it would require more evidence to prove this than is currently available.
- 1.3.9 Another possibility is that the late Saxon church was demolished and rebuilt next to the castle deliberately as a reaction to the support by Ely Abbey of Hereward the Wake.

This would place an undiscovered church to the north of the river, and again is not unknown in the area. A third option is that the scattered nature of the settlement did not justify the expenditure of resources on a church.

Medieval

- 1.3.10 Wisbech in Domesday Book was not a particularly large or important, yet throughout the mediaeval period the core of the modern town that we know evolved.
- 1.3.11 Wisbech is first referenced as a grant to the abbey at Ely c. AD1000 from the East Anglian Bishop Aelfwine. The scale and nature of Saxon occupation is unknown but a manor is currently thought 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. IV, 243).
- 1.3.12 The construction of the church, castle and new market moved the focus of settlement away from the north bank of the Nene, a process accentuated when the Nene outflow was finally blocked by silt in the earlier mediaeval period, leaving the Well Stream as the most important water course in the emerging town. The maintenance of two market places is indicative of a change in focus for activity on the Isle. The Old Market maintained its local connections, but it is likely that the new market became more associated with the commercial trade that was beginning to emerge during the 13th century.
- 1.3.13 Episodic flooding was a major problem in Wisbech and in 1236 a particularly devastating flood may have destroyed the castle and laid waste to the surrounding area. The *Flores Historiarum* described the 1236 flood: 'But on the morrow of the blessed Martin (November 12th)...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 small places, small boats, herds, and also a great multitude of men perished.' (FH, vol. 2, 219 as quoted in Hallam 1965, 127).
- 1.3.14 Given the problems afflicting the water flows out of the town, it is interesting to speculate as to why a port evolved here. It appears that the more reliable water flows lead through Lynn, and certainly Cambridge and Ely regarded Lynn as their main trading town. Wisbech and its environs must have possessed some attribute that focussed trade here, and although it did afford access to the western fens (in particular Holme and Yaxley) presumably there was a commodity here that was traded. This probably was the agricultural surplus generated by the fertile lands, especially when an ongoing programme of drainage created more of the same.
- 1.3.15 Agricultural surpluses have always been the main export from the town, in one form or another. First it was corn, then cole-seed and rape-seed, and in more recent times market gardening, especially fruit, although vegetables are also popular.
- 1.3.16 The town however, remained fairly small in size, compared to similar ones in the region. Only one church was built (compared to the 42 in Huntingdon during the mediaeval period). The population was centred around the two cores, the Old Market and the castle areas, but the town did not stretch much beyond these areas. The marginality of the land may have had something to do with this, for despite the continuing existence of the sea defences, and the ongoing reclamation projects, the core area (around the castle) flooded on a regular and often catastrophic basis. It is quite possible that the town existed as a focus for the area, but most of its population still inhabited the hinterlands in scattered settlements.

- 1.3.17 Most of these hinterlands fall outside the remit of this survey. However, the area to the immediate south-west of the town has revealed a form of agriculture known as darlands. These are drainage ditches roughly 2m wide used to delineate strips of agricultural land. These strips are around 12m wide and 160 long, which corresponds reasonably well to plots of land identified under the Midlands system of ridge and furrow.

Post-Medieval Town

- 1.3.18 The main growth of the town took place in the post-medieval period, when the population expanded rapidly. This could be down to several factors. Firstly, widespread drainage of the fens coupled with mechanical means of pumping water off the lands created wide swathes of very fertile agricultural land that could be used for crops or (in the case of marginal land) summer pasture. Secondly, there were deliberate attempts to free up the flow of the Nene through the town and improve access to the port facilities.
- 1.3.19 The impact of this was two-fold. The area could now generate larger agricultural produce to export, and also the access to the port was improved permitting larger vessels to ship it. The use of mechanical pumps generated a need for certain fuels, in particular wood and coal. Most of the port facilities were located below the Town Bridge, especially out towards the Horseshoe sluice to the north. Sutton bridge still provided a mooring for large vessels.
- 1.3.20 As trade grew, so the town prospered. The creation of extensive and elaborate Georgian and Regency properties are a reflection of this. However there was also a requirement for housing for the growing number of labourers that served the port and the town, and there are several references to a lack of such housing in the 18th and 19th centuries. The areas around Walsoken were always regarded as one of the poorer areas, so it is unsurprising that this is the direction in which the town expanded from the mid-19th century.
- 1.3.21 It also grew southwards, and the terraces around Victoria Road, Milner Road and such like were laid out at this time. The town expanded along Leverington Road and Lynn Road in a linear fashion, and in time Walsoken became totally absorbed. Expansion westwards was hindered by the fact that the wealthy families (especially the Peckovers) who owned the houses around here also owned the land, and would not permit much development in their vicinity.
- 1.3.22 The town probably reached its zenith by the end of the 19th and into the 20th century. At the opening of the 21st century, Wisbech is still recovering from the decline of its port and trade, and still is trying to find a new purpose for itself. Its population is static, and the whole area is economically depressed.

1.4 A Very Brief History of Wisbech Castle

For a comprehensive guide to the history of Wisbech Castle, see “Wisbech Castle” by G. Annis (1977).

The Norman Castle

- 1.4.1 A castle was constructed on the orders of William the Conqueror in 1086 (VCH Vol. II, 47). This castle was most likely of a Motte and Bailey design, although whether it had a mound/motte is not known. According to the Victoria County History it was built of stone, and the buildings covered 2 acres, the whole area of the castle being 4 acres

(ibid.). The earliest dated evidence of episcopal tenure of the castle is in the vacancy of 1215-19, when it was entrusted in turn to Ralph de Normanville and Robert de Cantia, and to Richard (Poore), Bishop of Salisbury (VCH Vol. IV, 252). King John is said to have stopped at the castle on his last journey. From the late 13th century the building was mainly used as a prison and as a place for holding the bishop's courts.

- 1.4.2 Although there is little evidence about the appearance of the original castle, it has been suggested that the seal of Sir John Colville, Constable of the castle may be the only evidence what the castle looked like in 1409 (plate 1). The only plan of the layout of castle comes from a sketch plan made in 1795 when the site was finally cleared (Figure 2). This clearly shows the near circular form of the castle and the moat around the north-east of the enclosure fronting the market place. The moat is said to have been 40ft (12m) wide (VCH Vol. II, 47). Excavations on the site of the Tesco store in the market place (now QD Stores) during the 1950s encountered evidence of the existence of the castle wall and the extensive moat, the gradual filling in of which seems to have extended into the 16th century (Annis 1977). This is suggested by the pottery found during these excavations which included Bourne and Grimston wares of the late 15th – early 16th century (Moorhouse 1974, 58).
- 1.4.3 Recent archaeological investigations at Ely Place (Fletcher, 2010) and at Wisbech Library (Fletcher 2009) revealed evidence of a large ditch or moat. This feature may represent a defensive ditch associated with the castle on a different alignment to the known position of the post-medieval castle moat.

The Bishops Palace

- 1.4.4 In the 15th century the castle fell into ruin, and was rebuilt during the episcopate of Bishop Morton (1479-86) (VCH Vol. IV, 252).
- 1.4.5 During the Civil War the town, generally on the side of Parliament, and thus the castle, were put into a state of defence. In 1643 £11 was spent on ironwork for the castle drawbridge. This is strong evidence that a moat was still open in the mid 17th century. However, it is quite possible the moat, being part of the defences, was re-worked at this time.
- 1.4.6 As with the original castle, there is little surviving evidence to suggest what the Bishops Palace may have looked like. There is however, a castle depicted on John Speeds map from 1607 which may in fact depict the Bishops Palace (Figure 3).

Thurloes Mansion

- 1.4.7 Following the Civil War, John Thurloe (Secretary to the Commonwealth Government) purchased the manor and replaced Morton's palace with a mansion on the site in 1658 (ibid. 254). The building is very similar to Thorpe Hall near Peterborough and thought to have been designed by Inigo Jones or his pupil, John Webb (Annis, 1977). Thurloe did not live at Wisbech for very long and the site reverted back to the church following the Restoration in 1660.
- 1.4.8 Figure 4 shows an engraving of Thurloes mansion and it is also present on the plan of the castle grounds in 1795 (Figure 2).

Joseph Medworths Castle

- 1.4.9 When Joseph Medworth, a local builder who made his fortunes in Bermondsey, purchased the mansion and castle grounds in the late 1790s. Medworth proposed a redevelopment of the grounds as shown on the 1795 plan to create The Crescent, Ely Place and York Row (still standing today) with the intention of retaining Thurloes mansion which stood in the centre of the site. Figure 5 shows a plan of Medworths proposed layout c.1800.
- 1.4.10 Medworth built The Crescent, however he later demolished the mansion, replacing it with the current Castle building (plate 2 and 3). Rather than wholesale demolition of the mansion, he took it down and built the current castle in 1816 by re-using much of the building material and interior fixtures and fittings.
- 1.4.11 Figure 6 is an engraving of The Crescent in 1827. Although the building itself has altered very little, this engraving shows additional buildings on either side, one of which (on the left) is the current pump room which was shifted into its current position when the Memorial Gardens were created. This figure also shows an entrance on this side of the castle (currently in the location of the Memorial Gardens). Although the perimeter wall is still standing, the gateway has since been removed and the access bricked up. This suggests the main entrance at this time was at the rear of the building to that used today and was a far grander approach and driveway leading directly in from the town bridge and north Brink area.

Cartographic Sources

- 1.4.12 A number of maps can be found which show the development of the modern “castle” and grounds from 1830 until the first Ordnance survey map in 1886 (Figures 7-12). The detail on these maps vary depending on their purpose and scale, however as a collection they are a very useful resource for looking at the development of the castle site. Figure 10 (1864), an estate map shows not only who occupied/owned each area denoted by a letter, but also the function of the buildings; stables and coach house, fire engine house and warehouse. Compare this to Figure 9 (1853), 11 years earlier, and the function of those outbuildings were all stables and coach house. By the second edition Ordnance Survey (Figure 13), 1927, there is less detail of the actual site, however the War Memorial is clearly shown, suggesting the entrance from Castle Square has been blocked up and perhaps the Memorial Garden is on place by this time.

1.5 Acknowledgements

- 1.5.1 The author would like to thank Geoffrey Wilkinson of Wisbech Castle who commissioned the archaeological work on behalf of Wisbech Castle and Cambridgeshire County Council and also to Michelle Lawes who made us all feel so welcome during the dig. The project was managed by Stephen Macaulay who also assisted on site. The site was directed by the author, assisted by OA East supervisors and site assistants James Fairbairn, Dave Brown, Jon House, Steve Graham and Tom Lyons. The education and outreach side of the project was organised by David Crawford-White and assisted by Helen Fowler. All metric and building surveying was carried out by the author, assisted by a number of volunteers. Thanks also to Peter Masters of Cranfield University who undertook the geophysical and GPR surveys. Finally, a big thank you to all those who were involved in the investigations; excavating, washing finds and recording; there were far too many to name individually!

2 AIMS AND METHODOLOGY

2.1 Aims

2.1.1 The trench evaluation sought to establish the character, date, state of preservation and extent of any archaeological remains within the area. The investigation will make a full record of these finds and report to the Cambridgeshire Historic Environmental Record (CHER). The aim of the survey of the vaults was to establish an understanding of construction techniques where possible, as well as perhaps gaining an insight into the use and function of the subterranean structure which has never knowingly been fully recorded or investigated before.

2.1.2 General aims of the community archaeology project were:

- to provide volunteer opportunities and training to members of the the local community to learn and be involved in an archaeological investigation.
- To provide access to local schools and to provide opportunities to take part in other related activities on site during their visit
- To encourage public viewing and access at weekends to promote understanding of our work and the significance of the work being undertaken in the historic core of the town
- to disseminate the findings of the investigation to the public both at the event and at later opportunities.

2.1.3 Specific Archaeological aims were;

- To preserve the archaeological evidence contained within the excavation area by record and to attempt a reconstruction of the history and use of the site.
- To investigate selected areas of the site (based on geophysical data) to increase current understanding of the archaeology This to include test pitting, trial trenches and small open area
- To determine if any archaeological evidence of the Bishop of Ely's Palace can be found surviving on the site
- Specifically to open a trench over the possible 'three sides of a building' recorded by geophysics and to attempt to date and record this feature accurately and ascertain its heritage.
- To ensure all records are accurately maintained and archived, with data given to Cambridgeshire Historic Environment Record office.

2.2 Methodology

Documentary Study

2.2.1 Background research has been undertaken by OA East, however, original research of primary sources is not within the scope of this study. The results are presented in this report in sections 1.3 and 1.4 above.

Trial trenching and Test Pitting

- 2.2.2 Machine excavation of trenches was carried out under constant archaeological supervision with a mini 1.5 ton tracked 360° excavator using a toothless ditching bucket. All test pits were excavated by hand.
- 2.2.3 Trial trenches were excavated to the depth of the upper interface of archaeological features or deposits. A 360° mechanical excavator using a 1.0m wide flat bladed ditching bucket was used to open all trenches (with the exception of Trench 1, which was hand-excavated).
- 2.2.4 The site survey was carried out by the author using a Leica TCR 705 TST Theodolite. The location of all trenches and test pits were recorded and the site survey was tied into the Ordnance Survey grid using known points on the castle building.
- 2.2.5 Spoil, exposed surfaces and features were scanned with a metal detector. All metal-detected and hand-collected finds were retained for inspection, other than those which were obviously modern.
- 2.2.6 All archaeological features and deposits were recorded using OA East's *pro-forma* sheets. Trench plans and sections were recorded at appropriate scales and colour and monochrome photographs were taken of all relevant features and deposits supplemented by digital photographs.
- 2.2.7 All features were investigated and recorded to provide an accurate evaluation of archaeological potential whilst at the same time minimising disturbance to surrounding archaeological structures, features and deposits.
- 2.2.8 Bulk samples were taken from a variety of feature fills and layers to test for the presence and potential of micro- and macro-botanical environmental indicators. The result of the analysis are incorporated in this report and appear in full in Appendix G.
- 2.2.9 Site conditions and weather were good throughout with no rain and almost constant sunshine

2.3 Geophysical Survey

- 2.3.1 Selected geophysical investigations were undertaken on all areas of the site using both resistivity, magnetometry and ground penetrating radar. This work was conducted by Peter masters of Cranfield University and took place during Wisbech Rose Fair on 2nd and 3rd July 2009. The full report is presented in Appendix I.

3 RESULTS

3.1 Introduction

3.1.1 Results are presented below on a trench by trench or test pit by test pit basis, within areas. Cut numbers will be represented in **bold** text and all other contexts will be in standard text. For location of trenches and test pits, see Figure 1

3.2 Lower Gardens (Figure 14)

Trench 1

3.2.1 Summary: Trench 1 measured approximately 4.5m by 2.80m. It was constantly extended from its original size, became an irregular shape (Figure 14). This trench was located within the rose bed of the lower garden and aimed to find the potential building indicated by the geophysics survey (Figure 15) (for full report see Appendix I). Located just below the topsoil, evidence of a brick built structure/foundation was recorded. Further investigation and extension of the trench revealed what may be the corner of a building with a mortar surface which possibly supported a tiled floor (Figure 16, Section 12, plate 4).

Layer 21 was a dark blackish brown silty topsoil containing mostly post-medieval pottery, fragments of undated animal bone and ceramic building material. It measured 0.30m thick and was the upper-most fill of the trench. Pottery retrieved from this layer provide an early to late 18th century date for this context.

Layer 22 was a firm, mid – dark orangey brown, sandy silty subsoil with frequent fragments of brick and tile and mortar flecks with a maximum depth of 0.28m. Pottery retrieved from this layer provide a late 18th century date for this context.

Layer 196 was a firm, dark brown, sandy silty layer with frequent fragments of brick and tile and frequent mortar flecks. This layer was not fully excavated, however it was at least 0.18m thick and continued beneath wall 183. This layer continued beyond the northern, western and southern edges of the trench.

Context 66 represents the cleaning layer around wall/foundation 183. The overall date for this context from the pottery spot dating is 17th century.

Wall/foundation 183 appeared to be “L”-shaped in plan, measuring approximately 1.30m east to west, ending to the east and changing direction on the western end, heading northwards for 1.60m and continuing beyond the edge of the trench. This wall comprised compacted fragments of hand-made red bricks and a white sandy mortar. There was no obvious bond or evidence of any surviving complete bricks. This may be a rubble foundation using bricks from another earlier building, or the remains of a wall which has been removed and crushed or disturbed by activity above and the demolition process.

Wall/foundation 191 appears to be part of the same structure as 183, forming the eastern side of the “L” shape, however, this element was given a different context number as it was the only part to comprise complete bricks which may be *in-situ*. Three complete bricks, were laid on edge aligned north – south. There was no obvious mortar remaining and it is possible that they continued northwards beyond the trench edge.

Mortar layer 193 was a firm, compacted deposit comprising mostly of crushed building material and white mortar. It was relatively flat and free from other inclusions and may represent a floor surface or a mortar layer which supported a tile floor. This layer was contained within wall 183 and measured 1.20m by 1.10m and continued beyond the northern and eastern edges of the trench.

Layer 192 was located at the south-eastern edge of the walls/foundations and was a rectangular shape in plan. This layer comprised small fragments of red brick but mostly a crushed white coloured sandy mortar. It had regular edges and measured approximately 0.80m by 0.50m and 0.25m thick. The relationship/function with the building is unclear, however the north-western edge overlapped 183. This may be a deposit which has fallen into this location during demolition.

Rubble deposits 195 and 197 were located in the south-western corner of the structure / 183. They appear to comprise the same material as 183, however, there is no form or clear edges and there was little or no mortar to bond. These deposits were loose and lacked structure, suggesting they may represent demolition or collapse of 183. These layers may be evidence of a continuation of 183 to the west or disturbed upper courses of this part of the structure.

Trench 2

- 3.2.2 Summary: Trench 2 measured approximately 4m by 2m and orientated north-west to south-east. This trench was located in an attempt to find the potential building as indicated on the geophysics report (Figure 15 and Appendix I). This trench contained evidence of several layers within the section (Figure 16, Sections 4 and 7, plate 5). These layers, all post-medieval in date relate to demolition and dumping of waste and debris. A pit was also recorded which was dated to the 17th century. This trench was excavated to a depth of 1.24m from the surface, and a further 1.18m in a test pit within the trench. The test pit was dug through flood deposits dating to the 12th to 14th centuries and fragments of wood, pottery and leather were found.

Layer 30 was a firm, dark grey brown, clayey silty topsoil with moderate small stone inclusions. This layer had a maximum thickness of 0.40m.

Layer 49 was a moderately soft, light yellowish brown, clayey sand with occasional small stones, charcoal and chalk flecks. This layer had a maximum recorded thickness of 0.50m and was most likely the result of depositing waste or levelling in the post-medieval period.

Layer 50 was a firm dark reddish grey clayey sand with frequent brick rubble inclusions. This layer measured 0.20m thick and was most likely a result of depositing waste or demolition of a building in the post-medieval period.

Layer 96 was a light greyish brown sandy, clayey silt with frequent inclusions of brick and tile fragments and flecks of chalk and mortar. This layer measured 0.34m thick and may represent demolition rubble or deposit of rubble waste.

Pit 77 was identified in section and in the base of Trench 2 (Figure 16, Sections 4 and 7). This pit had steep sloping edges and a flat base. Although not fully revealed in plan, what survived in the base of the trench would indicate the pit was roughly rounded. This pit was filled by 88, 54, 51, 52 and 76. This pit truncated layer 32

Upper pit fill 88 was a fine, mid grey brown sandy silt with occasional fine pebbles, lenses of mortar and flecks of charcoal and red ceramic building material. This deposit measured 0.62m thick.

Pit fill 54 was a moderately loose, light grey brown deposit comprising mostly red brick and mortar. This deposit measured 0.15m thick.

Pit fill 51 was a firm but flaky, dark blackish brown deposit of charcoal-rich silt. This deposit measured 0.06m in thickness.

Pit fill 52 was a moderately soft, light yellowish brown, clayey, sandy silt with occasional stone and brick and tile inclusions. This fill measured 0.34m thick.

Pit fill 76 was a moderately compacted, light brown clayey silty layer with frequent inclusions of red brick rubble, tile and creamy white mortar. This layer measured 0.45m in thickness and finds retrieved included sherds of 17th century pottery.

Layer 32 was a moderately compact, but soft dark greyish brown clayey sand with occasional mortar and brick inclusions. This layer was not fully excavated, but further investigation in the test pit revealed it measured 1.00m thick. Finds retrieved from this layer included pottery late 17th century and residual medieval pottery and a worn silver half-groat of Elizabeth I, third issue dated 1567-70 (SF 1, plate 6) (Appendix B). This was the lowest recorded layer in the trench, other than in the test pit.

Context 6 was a number assigned to the initial cleaning across the surface of the trench at the lowest machined level. Pottery retrieved was spot dated to mid 13th to mid 14th century.

Test pit in Trench 2 (plate 7)

- 3.2.3 Summary: The test pit in Trench 2 was dug towards the end of the dig in order to establish dates and sequences of layers beneath layer 32 (Figure 16, Section 29). This test pit measured 1m by 1m and excavated to a depth of 1.28m, revealing sequences of Medieval flood silt deposits. Finds from the test pit included preserved leather, wood and pottery dating as early as 13th to 14th centuries.

Layer 132 was a soft, light brownish grey sandy silt with no obvious inclusions and a maximum thickness of 0.24m.

Layer 133 was a soft, light brownish yellow sandy silt with no obvious inclusions and a maximum thickness of 0.25m.

Layer 134 was a soft, dark brownish grey sandy silt with no obvious inclusions. It measured 0.15m thick and finds retrieved included brick and tile fragments, stone and pottery dated to the mid 12th to 14th century..

Layer 159 was a firm, dark blueish grey sandy silt with no obvious inclusions. It measured 0.18m thick and finds retrieved included pottery, animal bone, shell, stone, and leather. At this level, finds became more frequent than within the silt layers above. A twenty litre sample of this context was taken for analysis. A small amount of cereals and frequent untransformed seeds were noted as well as a frequent amount of charcoal. A small quantity of small and large animal as well as fish bones were also recorded. The pottery retrieved from this layer provided a context date of 13th to mid 14th century.

Layer 184 was a firm, dark blackish grey sandy silt with frequent charcoal inclusions. This layer was not fully excavated, and measured at least 0.19m thick. A ten litre soil sample from this context was taken for environmental analysis. This sample revealed a moderate amount of cereals and untransformed seeds as well as charcoal and a small quantity of large animal bones. A single cereal grain preserved by mineralisation was also retrieved.

Trench 3

- 3.2.4 Summary: Trench 3 measured approximately 4.7m by 2m and orientated northwest to southeast. This trench was located in an attempt to find the potential building as indicated on the geophysics report (Appendix I). This trench revealed a large clay lined pit dated by pottery to the 16th century and evidence of two potential parallel robbed out walls on a roughly north to south orientation. As in Trench 2, a number of layers were recorded which relate to post-medieval demolition, levelling and waste deposition (Figure 16, Section 45)

Context 7 was the number allocated to initial cleaning within this trench. Brick from this layer included a decorative brick which seems to have been deliberately cut so the brick could slot into a structure (plate 8)

Layer 98 was a firm, dark grey brown, clayey silty topsoil with moderate small stone inclusions. This layer had a maximum thickness of 0.29m.

Pit **100** was recorded in section only. It had steep sloping edges and a flat base. Measurements from section indicate it was at least 1.95m wide and 0.35m deep. This pit contained just one fill, 99 and is likely to represent post medieval/modern garden feature.

Fill 99 was a loose mid-greyish brown silty sand with occasional fine pebbles, charcoal flecks and lumps of mortar. This fill was 0.35m thick and filled the visible extent of **100**. There were no finds retrieved from this deposit.

Layer 106 Pottery retrieved from this layer provide a 17th century date for this context.

Pit **104** was recorded entirely from the section (Figure 16, section 45). This pit had moderately steep sloping edges and a flat base, continuing east beyond the end of the trench. It measured a minimum of 2m wide and 1.35m deep. It contained five fills (101, 102, 105, 103 and 243).

Pit fill 101 was a loose, mid brown, silty clay with frequent rubble stone inclusions. This fill measured 0.52m thick and represents the uppermost fill of pit **104**.

Pit fill 102 was a compacted light-mid orangey brown silty clay. It measured 0.34m in thickness and pottery retrieved from this layer was dated to the early 16th century.

Pi fill 105 was a thin layer of compacted silty clay with a maximum thickness of 0.12m. This deposit contained occasional moderate sized stones and charcoal flecks.

Pit fill 103 was a moderately compact, dark orangey brown deposit with frequent fragments of brick and tile. This deposit measured 0.40m thick and pottery retrieved provides a 16th century date for this context.

Pit lining 243 was the primary fill of pit **104**. It was a compacted, hard, mid brown-yellow clay, containing moderate amounts of charcoal and mortar flecks. This deposit measured 0.13m (Max) and may represent a hard, clay lining of the pit.

Layer 244 no records were made of this context

Layer 245 no records were made of this context

Layer 246 no records were made of this context

Layer 250 no records were made of this context

Robber cut **251** no records were made of this context

Backfill 247 no records were made of this context

Backfill 249 no records were made of this context

Layer 248 no records were made of this context

Trench 4

3.2.5 Summary: Trench 4 measured approximately 8.5m by 2m and orientated northeast to southwest. This trench was located in an attempt to find out what had caused large anomaly in this area as indicated on the geophysics report (Appendix I). Within this trench, three layers were recorded (Figure 16, Section 38), the lowest of which (19) comprised compacted rubble which is likely to have caused the anomaly in the geophysics survey. This trench also contained a lead water pipe at the south western end. It is thought that this pipe continues underground to the well and was once used to supply water to the pump next to the house.

Context 17 was the number allocated to the unstratified finds retrieved during machining the trench. These included pottery and clay pipe which provide a late 17th to mid 18th century date.

Context 20 was a number allocated to cleaning around the pipe at the end of the trench. Pottery retrieved from this layer was dated to the 17th century..

Layer 185 was a dark blackish brown silty topsoil containing mostly post-medieval pottery, fragments of undated animal bone and ceramic building material. It measured 0.30m thick and was the upper-most fill of the trench.

Layer 186 was a firm, mid orangey brown, sandy silty subsoil with frequent fragments of brick and tile and mortar flecks with a maximum depth of 0.24m.

Layer 19 was a firm, very compacted deposit comprising of almost entirely crushed and compacted building material. Frequent fragments of broken brick and tile were present along with a white, sandy mortar. This layer was investigated in a 1m slot to a depth of 0.80m, however due to safety reasons, it was not possible to reach the bottom of this context. Pottery retrieved from this layer provide a mid 16th to late 17th century date for this context.. This deposit is likely to have been the result of either a dumped layer of rubble from a near by demolished building or the backfill of a larger feature such as a pit or possibly a cellar. Further test pits were located around this part of the garden to establish the extent and continuation of this context. The bricks recovered are thought to be late medieval in date and some fragments had a green glaze (Appendix F).

Test Pit 1

3.2.6 Summary: Test Pit 1 measured 1m by 1m and was excavated to a depth of 1.3m. Four layers were recorded within this test pit.

Layer 8 was a dark blackish brown silty topsoil containing mostly post-medieval pottery, fragments of undated animal bone and ceramic building material. It measured 0.35m thick and was the upper-most fill of the test pit.

Layer 9 was a firm, mid orangey brown, sandy silt with frequent fragments of brick and tile and mortar flecks with a maximum depth of 0.45m. Pottery retrieved from this layer provide a 13th – mid 14th century date for this context.

Layer 14 was a firm, light orangey brown sandy silt with occasional mortar lumps and frequent fragments of brick and tile and a maximum thickness of 0.10m. Pottery retrieved from this layer provide a 16th to 17th century date for this context.

Layer 61 was a firm, mid orangey brown sandy silt with rare white mortar flecks and a maximum thickness of 0.45m. Pottery retrieved from this layer provide a mid 14th to late 15th century date for this context. A ten litre soil sample was taken from this context for environmental analysis. This sample revealed a small amount of cereals as well as a small quantity of animal bones, marine molluscs and pondweed (Appendix H).

Test Pit 2

3.2.7 Summary: Test Pit 2 measured 1m by 1m and was excavated to a depth of 1.4m. Three layers were recorded within this test pit (Figure 16, Section 3).

Layer 10 was a dark blackish brown silty topsoil containing mostly post-medieval pottery, fragments of undated animal bone and ceramic building material. It measured 0.27m thick and was the upper-most fill of the test pit.

Layer 11 was a compact, mid brown, fine silty clay with frequent fragments of brick and tile and flecks of mortar and a maximum thickness of 0.40m. Other finds included coal, clay pipe stems, large animal bones, fragments of thin glass and part of a medieval pantile. Pottery and clay pipe retrieved from this layer provide a late 17th century date for this context, however, more significantly, this layer contained the first recorded sherd of Ipswich Ware from Wisbech.

Layer 41 was a loose, light brown and creamy beige sandy soil with frequent inclusions of brick and tile and a maximum thickness of 0.53m. .

Test Pit 3

- 3.2.8 Summary: Test Pit 3 measured 1m by 1m and was excavated to a depth of 0.62m. Three layers were recorded within this test pit (Figure 7, Section 1).

Layer 12 was a dark grey brown, fine clayey, silty topsoil containing mostly post-medieval pottery, fragments of undated animal bone and ceramic building material. It measured 0.22m thick and was the upper-most fill of the test pit.

Layer 13 was a dark brown fine silty clay with frequent inclusions of mortar flecks and brick and a maximum thickness of 0.23m. Other finds included pottery providing an overall date of early to mid 19th century for this context.

Layer 15 was a moderately compact, dark brown clay with frequent inclusions of mortar and brick and a maximum thickness of 0.20m. Pottery retrieved from this layer provide a mid 16th to late 17th century date for this context and the brick is also thought to be from the 17th/18th century

Test Pit 11

- 3.2.9 Summary: Test Pit 11 measured 1m by 1m and was excavated to a depth of 1.35m. Four layers and a possible pit containing two fills were recorded within this test pit (Figure 7, section 29).

Layer 70 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.33m.

Pit **240** was recorded within the section of this test pit and appears to have been cut from just below the topsoil, relatively high in the stratigraphic sequence. Its full dimensions were not revealed within this test pit, however, the section reveals a moderately sloping edge and as the base was not revealed, it measured more than 0.50m deep. Pit **240** was filled by 71 and 239.

Fill 239 was a soft, greyish brown sandy silt with occasional small fragments of brick and mortar and charcoal flecks. This fill had a maximum thickness of 0.52m and was the upper fill of this pit.

Fill 70 was the lower fill of pit **240** and was a dark brownish grey coloured sandy silt with a few pebble inclusions. It had a maximum thickness of 0.23m.

Layer 85 was a soft, yellowish brown sandy silt with occasional mortar flecks and a maximum thickness of 0.28m. Finds included clay tobacco pipe dated 1640-1660, as well as sherds of late medieval residual pottery dated mid 14th to mid 16th century. Late 17th/18th century brick was also found. Six different types of roof tile were also found, indicating a building may have been located within close proximity.

Layer 170 was a soft mid brown, sandy silt with moderate flecks of mortar and fragments of terracotta roof tile. Other finds included pottery, providing a context date and possible date for the feature as 16th to late 17th century. Two fragments of glazed ridge tile were also found, dated to the medieval period.

Layer 226 was a soft, greyish brown sandy silt with no obvious inclusions.

Test Pit 12

- 3.2.10 Summary: Test Pit 12 measured 2m by 1m and was excavated to a depth of 1.22m. The edge of a possible pit or ditch were recorded within this test pit along with the remains of a possible wall or building foundations on a northeast to southwest orientation (Figure 16, Section 36 and plate 9).

Layer 73 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.3m. Pottery retrieved from this layer provide a 17th century date for this context.

Layer 79 was a light, greyish brown silty sub-soil layer with frequent inclusions of rubble material including brick and mortar. This layer had a maximum thickness of 0.50m. Pottery and clay pipe retrieved from this layer provide a 17th century date for this context.

Layer 80 was a light grey brown silty clay with occasional inclusions of brick and charcoal flecks. It measured a maximum 0.12m thickness and contained early to mid 16th century pottery.

Layer 09 was a mid brown sandy, silty layer comprised almost entirely of fragments of brick and mortar. This layer measured at least 0.75m thick.

Pit / ditch **242** was not fully revealed in plan and recorded from section (Figure x, section 36). A steep sloping edge was visible in the west facing section, suggesting a feature has been cut from just below the sub-soil layer. This ditch/pit may have been to remove the wall / bricks from foundation recorded below (242).

Fill 108/109 was the upper-most recorded fill of **242**. it was a very dark, blackish brown, silty fill with occasional flecks of mortar and brick with a maximum thickness of 0.22m. Pottery retrieved from this layer provide a mid to late 15th century date for this context. A complete curved brick, possibly from an oven or hearth was also recovered (plate 10), along with other brick fragments which date to 14th/15th century (Appendix F).

Fill 125 was a mixed brown and red brick rubble layer with occasional fragments of brick and mortar. This layer measured a maximum 0.20m thickness.

Fill 126 was the lowest recorded fill of **242**. It was a dark brown with frequent mortar and red brick flecks. It had a minimum thickness of 0.24m and continued beyond the extent of the base of the test pit. Pottery retrieved from this layer provides a 17th century date and the brick recovered is believed to be medieval.

Test Pit 13

- 3.2.11 Summary: Test Pit 13 measured approximately 1m by 1m and was excavated to a depth of 1.10m. Four layers were recorded within this test pit, representing a sequence of demolition rubble (Figure 16, Section 37).

Layer 69 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.40m. Finds retrieved from this layer included pottery and clay pipe which date to the 17th century.

Layer 86 was a mid greyish brown with frequent stone and brick and tile fragment inclusions. This layer measured a maximum 0.31m thick and contained fragments of late 17th century clay pipe and several fragments of brick and tile dated to the late 17th to mid 18th century.

Layer 116 was a thick, compacted demolition layer comprising large and frequent fragments of red brick, tile and lumps of mortar. This layer measured 0.45m. Pottery retrieved from this layer provide an early 17th century date however the brick is thought to be medieval in date.

Layer 117 was a dark greenish brown, sandy silty layer with occasional charcoal flecks and a maximum thickness of 0.24m. This was the lowest excavated layer in this test pit and pottery retrieved from this layer provide a mid 16th to mid 18th century date for this context..

Test Pit 14

- 3.2.12 Summary: Test Pit 14 measured approximately 2m by 1m and was excavated to a depth of 1.50m. (Figure 16, Section 42 and plate 11). This test pit contained evidence of

a redbrick rubble / demolition layer which appears to have been truncated by a ditch on a north-east to south-west alignment.

Layer 44 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.42. Finds retrieved from this layer included the frame from a large composite oval brooch with the stumps of the hinge and catchplate on the underside (SF4). The remaining elements of the brooch would have included a back-plate and a decorative setting protected by a cover of clear glass (Appendix B). Pottery from this layer was dated mostly to the 17th and late 18th century and clay pipe also recovered was dated 1640-1660.

Layer 45 was a mixed mid grey brown silty subsoil with occasional stone and brick and tile fragment inclusions. This layer measured a maximum 0.40m thick and pottery and clay pipe retrieved from this layer provide a mid 17th century date for this context.

Layer 46 was a compact, thick deposit of demolition rubble containing large fragments of building material including red brick, roof tile and mortar. This layer measured a maximum 0.90m thick and pottery retrieved provide a early to mid 17th century date for this context.

Context 47 was allocated to the cleaning at the base of the test pit where there may have been a change in context, however it was not possible to excavated further in the time allowed. Pottery retrieved from this context was spot dated to 15th to 16th century.

Ditch **198** was a not fully revealed in plan, however, one edge clearly shows this feature was orientated northeast to southwest. It had a flat base and was 0.80m deep. It truncated demolition layer 46 and may have been to removed a wall on this alignment. It was filled by context 84.

Ditch fill 84 was a dark greyish brown silt with occasional small stone and mortar fleck inclusions. This deposit was the sole fill of **198**. Finds retrieved included pottery and clay pipe, providing a context date of 17th century.

Test Pit 15

3.2.13 Summary: Test Pit 15 measured approximately 2.8m by 1.40m and was excavated to a depth of 0.75m. (Figure 16, Section 10 and plate 12). This test pit contained evidence of building rubble and the remains of a possible wall on a north-west to south-east orientation. This wall had been truncated on the western side by ditch running on a north-south alignment.

Layer 65 was a firm, dark grey brown, fine silty clay topsoil with occasional pebble inclusions and fragments of brick, tile and mortar. This layer had a maximum thickness of 0.30m. Finds retrieved from this layer included pottery dated to the 19th century.

Layer 82 was a loose, mid-brown sandy clay layer which appears to be a make-up or levelling layer. It measured 0.20m thick and contained 19th century pottery and clay pipe dating to 1640-1660.

Ditch **147** was linear in plan and truncated 139, a possible wall/building foundation. This ditch had steep sloping edges and a flat base. As it was not fully revealed, the width is unknown, however, it measured 0.30-0.40m deep and was orientated north to south. It was filled by 146.

Ditch fill 146 was a loose, light brown, sandy silt with inclusions of small fragments of building material. This deposit appears to represent a single event of deliberate backfill.

Wall base / foundation 139 comprised mostly of half-bricks which were a dark red colour and hand made. There was no obvious bond used and some of the brick fragments had remnants of mortar attached. Together, the brick fragments were on a northeast to southwest alignment and may be the remains of a disturbed foundation, measuring at least 2.20m in length and 0.64m wide. The wall was overlying layer 160.

Layer 160 was a firm, light brown and creamy beige layer of crushed lime mortar and fragments of building material and was recorded on the north side of 139. This layer was recorded continuing beneath the wall foundation (139) and truncated by ditch **147** but was not excavated.

Layer 140 was recorded on the south side of wall 139. It was a very hard, compact, light brown and creamy beige layer with occasional fragments of red brick. This layer was not excavated, coving an area 1.08m in length and 0.74m wide, continuing beyond the limits of the excavation area. This layer may represent occupation or build-up, the compacted, hard surface may also indicate a that it was a floor.

Test Pit 21

- 3.2.14 Summary: Test Pit 21 measured approximately 2.4m by 1.80m and was excavated to a depth of 0.92m. (Figure 16, Sections 24 and 25 and plate 13). This test pit contained evidence of building foundations. It appeared that a pit was cut into which building foundations or platform was constructed and then the area around was backfilled. A layer of brick rubble (206) was recorded on top of the foundation, however no form or orientation could be ascertained.

Layer 83 was a firm, light grey brown, fine, silty clay topsoil with occasional pebble inclusions and fragments of brick, tile and mortar. This layer had a maximum thickness of 0.38m and pottery and clay pipe retrieved from this layer provide a 17th century date for this context.

Foundation cut **202** was recorded, primarily visible on the north and western sides of the test pit. The edges and extent were not fully revealed, however, the base shows that it was flat and measured approximately 0.50m deep. It was dug in order to construct 127 and 206 and backfilled with 115 and 114.

Layer/backfill deposit 114 was a mid brown sandy silty layer with occasional small stone inclusions and flecks of mortar. This layer contained lenses of sandy gravel contained within it and a maximum thickness of 0.34m. Find retrieved from this layer included 17th century pottery and clay pipe.

Backfill deposit 115 was a dark brown silty layer with occasional small stone inclusions and flecks of mortar. This deposit had a maximum thickness of 0.30m and pottery retrieved from this layer provide a 17th century date for this context.

Rubble / building platform layer 127 was a very compacted deposit made up of fragments of brick, tile and mortar as well as lumps of flint and crushed stone. This deposit measured at least 1.70m by 0.90m, continuing beyond the eastern limit of the test pit and truncated by a modern service to the south. A deposit of compacted bricks (206) was recorded on top of this layer.

Layer/deposit 206 comprised a number of fragments of broken red bricks. There was no obvious bond or any complete bricks surviving. The bricks appeared to respect the orientation of the deposit below (127), and may represent the remains of a building constructed on the crushed mortar layer below.

Layer 203 was the lowest excavated context in this test pit, sitting below / truncated by foundation cut **202**. It was a mid-dark brown, clayey silt with occasional small stone and charcoal fleck inclusions. The full thickness of this layer is unknown as only 0.12m were excavated in order to establish a date.

Test Pit 23

- 3.2.15 Summary: Test Pit 23 measured 1m by 2m. It was located to the immediate south of the castle building within an area of shrubs and trees and was excavated to a depth of 0.40m, through topsoil / garden soil only. Excavation of this test pit was suspended due to tree roots.

Test Pit 39

- 3.2.16 Summary: This test pit was excavated in order to establish if the wall recorded in Trench 1 continued to the north on the same alignment. The test pit was excavated beyond the depth the wall was reached in Trench 1, however there was no evidence of any wall or demolition debris. The test pit was therefore photographed and backfilled immediately.

3.3 Upper Gardens (Figure 17)

Test Pit 6

- 3.3.1 Summary: Test Pit 6 measured 1m by 1m and was excavated to a depth of 0.61m where the top of the vaults were revealed. Three layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 18, Section 31).

Layer 03 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.16m. Pottery retrieved from this layer provide a 19th century date for this context.

Layer 05 was a light brown silty subsoil with occasional fragments of stone and brick. This layer measured a maximum 0.21m thick and contained pottery dating to the late 18th / early 19th century.

Layer 33 was a moderately compacted demolition rubble comprising large and frequent fragments of red brick and lumps of mortar. This layer measured 0.30m and pottery retrieved from this layer provide an early to mid 19th century date. Clay pipe dated 1640- 1660 was also recovered.

Below layer 33, the top of the vaults was recorded. The brickwork of the top of the vaults was arched and covered with a hard, compacted creamy coloured render. No further investigation was undertaken for safety reasons.

Test Pit 7

- 3.3.2 Summary: Test Pit 7 measured 1m by 1m and was excavated to a depth of 0.74m where the top of the vaults were revealed. Two layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 18, Section 43, plate 14).

Layer 41 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.14m. Pottery retrieved from this layer provide an early 19th century date (1813-1834) for this context.

Layer 28 was a pale brown silty layer charcoal flecks and occasional fragments of stone and brick. This layer measured a maximum 0.62m thick.

Below layer 28, the top of the vaults was recorded (plate 14). The brickwork of the top of the vaults was arched and covered with a hard, compacted creamy coloured render. No further investigation was undertaken for safety reasons.

Test Pit 8

- 3.3.3 Summary: Test Pit 8 measured 1m by 1m and was excavated to a depth of 0.78m where the top of the vaults were revealed. Three layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 18, Section 33)

Layer 16 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.14m.

Layer 29 was a pale brown silty layer charcoal flecks and occasional fragments of stone and brick. This layer measured a maximum 0.40m thick and contained a fragment of a very weathered and worn large Norwegian Ragstone hone. The section was originally square or rectangular but is now triangular, being worn down more on one face than the other. Part of the narrow edge has sheared off. Although this is an import, it does not class as a luxury item as ragstone hones were imported from Norway from the 9th century onwards throughout the medieval period and are common as site finds. Available in a range of sizes, they were used to sharpen a range of tools, from large objects such as scythes down to small personal knives. Initially imported as finished objects, there is evidence from medieval London that raw blocks of the stone were imported to be worked into hones at the port of entry (Appendix B). Pottery retrieved from this layer provide a 19th century date for this context.

Layer 35/37 was a moderately compacted rubble layer comprising large and frequent fragments of red brick and lumps of mortar. This layer measured 0.24m. Fragments of 15th to early 16th century building material were recovered from this layer, possibly thought to have come from a mosaic floor.

Below layer 35/37, the top of the vaults was recorded. The brickwork of the top of the vaults was arched and covered with a hard, compacted creamy coloured render. Part of a square concrete slab which is likely to have covered one of the air vents of the central chamber below was revealed. No further investigation was undertaken for safety reasons.

Test Pit 9

- 3.3.4 Summary: Test Pit 9 measured 1m by 1m and was excavated to a depth of 0.78m where the top of the vaults were revealed. Three layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 18, Section 44).

Layer 26 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.16m. Pottery retrieved from this layer provide a mid 15th to 16th century date for this context however clay pipe dating to around 1700 was also recovered..

Layer 27 was a pale brown silty subsoil layer containing charcoal flecks and occasional fragments of stone and brick. This layer measured a maximum 0.26m thick.

Layer 36 was a thin, mid-dark brown silty layer, only present in part of the trench. This layer measured 0.06m thick.

Layer 38 was a moderately compacted rubblely layer comprising large and frequent fragments of red brick and lumps of mortar. This layer measured 0.37m thick.

Below layer 38, the top of the vaults was recorded. The brickwork of the top of the vaults was arched and covered with a hard, compacted creamy coloured render. No further investigation was undertaken for safety reasons.

Test Pit 10

- 3.3.5 Summary: Test Pit 10 measured 1m by 1m and was excavated to a depth of 0.63m. Three layers were recorded within this test pit, representing a sequence of post-medieval make-up.

Layer 39 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.16m.

Layer 40 was a pale brown silty subsoil layer with charcoal flecks and occasional fragments of stone and brick. This layer measured a maximum 0.27m thick. Pottery retrieved from this layer was dated to the 17th and 19th centuries.

Layer 97 was a moderately compacted rubble layer comprising large and frequent fragments of red brick and lumps of mortar. This layer measured 0.20m and contained mid 15th to 16th century pottery.

No further investigation was carried out in this test pit and the top of the vaults was not reached.

Test Pit 17

3.3.6 Summary: Test Pit 17 measured 1m by 1m and was excavated to a depth of 1.10m where the top of the vaults were revealed. Two layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 18, Section 32, plate 15).

Layer 74 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.34m.

Layer 75 was a moderately compacted rubblely layer comprising large and frequent fragments of red brick and lumps of mortar. This layer measured 0.76m thick.

Below layer 75, the top of the vaults was recorded where two chambers on a north-south orientation joined (plate 15). The brickwork of the top of the vaults was arched and covered with a hard, compacted creamy coloured render. No further investigation was undertaken for safety reasons.

Test Pit 22

3.3.7 Summary: Test Pit 22 measured 2m by 1m and was excavated to a depth of 0.78m. It was located on the gravel path in the upper garden and was excavated to a depth of 0.91m where the top of the top of the vaults below was encountered. Two layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 18, Section 34, plate 16).

Layer 95 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.16m. Finds retrieved from this layer included 19th century pottery and residual fragments of 17th - 18th century clay pipe.

Layer 96 was a soft, very pale creamy brown silt with occasional charcoal flecks. This layer measured a maximum 0.64m thick. This layer of fine silt was very much like flood silts encountered in the lower parts of the site (Trench 2 and vaults areas), however, Test Pit 22 was too high to have been affected by flood episodes and no similar deposits were encountered elsewhere in the upper or memorial gardens. It is more likely that this layer has been imported from elsewhere and used to level this part of the garden when the path was laid.

Below layer 96, the top of the vaults was recorded (plate 16). The brickwork of the top of the vaults was arched, however, unlike the other test pits above the vaults, the vaults located here were constructed of stone. The stone used for the construction (context 87) varied in size and colour and there was no obvious bond or mortar. This may suggest that the vault chamber beneath (L2) is of a different phase / date to the rest. No further investigation was undertaken for safety reasons. A modern ceramic pipe was also recorded in the western edge of this test pit.

Test Pit 29

- 3.3.8 Summary: Test Pit 29 measured 1m by 1m and was excavated to a depth of 0.45m, due to a lack of time, this test pit was not investigated further. Two layers were recorded within this test pit, representing a sequence of post-medieval make-up.

Layer 144 was a loose, mid grey brown silty topsoil with occasional pebble inclusions and a maximum thickness of 0.26m. Pottery retrieved from this layer was dated to the late 18th to early 19th century.

- 3.3.9 Layer 145 was a compacted, mid yellowish grey-brown silt with frequent chalk and mortar. This layer measured a maximum 0.10m thick.

3.4 Memorial Garden (Figure 19)

Test Pit 24

- 3.4.1 Summary: Test Pit 24 measured 1m by 1m (later extended to 2m by 1m) and was excavated to a depth of 0.96m where the top of the top of the vaults below was encountered. Three layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 20, Section 22, plate 17).

Layer 24 was a firm, brownish grey sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.33m.

Layer 128 was a light brown silty subsoil. This layer contained pottery dated to the mid 19th century.

Layer 129 was a compacted, pale brown silt with frequent chalk inclusions and occasional charcoal flecks. This layer measured a maximum 0.27m thick and finds retrieved from this layer included 19th century pottery.

Layer 171 was a loose, light greyish brown silt with a maximum thickness of 0.40m. This layer contained frequent fragments of brick and lump of tile.

Below layer 171, the top of the vaults was recorded (plate 17). The brickwork of the top of the vaults was arched, and two phases were recorded, corresponding with the survey of chambers L3/L4 below (see figure 21). There was a suggestion of collapse/repair of the brickwork and therefore investigation was suspended.

Test Pit 25

- 3.4.2 Summary: Test Pit 25 measured 1m by 1m and was excavated to a depth of 0.45m, due to a lack of time, this test pit was not investigated further. Four layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 19, Section 30, plate 18).

Layer 219 was a loose, mid grey brown silty topsoil with occasional pebble inclusions and a maximum thickness of 0.27m.

Layer 220 was a compacted, mid yellowish grey-brown silt with frequent chalk and mortar. This layer measured a maximum 0.09m thick.

Layer 221 was a loose, dark reddish brown silty sandy layer with a maximum thickness of 0.10m. This layer contained frequent fragments of stones and building rubble throughout.

Below layer 221, the top of a compacted brick and rubble surface was recorded. Due to a lack of further time, this layer was not investigated further, however, its location suggests it should be

over the top of vaults or even the well contained within L3 (see figure 21), and this hard surface may be the top of the chamber or well cover.

This test pit was excavated against the 19th century wall which divides the current memorial garden from the castle grounds. Below the present wall was evidence of at least five courses of earlier brick (plate 18), indicating an earlier wall or foundations on this alignment. This earlier wall was constructed from a darker reddish hand made brick and bonded with a soft, crumbly mortar.

Against the wall was also a brick-built block with square stone slab on top. This may have been associated with the vaults beneath, perhaps a ventilation shaft, or a plinth associated with earlier wall / foundations recorded.

Test Pit 27

3.4.3 Summary: Test Pit 27 measured 1m by 1m and was excavated to a depth of 0.70m. Four layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 20, Sections 16 and 19).

Layer 142 was a loose, mid grey brown, sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.28m. Finds retrieved from this layer included early to mid 19th century pottery and clay pipe.

Layer 143 was a loose, light grey sandy silt with small stone inclusions. This layer measured a maximum 0.09m thick and contained early to mid 19th century pottery and clay pipe.

Layer 217 was a loose, pale, yellowish beige, silty sandy layer with a maximum thickness of 0.04m. This layer contained frequent fragments chalk and mortar fragments throughout.

Layer 144 was a loose, dark reddish brown silty sandy layer with a minimum thickness of 0.30m. This layer contained frequent fragments of stones and building rubble throughout. Other finds included late 18th to early 19th century pottery.

Within this layer, two courses of three bricks laid in an east to west alignments were recorded. These bricks were like those recorded in Test Pit 25 and may be the foundations of part of a contemporary structure/wall.

Due to restrictions on time, no further investigation took place in this test pit.

Test Pit 28

3.4.4 Summary: Test Pit 28 measured 1m by 1m and was excavated to a depth of 0.65m. Four layers were recorded within this test pit, representing a sequence of post-medieval make-up. (Figure 20, Section 15).

Layer 209 was a loose, mid grey brown, sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.28m.

Layer 141 was a loose, light grey sandy silt with small stone inclusions, measuring a maximum 0.09m thick. This layer contained two medieval gaming pieces, which initially were thought to have been part of the same object (SF16). The first was a worn bone chesspiece, the other is either part of a second chess piece or a counter (plate 19). The chesspiece is a turned cylindrical pawn with rounded top made from a hollow long bone, it may originally have been fitted with a rough bone plug like similar bone and antler examples from London and Ludgershall Castle, Wiltshire. The second piece is a turned bone counter, pierced in the centre and fitted with a small bone knob. It shows no sign of wear and may have been discarded when the knob broke. It is similar to game counters from Norwich and York with no knob but a large central hole. The very marked difference in wear between the two pieces marks them out as separate, but in addition the counter is too narrow to have slotted into the wider end of the pawn, and too

wide to have slotted into the narrower end. (Appendix B). Pottery and clay pipe were also retrieved from this layer which provide dates ranging from the 16th to the 19th century.

Layer 208 was a loose, pale, yellowish beige, silty sandy layer with a maximum thickness of 0.04m. This layer contained frequent fragments chalk and mortar fragments throughout.

Layer 210 was a loose, dark reddish brown silty sandy layer with a minimum thickness of 0.30m. This layer contained frequent fragments of stones and building rubble throughout.

Test Pit 30

- 3.4.5 Summary: Test Pit 30 measured 1m by 1m and was excavated to a depth of 0.60m. Just one layer of topsoil was recorded within this test pit which was excavated and backfilled on the same day.

Layer 149 was a loose, mid grey brown, sandy silty topsoil with occasional pebble inclusions and a minimum thickness of 0.60m. Finds retrieved from this layer included pottery dated from the 16th to 17th century.

Test Pit 31

- 3.4.6 Summary: Test Pit 31 measured 1m by 1m and was excavated to a depth of 0.45m. Just one layer of topsoil was recorded within this test pit which was excavated and backfilled on the same day.

Layer 150 was a loose, mid grey brown, sandy silty topsoil with occasional pebble inclusions and a minimum thickness of 0.45m. Finds retrieved from this layer included 19th century pottery.

Test Pit 32

- 3.4.7 Summary: Test Pit 32 measured 1m by 1m and was excavated to a depth of 0.37m. Two layers of topsoil and subsoil were recorded within this test pit which was excavated and backfilled on the same day (Figure 20, Section 14).

Layer 151 was a loose, mid grey brown, sandy silty topsoil with occasional pebble inclusions and a maximum thickness of 0.28m.

Layer 214 was a loose, light yellowish brown sandy silty subsoil with occasional small stone inclusions and a minimum thickness of 0.25m.

Test Pit 33

- 3.4.8 Summary: Test Pit 33 measured 1m by 1m and was excavated to a depth of 0.79m. Four layers were recorded within this test pit (Figure 20, Section 13).

Layer 152 was a loose, mid grey brown, sandy silty topsoil with occasional small stone inclusions and a maximum thickness of 0.26m. Finds retrieved from this layer included 19th century pottery.

Layer 215 was a thin deposit of compact, light yellowish brown chalk and mortar with a maximum thickness of 0.03m. This layer may represent demolition close by.

Layer 153 was a loose, light brown, silty clay with occasional pebble inclusions and a maximum thickness of 0.31m. Finds retrieved from this layer included early to mid 18th century pottery.

Layer 216 was a compacted, light brown sandy silt with brick and rubble inclusions and a maximum thickness of 0.33m.

Test Pit 34

- 3.4.9 Summary: Test Pit 34 measured 1m by 1m and was excavated to a depth of 1.08m. Five layers were recorded within this test pit which was excavated to a depth of 0.79m (Figure 20, Section 20, plate 20). Most significantly two layers recorded were associated with an earlier road surface.

Layer 154 was a loose, mid grey brown, sandy silty topsoil with occasional small stone inclusions and a maximum thickness of 0.40m.

Layer 155 was a moderately compact, mid brown, sandy silty subsoil with occasional inclusions of brick and rubble material and a maximum thickness of 0.21m.

Layer 156 was a compacted but soft, light brown, silt with no obvious inclusions and a maximum thickness of 0.05m. This layer may represent a natural silt build-up following disuse of the surface beneath.

Layer 161 was a very hard, compacted, white, chalk layer with a maximum thickness of 0.06m. There were no obvious other inclusions and no datable finds were retrieved. This layer is likely to represent a road surface or track (see discussion).

Layer 162 was a compacted, mid brown sandy silt with brick and rubble inclusions and a minimum thickness of 0.42m. Finds retrieved from this layer included mid 16th to late 17th century pottery.

Test Pit 35

- 3.4.10 Summary: Test Pit 35 measured 1m by 1m and was excavated to a depth of 1.06m. Five layers were recorded within this test pit which are comparable with those in Test Pit 34. (Figure 20, Section 21). This test pit was located against the curved boundary wall which divides the memorial garden and the upper garden. Two courses of the footings of this part of the wall which dates to the 19th century were revealed.

Layer 157 was a loose, mid grey brown, sandy silty topsoil with occasional small stone inclusions and a maximum thickness of 0.18m.

Layer 158 was a moderately compact, mid brown, sandy silty subsoil with occasional inclusions of brick and rubble material and a maximum thickness of 0.30m.

Layer 163 was a very hard, compacted, white, chalk layer with a maximum thickness of 0.06m. There were no obvious other inclusions and no datable finds were retrieved. This layer is likely to represent a road surface or track (see discussion).

Layer 164 was a compacted, mid brown sandy silt with brick and rubble inclusions and a minimum thickness of 0.29m.

3.5 The Vaults (Figure 21)

Following listed building approval, a number of test pits were excavated within the vaults. The location of these test pits was determined by geophysical survey and in order to try and establish a function and use of the tunnels. Whilst working in the tunnels, hard hats were worn at all times and artificial lighting was provided by a number of halogen lamps (plate 21).

“Oven” Context 16

- 3.5.1 Context 16 was situated in the centre of the well tunnel (L4) and consisted of a circular brick built structure thought to have been a smoker, oven or stove (plate 22). During a clean over of the area which included rubble and loose bricks, a small iron door was recovered, likely to have been part of the structure as the brick rubble closely matched the bricks that survived on the stove or oven.(plate 23).
- 3.5.2 The structure only survived to two courses of bricks and had a diameter of 0.80m The surviving courses were of a rough bond of full and half bricks with a light grey lime mortar, giving the structure a very utilitarian appearance. A draught channel remained and ran north-south through the structure topped by an iron grill on which a fire would have probably sat. The small door found amongst the rubble and loose soil within the tunnel was probably for the removal for ash and cinders (plate 23).

Test Pit 4

- 3.5.3 Summary: Test Pit 4 was located within tunnel R2. It measured 1.00m wide by 1.50m long and was excavated to a depth of 1.20m (Figure 22, Section 9). Two pits dating to the 19th century were recorded.

Context 120 was the fill of a small sub circular pit 121. It consisted of a very dark grey silty clay mixture containing 19th century pottery and glass. A moderate amount of charcoal was present within this fill, although there was no visible evidence of burning in situ. Maximum depth of this fill was 0.45m.

Context **121** was the cut of a small sub circular pit with steep visible sides and a flatish base. The pit contained a single fill (120) this pit seems to have contained dumped rubbish and cuts through from the modern surface. It measured 0.75m by 0.60 and had a maximum depth of 0.45m.

Layer 119 was a silty dark grey post medieval layer containing modern glass, pottery, undated animal bone and ceramic building material. Pottery retrieved from this layer provide a 19th century date for this context. It measured 0.15m thick and was cut by pit **121**.

Layer 123 was excavated to a depth of 1.00m and consisted of a mid brown silty clay. Finds included mortar bone and glass and pottery. Tube like mineralised plant or worm casts were found in the NW corner of test pit 4. A twenty litre soil sample was taken from this context which revealed a moderate amount of seeds and cereals as well as more than 50 specimens of fish bones. Small and large animal bones were also found as well as a sherd of abraded medieval pottery. An eel (*Anguilla anguilla*) vertebrae and a lower mandible of the Black rat (*Rattus rattus*) were also noted in the residue.

Pit **72** was circular in plan and had steep sloping edges and a flat base. It measured approximately 0.50m in diameter and 0.19m in depth. This pit had one fill, context 71.

Pit fill 71 was a soft, greyish brown, clayey silt with occasional inclusions of brick and mortar. This fill had occasional charcoal flecks and a maximum thickness of 0.30m. Clay pipe retrieved from this layer provide a 19th century date for this context. Other finds included a globular mother-of-pearl button with inset copper-alloy loop dating to the late Victorian – Edwardian era . A ten litre sample of this context was taken for analysis which revealed a small amount of untransformed seeds, bones from small and large animals as well as fish, pottery, building material and two iron nails. The environmental sample also contained numerous shards of green, brown and clear glass along with coal and clinker and hammerscale in the form of spheroidal hammerslag.

Test Pit 5

- 3.5.4 Summary: Test Pit 5 was located within tunnel L9. This test pit initially measured 1m by 1m, however it was widened and extended as it became deeper (Figure 22, Sections 26 and 27, plates 24 and 25). This test pit revealed the lower courses and foundation blocks upon which the vaults were constructed. Below this, thick deposits of silty clay with early medieval pottery were recorded which may represent fills of a large pit containing sherds of 12th to 14th century pottery in its lower fill. Below this, a sequence of compacted flood silt layers were discovered towards the base of the test pit (at around 0mOD). Although undated, these layers represent several episodes of flooding where the silts from each flood or tide have settled on top of each other. This is likely to be from a period before any of the known buildings on the site.

Layer 135 was a mid to light brown clayey silt with occasional charcoal flecks and occasional inclusions of brick and stones. This layer had a maximum thickness of 1.10m and was the uppermost fill in test pit 5. Pottery dated to the 19th century was recovered from this layer.

Layer 136 was a firm grey silty clay with a maximum thickness of 0.30. A ten litre soil sample was taken from this context for environmental analysis. This sample revealed a moderate amount of charcoal as well as frequent bones from small and large animals and fish. Marine molluscs and a small amount of pottery were also recovered and a caudal denticle of the Thornback ray (*Raja* sp.) was recovered from the residue (Appendix G). The pottery retrieved from this layer was dated to the 19th century, however a number of 11th -12th and 13th to mid 14th century sherds were also recovered as well as late medieval green glazed brick and floor tile fragment.

Layer 138 was a firm, light brown coloured clayey silt with a maximum thickness of 0.10m. Pottery from the mid 12th to 14th (possibly mid 12th to mid 13th) century was recovered from this deposit.

Layer 137 was a firm, dark brown clayey silt with a maximum thickness of 0.30m. This layer contained occasional bone and charcoal inclusions but no pottery or other dating evidence.

Layer 238 comprised several compacted silt layers, possibly representing episodes of flooding. This layer had a maximum thickness of 0.40m and no obvious inclusions.

Layer 227, like 238 above comprised several compacted silt layers, possibly representing episodes of flooding. This layer was recorded in a small additional excavated slot in the base of the test pit. It had a maximum thickness of 0.61m and no obvious inclusions.

Test Pit 18

- 3.5.5 Summary: Test pit 18 measured 1.0m by 1.0m and was excavated to a depth of 0.65m. Three layers were recorded within this test pit (Figure 22, Section 8).

Context 110 was the number allocated to the lower courses of bricks from the wall of the vaults. Here, four courses of narrow red bricks were recorded sitting on top of a course of larger, square-cut stones which represent the foundations of this element of the vaults.

Layer 111 consisted of a firm dark brown silty clay material to a depth of 0.15m and contained post medieval pottery and bone. This was the uppermost layer of the test pit. This layer abutted the wall of the vault in tunnel R8.

Layer 112 consisted of a light to mid brown compact sandy silty clay layer to a recorded depth of 0.20m. This context contained fragments of tile and animal bone.

Test Pit 19

- 3.5.6 Summary: Test pit 19 measured 1m by 1m and was excavated to a depth of 0.60m. Two layers were recorded within this test pit .

Layer 235 consisted of a light to mid brown firm silty clay material. It had a maximum depth of 0.18m and contained mid 19th century pottery and clay pipe fragments, glass and small amounts of ceramic building material.

Layer 236 was a compact dark grey brown silty sandy clay. It contained little in the way of finds except for a single abraded sherd of late 18th to early 19th century pottery. It was excavated to a depth of 0.42m.

Test Pit 20

- 3.5.7 Summary: Test pit 20 measured 0.85m wide by 1.0m and was excavated to a maximum depth of 1.08m. Four layers were recorded within this test pit (Figure 22, Section 11).

Layer 165 was a compact dark grey black silt with a maximum depth of 0.10m and contained modern pottery, glass, ceramic building material and plastic. This layer is conducive with a modern waste deposit.

Layer 166 consisted of a hard packed dark silty clay with very frequent chalk and mortar inclusions. This existed to a depth of which were either a relatively modern floor level or a mortar foundation layer of a brick floor which has been completely removed. This layer had a maximum thickness of 0.10m. Tunnel R5 still has a brick floor in situ.

Layer 167 consisted of a compact light to mid brown silt with occasional chalk inclusions. It had a maximum thickness of 0.40m. This layer contained animal bone..

Layer 168 consisted of a dark brown silt that was excavated to a depth of 0.70m

Test Pit 36

- 3.5.8 Summary: Test pit 36 was located in the corner of the well tunnel at the end of L3 and L4 (Figure 21). It measured 1.14m in length by 0.61m wide and was 0.64m deep. Four layers were recorded within this test pit

Layer 178 was a compact dark grey silt containing modern pottery, ceramic building material and glass and was similar to other uppermost layers dug throughout the vaults.

Layer 179 consisted of a possible brick and stone footing probably relating to the wall blocking the southern end of the the well vault. The bricks are not whole and are probably reused from elsewhere within the vaults. A small copper-alloy pin (SF8) was also recovered from this layer. Pins of this type date to the 13th century and perhaps the early 14th century (Appendix B).

Layer 180 was a moderately loose dark grey silty clay soil with some reddish brown sandy lenses it was similar in composition to layer 178 and could be a redeposited back fill relating to the construction of the wall blocking this end of the vault. This layer contained some broken brick and tile.

Layer 181 consisted of a loose dark reddish brown rubble mixture containing a large amount of broken ceramic building material. Considering the large amount of ground disturbance this end of the vault has seen subjected to it is unsurprising that a moderate amount of redeposited material was encountered.

Context 182 was the excavation cut of test pit 36.

Test Pit 37

- 3.5.9 Summary: Test pit 37 was located against the wall and close to test pit 36 in L3/4. it measured 0.95m in length by 0.70m wide and was 0.85m deep. Three layers were recorded within this pit.

Layer 174 consisted of a medium to dark grey clay almost identical to layer 178 in test pit 36. finds consisted of modern tile, pottery, brick and glass.

Layer 175 consisted of a medium to dark brown moderately compact silt containing no finds.

Layer 176 was a loose rubble layer most probably relating to some alteration to the area around the well or a rebuilding of the vault wall.

Context 177 was the excavation cut of test pit 37.

Test Pit 38

- 3.5.10 Summary: Test pit 38 was located in vault L8 and measured 1.0m by 1.0m and was excavated to a depth of 0.10m. Three layers were recorded within the pit.

Layer 211 consisted of a medium to dark brown silty clay containing 19th century pottery, bone and glass.

Layer 212 consisted of a white hard mortar possibly a pre existing floor surface or bedding mortar for a brick surface similar to that found in test pit 20.

Test Pit 40

- 3.5.11 Summary: Test pit 40 consisted of a pit dug at the end of vault tunnel L8 The test pit measured 1.0m by 1.0m and was dug to a depth of 1.20m against the vault wall and to a depth of 0.68m on the other three sides. Three layers were recorded within the test pit (Figure 22, Sections 40 and 41).

Layer 199 consisted of white mortar with chalky inclusions with a maximum depth of 0.10m and is similar in make up to the layer 212 found in test pit 38. Pottery retrieved from this layer has been dated to the 19th century.

Layer 200 was made up of a light brown silty clay layer which existed to a maximum depth of 0.20m a moderate amount of brick rubble was found within this layer.

Layer 201 consisted entirely of brick and rubble considered to be late medieval in date, and had a maximum thickness of 0.22m. Pottery retrieved from this layer has been dated to the mid 15th to mid 17th century and fragments of late medieval olive green coloured glazed brick were also found.

Test Pit 41

- 3.5.12 Summary: Test Pit 41 was located in the well tunnel and was dig up against the wall, in front of the well. (Figure 22, Section 39). This test pit found what is though to be the same lead water pipe recorded within Trench 4.

Layer 90 was a compact, light grey, sandy clay layer with a maximum thickness of 0.13m. Finds retrieved from this layer included fragments of brick and glass. This was the upper-most layer in this test pit.

Layer 118 was a firm, light brown clayey fill with no obvious inclusions.

Pipe trench **93** linear in plan measuring approximately 0.75m wide and 0.37m deep. It was investigated in a 1.3m slot where it was recorded as having steep sloping edges and a flat base.

Pipe Trench fill 92 was a soft, mid brown, mixed soil, measuring 0.37m in thickness. This deposit contained sherds of 19th century pottery and represents the backfill around the pipe..

3.6 Finds Summary

3.6.1 The investigations at Wisbech Castle produced a significant quantity of artefacts, all of which were washed and bagged up on site by volunteers. For analysis purposes, only those from stratified contexts (not including topsoil and subsoil) were looked at for the specialists reports, other than those which were of special interest or significance. The table below gives a summary of the quantity of finds used for analysis:

Material	Quantity
Pottery	151
Bone	132
Ceramic Building Material	199
Clay Pipe	78
Plaster/Mortar	43
Worked Stone	19
Roof Tile	65
Slate	15
Shell	95
Flint	3
Shale	4
Coal	37
Slag	5
Other Metal Objects	55

3.7 Environmental Summary

3.7.1 Nine bulk samples were taken from features within the evaluated areas of the site in order to assess the quality of preservation of plant remains, bones and artefacts and their potential to provide useful data as part of further archaeological investigations

3.7.2 The assemblage appears to represent mainly a natural accumulation of plant remains from local vegetation along with a small quantity of domestic waste. Nearly all of the samples contain numerous fish bones and fishscale suggesting that fish was a dietary constituent.

3.7.3 The assemblage is typical of the floral and faunal assemblages found in Wisbech from the medieval and post-medieval period. Repeated flooding events have resulted in silt

layers that contain the remains of plants and organisms that would have been in the flood water and also would have colonised the standing flood waters prior to drainage.

- 3.7.4 Column samples were also taken from the flood silt sequence in Test pit 5 in the vaults. These samples are currently held at OA East stores, however the cost of analysis falls outside the scope of this investigation.
- 3.7.5 The full results and assessment is presented in Appendix G.

4 SURVEY OF THE VAULTS (FIGURE 21)

4.1 Introduction

- 4.1.1 The vaults are accessed from an entrance located within the grounds of the castle (plate 26), but not associated with the present building. The vaults are thought to sit within the footprint of Thurloes Mansion, but some foundation elements are considered to be significantly earlier, perhaps dating to the period of the Bishops Palace.
- 4.1.2 Until now, a full scale plan of the vaults has not been carried out. In order to fully understand the scope and layout of the vaults, a measured survey was carried out in July over a period of two days.
- 4.1.3 A full survey of the vaults, detailing phasing and construction techniques would involve significantly more time and resources than was allowed in two days, however, the plan produced can be used as a starting point for further investigation and recording.

4.2 Methodology

- 4.2.1 A hand drawn base plan of the vaults was required as part of the investigations. The survey was carried out on 2nd and 3rd July 2009 with the help of two volunteers (Colleen Seward and Liz Jones), .
- 4.2.2 A base line was set out along the main, central passage of the vaults, running from the entrance in a north-west to south-east orientation. From this line, each of the side tunnels was measured and drawn onto a plan at a 1:50 scale. All distances and measurements were checked using a Leica Distometer.
- 4.2.3 The area surveyed was lit using halogen lamps and torches. During the survey, the vaults were open to the public as part of the Rose fair celebrations

4.3 Discussion

- 4.3.1 The survey was not aimed at fully phasing or dating the various elements of the tunnels as this would have required significantly greater time and resources than were available. What it hoped to achieve in the time allowed was to produce the first full scaled plan of the vaults (Figure 21). However, during the survey, a number of interesting features came to light which were observed, but not fully recorded. It is hoped that in the future, this plan can be put to use in a more detailed investigation into the development of this part of the castle.
- 4.3.2 Tunnel L2 was not fully accessible as it has been sealed at some point, possibly due to structural safety reasons. The end of R1 also appears to have undergone repair and support at the far end. There was evidence of minor repair in many other locations, and from the test pits above it seems repairs could have been made from the outside as well as inside.
- 4.3.3 All elements of the vaults were constructed of brick with support arches between each one (plate 27). In tunnel R5, these arches had been bricked up and there was evidence of fittings at the entrance which had held a door indicating this tunnel may have had a lockable door or gate and perhaps used to store expensive commodities or goods. This tunnel also had white lime-wash on the walls and also had a brick floor.
- 4.3.4 There were clearly different phases and elements to the vaults, however, it was difficult to establish dates to attach to them.

- 4.3.5 It was reported by many visitors and also documented in a number of sources that the tunnels extended further than their present locations, however, the geophysical survey was not able to confirm this. The ends of some vaults (L9, L6 and L1) had a later brick rounded “end” which gave the appearance and suggestion that they could have extended further, however it is more likely that the curved brick ends were inserted for structural repair and strengthening reasons.
- 4.3.6 The end tunnels, R8 and L9 were significantly different to the others noted. The ceilings were much lower in this vault and they were also much wider. There was evidence of repair or strengthening using what appears to be nineteenth century brick (plate 29).

5 DISCUSSION AND CONCLUSIONS

5.1 Lower Garden

- 5.1.1 Investigations in the lower garden identified a surprisingly varied and interesting sequence of layers and features as well as a significant quantity of finds, in particular ceramic building material (brick, roof and floor tile). A principal aim was to identify what could have produced the anomalies recorded in the geophysics report (Appendix I) which were interpreted as a possible building. This determined where the trenches and test pits were located in the first instance.
- 5.1.2 The earliest activity identified within the lower gardens came from a single sherd of Ipswich Ware pottery which was found within the subsoil of Test Pit 2, dated 700 – 850AD. Although this did not come from an archaeological feature within the test pit (it was located too high in the stratigraphic sequence), it does suggest that archaeology dating to the Saxon period may be located close by or existed close to the site and later destroyed. Nearby investigations in 2008 and 2009 at the nearby library (Fletcher 2009) and at 4 Ely Place (Fletcher 2010) have found evidence of early fortifications dating to the period and as pottery does not tend to travel too far in such urban contexts, this is good evidence of activity in this location and may be associated with a building pre-dating the Norman Castle of 1086.
- 5.1.3 Structural remains thought to be the foundations or destroyed walls of brick-built buildings were identified within Trench 1, Trench 3, Test Pit 15 and Test Pit 21. Interestingly they all on different alignments and plotting the continuation of any between test pits and ditches has proved to be impossible. This is partly because not enough could be revealed in plan to truly understand the alignments and construction methods. Trench 1 revealed the most impressive of the structures, with what appeared to be the corner of a structure, complete with mortar and a mortar layer which may have supported a tile or stone floor. The foundations within the other trench and test pits were made up of tightly laid, firmly compacted fragments of broken or crushed brick. Although it is impossible to say if these were the a result of demolition or simply crushed brick used for a solid foundation, it is clear that they were all made up of a similar dark red brick to those in Trench 1 and although truncated by later features and activity, it is highly probable that they relate to a contemporary building on this part of the site. It has not been possible to ascertain a date of construction, other than in Trench 1, as there were no complete bricks or pottery from within the courses, and in Trench 1 the structure was left in tact for future research. However, stratigraphic dating evidence from features which truncate them in Test Pit 21 and Trench 2, would indicate they pre date the 16th/17th century. Although little documentary evidence of the Bishops Palace exists to indicate how it may have looked, it is generally accepted from comparing with other surviving examples, the period of construction and available building materials, that it would have been constructed from red brick. It is therefore a strong possibility that these foundations and walls may be associated with the building of the Bishops Palace.
- 5.1.4 A large area of compacted red brick rubble was recorded in the northern part of the lower garden within Trench 4 and test pits 12, 13 and 14. A large anomaly was identified by the geophysical survey (Figure 15) which influenced the location of Trench 4, as the layer appeared bigger than the survey suggested, additional test pits were used to establish the extent of the spread. These deposits were more loose and less regular than the deposits recorded in the areas mentioned above and have been interpreted as demolition material. All comprising the same red brick, a number of

samples were taken of these for analysis (Appendix F). Together with pottery, these layers have been dated as late medieval and 14th-15th century, with a number of fragments of green glazed brick indicative of the sort of display of wealth used on a high status building. Could this area contain the demolition rubble of the Bishops Palace? Due to health and Safety restrictions as well as time constraints, it was not possible to dig to the bottom of these trenches and test pits. Test pit 14 was the deepest, excavated to a depth of 1.5m and still the rubble continued down. Is it therefore possible that there is a much deeper feature such as a large cellar or pit dug for the disposal of this unwanted material?

- 5.1.5 The next phase of activity within this area occurred in the 17th century. Pottery dated to this century has been recovered from the base of a number of pits and ditches recorded within the test pits and trenches in the lower garden. Pits were recorded within Trench 2 and Test Pit 14 and a clay lined pit was found in Trench 3, all dating to the 16th - 17th century and ditches dated as 17th century were recorded in Test Pits 12 and 21. Although these features have been interpreted as pits and ditches, on the whole it is difficult to be certain due to the restricted size of the trenches and test pits, what is certain however is that these were cut features and truncating an earlier phase of building activity. The 17th century saw the construction of Thurloes Mansion in 1656. It is known that Thurloe demolished the Bishops Palace, presumably selling on much of the material before building his own house on the site. Is it possible these pits and ditches relate to the period of construction or just prior to construction of Thurloes Mansion? The mansion is known from cartographic sources to have been located further west, above the location of the vaults and these features may be rubbish pits or drainage ditches at the rear either of the mansion itself or within the grounds of the palace, before it was demolished, when it is known to have fallen into a state of disrepair. It is interesting to note that a number of sherds of medieval window glass were recovered from the pits; almost certainly from the dismantled Bishops Palace.
- 5.1.6 It seems that following the activity of the 16th-17th century, the site is subsequently levelled throughout the post-medieval period. This is likely to be a result of landscaping for the mansion and later making up ground for the construction of the current castle building in 1816 as Medworh took down Thurloes Mansion piece by piece. There are large fragments of building stone still lurking in the bushes of the lower garden, very similar to the large cut ashlar blocks and carved pieces recovered during the library excavations in 2009 (Fletcher 2009). Could these all be fragments of stone salvaged from Thurloes Mansion but not reused by Medworth in his new castle?
- 5.1.7 Material from when the castle was being used as a school in the nineteenth century was also recovered amongst the finds in the topsoil. A number of fragments of slate boards and pencils were found, one board still had the writing visible. Also, a bone stylus that still retains the blunted stump of its iron point (SF55) was also found in Trench 2. Sometimes called parchment pricklers but more probably used on wax tablets, similar bone and ivory styli occur widely in the late medieval and early post-medieval periods on monastic and scholastic and secular sites

5.2 Upper Garden

- 5.2.1 The test pits excavated in this area aimed to look at the top of the vaults structure and to establish how much soil coverage exist above them and if any demolition material from Thurloes Mansion was present. These test pits revealed a sequence of two or three layers directly over the vaults with an average covering of 0.82m. There was

obviously less coverage recorded in the test pits directly over the top of the tunnel arches.

- 5.2.2 Test Pit 22 located on the gravel path was probably the most interesting, revealing evidence of what may be the earliest phase of the vaults, constructed in stone, rather than brick. This test pit corresponds with L2 in the vaults below and further investigation into the phasing and construction of the vaults would enable further and more meaningful interpretation.
- 5.2.3 Finds from the area comprised mostly 17th to 19th pottery and clay pipe. A fragment of a very weathered and worn large Norwegian Ragstone hone and 15th century brick were found in Test Pit 8.

5.3 Memorial Garden

- 5.3.1 Test pits were investigated in the Memorial Garden over a single weekend and therefore, not all were completed or excavated deeper than topsoil and subsoil before we were required to backfill. Despite this, we were able to collect some interesting finds as well as plot the survival of an earlier road surface.
- 5.3.2 Cartographic sources, for example Figure 6 (engraving of The Crescent in 1827), show that the area now occupied by the Memorial Garden used to lay within the castle estate. Maps show this to be the case up until at least 1886 (Figure 12) and that the current castle, as well as Thurloes Mansion, were accessed from the York Row/Bridge Street side of the town. Test pits 34 and 35 revealed evidence of an earlier road surface. This road foundation was constructed from a compacted white chalk, located approximately 0.75m below the current ground surface, indicating landscaping and imported soil has raised the ground level since the road was in use. Although the road surface did not contain dating evidence, a layer directly below it in Test pit 34 contained pottery dated to the 16th-17th century, contemporary with the period of Thurloes Mansion.
- 5.3.3 Two of the test pits located against the boundary wall (24 and 25) revealed continuation of the vaults below. Test Pit 24 revealed evidence of repair and 25 revealed a capped ventilation shaft. Bricks at the base of the current boundary wall looked to be earlier in date were noted in Test Pits 25 and 27 and could relate to earlier building in this location. Figures 5, 9 and 10 all indicate the presence of buildings in this location which no longer appear by the 1st edition Ordnance Survey Map (Figure 12, 1886). On the earlier plans these are labelled as coach-house and stables.
- 5.3.4 One of the most interesting finds of the excavation came from a subsoil layer in Test Pit 28. A medieval chesspeice and bone counter (plate 19 and Appendix B). Although not from a medieval layer, these pieces are likely to have come from the castle site and provide evidence of games and social activities taking place in the medieval period.

5.4 Vaults

- 5.4.1 Investigations in the vaults revealed sequences of flood deposits which pre-date the bishops Palace and the construction of the vaults. The test pits also gave an insight into construction methods and foundations of the vaults themselves.
- 5.4.2 The earliest dated activity was recorded in Test Pit 5, the deepest excavated test pit which was investigated to a depth of 2.40m. The lower deposits produced pottery dating to the 12th to 13th century and the soil samples recorded remains of fish and marine molluscs, indicating this was a probable flood deposit - perhaps one of the many floods which devastated the town in the 13th century.

- 5.4.3 The majority of the test pits recorded layers with finds dated to the 19th and 20th century. It appears that much of the current floor level has been made-up over the past hundred years or so as a result of general disuse and flood. This may also have been the last time the “oven” recorded in L4 was used. During the investigations, a visitor to the dig told us how a group of scouts were involved in clearing away lots of mud and silt from the vaults approximately 30 years ago. He claimed that around 30cm was removed from the floor, suggesting the built up layers were even deeper.
- 5.4.4 The small “oven” feature is likely to date to the 18th or early 19th century. An illustration in “A History of Wisbech Castle” (Annis 1977) shows a domed structure in the passage way leading to the well, which is almost certainly this feature. Whether the dome was factual or drawn with artistic license is unclear. A detached chimney is also shown to the right of the structure, this chimney was found in the grounds of the castle but showed no signs of heat or soot damage, so may have no association with the oven or stove. Although the feature lies directly below a ventilation shaft within the vault ceiling, the brickwork around this opening shows no sign of heating or soot. Steam from a boiling copper may have exited at this point and would not leave any discernible trace.
- 5.4.5 Varying suggestions have been made for the use of this feature, including a smoker, oven or stove. A smoker can probably be ruled out as a much larger structure with room for racks to hang fish etc would have been usual.
- 5.4.6 Another suggested use of this feature maybe related to the washing of laundry. A large copper or tub could possibly have sat on the brick stove to provide hot water. The source for the water, the well is just a few meters away. Various buildings have existed over the well area including a warehouse and Fire Engine House but there is no mention of a laundry so it could be supposed that the processing of laundry may have been taking place within the vault area.

5.5 Significance

- 5.5.1 The Community Excavations at Wisbech Castle proved highly successful and significant on a number of levels. Firstly, the project enabled such a large number of people from all backgrounds, professions and levels of ability to be involved in excavation on one of the most historical sites in the town. From finds processing to digging and the most important job of making the tea, everyone involved in the project played a contributing part in making it one of the most successful and enjoyable community excavations this unit has been involved with.
- 5.5.2 For those unable to give up the time to be involved in the project, there was opportunity throughout the dig to view the excavations and an open weekend including historical reconstructions and site tours attracted lots of local interest. More than 700 children from twenty local schools were given the opportunity to not only see the excavations taking place and have tours of the vaults but also to be involved in archaeology-related activities and have since followed up their interest in the classroom through various activities and handling packs as well as a local art competition.
- 5.5.3 In terms of the archaeology, the project has successfully identified evidence of the Bishops Palace through structural remains and demolition material. Pottery and finds from the period may have been absent from the walls and remains themselves, however the position of the walls in the stratigraphic sequence combined with the high status and quality of the building materials used, all indicate these were the remains of the Bishop of Ely's Palace.

- 5.5.4 The project has also uncovered some fascinating and exciting finds including a rare brick assemblage of national importance. Finds tell us about the use of the site as well as the status of those who lived on it over the past 1000 years. The deeper excavations in the vaults and lower gardens, allowed us to see sequences of flood deposits which pre-dated the Bishops Palace.
- 5.5.5 Although each test pit was relatively small-scale, each added to the overall understanding of the development of each of the areas excavated. They have provided an insight into the larger picture, but have also thrown up a number of questions and issues to be addresses to further our understanding. Hopefully more work in the future will expand on these areas for investigation.
- 5.5.6 Given the scale of of site and the ambitious excavation of more than forty trenches and test pits over fourteen days, everyone involved can consider themselves responsible for findings which have not only added to our knowledge of this historic site, but also has enthused and inspired many to take their interest further. The establishment of a local amateur interest group formed from members of the dig has hopefully proven it was not only a successful project but also an enjoyable experience for all involved.

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Appendix B. METALWORK AND SMALL FINDS

By Nina Crummy

B.1 Introduction

This small assemblage includes a wide range of objects of varying functions that date from the late medieval to modern period.

The only coin is a worn half-groat of Elizabeth I, minted between 1567-70 but lost after it had been in circulation for some time.

B.2 The Small Finds

- B.2.1 Several objects date to the medieval period. One is a copper-alloy dress pin with a globular head (now damaged) filled with lead-tin solder (SF 8). Pins of this type date to the 13th century and perhaps the early 14th century in Colchester (Crummy 1988, 8-9). Two bone items found together are evidence for leisure activities. One is a worn bone chesspiece, the other is either part of a second chess piece or a counter (SF16). The chesspiece is a turned cylindrical pawn with rounded top made from a hollow long bone, it may originally have been fitted with a rough bone plug like similar bone and antler examples from London and Ludgershall Castle, Wiltshire (MacGregor 1985, 137, fig. 71, r; Egan 1998, 292-4). The second piece is a turned bone counter, pierced in the centre and fitted with a small bone knob. It shows no sign of wear and may have been discarded when the knob broke. It is similar to game counters from Norwich and York with no knob but a large central hole (Margeson 1993, 217, fig. 164, 1773; MacGregor *et al.* 1999, fig. 940, 7113-14). The very marked difference in wear between the two pieces marks them out as separate, but in addition the counter is too narrow to have slotted into the wider end of the pawn, and too wide to have slotted into the narrower end.
- B.2.2 Literacy is attested by a bone stylus that still retains the blunted stump of its iron point (SF55). Sometimes called parchment prickers but more probably used on wax tablets, similar bone and ivory styli occur widely in the late medieval and early post-medieval periods on monastic and scholastic and secular sites such as Battle Abbey, the Carmelite friary in Maldon and the Free Grammar School at Whitefriars in Coventry, and in secular contexts in major towns, for example Norwich, Winchester, London and York (Geddes 1985, 149-51, fig. 45; Major 1999, fig. 32, 21-2; Woodfield 1981, 103, fig. 10, 4; Margeson 1993, 69-71, fig. 38; Biddle & Brown 1990, 733-8; Egan 1998, 270-2, figs 209-10; MacGregor *et al.* 1999, 1974-6; Ottaway & Rogers 2002, 2934-6).
- B.2.3 A fragment of a large hone made from Norwegian ragstone is medieval (SF84). Although this is an import, it does not class as a luxury item as ragstone hones were imported from Norway from the 9th century onwards throughout the medieval period and are common as site finds. Available in a range of sizes, they were used to sharpen a range of tools, from large objects such as scythes down to small personal knives. Initially imported as finished objects, there is evidence from medieval London that raw

blocks of the stone were imported to be worked into hones at the port of entry (Graham-Campbell & Kidd 1980, 134; Mann 1982, 30; Crummy 1988, 77; 2003, 141; Ottaway & Rogers 2002, 2793-7).

- B.2.4 An unusual object is a miniature lead-alloy scoop (SF7). This is of uncertain date, but may be related to lead/tin toys of the late medieval and early post-medieval periods, many of which are of domestic equipment (Egan 1998, 281-3).
- B.2.5 The latest items are two dress accessories, a mother-of-pearl button and the frame from a large composite brooch (SFs 4 and 112), both probably of late Victorian-Edwardian date.

B.3 The Small Finds Descriptions

SF 1. (32); trench 2. Worn silver half-groat of Elizabeth I, third issue, mint mark coronet, 1567-70. Obverse, (ELIZABETH D) G ANG FR ET (H) REGINA, rose behind left-facing bust; reverse, shield and long cross, POSVI (DEV ADIVTORE)M MEV, shield on long cross fourchée. Diameter 18 mm.

SF 55. (188); Trench 2. Bone stylus with elongated globular head, cordoned shaft and blunted iron point. Length 52 mm.

SF 112. (71). Globular mother-of-pearl button with inset copper-alloy loop for attachment. Diameter 8 mm, length 10 mm.

SF 16. (141). a) Worn turned bone pawn with a rounded top and pairs of grooves at top and bottom. Height 23 mm, maximum diameter 25 mm, minimum 16 mm. b) Small thick turned bone counter with a broken knob fitted into a central perforation. The upper face has decorative concentric grooves and mouldings. Diameter 20 mm, thickness 5 mm, height with the stump of the knob 9 mm. Other than the broken knob it shows no signs of wear.

SF 8. (79). Copper-alloy pin with damaged composite head of copper-alloy sheet over lead-tin solder. Length 54 mm.

SF 84. (29). Fragment of a very weathered and worn large Norwegian Ragstone hone. The section was originally square or rectangular but is now triangular, being worn down more on one face than the other. Part of the narrow edge has sheared off. One end is broken, the other is original but damaged. Length 74 mm, width 40 mm.

SF 7. (65). Miniature lead-alloy scoop or shovel with broken handle. Length 34 mm.

SF 4. (44). The frame from a large composite oval brooch with the stumps of the hinge and catchplate on the underside. The remaining elements of the brooch would have included a back-plate and a decorative setting protected by a cover of clear glass. Length 49 mm, width 39 mm.

Appendix C. GLASS REPORT

By Carole Fletcher

C.1 Introduction

- C.1.1 The excavation produced a small assemblage of shards of medieval window glass and post medieval vessel glass alongside fragments of 18th, 19th century window glass and 19th and 20th century glass vessels. This report is only concerned with the medieval window glass and post medieval vessel glass.
- C.1.2 Many of the small fragments of window glass are in poor condition due to the burial environment, the glass having become opaque and granular. However a number of fragments have retained some small degree of transparency and the assemblage is predominantly white glass; no pot metal glass has been identified.
- C.1.3 The vessel glass assemblage consists of small fragments from a minimum of four vessels.

C.2 Window Glass

▪ *Grisaille*

- C.2.1 The assemblage contains a small number of painted glass fragments, which can be classed as grisaille a term applied to white (clear) glass painted with simple, often monochrome decoration, in this case red/brown paint.
- C.2.2 A shard from context 4, SF 119 shows naturalistic foliage, although the form of the foliage could not be identified, and a small fragment of glass from context 107 (SF118) also appears to represent foliage. Stylistically these fragments of glass would appear to be decorated style (c.1250-1350) and 14th century in date. Context 4 was dated by the pottery recovered to the early 19th century and context 107 to the 17th century so unfortunately the glass is residual in both contexts.
- C.2.3 On the largest painted fragment (SF120 context 109) only a strap-work like design (parallel lines along one or two sides), survives, these lines produce a trellis like pattern across the window. Unfortunately much of the surface of the glass has been lost so it is unclear if this shard is from a quarry of naturalistic foliage (Decorated style, c.1250-1350 (Marks 1993)) or a diamond-shaped quarry bearing an individual motif (International style, c.1350-1450 (Marks 1993)). Both styles are present in the 14th century although the individual motif is more commonly associated with 15th century glass. The context from which the glass was recovered was dated to the 17th century.

▪ *Miscellaneous painted designs*

- C.2.4 A single fragment of painted glass with a small surviving length of grozed edge was recovered from context 189 (SF90.1). The fragment is covered with stippled matt which has been lightly scraped away to produce highlighted curves. No trace lines are present and the scraped areas do not appear well defined enough for the decoration to be diaper. It is possibly drapery or figurative, perhaps representing hair. Stylistically the shard is difficult to date and may be 14th or 15th century having been recovered from a 17th century context.

- **Quarries**

C.2.5 In addition there is a large fragment of an apparently undecorated diamond-shaped glass quarry (SF90.2). The glass is well grozed and varies in thickness from 2-3mm. Now mainly opaque although originally clear there is no obvious sign of trace line or other decoration on the glass surface.

C.3 Discussion

C.3.1 The assemblage is one of white glass which is predominantly full of bubbles and faults. This may indicate that at least some of the white glass is English, 'English white glass being considered inferior to that produced on the Continent' (Marks 1993, 30).

C.3.2 The glass recovered from the excavation indicate that the site was one of high status in the 14th or 15th century when 'entire windows remained beyond the purses of the less well-to-do throughout the Middle Ages' (Marks. 1993, 6) Marks is referencing the donation of windows to a church but the same statement can easily be applied to stained glass in a Bishops Palace.

C.3.3 Stylistically some the painted glass may be from the end of the decorated style (c.1250-1350) while other fragments may belong to the early part of International style, (c.1350-1450) "the trellis work of naturalistic foliage and stems on grisaille was replaced by diamond-shaped quarries bearing individual motifs often with yellow stained edging" (Marks 1993, 167). The fragment of glass with painted strap work unfortunately is too damaged to indicate if it bore naturalistic foliage or a single central design. Both styles pre-date the building of the Bishops palace in the last quarter of the 15th century.

C.3.4 The medieval glass could have been deposited during the demolition of Wisbech Castle or the glass may have been reused in the later Bishops Palace and possibly destroyed or removed at a later date. This may have been during the dissolution or the reign of Edward VI when outbreaks of iconoclasm destroyed many religious images throughout country (Marks 1993. 229-231) Some of the glass may have survived until the demolition of the palace in 1656 when Thurloe's Mansion was built since much of the medieval window glass was recovered from 17th century contexts.

C.4 Vessel Glass

C.4.1 A small number of fragments of vessel glass were recovered from the excavation all are decorated and are translucent with a fine white coating of oxidization due to their burial environment.

C.4.2 From context 40 a single body shard of thin colourless mould blown glass beaker with vertical ribbing, decorated with applied thick spiral or horizontal trail. which appears to disappear between the ribs. The shard is from close to the base of the vessel as small fragments of glass extend beyond the surface of the glass most likely from an applied basal cordon.

C.4.3 The vessel a Venetian-style glass beaker dates to the late 16th century or early to mid 17th century and would have been produced in Low Countries or England. The pottery recovered from the context dates to the 16th century A similar vessel was described

the catalogue of the glass from Abacus House (Fig 21) by Clark in her MA dissertation project on the assemblage of Tudor glass found at Gutter Lane, London. (<http://www.arch.cam.ac.uk/~rec51/page3.htm>).

- C.4.4 Context 46 produced a single fragment of colourless glass, now cloudy pinkish oxidisation covers the surface of the glass. Possibly from a bowl or large vessel as there is little curve to the glass. There are two Lattimo (opaque white glass) strips parallel to each other on the outer surface of the glass between these strips are finely incised diagonal lines. Visible against a strong light are fine lattimo threads running diagonally in the opposite direction to the engraved lines on the surface of the vessel between the lattimo lines. The pottery recovered from the context dates to the 17th century and the vessel is similarly dated and may be Venetian.
- C.4.5 SF88, context 148 a single thin shard covered with cloudy white oxidisation, from a colourless Venetian-style glass beaker with applied pinched thin spiral or horizontal trail of uneven widths. The glass was recovered from a topsoil context however the vessel dates to the late 16th century or early to mid 17th century.
- C.4.6 SF89, context 66. Two thin shards covered with cloudy white oxidisation, from a colourless Venetian-style glass beaker with applied pinched thin spiral or horizontal trail. Pottery recovered from the context dates to the 17th century alongside several fragments of clay pipe which date from c.1660-1680. The vessel is possibly late 16th or early to mid 17th century.

C.5 Discussion

- C.5.1 The assemblage represents a limited number of drinking vessels all of which are of relatively high status and date to the late 16th century or early to mid 17th century. Produced in England or the Netherlands and one shard possible in Venice, the vessels appear to pre-date the building of Thurloe's Mansion in the later half of the 17th century suggesting that they belong to the last phase of use of the Bishops Palace.

Appendix D. POTTERY SPOT DATING TABLE

Context	Spot dating Date Range
3	19th century
4	Early 19th century (1813-1834)
5	late 18th though most likely early 19th century
6	*mid 13th-mid14th
7	*mid 17th century (RFWE intrusive)
9	13th-mid14th century
11	late 17th century
13	19th century (early to mid)
14	16th-17th century
15	Mid 16th-late17th century
17	*late17th-mid18th century
19	Mid 16th-late17th century
20	17th century
21	*early -late 18th century
22	*late 18th century
26	*mid 15th-md16th century or 18th with clay pipe
29	19th century
31	mid 17th century (with clay pipe)
32	late 17th century (with resid med)
33	early-mid 19th century
40	Unsure rfwe may be intrusive 19th or 17th
44	*late 18th century with much 17th
45	mid 17th century (with clay pipe)
46	early -mid 17th century
47	15th-16th century (clay pipe suggestes mid 17th
60	*19thcentury
61	mid14th-late 15th century
65	* 19th century
66	mainly 17th century if you ignore the 19th
69	17th century
71	mid 17th century (using clay pipe)
73	* 17th century
76	17th century
77	late 17th century
79	17th century using clay pipe
80	16th century (early to mid)
82	early 19th century
83	* 17th century
84	17th century (if you ignore the RFWE)

Context	Spot dating Date Range
85	residual late med mid 14th-mid 16th (1640-1660)
86	late 17th century
92	19th century
95	19th with much residual 17h-18th (1700-1740)
97	mid 15th-16th century if you ignore the RFWE
102	early 16th century
103	16th century
106	17th century
107	17th century if you ignore the RFWE
109	mid -late 15th centuy
114	17th century (midto late 17th with clay pipe)
115	17th century (midto late 17th with clay pipe)
116	17th century
117	mid 16th-mid 18th century
119	19th century with residual 17th century
120	early 19th century
126	17th century (midto late 17th with clay pipe)
128	mid 19th century
129	19th century
130	* 19th century (early to mid)
134	mid 12th-mid 14th century
135	19th century with some residual 18th and med
136	19th with much 13th-mid 14th & 11th-12th
137	ignore redware 16th with much medieval
138	mid 12th- mid 14th (pos mid 12th-mid13th)
141	* 19th with resid 18th, 17th and 16th
142	early -mid 19th century (with clay pipe)
143	early -mid 19th century (with clay pipe)
144	late 18th early 19th century
149	16th-17th century
150	19th century
152	19th century
153	early -mid 18th century
159	13th-mid 14th century
162	mid 16th-late 17th century
170	16th-late 17th century
188	13th-mid 14th century
189	early 17th century
199	19th century
201	mid 15th-mid17th century
205	late 17th century
212	19th cent with residual medeval

Context	Spot dating Date Range
223	late 19th early 20th century
224	late 18th unless crea intrusive (17th century)
235	mid 19th century +
236	late 18th early 19th century

Appendix E. CLAY PIPE

By Carole Fletcher

E.1 Introduction

E.1.1 185 fragments of clay smoking pipe were recovered from the Wisbech Castle excavations (WISCAS09). The majority of the diagnostic fragments date from the mid 17th century. A small amount of earlier material was recovered and a small group of 18th century pipes were also identified.

E.2 Methodology

E.2.1 Terminology used in this assessment was taken from Oswald's work clay pipes for the archaeologist (1975). The pipe bowls, considered the most diagnostic part of the assemblage, were identified and dated using the standard typology for English pipe bowls.

E.3 Quantification and Fabrics

E.3.1 A full quantification table for the clay pipes, including separate counts for complete bowls, bowl fragments and stems, and noting the presence or absence of marked fragments, can be found at the end of this report. The clay pipes are all made from white ball clay.

E.4 Marks, Decoration and Provenance

Marks and Decoration

E.4.1 Two pipes were marked with the makers initials in relief. One is IW on the sides of the heel on an Oswald type 10 form (1700 to 1740) from context 95 and IP on the sides of the spur on an Oswald type 12 form (1730-1780) from context 153. No other makers were present in the assemblage.

E.4.2 There were very few highly decorated bowls in the assemblage the majority bearing only simple rouletting around the around the mouth of the bowl. Where present the decorated pipe bowls all date to the 18th century. The most ornate bowl, an Oswald type 22 (1730-1780) was recovered from context 148. The back and side of the bowl bare a Royal Coat of Arms held by a Lion and Unicorn. The flur de leis of France can be distinguished and the Irish harp and although the remainder of the design is poorly moulded it most likely represents the arms of Scotland and England. The date of the coat of arms may be earlier than that of the pipe onto which it was moulded.

- E.4.3 Three other fragments of decorated pipe bowl were recovered including a near complete bowl (Oswald type 24, 1810-1840) from context 141. Decorated in relief with dots around the base above which was fluting which did not reach the rim of the bowl. The front seal was decorated with crude leaves. A second fragment with similar decoration was recovered from context 142 and a further fragment of fluted decoration on a bowl of unidentified form was recovered from context 26.

Provenance

- E.4.4 The two initialled pipes were not identified to a specific pipe maker and the absence of makers' marks on the remaining the clay pipes makes a discussion of provenance somewhat vague. The assumption is that the majority of the clay pipes recovered represent local production.

E.5 Research Potential and Further Work Statement

- E.5.1 The clay pipe assemblage from Wisbech Castle excavations offers the opportunity to understand the material culture of the area and more closely date certain contexts in addition to understanding the early development of the local clay pipe industry.
- E.5.2 The pipes should be fully analysed to full report level and any future clay pipe analysis should be integrated with the analysis of the post-medieval ceramics and glass.

CLAY PIPE QUANTIFICATION TABLE

Context	Weight kg	Number of complete or near complete pipe bowls	Number of bowl/heel Fragments	Heel Mark	Number of pipe stem fragments	Decoration	Form	Earliest Date	Latest Date
3	0.009		1		1				
4	0.017				7				
7	0.014	1			3		Oswald type 5 ?	1640	1660
10	0.035	1	1		8		Oswald type 5	1640	1660
11	0.044	1	1		15		Unsure of form	1640	1660
12	0.010	1				Lined	Oswald type 5	1640	1660
17	0.008	1					Oswald type 5	1600	1660
17	0.017	1			1		Oswald type 4/5	1600	1660
26	0.004		1		1	Fluted	Unsure of form		
31	0.014	1			1	Rouletted	Oswald type 5	1640	1660
32	0.001				1				
33	0.022	1			2		Oswald type 5	1640	1660
35	0.010				2				
38	0.006				1				
40	0.005				2				
44	0.010	1					Oswald type 5	1640	1660
45	0.042	1			7	Rouletted	Oswald type 5	1640	1660
46	0.014				4				
	0.002				1	Rouletted			
47	0.011	1				Rouletted	Oswald type 4	1600	1640
	0.012	1			1	Rouletted	Oswald type 5	1640	1660
66	0.025	1			5	Lined	Oswald type 6	1660	1680
69	0.010	1				Lined	Oswald type 5	1640	1660
	0.015	2				Rouletted	Oswald type 5	1640	1660
70	0.056	3			6	Lined	Oswald type 5	1640	1660
71	0.036	1			6	Lined	Oswald type 5	1640	1660
76	0.003				1				
77	0.018	1					Oswald type 8	1680	1710
79	0.009	1				Rouletted	Oswald type 5	1640	1660

Context	Weight kg	Number of complete or near complete pipe bowls	Number of bowl/heel Fragments	Heel Mark	Number of pipe stem fragments	Decoration	Form	Earliest Date	Latest Date
80	0.003				1				
82	0.035	2	1		4	Rouletted	Oswald type 5	1640	1660
83	0.014	1			1	Rouletted	Oswald type 5	1640	1660
84	0.014	1			2	Rouletted	Oswald type 4	1600	1640
85	0.023	2			1	Lined	Oswald type 5	1640	1660
86	0.026		1		7		Oswald type 4/5	1600	1660
	0.003	1					Oswald type 4	1600	1640
	0.007	1				Rouletted	Oswald type 16	1610	1640
92	0.021				10				
95	0.009	1					Oswald type 5	1640	1660
	0.004	1					Unsure of form	1700	
	0.008	1		I and W on sides of spur			Oswald Type 10	1700	1740
96	0.020	1			3		Oswald type 13	1800	1820
103	0.010				2				
107	0.004				1				
114	0.036	2	1		6	Rouletted	Oswald type 6	1660	1680
115	0.023	1			4	Rouletted	Oswald type 5	1640	1660
116	0.002				1				
119	0.004				1				
120	0.006				2				
126	0.009	1					Oswald type 5	1640	1660
128	0.016		2		3				
131	0.004	1					Oswald type 24	1810	184
135	0.001				1				
136	0.011				3				
141	0.107				40	Rouletted	Oswald type 4	1600	1640
	0.007	1				Dots around base with ?leaves branching off both seams and fluting towards rim	Oswald type 24	1810	1840
	0.009	1				Rouletted (wide band)	Oswald type 5	1640	1660
142	0.002	1				Dots around base	Oswald type 24	1810	1840
143	0.054	1			19		Oswald type 24	1810	1840

Context	Weight kg	Number of complete or near complete pipe bowls	Number of bowl/heel fragments	Heel Mark	Number of pipe stem fragments	Decoration	Form	Earliest Date	Latest Date
144	0.008				2				
148	0.013	1			1	Crest on back and sides of bowl front of bowl leaves branching off the seam. Unicorn complete, lion has lost its head. Crest quartered but unclear apart from fleur de leis and Irish harp. It appears to be a Royal Coat of Arms. The remaining quarters may represent the arms of England and Scotland.	Oswald type 22	1730	1780
152	0.015				5				
153	0.066				23				
	0.008	1		I and P on sides of spur			Oswald type 12	1730	1780
	0.016	1				Rouletted	Oswald type 7	1660	1680
	0.016	1			3	Rouletted	Oswald type 5	1640	1660
155	0.006	1					Oswald type 16	1610	1640
162	0.002				1				
223	0.025	1			3	Rouletted	Oswald type 6	1660	1680
235	0.014	1			2	Rouletted	Oswald type 5	1640	1660

Appendix F. BRICK, FLOOR AND ROOF TILE

By Robert Atkins, BsocSc., DipArch

F.1 Introduction

- F.1.1 A moderately large assemblage of brick and tile (1621 fragments weighing nearly 182kg) came from less than 100 different contexts (Table F1). It is important to note that this assessment does not include a significant quantity of small/abraded brick and tile fragments which were discarded either in the field or while being cleaned. This has meant that there has been no calculation of weight per sherd for the site. The discarding policy was carried out by very experienced archaeologists including the unit's finds Project Officer. Small undiagnostic fragments would have added little to the overall interpretation and so the net result of this policy will not have affected this overall assessment.
- F.1.2 This report is an assessment of the potential of the collection, with recommendations for further work given. All the assemblage was analysed to try and place the artefacts into their known historical setting. The artefacts are unlikely to have travelled great distances, indeed they are probably derived from the former buildings on the site. Documentary evidence points to these former medieval and post-medieval structures having used brick and tile at some time. These former building comprised a medieval castle (finally cleared in 1796), a late medieval bishop's palace dating from c.1478 which was later destroyed to make way for a 17th century mansion built in 1656 and this building was also subsequently removed in 1816. Cartographic evidence shows there was a small number of 19th century out-buildings on the site.
- F.1.3 The report also tries to understand where the collection was produced, whether they were made locally or imported. A date typology has been attempted for the Wisbech brick. This has been helped by some remarkable brick records with for example, medieval rolls detailing brick making in Wisbech from the 1330's (Sherlock 1998), from brick measurements in standing buildings in Ely and Kings Lynn and by comparisons with bricks recovered from several previous archaeological work in Wisbech.
- F.1.4 Analysis of roof tiles have been more difficult as little recording of tiles have taken place. Elsewhere, sites in Huntingdon have shown that generally the fabric and tile shapes do not change significantly from the 12th to the 18th centuries and therefore dividing medieval and post-medieval tile CBM was not generally feasible.

F.2 Methodology

- F.2.1 The brick, ceramic and stone floor and roof tile were all weighed by context and type and rapidly assessed by fabric and count. A hand lense was occasionally used for more detailed fabric identification. The brick and tile was divided into nine separate categories and a detailed table on each has been analysed by context number (Tables 7-15 in archive). The main details from these tables appears in this report (Tables F1-6).

Type	No. of contexts	No. Fragments	Weight (g)
Brick	71	560	105985
Ornamental/decorated brick	6	8	3073
Ceramic floor tile	5	5	1203
Stone floor tile	1	1	185
Ceramic peg tile	64	832	57735
Ridge tile	3	4	144
Limestone roof tile	45	146	9915
Post-medieval pantile	11	14	1835
Post medieval/modern Slate roof tile	8	51	1805
Total		1621	181880

Table F1: Brick, floor and roof tile by type with no. fragments and weight

- F.2.2 All complete lengths, widths and thickness of brick and tiles were recorded. The exception was ceramic tiles where the thickness was not measured. The presence of mortar was recorded on fragments to assess if they had been used before being discarded. The peg holes of the tiles were measured to try and differentiate between one and two peg hole types.
- F.2.3 In the results section, the report has been divided in brick and tile by period. This means that only the diagnostic pieces have been used, although tiny fragments have been weighed and counted.

F.3 Quantification and Provenance

- F.3.1 The brick and tile is currently stored within 11½ crates (staka boxes). The brick and ceramic tile are bagged together by context within 10 of these staka boxes. The limestone tile has, in the main, been separated and deposited in a separate box although a small quantity is within the brick and ceramic tile fragments. The slate tile is within a separate crate of worked stone.
- F.3.2 Table F1 shows that by quantity brick and roof tile had similar quantities but not by weight where brick fragments dominated. The vast majority of the roof tile fragments comprised ceramic peg tile pieces. There were also a significant quantity of limestone roof tile fragments. There was a background scatter of slate tiles and pantiles.
- F.3.3 The majority of the contexts were from the topsoil and often in these contexts there was mixed dating with medieval and post-medieval brick, tile (and pottery) found. It is therefore not surprising that the recorded brick/tile are generally of a small size and it is likely some fragments would have taken a long time to be deposited in their final resting place. It should be remembered that many of the small/tiny pieces had been discarded prior to this report. The fragmentary nature

of this assemblage can be seen by there being just three 'complete' bricks and only seven ceramic roof tiles with widths measurable. It is therefore very likely that the majority of artefacts had been discarded as they were not considered viable for reuse elsewhere.

F.4 Results

Brick

F.4.1 There are 568 brick or probable brick fragments (c.109kg) and these came from 71 contexts (Table F1). The bricks probably date from the c.14th century, although the majority are late medieval or early post-medieval in date. There are few which date to the 18th century or later. Although the vast majority are plain wall bricks, there are a significant number of late medieval glazed bricks and a few ornamental bricks of medieval to c.19th century date.

F.4.2 It has also only been possible to date some of the brick within a fairly close date by size i.e. pre -1600 the bricks seem to be wider than post-1600 ones (Table F6). The post-medieval bricks (16th to 18th centuries) are more difficult to date, but the thickness of bricks produced correspond to the parliamentary statutes of 1625 and 1660's which progressively stipulated there should be thicker bricks. The size and the relative poor quality manufacture of most of the post-medieval bricks on site argues for a 16th-17th century date for most of these examples.

- Late 13th or 14th century bricks

F.4.3 There seems to have been three late 13th/14th century bricks from a single internal structure such as a circular oven. All three identical bricks were crudely hand squeezed to create a curve shape. The three bricks were found in context 32 and two from context 108/109 including one complete example (Plate 10). All three were in a hard red fabric and are very likely to have been locally made in Wisbech. The complete example is c.230mm (9") length, the width was originally 95mm (4") but where the lower half had been hand squeezed it has been reduced to a 65mm width. The thickness is 48mm (2") and it weighs 2245g. The bricks had been taken from moulds when soft and the lower half of brick squeezed and the brick "bent" to create a curving affect. There are hand and finger prints on all the three bricks. On the complete brick there is a slight crack 25mm long and 15mm wide across the extended curved side and this took place during the shaping process. Despite the crack, the brick was still deemed viable as it was then fired/over fired in the kiln. There are traces of mortar on both sides. This early date has been tentatively assigned due to the poorly made and crude manufacture of these bricks (for the full report, other site comparisons to these bricks will be needed to confirm or reject this tentative date).

- Late medieval bricks

F.4.4 There was a significant quantity of glazed and unglazed plain bricks found and these date to the late medieval period. There are also two decorated glazed brick fragments including part of a decorated glazed stove brick. Amongst the remains there are also two irregular glazed droplets (contexts 7 and 136; weighing 13g and 11g respectively). These droplets were presumably carted with the bricks to the site. All these glazed

bricks were probably locally made in Wisbech (see Discussion).

- Late medieval glazed bricks

F.4.5 The glazed brick can be divided into two types (plain glazed bricks and decorated glazed bricks (Table F2). The former comprises 60 fragments of plain glazed brick (12224g) from 31 contexts. Most contexts contain a single fragment of a glazed brick bricks with only one context having more than five fragments (context 201 with 11 pieces weighing 2492g). All the bricks seems to have been fired to high temperatures as in some instances the bricks are "over fired". The bricks were produced in moulds. Occasional drag marks were seen on one side of the brick where external clay had been scraped from the mould (e.g. brick fragment from context 32).

F.4.6 All the glazed bricks are in a hard red fabric with two exceptions, one in an orange/red fabric and the other from context 48 which is in a poorly sorted yellow/red fabric. The glaze on the bricks varies from olive green to dark green to brown and are mainly on the outer face of the brick so it would have been seen within a feature. Here, the glaze is recorded as being "evenly spread". Adjacent parts of the bricks are also glazed but in decreasing amounts away from this outer face.

Type	No. contexts	No. Fragments	Weight (g)	Dimensions
Glazed plain	31	60	12224	two had widths of 120mm and 122mm (5") 17 had thickness's between 48mm (2") and 65mm (2½")
Glazed decorated	2	2	712	Context 201- c.100mm (c.4") thick

Table F2: Late medieval glazed bricks

F.4.7 There are no complete bricks but 2 have complete widths surviving (120mm and 122mm (5") wide). There are 17 fragments where the thickness can be measured and these vary widely between 48mm (2") and 65mm (2½"). A few of the more complete bricks are very uneven with the thickness of three brick varying between 50-58mm, 52-60mm and 54-63mm respectively. The glazed bricks are all poorly made and it is uncertain whether there were produced in two sizes - 2" or 2½", or whether the bricks were all meant to be (2½") but the crude manufacturing created significant distortions. The poor brick manufacturing can be seen in the uneven nature of a brick from context 201, where the face is also cracked.

F.4.8 Some of the glaze bricks had straw impressions on their bases. This was caused, whilst the brick was still soft, being laid on straw to dry. Two bricks have finger or thumb impressions with a brick from context 201 having two finger impressions on the top side and a further finger impression on the base presumably caused when the brick had been removed from the mould. One of the glazed bricks displays signs of sooting/burning which may signify it had been placed near a fire (context 116).

F.4.9 After the building had been demolished, some of the bricks seem to have been reused as mortar was seen both overlying the external glaze on a few bricks and mortar was also placed on some internal broken brick faces.

F.4.10 There were two fragments of decorated glazed brick recovered. The decorative brick from context 7 (cleaning layer in Trench 3) is larger than simple brick and has more faces (Plate 8). The fragmentary condition (261g) makes an interpretation difficult but one side of the brick seems to have been deliberately cut so the brick could slot into a structure. Decorated brick from context 201, is probably a decorated glazed stove brick (context 201). It is locally made, copying continental Flemish stove tiles (pers comm Paul Sperry). This stove brick is c.100mm thick (451g) with an olive green glaze and in a heavily fired hard red clay fabric. The external face extends from the side of the brick by c.10mm in a curve to give a rounded appearance. The face was glazed to create a pleasing countenance.

- Unglazed late medieval bricks

F.4.11 The majority of the brick fragments recovered are unglazed (Table F1) but the dating of these bricks are very difficult. It is probably significant that recorded medieval (pre-16th century) brick mostly seems to be at least 5" wide and that no post-medieval brick is more than 4½" wide (Table F6).

F.4.12 The widths of the bricks varied slightly but there were 19 bricks which had widths at least 119mm in size (this is the minimum size to have been assessed as being 5" wide; Table F3). Of these 19 bricks, nine are in an orange sandy fabric, three in an orange/red sandy fabric and seven in a red fabric. The difference in the colour is probably not significant as the contemporary standing Ely bishop's palace has brick in all three colours (see Discussion below). Despite probably having no significance, it is interesting to compare all three "fabrics".

Fabric	length (no.)	Width and thickness	Other comments
Orange	1) 272mm	1) 127-130mm/60mm, 2) 125mm/c.50mm, 3) c.130mm/52mm, 4) c.130mm/60mm, 5) c.130mm/60mm, 6) 120mm/60mm, 7) 120mm/60mm, 8) 122mm/?, 9) 124mm/51mm	1), 2), 3), 4), 7) and 9) had straw impressions recorded 1) and 7) drag marks from scraping external clay from mould recorded.
Orange/red	-	1) 130mm/60mm, 2) 125mm/63mm, 3) 128mm /?	1) cracked from firing and was "crudely" made. 2) and 3) had straw impressions
Red	-	1) 127mm/60mm, 2) 120mm/60mm, 3) 120mm/60mm, 4) 127mm/60mm, 5) 130-135mm/60mm, 6) c.119mm/c.62mm, 7) c.120mm/c.60mm	3) width not uniform; mould mark

Table F3: Nineteen late medieval unglazed bricks with widths of 5" (minimum qualifying size 119mm)

F.4.13 In all three fabrics the brick size varies and this may be explained by the wooden moulds warping due to use and/or through differential weather conditions such as rain. In nearly all cases the bricks are crude and poorly made with very poor arrises, uneven widths etc.

F.4.14 Of the orange fabric, the widths varied from 120mm to c.130mm and the thickness from 50mm to 60mm. It is uncertain whether there were two thickness sizes (2" and 2½") or the variability is due to warping moulds. There is an almost complete brick in this orange fabric - the only example from the site from this period. The orange/red fabric is the least variable with widths between 125mm and 130mm and their thickness between 60mm and 63mm. The bricks in a red fabric are between 119mm and 130mm+ wide and 60mm and 62mm thick. Unlike the orange fabric there are no thicknesses less than 60mm recorded. A second difference is that there are no red bricks which have straw impressions. It is uncertain how significant these differences are, presumably they were produced at separate times when the clay was mixed differently.

- Post medieval brick

F.4.15 There are 15 complete widths from the present assemblage recorded measuring under 5" (between 95mm and 116mm; Table F4). The bricks comprise four in an orange fabric, 10 in red and one in a red/purple fabric.

Fabric	length (no.)	Width and thickness
Orange	-	1) 115mm/50mm, 2) 114mm/52mm, 3) 100mm/51mm, 4) 100mm/50mm
Red	9) 10"	1) 113mm/60mm, 2) 113mm/60mm, 3) 111mm/60mm, 4) 116mm/?, 5) 110mm/c.50mm, 6) 110mm/60mm, 7) 113mm/51mm, 8) 105mm/51-54mm, 9) 115mm/60mm, 10) 110mm/60mm
Red/purple		1) 95mm/60mm

Table F4: Fifteen 16th-18th century post-medieval unglazed bricks with widths of 4" and 4½" (maximum qualifying size 116mm)

F.4.16 Only four bricks were in an orange fabric with just one of these recorded with straw impressions and this may have been a change in manufacturing with late medieval bricks not being laid on straw. The widths varied for the orange bricks from 100mm to 115mm but the thickness of these are all around 2" in size. The statutes on bricks 1571 and 1625 limited the thickness of brick to 2¼" thick although in the 1660's various statutes increased the size from 2⅜-5/8" (see Discussion). The narrowness of these orange bricks may be significant and suggests an earlier date in the c.16th century.

F.4.17 In contrast, the red fabric bricks (some described as hard red) are between 105mm and 116mm wide but their thickness varies from 2" but mostly c.2½" (Table F4). There is a large increase in red fabric bricks in this period (compared with late medieval) and this seems to be significant especially as most of the red brick produced thicker bricks (beyond 2¼"). This may suggest that red brick were mostly produced after this early 17th century period and were mid 17th century in date when brick thickness sizes increased. This would tie in when the 17th century mansion was built on the site.

F.4.18 The single red/purple brick recorded is of interest due to being the smallest width recorded (95mm and 60mm thick). It is possible that this brick is late medieval in date as purple bricks are within the late medieval palace at Ely where they form diamond designs.

F.4.19 The quality of the manufacturing varies with the bricks vary from poorly made to reasonably well made. None of the bricks are very well made which would normally

indicate a later 18th or 19th century date. It is interesting to note that none of the bricks are frogged, spaced or of the Fletton type, indeed none of the bricks are likely to have been imported from outside the Wisbech area. An example of poor manufacturing is a complete brick from context 136. This is 10" long by 4½" width and 2½" thick. Half of this brick has been severely over fired which has caused warping and severe cracking. The brick was still used as there are remains of mortar adhering to two sides of it.

- F.4.20 There are a few later post-medieval bricks. The vast majority of the bricks had thickness's which varied from 2" to 2½" with only four unglazed bricks of at least 70mm (c.3") thick with the greatest being 75mm (context 14). It is perhaps significant that this relatively thick brick is not well made and is probably pre-19th century in date. There is a complete probable ornamental capping brick for a top of a wall (context 31). It is in a yellow sandy fabric with some red clay lumps. This brick is 9" long, 4½" wide at base and 3½" at top and 2" thick. This is likely to date to the 18th or 19th centuries.
- Ceramic floor tile
- F.4.21 There are five fragments (1203g) of late medieval to post-medieval floor tiles and they all came different from separate contexts.
- F.4.22 It is very likely that parts of the medieval castle and the late medieval bishops palace had been tiled with medieval floor tiles. It is perhaps significant that only three late medieval floor fragments were recovered during the excavations - perhaps implying that the former floors were almost entirely reused elsewhere after dismantling? One late medieval floor tile fragment from context 189 had been reused to make an object.
- Stone floor tile
- F.4.23 A single limestone floor tile (185g) was recovered from context 135. The corner of this floor stone survives comprising the parts of two vertical sides which meet at a right angle. The stone is smooth on one side and rough on the other. It is 26mm thick. The date for this floor tile is unknown.
- Ceramic roof tile
- F.4.24 Ceramic roof tile from within medieval and post-medieval contexts comprises four ridge tile fragments from three contexts (144g) and 832 pieces of peg tile from 64 contexts weighing (57735g). This is a moderate assemblage.
- F.4.25 The ridge/crested tile are small fragments showing elaborate roof types were very uncommon. All four fragments are in an orange sandy fabric with dark green glaze on external sides including a fragment which also has an external square ridge point along the top (plate 29).
- F.4.26 In contrast the vast majority of the ceramic roof tile consist of peg tile fragments. Most of the tile were found in small quantities although three contexts had over 26 fragments with context 14 with 264 fragments weighing (15021g), context 32 had 43 fragments (3221g) and context 85 with 52 fragments weighing (6403g). Context 14 was by the largest and probably represented roof demolition rubble discarded after re-roofing or demolition of a structure. This context had relatively few other artefacts with only a single pottery sherd and moderate bricks fragments (27 fragments weighing 3614g). Context 32 not only had a reasonable roof tile assemblage but also had a moderate quantity of pottery (18 sherds) and brick (30 fragments weighing 11553g). Context 85 only had a single pottery sherd and moderate brick (25 fragments (9323g)).
- F.4.27 A further six contexts of roof tile had between 21 and 26 fragments but only two of these weighed over 1kg with the most at 1694g and so seemingly not significant. One

large fragment had substantial quantities of mortar adhering to both sides to the tile but on opposing halves indicating there was a significant overlap between the tiles across the roof.

- F.4.28 The majority of the tiles are small fragments many with mortar attached. This demonstrates they had been used, broken and then discarded. The small size of the sherds seem to imply that this took place after some considerable time. This theory that the tiles had been discarded as unfit to use is backed up by no complete roof tiles being recovered and only seven examples where complete widths survived. Three of these tiles are from one type of tile. They have widths between 144mm and 148mm wide (5½") and are poorly made in a red fabric with yellow clay lumps (Plate 30; context 85). This fabric is very likely to have been locally made, the photograph shows an uneven tile, over firing and poor sorting has caused cracks and fissures. Two/three finger prints appears on one example of this fabric. Examination shows this is a 1 peg hole-type tile.
- F.4.29 One tile has a width of 158mm (c.6") and is in a red sandy fabric with some clay inclusions (1 peg hole type tile). Two examples are 159mm and 161mm wide (6") are both in an orange sandy fabric and are a 1 peg hole type tile. The seventh tile is 175mm (7") wide and is also in an orange sandy fabric and is a 1 peg hole type.
- F.4.30 Peg holes are on 89 tile fragments. 78 of these are rounded or sub-rounded in shape and 11 sub-square. There is evidence of single peg tiles with a central hole near the top edge as well as double peg tile hole tiles with peg holes mostly near the top two edges of the tile. There seems to have been a fairly equal distribution between the 1 and 2 peg hole types with 33 and 31 respectively and 25 uncertain (Table F5).
- F.4.31 All eleven sub-square peg holes tiles came from different contexts except two were from context 14 and two from context 31. Three are in an orange sandy fabric (two are/probably are 2 peg hole types), seven are in a mixed yellow/red clay fabric (five are/or probably are) a 2 peg hole type and and one in a yellow sandy fabric (a 2 peg hole type). Interesting, there seems to be a correlation with sub-square holes - all are 2 peg hole type tiles where they could be determined. This applies even when they were produced in a different fabric.

Fabric	One peg hole type	Two peg hole type	Uncertain
Yellow	1	2	2
Yellow with yellow clay lumps	1	1	1
Yellow with some red clay lumps	1	2	4
Yellow/Red mix	1	-	-
Red	4	2	3
Red/orange mix	-	1	-
Red with some yellow clay lumps	14	3	2
Orange sandy	4	8	7
Orange with yellow clay lumps	7	4	3
Total	33	23	22

Table F5: Round/sub-rounded peg holes by fabric and tile type

- F.4.32 In contrast to the sub-square peg holes, the 78 round or sub-rounded peg hole types are fairly evenly distributed between the 1 and 2 peg hole types. In the different fabrics, there is only one group (red with some yellow clay lump inclusions) where there is a clear bias and that is to the 1 peg hole type.
- F.4.33 The roof tile fabrics comprised about nine main types in all the assemblages (see Table F5 above). In the archive tables the number of fabrics given is further sub-divided as some tile inclusions include shell and/or flint pieces. These are relatively few in number and for convenience have been amalgamated within the table. Overall, the roof tile assemblage as a whole has no Ely wares and most are almost certainly locally made.
- Limestone roof tiles
- F.4.34 There are 146 limestone roof fragments from 45 contexts (9915g). These tiles would have been imported into Wisbech. A few of tiles have frequent shells within the limestone. There are no complete tiles, although two have probable complete widths, a part tile from context 107 (weight 721g) is 170mm+ long, ?161mm wide (6½") and c.11mm thick, whilst the other is 163mm wide. The limestone tiles varies in thickness between 5mm and 16mm although a possible tile is 20mm in size.
- F.4.35 There are 12 peg holes surviving, 11 round or sub-round and one sub-square. The round/sub-rounded holes varies from a small 3mm round peg hole, 35mm from the top of the tile (context 103) but all the remainder are between 7mm to 13mm in size. The sub-square peg hole is 6mm by 5mm in size and there is a stain from an iron nail adjacent to this hole. Unfortunately, none of the tiles are complete so it is uncertain whether the tiles had more than one peg hole.
- F.4.36 A single example survives with splash green glaze on one side (context 103). None of the other tiles have any glazing so it is uncertain how significant this glazing is. 29 tiles are recorded as having mortar adhering to them with a few having mortar on both sides. The tile with the part tile has substantial quantities of mortar adhering to both sides to the tile but on opposing halves indicating there was a significant overlap between the tiles across the roof.
- Pantile
- F.4.37 There are just 14 pantile fragments (1835g) from 11 different contexts. All fragments are well made and probably date to the 18th/19th although a few may be slightly earlier. There are seven fragments in a hard orange fabric, six in a hard red and one a mixed yellow/red fabric. A single nib survives on one orange fabric pantile (context 224; weight 571g) which is the only pantile fragment more than 300g in weight. The nib is 60mm long, 22mm wide and c.12mm deep. Mortar is recorded on two pantile fragments.
- Slate roof tile
- F.4.38 A very small collection of slate roof tile came from eight contexts. The slate is dark blue grey. It is probably Welsh slate (pers comm. Carole Fletcher). Although slate was used from the Roman period, the slate within the site is likely to be late 18th/19th century date. It was at the end of the 18th century that the demand for Welsh slate dramatically increased (<http://www.bbc.co.uk/wales/history/sites/themes/society/industry-slate>).

F.5 Discussion

- F.5.1 This report has found that the brick and tile remains are of regional importance. This is the most significant brick and tile assemblage in terms of quantity of artefacts excavated in this area of Cambridgeshire and the collection is unusual for their relatively early date. The assemblage comprises predominantly fragments of late medieval and post-medieval brick and tile pre-dating the 18th century. The excavations found that the majority of the assemblage would probably have been produced locally (both bricks and tiles) with the only real/definite imports comprising relatively small quantities of medieval/early post-medieval limestone tiles and post-medieval/modern slate tiles.
- F.5.2 A significant quantity of these brick and tile fragments had been reused, presumably when the the palace had been pulled down and a new structure was built partly with these artefacts in the middle 17th century. This reuse can be seen in mortar on both the glazing side of bricks and on their broken sides. There were a few 18th and 19th century bricks, slates and pantiles, which presumably were from later additions to the mansion structure or from known 19th outbuildings on the site. The majority of the roofs of former buildings on the site had been built with ceramic peg tiles. Most of the brick on the site are fairly small fragments which implies that these had been discarded as they were not deemed fit for reuse. In all, there were only three complete bricks in the assemblage with two of these being in a warped state. There are only 39 bricks with complete widths and 113 part bricks recovered with at least the thickness surviving. There were only a few contexts where there were primary assemblages - and these often contained dumps of small roof tile fragments. These fragments again show a process of leaving unwanted material with larger pieces being taken away for reuse.
- F.5.3 In this discussion there has been some effort to compare brick artefacts in particular using documentary evidence, brick from standing buildings within Ely Palace and artefacts from other excavations from in and around Wisbech. As a result a vague brick typology has been formed and the evidence seems to suggest that local bricks can be aged by size (Table F6). This is the first attempt in this county to give a chronological age to bricks by size. Hopefully, in subsequent work, this typology will be questioned and possibly expanded (if thought largely correct). It is important to note that in contrast to Cambridgeshire, Essex has now got a brick type series through the efforts of Pat Ryan (Ryan 1996).
- F.5.4 A proper brick typology will only occur in Cambridgeshire if people try to understand the importance bricks can play in both dating and interpreting buildings in an economic and historic landscape. This is partly a great failure amongst a lot of archaeologists to consider brick or brick making important with many reports not even containing a brick report under their specialist contributions. Archaeological evaluations and excavations often fail to measure bricks including weighing complete examples, give an even basic description and sometimes do not even try and equate standing foundations with documentary and map evidence. In archaeology there does need to be an established minimum requirements for brick reporting - hopefully this will be started and enforced in the future.

- High Medieval

- F.5.5 The earliest bricks found in the present excavations possibly/probably date to the late 13th or 14th century. This is very early as one hand bricks start in the late 13th century (Ryan 1996). These bricks had been crudely shaped to create a curve and are very likely to have been made for an internal feature within the castle such as an oven. It is uncertain when brick was introduced to Wisbech but a High Medieval date is very likely. Significantly, it has been suggested brick was introduced during the late 13th century brick in the nearby town of King's Lynn (Brown and Hardy forthcoming, 10). Documentary evidence shows that by the middle of the 14th century a brickworks in Wisbech was being run on land owned by the abbot of Ely (Sherlock 1998). This religious ownership of brickworks is not unusual, with brick making ventures often occurring within monasteries. At Coggershall Abbey and Waltham Abbey, for example, they were producing two handed bricks from the 12th century (Ryan 1996, 23).
- F.5.6 The reasons for early brick manufacturing in Wisbech is both the lack of wood and stone as local natural resources. The shortage of wood, particularly in the fens, may go some way to explaining the lengths to which the residents of Wisbech appeared to go in reclaiming such material following major floods (Hinman and Popescu forthcoming). In contrast, towns such as Northampton, where stone is plentiful, there is little evidence of brick making before the 18th century (Atkins 2002).
- F.5.7 The Wisbech brick making documents are the earliest brick making accounts in England (Sherlock 1998, 59). The documents were from within manorial account rolls for three separate periods 1333-4, 1347-8 and 1355-6 and are held in the Ely diocesan archives (Sherlock 1998, 59). The only brickworks specifically mentioned was in 1347-8, at Waldersea, which is immediately south-west of Wisbech (near the River Nene) although bricks in these accounts could have been made at several places within the bishop's fenland estates (Sherlock 1998, 65). These records record a great deal including matters such as cost for the repair of wooden brick moulds.
- F.5.8 The crudeness of the bricks found in the excavations does imply a local manufacture. The rolls mention Wisbech bricks but it is very likely the Waldersea brickworks is the only location and this would explain why it took 2 days to transport 1000 bricks from the works by horse and cart to Wisbech castle (Sherlock 1998, 64). A place outside the town, away from domestic buildings and near the River Nene would have been sensible as fire would have been a danger. These 14th century rolls record thousands of peat turves being used as a fuel for firing the Wisbech brick works. A location near the river, would have been a necessity as these Wisbech bricks were recorded sold to Ely, King's Lynn and elsewhere (Sherlock 1998). The road network would not have been capable to transport these heavy loads over long distances and boats along lodes and rivers would have been used to transport the bricks. Certainly, the records records that a lot of bricks were being used at the site, for example, 6,000 bricks used for making the buttresses of the Wisbech castle bakery (Sherlock 1998, 60). These 6,000 bricks were recorded as being costed at 3 shillings 6d per thousand bricks.
- F.5.9 There is a slight chance the bricks found had been imported. The imported bricks from abroad were Flemish and surprisingly they were recorded as being cheaper. As a consequence the new bridge at Ely Castle in 1334-5 was made with both Wisbech and imported Flemish bricks brought into King's Lynn (Sherlock 1998, 65).
- F.5.10 The size of the late 13th/14th bricks on site at 9" by 4" by 2" is considerably smaller than brick from the Castle almshouses, the only other known part of Wisbech castle where bricks have been found. These almshouses were demolished in September 1971

and had been constructed of bright red bricks measuring 11 inches by 5.5 inches and 3 inches thick (Table F6).

- F.5.11 The mid 14th century accounts do not record roof tile being produced - indeed 3,000 slate tiles were brought at King's Lynn and transported by river to Wisbech castle (Sherlock 1998, 64). By slates, this would probably mean limestone roof tiles and not slate roof tile. It is possible the limestone roof tiles found on the present site date to this period or possible the late medieval (see below).
- F.5.12 It is important to note that by the 15th century brick was becoming increasingly common in Wisbech. In October 1439, for example, a tennis place and a bowling alley, were walled in Wisbech with brick worth £20 by the year to the owner, and unfortunately this was quite destroyed by the water (Holinshed 1577, 1213). Therefore, although brick making documentary records stop in 1355-6, it is likely that local production was still occurring.
- Later Medieval
- F.5.13 The evidence from the present excavations was that local brick making was occurring in the late medieval period. This is implied by both the glazed droplets dropped from manufacturing glazed bricks were recovered on site as well as the crudeness of both the unglazed and glazed bricks found. The size of the width of the bricks seem important with 5" wide being seeming the normal width (Table F6). 16th century and later bricks were narrower. The bricks were of slightly different sizes, this can be explained by the wooden moulds warping over use and through different weather conditions (Tables F2-4).
- F.5.14 Most of the bricks on site were later with a significant minority of the brick and tiles probably derived from the late medieval 15th century bishop's palace. The Wisbech example shows the high status of the site. Reddish-coloured bricks were being made in England in the 15th century, initially on high status sites *i.e.* royal sites, sites connected with members of the royal court and monastic sites (Ryan 2008, 52-3).
- F.5.15 There was a significant quantity of glazed and unglazed bricks being produced locally possibly in two set sizes. Most of the glazed bricks were plain but two were decorative, including a probable stove brick. The glazed bricks (plain and decorative) are of interest and implies elements within the palace were built to deliberately stand out and be attractive. Glazed bricks are very unusual and Bishop Alcock was therefore making a point in using them for his palace.
- F.5.16 It is uncertain whether the limestone roof tiles date to this period. The green glaze on one of the fragments was probably not intentional. The limestone may date to the earlier period and belong to the castle but it may be significant that Collyweston-type roof tiles have been found nearby at New Inn Yard from a 16th century pit (116; Mortimer 2008). It is very likely that peg roof tiles were also were probably being produced locally but it uncertain whether they would have been used on palace if limestone was also being used? Unfortunately, it is uncertain what the palace was roofed in. It is likely that some of ceramic peg tile dates to this phase. The crude manufacture of some of these pieces implies they had been locally made. Certainly, Ely tile was far better manufactured.
- F.5.17 Unglazed bricks from this Wisbech site are very similar to the bricks within the bishop's palace at Ely. This is significant as both the Wisbech and Ely palaces were finished by the same bishop (Bishop Alcock 1486-1500) although the Wisbech palace had been started by the previous bishop in c.1478. It is uncertain whether Wisbech was also

supplying bricks to Ely as there are some records for early brick making in Ely. Lucas in his article on Ely bricks and roof tiles argues that the brick making in Ely dates from the 15th century (Lucas 1993, 157). What is of interest is why were the Ely bricks from the palace remarkably similar to the bricks recovered in this Wisbech excavation. They were of a very similar size c.10+'' long, 5'' and 2½'' thick, fairly poorly made with widths varying in size and were a mixture of orange or red sandy fabric. The Ely building also incorporates a diamond pattern created by placing dark red/purple bricks in amongst the orange red bricks and a purple brick was found in the Wisbech assemblage. The question is were the palaces built to look like each other? Lucas argues that Wisbech was one of the distribution points for Ely bricks on a figure (1993, Fig. 1) but unfortunately doesn't say when this was occurring and doesn't quote any reference to this taking place (although the title of his article implies a date sometime between the 16th and 18th centuries, therefore post-dating the building of the Wisbech palace).

F.5.18 The bricks found in this Wisbech excavation were also of the same size as contemporary bricks recovered from nearby excavations in Wisbech by Mark Hinman. He found the first use of brick occurred on this site during the second half of the 15th century (Period 3, Phase 9.2) with alterations to Buildings 10 and 11. These bricks were described as unfrogged, red, and handmade, measuring c.10'' x c.5'' x 2½ inches (Hinman and Popescu forthcoming; Table F6). At King's Lynn, most late medieval buildings were built with bricks possibly slightly narrower, c.5'' wide and c.2'' thick (type B and C; Clarke and Carter 1977, 443).

- Post-Medieval

F.5.19 significantly the Wisbech bricks are very different to the early 16th century bricks from Ramsey Abbey which was smaller in width size (Table F6). The Ramsey bricks are well dated with many records of bricks and brick moulds being produced by Ramsey Abbey employees in the early 16th century (DeWindt and DeWindt 2006, appendix 8). A late medieval brick kiln close to the site of Ramsey Abbey in 1967, dated as early 16th century also produced much evidence for roof tile and possibly floor tile manufacture (e.g. Eames 1980, 123).

F.5.20 Two statutes of 1571 and 1625 had attempted to standardize the size of bricks, chiefly in London but also beyond. The former statute set a standard size of 9'' (230mm) x 4 ½'' (115mm) x 2 ¼'' (57mm), and the latter set it at 9 ½'' (239mm) x 4'' (102mm) x 2 ¼'' (57mm). Wisbech post-medieval bricks, may have followed these statutes with the four orange post-medieval fabrics (with widths less than 5'') all being about this size (although the thickness's are narrower at 2''). The narrowness of these bricks may be significant suggesting an earlier date c.16th century for them, pre-dating the statutes. The thickness of bricks increased in the two statutes (above). In the 1660's there were various statutes which further increased the brick size from 2³/₈-2⁵/₈'' . It is therefore not unsurprising that in all the recorded 17/18th century brick examples from Wisbech they measured 2½'' or more (Table F6).

F.5.21 It is also significant that the 10 red fabric bricks (with widths below 5'') varied from 2'' but most measured around 2½''. This perhaps asserts that a significant number of the red bricks were post 1625 in date, when bricks increased in thickness (see Table F6). The red fabric bricks seem to become increasingly common from the later 17th century (in contrast to orange colour bricks which were dominant within the present excavation and in the wide Wisbech area in late medieval period (Table F6).

F.5.22 What has not been talked about is the economic benefits of Wisbech brick and tile making. It has long been recognized by economic and social historians that an active

building trade can boost the economy (and population) of a town. "The building trades were active in all areas of expansion, it is often possible to correlate regional bursts of industrial growth with new housing. Moreover the output of the builders represented a very high proportion of new capital" (Checkland 1979, 165). Wisbech is the largest town in the Fenland area but it is uncertain how much this suggested long standing brick making has to do with this.

Date	Fabric etc	Length	Width	Thick	Weight (g)	Site
?Late13th/14th	Hard red	9"	4"	2"	2245	Present excavations
?High medieval	Red	11"	5.5"	3"		Castle almshouses in 1971
Late medieval	glazed plain in red	?	5"	2-2½"	?	Present excavations
Late medieval	glazed decorative in red fabric	?	?	4"	?	Present excavations
Late medieval	unglazed. mostly orange but a few orange/red and red	11"	5"	2½"	3528+	Present excavations. Almost complete
Late 15th (1486-1500)	unglazed - mixture of orange to red	10"	5"	2½"	?	Ely Palace (standing building)
Late 15th	unglazed, red	10"	5"	2½"	?	Wisbech. Brick wall 64/5 (Hinman and Popescu forthcoming)
Early 16th	Red	?	4½"	2"	?	Ramsey Abbey (Ryan 2009, 52-3)
Early 16th	Orange or yellow-pink	9 to 9 ½"	4 ½"	2 ¼"	?	New Inn Yard, Wisbech. Wall footings (159, 161 and 162; Mortimer 2008)
16th	red brick	?	?	2"		New Inn Yard, Wisbech. Pit 116 (Mortimer 2008)
16th	Red unglazed and glazed	?	?	?	?	Wisbech, two brick drain culverts (20 and 183; Hinman and Popescu forthcoming)
16th	Red	11½"	4"	?	?	Wisbech, Wall (54 and 55) (Hinman and Popescu forthcoming)
? Late 17th	Red	10"	4½"	2½"	3130	Present excavations
?18th	Red	9½"	4½"	3"	?	Wisbech library. Brick wall (Phillips 2008)

Late 18th	Dark red. Varied slightly in dimension	9"	4"	2 ^{3/4} "	?	Georgian cellar floor, Nr. Wisbech castle (Fletcher 2008)
Late 18th or early 19th	Orange/red	9"	4"	2½"	?	New Inn Yard, Wisbech. Cellar floor 6 (Mortimer 2008)
18th/early 19th	Poorly mixed yellow/red. Creased face	9"	4"	2½"	?	Nene Infant school, brick culvert Wisbech (Graham 2008)

1.1.1 Table F6: Brick sizes by period from the present excavations compared with other brick found in Wisbech and elsewhere.

F.6 Research potential and Further Work Statement

F.6.1 This is a relatively large and important assemblage of brick and tile spanning c.600 years. There is great potential for further work on this regionally important assemblage. It is very likely that most of the brick and tile were produced locally (but this has not yet been proved). This present assessment report could be greatly strengthened by further research. Research into documentary evidence for brick making in Wisbech would be especially fruitful. Further published sources could be used as well as other documents such as wills, conveyances, poor rate books, cartography. Elsewhere, such as Northampton such research has been invaluable (Atkins 2002).

F.6.2 A thin section of representative brick and tiles would be useful in establishing a database. Thin sectioning could be extended to include brick from the Ely bishop's palace to understand any relationships between the two sites.

F.6.3 Further work also needs to be done on the roof tile report to try and determine the different fabric types.

F.6.4 Published bricks reports could be viewed so that some of the unusual bricks could be paralleled - such as the possible late 13th/14th bricks, the possible stove brick.

F.6.5 Whilst several brick and tile have been photographed. It would be useful to draw some of the items.

F.6.6 The quick type series (Table F6) implies that brick widths have generally got smaller as time progressed although the thickness increased in the later post-medieval period. This table could be vastly improved by:

- Measuring bricks from dated standing buildings in Wisbech. There are several buildings including Peckover House which date from at least the 18th century.
- There have been many late medieval and post-medieval bricks found from other Wisbech excavations but have either not been recorded or further information could be gained.
- Reports from Oxford Archaeology East have only been used (above). It would be worth researching reports from other units.

Appendix G. ENVIRONMENTAL REPORTS

By Rachel Fosberry, HNC AIFA

G.1 Introduction and Methods

- G.1.1 Nine bulk samples were taken from features within the evaluated areas of the site in order to assess the quality of preservation of plant remains, bones and artefacts and their potential to provide useful data as part of further archaeological investigations.
- G.1.2 Ten litres of each sample were processed by tank flotation for the recovery of charred plant remains, dating evidence and any other artefactual evidence that might be present. The flot was collected in a 0.3mm nylon mesh and the residue was washed through a 0.5mm sieve. Both flot and residue were allowed to air dry. The dried residue was passed through 5mm and 2mm sieves and a magnet was dragged through each resulting fraction prior to sorting for artefacts. Any artefacts present were noted but have not been reintegrated with the hand-excavated finds. The flot was examined under a binocular microscope at x16 magnification and the presence of any plant remains or other artefacts are noted on Table G1.

G.2 Quantification

- G.2.1 For the purpose of this initial assessment, items such as seeds, cereal grains and small animal bones have been scanned and recorded qualitatively according to the following categories
- # = 1-10, ## = 11-50, ### = 51+ specimens
- G.2.2 Items that cannot be easily quantified such as charcoal, magnetic residues and fragmented bone have been scored for abundance
- + = rare, ++ = moderate, +++ = abundant



G.3 Results

Sample No.	Context No.	Cur No.	Feature Type	Sample Size (L)	Cereals	Weed Seeds	untrans- formed Seeds	Snails from flot	Small Bones	Charcoal <2mm	Charcoal >2mm	Small animal bones	Large animal bones	Fish bone	Marine molluscs	Pottery	CBM	Metal
1	71	72	pit	10	0	0	###	0	0	0	0	#	#	0	0	#	#	2x Fe nails
2	123		silt layer	10	##	0	##	0	0	++	++	##	##	###	0	#	0	0
3	123		silt layer	10	#	#	#	0	#	++	++	#	#	#	0	0	0	CuA
4	159		silt layer	10	#	0	###	0	#	++	++	#	#	0	0	0	0	0
5	159		silt layer	10	0	0	###	0	0	+++	+	#	#	#	0	0	#	0
6	123		silt layer	1.5	0	0	#	0	0	+	0	0	#	0	0	0	0	0
7	184		organic layer	30	##	0	###	0	0	+	+	0	#	0	0	0	0	0
8	61		silt layer	10	#	0	0	###	0	++	++	0	#	0	#	0	##	0
9	Test Pit 5		pit fill	10	0	0	0	0	#	+++	++	###	###	###	#	#	0	0

Table G1. Results

Preservation

- G.3.1 The majority of the samples contain plant remains preserved by waterlogging (survival due to anoxic conditions) in addition to limited plant remains preserved by carbonisation.
- G.3.2 Sample 7 also contains a single cereal grain preserved by mineralisation.

Plant Remains

▪ Cereals

- G.3.3 Charred cereal grains are present in five of the samples although quantities are generally low; not exceeding twenty grains. Wheat (*Triticum* sp.) predominates with oats (*Avena* sp.) occurring as single specimens in two of the samples. No chaff elements occur.

▪ Weed Seeds

- G.3.4 Samples contain moderate quantities of seeds preserved in anoxic conditions including elder (*Sambucus* sp.), goosefoot (*Chenopodium* sp.) water plantain (*Alisma plantago aquatica*), cut-leaved crane's bill (*Geranium dissectum*), water crowfoot (*Ranunculus* subgenus *Batrachium*), (buttercup (*Ranunculus* sp.), wood avens (*Geum urbanum*), dock (*Rumex* sp), nettle (*Urtica* sp.), poppy (*Papaver* sp.) and sedges (*Carex* sp.).
- G.3.5 Charred seeds were rare with only one species present; nutlets of saw-sedge (*Cladium mariscus*) occur in two of the samples.

▪ Ecofacts and Artefacts

- G.3.6 Sample 1, fill 71 of pit 72 contains numerous shards of green, brown and clear glass along with coal and clinker along with hammerscale in the form of spheroidal hammerslag.
- G.3.7 Elements of fish bone and small mammal bones and large mammal bones are common in most of the residues. A caudal denticle of the Thornback ray (*Raja* sp.) was recovered from the residue of Sample 9, layer 136 (Test Pit 5) and eel (*Anguilla anguilla*) vertebrae and a lower mandible of the Black rat (*Rattus rattus*) were noted in the residue of Sample 2, layer 123
- G.3.8 Ostracods are common in four of the samples along with egg cases of the water flea (*Daphnia* sp.)
- G.3.9 Pondweed (*Lemna* sp.) was noted in Sample 8, layer 61.

G.4 Discussion

- G.4.1 The charred plant remains in this assemblage are dominated by cereal grains. Wheat grains predominate. Although they are present in small quantities, they do indicate that cereals were being utilised. The lack of any chaff elements suggests that clean grain was imported as would be expected in a medieval urban environment. The cereals along with other dietary remains namely egg shell, shell fish, animal bone and fish bone, are probably derived from low-density deposits of domestic refuse.
- G.4.2 The only other charred plant remains in this assemblage are the nutlets of saw sedge. Sedges are the major vegetation types of the Fen and were commonly used as fuel.
- G.4.3 Eppiphium (egg cases) of the water-flea (*Daphnia* sp) are indicative of standing or very slow-flowing water, as are the aquatic plants; duckweed and water crowfoot.
- G.4.4 Ostracods are small bivalve crustaceans that inhabit the bottom of aquatic habitats such as lakes, ponds and streams (freshwater) or marine. They are particular in their habitat and can be useful as environmental indicators.

G.5 Statement of Research Potential

- G.5.1 The assemblage from the evaluation of the Wisbech castle site is typical of the floral and faunal assemblages found in Wisbech from the medieval and post-medieval period. Repeated flooding events have resulted in silt layers that contain the remains of plants and organisms that would have been in the flood water and also would have colonised the standing flood waters prior to drainage. As such, this assemblage has a limited research potential.

G.6 Further Work and Method Assessments

- G.6.1 In conclusion, the assemblage appears to represent mainly a natural accumulation of plant remains from local vegetation along with a small quantity of domestic waste.
- G.6.2 Nearly all of the samples contain numerous fish bones and fishscale suggesting that fish was a dietary constituent. Analysis of these remains could provide an insight into diet and butchery practice.
- G.6.3 The low density of plant macrofossils in this assemblage limits interpretation of the features sampled. It is not considered that full analysis would add significantly to this and further work is not recommended.
- G.6.4 If further excavation is planned, sampling should be undertaken as investigation on the nature of cereal waste and possible weed assemblages is likely to provide an insight into to utilisation of local plant resources, agricultural activity and economic evidence from this period.

Appendix H. FAUNAL REMAINS

By Chris Faine MA, MSc AIFA

H.1 Introduction

H.1.1 Fifty-six contexts from the Wisbech Castle excavations contained identifiable faunal remains. Bones were recorded using a version of the criteria described in Davis (1992) and Albarella & Davis (1994). At this preliminary stage all elements were scanned and assessed in terms of species, siding (where appropriate), and completeness. Completeness was expressed in terms of percentage and zones present (after Dobney & Reilly, 1988). The entire identifiable assemblage was quantified in terms of number of individual fragments (NISP) and number of individuals (MNI). Rates of epiphyseal fusion were not quantified at this stage but unfused epiphyses were noted wherever possible. Material from topsoil contexts was not included in this assessment.

H.2 The assemblage

H.2.1 Table H1 shows the species distribution for the assemblage. As one would expect the assemblage is dominated by domestic mammals, with sheep being the most numerous taxon, both in terms of NISP and MNI, along with lesser amounts of cattle and pig remains. Horse remains are limited to material from two contexts. Commensal species such as cat and dog are present in small quantities. Relatively large numbers of rabbit and both domestic and wild bird species are also present (including fowl, duck and partridge).

H.2.2 Although the assemblage was only scanned at this stage, the sheep/goat assemblage appears to consist of more meat bearing elements (upper limbs etc) than the cattle assemblage, which contains more post-cranial elements and skull fragments. A number of cattle lumbar vertebrae from context **223** were sawn vertically. The wider variety of cattle body parts represented suggests animals were reared locally and brought to town as complete carcasses or else as live animals. The sheep/goat body part distribution suggests the presence of disarticulated carcasses, as many of the elements that are lacking in the assemblage (such as mandibles and tibiae) survive well and are unlikely to be missed during excavation. A small number of juvenile cattle and sheep remains were recovered, suggesting at least the presence of younger animals if not breeding within the town itself. A wide variety of pig body parts (including juvenile remains) were also recovered from the assemblage suggesting the presence of live animals or at least complete carcasses. This is not unexpected as pigs were more suited to being kept in urban areas, requiring no pasture and having a more varied diet than other domesticates. The presence of juvenile animals is also to be expected as pigs reach maturity earlier than other domesticates and are limited in the secondary products they produce, with the result that they are generally killed earlier than cattle and sheep/goats.

	NISP	NISP%	MNI	MNI%
Cattle (<i>Bos</i>)	35	14.5	24	21.3
Sheep/Goat (<i>Ovis/Capra</i>)	75	31.3	40	35.7
Pig (<i>Sus scrofa</i>)	20	8.4	10	8.9
Horse (<i>Equus caballus</i>)	3	1.2	2	1.9
Roe deer (<i>Capreolus capreolus</i>)	2	0.9	2	1.9
Cat (<i>Felis sylvestris</i>)	10	4.2	4	3.5
Dog (<i>Canis familiaris</i>)	4	1.7	2	1.9
Rabbit (<i>Oryctolagus cuniculus</i>)	29	12	5	4.4
Bird	45	18.8	23	20.5
Unid large mammal	17	7	N/A	N/A
Total	240	100	112	100

Table H1: Species distribution for the entire assemblage

H.3 Conclusions

H.3.1 As the assemblage was scanned at this stage no definite conclusions can be drawn from the assemblage at the present time. In terms of species proportions the assemblage closely resembles those from New Inn Yard (Faine, 2007). The body part distributions and age ranges are similar to those seen on a variety of medieval urban sites such as New Inn Yard (Ibid) and Norwich Castle (Albarella et al, forthcoming). In terms of the domestic mammals the majority arrived in the town either alive or as whole carcasses, with the possibility of some on site breeding. Horses were most likely used for traction during this period. Both domestic and wild birds were commonly eaten during this period as were rabbit, with both cat and dog representing commensal species (no cut marks were seen on the cat remains)

Appendix I. GEOPHYSICAL REPORT



**GROUND PENETRATING RADAR AND
EARTH RESISTANCE SURVEY
AT WISBECH CASTLE, WISBECH,
CAMBRIDGESHIRE**

TF 4620 0957

Cranfield Forensic Institute Report No. 036

**Peter Masters
July 2009**

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Summary

Ground Penetrating Radar and limited earth resistance survey was carried out at Wisbech Castle, Wisbech, Cambridgeshire in July 2009. The purpose of the survey was to locate the remains of the Bishops Palace and tunnels extending from the known vaults.

A total of 23 GPR profiles were recorded at the Castle site some of which revealed reflections showing features of archaeological interest. The results have produced some good reflections of probable remains relating to the later buildings on this site. Grids GR1 and GR2 have revealed possible wall alignments as well a modern pipe trench.

Profiles 7-12 indicated the presence of metal pipes although profile 9 showed possible wall-like and ditch-like features but these could be modern origin. Profiles 13-19 produced distinct hyperbola reflections of the tunnels beneath whilst profiles 22-23 were surveyed along the main entrance tunnel and one side tunnel, which revealed only the floor surface and natural geology.

The resistance survey has produced few anomalies of archaeological significance although a rectilinear low resistance anomaly was detected suggesting possible remains of robber trenches.

1.1 Introduction

- 1.1.1 A geophysical survey was undertaken on behalf of OA East as part of a Heritage Lottery Funded (HLF) project at Wisbech Castle, Wisbech, Cambridgeshire (Figure E1). The purpose of the survey was to locate any surviving evidence of walls of the former Bishop's Palace and additionally to trace where possible the extent of the vaulted tunnels beneath the Castle gardens. The work was carried out in July 2009. The survey methodology described in this report was based upon guidelines set out in the English Heritage document '*Geophysical Survey in Archaeological Field Evaluation*' (EH 2008).

1.2 Location and Description

- 1.2.1 The site is located in Wisbech centre within The Crescent, a Georgian development. It is situated approximately 25 miles north-east of Peterborough. The present grounds contain gardens and vaults of a former 17th century building which once stood on the site.
- 1.2.2 The underlying geology is comprised of undifferentiated tidal flat deposits (Geological Map data © NERC 2008). The GPR and resistivity response of this type of geology is generally moderate to good depending on depth and target being detected (Gaffney & Gater 2003, 78; EH 2008, 28).

1.3 Methodology

Ground penetrating radar (GPR)

- 1.3.1 A Malå Geoscience AB RAMAC/GPR system consisting of shielded monostatic antenna, CUII control unit and XV monitor was used to collect profiles with a 500MHz antenna.
- 1.3.2 The 500MHz antenna was selected as most suitable centre frequency for obtaining the depth penetration and lateral resolution required for the survey. Individual profiles were collected over the site at varying intervals and a station spacing of 0.02cm. The nominal location of each profile is shown in Figure I2.
- 1.3.3 Processing was carried out using RAMAC GroundVision 1.4.4 software. DC offset correction and linear time gain was applied to the radar data to correct for low frequency noise and amplitude attenuation with distance respectively.

Resistivity Survey

- 1.3.4 Resistivity survey measures the electrical resistance of the earth's soil moisture content. A twin probe configuration is normally used, which involves the pairing of electrodes (one current and one potential), with one pair remaining in a fixed position (remote probes), whilst the mobile probes measure resistivity variations across the survey grids. Resistance is measured in ohms, and this method is generally effective to a depth of 1m.

- I.3.5 Features such as wall foundations are usually identified as high resistance anomalies, as well as rubble spreads, made surfaces (i.e. yards and paths) and metalled roads and track ways. In contrast, low resistance values are normally associated with water-retentive features such as large pits, graves, ditches, drains and gulleys.
- I.3.6 The resistivity survey was carried out using a Geoscan RM15 Resistance Meter with a twin probe array configuration in mobile probe spacing of 0.5m. The zigzag traverse method of survey was used, with 1m wide traverses across a 20m x 10m grid and 1m x 0.5m wide traverses across two 10m x 10m grid-squares.
- I.3.7 The data was processed using *Archeosurveyor v.1.3.2.8*. It was despiked to remove extremely high readings caused by bad contact with the ground surface. The enhanced data was high and low passed filtered in order to remove near surface geology and other trends as well as give it a smoother appearance. The results are plotted as greyscale and trace plot images (Figures I3 and I9).

I.4 Analysis and Interpretation of Results (Figures I2-I9)

Ground penetrating radar (GPR)

- I.4.1 A total of 23 radar profiles were recorded along traverses set at varying intervals across the site. Profiles 1-6 were undertaken across the lawn area set at 5m intervals. These are not included in the report as the lawn area was grid surveyed at 0.5m intervals in the x and y directions. Where profiles traverse similar ground and parallel to each other, the interpretation will refer to the same anomalies in each of the profiles (i.e. Profiles 13-19).

General Responses

- I.4.2 The survey conditions at the site were very favourable for GPR as the ground surfaces were flat lawn areas. The depth of penetration was generally very good with significant reflections recorded to a two-way travel depth of up to c.1.6m.
- I.4.3 The top most uniform reflections appear in all GPR profiles. These represent air waves that are followed by very distinct high amplitude reflections visible as thick black lines, which are derived from the ground waves and are seen up to the depth of approximately 0.4m. Underlying airwaves can be seen as stacked inverted Vs (Figure I8, example).
- I.4.4 A series of discontinuities occur within the profile datasets as vertical lines due to the antennas moving over uneven ground (example shown in Figure I6, B). This is where antenna coupling changes the nature of the waves travelling through the ground, producing anomalous amplitude changes, which can be misinterpreted as geological or archaeological changes.

Specific Responses

- I.4.5 Specific features interpreted from the survey dataset accompany the profiles included in this report (Figures I4-I8).

Lawn Area

- I.4.6 One 20m x 20m grid-square and two 10m x 10m grid-squares were surveyed on the lawn area to the rear of the present Castle building. A series of time-slices have also been recorded at varying depths where anomalies were evident (not illustrated).

GR 1

- I.4.7 Between 0.50 and 0.56m a linear anomaly was detected indicating the presence of pipe or similar feature. At 0.71m a number of anomalies appear to reflect possible wall alignments although some of these reflections may be of natural origin.

GR 2

- I.4.8 Horizontal time-slices at 0.22m, 0.30m, and 0.40m show near surface reflections of the concrete stone slabs that form a path between the building and the underground vaults with a sundial at its centre.

Profiles

- I.4.9 At 0.46m, two parallel high reflection anomalies were recorded indicating possible wall remains. At a depth of 0.69m, a linear low amplitude reflection was recorded, which appears to correlate well with the earth resistance anomaly indicating the presence of a pipe.
- I.4.10 A sub-circular high reflection anomaly was recorded at a depth of 1.28m in the horizontal time-slice. This may reflect the presence of masonry indicating some form of rubble foundation to an earlier building. However, this could also resolve as a geological amplitude reflection.
- I.4.11 Profiles 1-10 and 13 covered similar areas of the ground except where profiles 7-10 crossed the mound. Profiles 1-10 were set 5m apart to give a good correlation between the passes across the summit of the hill. Profile 13 is aligned along the same traverse as Profile 1; therefore these will be described and interpreted as one.
- I.4.12 Profiles 7-12 were collected in the public gardens to the north-west of the present castle building.
- I.4.13 Profile 7 was c.30m long and traversed the area between the retaining wall and the flower beds on the south-west side of the public gardens. A series of high-amplitude reflections (Figure I6, examples) that are stacked vertically at location A were generated by a large piece of metal near the ground surface possibly indicating the presence of pipes. A low amplitude reflection at location B possibly indicates the presence of a stratigraphical layer.
- I.4.14 Profile 8 ran parallel to the war memorial where a high amplitude reflection was recorded at the beginning of the traverse possibly denoting the reflection from the retaining wall (Figure I6, C). At approximately 4m and 11m along the profile close to the surface, high amplitude reflections were detected (Figure I6, D) possibly indicating the top of a wall or void that could be associated with a tunnel.
- I.4.15 Profiles 9 and 10 ran between the retaining wall and the flower beds, similar to Profile 7, where a few reflections were recorded. Three reflection hyperbolas (Figure I6, Profile 9, E) were recorded in the radar profile that could possibly indicate the presence of wall-like features or could resolve as air-waves. Two wide (Figure I6, F) low amplitude reflections were detected and to indicate ditch-like features within the radar timeslice.
- I.4.16 Profiles 11 and 12 ran from the memorial to the Castle garden retaining wall. No distinct reflection hyperbolas are evident in the recorded image (not illustrated).
- I.4.17 Profiles 13-21 were surveyed over the top of the tunnels in order to capture the distinct reflection hyperbolas. Profiles 13-19 were surveyed parallel to each other in the y direction set 2m apart whilst profiles 20-21 were surveyed in the x direction set 6m

apart. The time-slices clearly show distinct reflection hyperbolas generated from tops and sides from the tunnels beneath (Figure E7, A and B).

- I.4.18 Profile 16 shows two distinct multiple reflections that were generated from a horizontal surface with a high coefficient of reflectivity. These multiples as they often called can be confused with 'real' reflections that may have been created by from multiple stacked layers in the ground (Conyer 2004, 126-7). Upon processing the data, these multiple reflections have been removed to show two high amplitude reflections possibly denoting the top of the vaults/tunnels.
- I.4.19 At 18-24ns (c.1m depth), a horizontal high amplitude reflection was recorded in the profile generated probably from a buried surface or stratigraphical horizon.
- I.4.20 Profiles 22-23 were undertaken along the central access tunnel and one side tunnel of the former prison of the Castle in order to detect any remains beneath the floor surface. The only reflections from the radar survey were from the existing floor surface or more likely the underlying geology.
- I.4.21 Profile 23 shows a series of inverted V shaped reflections, which probably denote air waves. A single high amplitude reflection (Figure I8, A) was recorded at 4m along the profile, this was caused by a hole in the floor surface of the side tunnel.

Earth Resistance Survey

- I.4.22 The earth resistance survey was carried out on the lawn to the west of The Castle building. Two types of configurations were undertaken to gain the maximum resolution of the underlying anomalies/features present.
- I.4.23 A single 20m x 10m grid was initially surveyed with readings taken at 1m x 1m interval. The results showed very few significant anomalies except for a zone of high resistance (Figure I3, outlined in green) detected on the northern side of the grid. This probably denotes the presence of rubble spread or is more likely to resolve as an area of compaction.
- I.4.24 Following this, two 10m x 10m grids were surveyed with readings taken at 1m x 0.5m in order to improve the resolution and detection of any archaeological features beneath the lawn. A low resistance rectilinear anomaly was detected to the south side **7** of the paved concrete path, which runs across the centre of the lawn. This is probably the outline remains of a robber trench that once contained wall foundations. The area of compaction detected in the initial survey was also recorded in this survey (green). A low resistance linear anomaly (blue line) orientated north-east to southwest is likely to represent the presence of a pipe trench. The ground penetrating radar survey in this area also recorded a similar anomaly (Figure I5).
- I.4.25 No other significant anomalies were recorded in this limited area of survey.

I.5 Conclusions

- I.5.1 The GPR survey has recorded a number of significant anomalies relating to the remains of the Castle. The reflections recorded in the lawn area may indicate the presence of wall remains. Other reflections appear to support the anomalies recorded by earth resistance.

-
- I.5.2 The radar survey in the public gardens appears to have indicated the presence metal pipes and little indication of the tunnels extending beyond those already known. Other reflections have recorded features that may denote the presence of wall-like features but are likely to reflect ground/air waves.
- I.5.3 The resistance survey may have recorded possible traces of a rectilinear feature possibly robbed out wall foundations. Other anomalies recorded in the limited survey area reflect more recent remains such as a service/pipe trench.
- I.5.4 Based on the results, it can be concluded that some of the anomalies recorded by both techniques may indicate the presence of wall foundations but without further investigative work these remain inconclusive.

I.6 Acknowledgements

- I.6.1 Cranfield University, Centre for Archaeological and Forensic Analysis would like to thank Stephen Macaulay, Project Manager for this commission. I would also like to thank Taleyna Fletcher for her help on site.

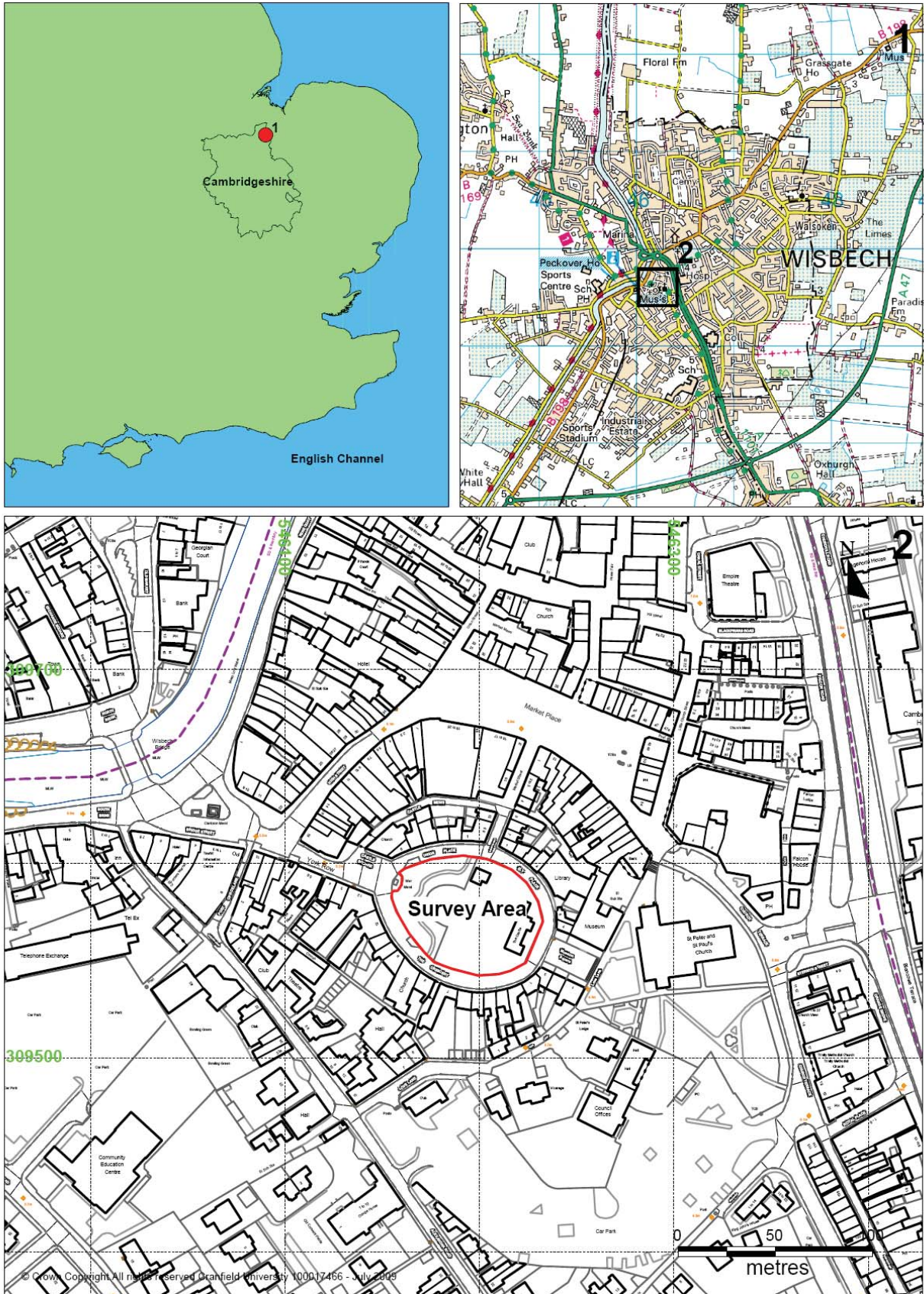


Figure 11. Location Plan Scale 1:2500

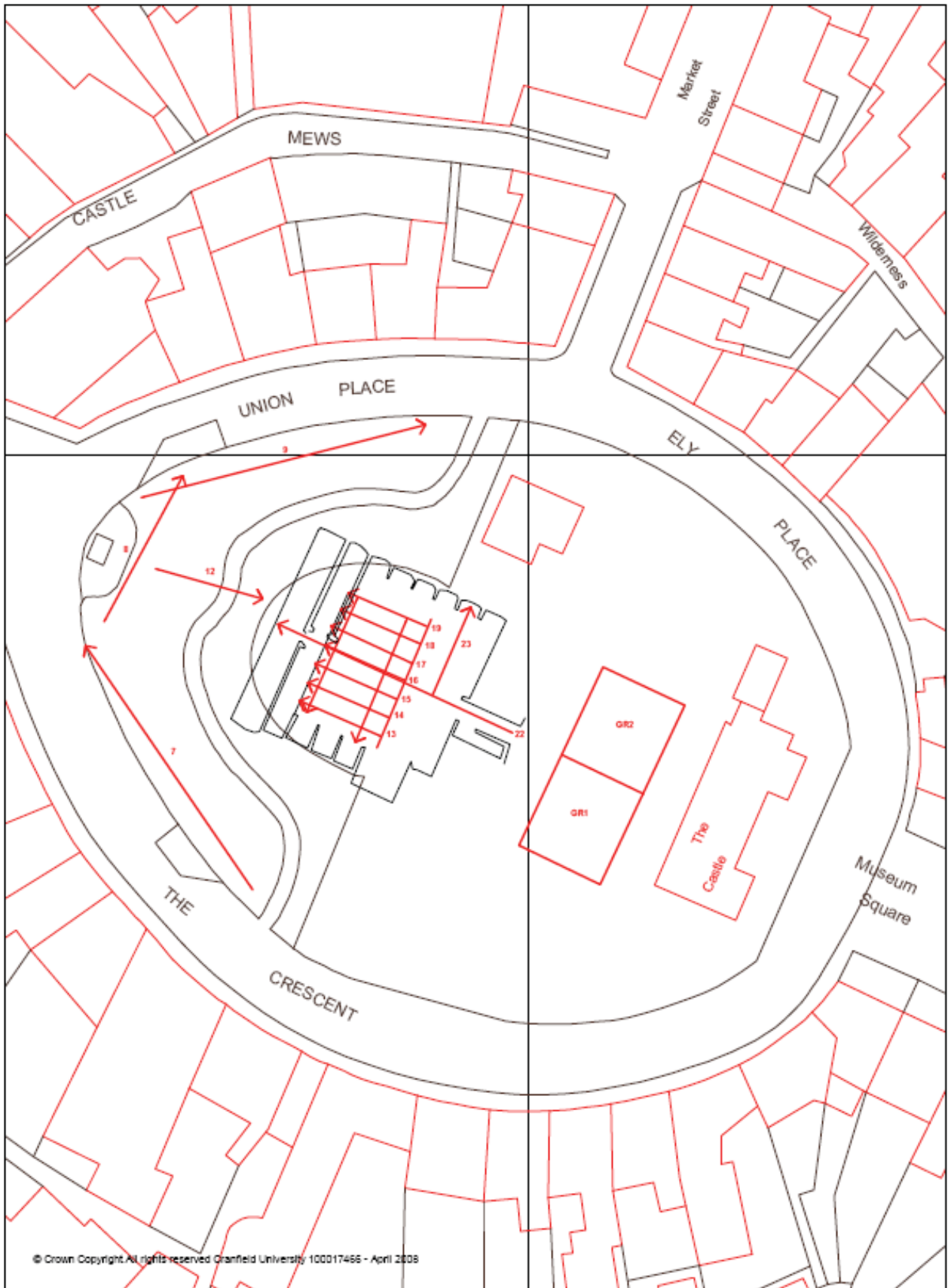


Figure I2. Location of GPR Survey – Scale 1:500

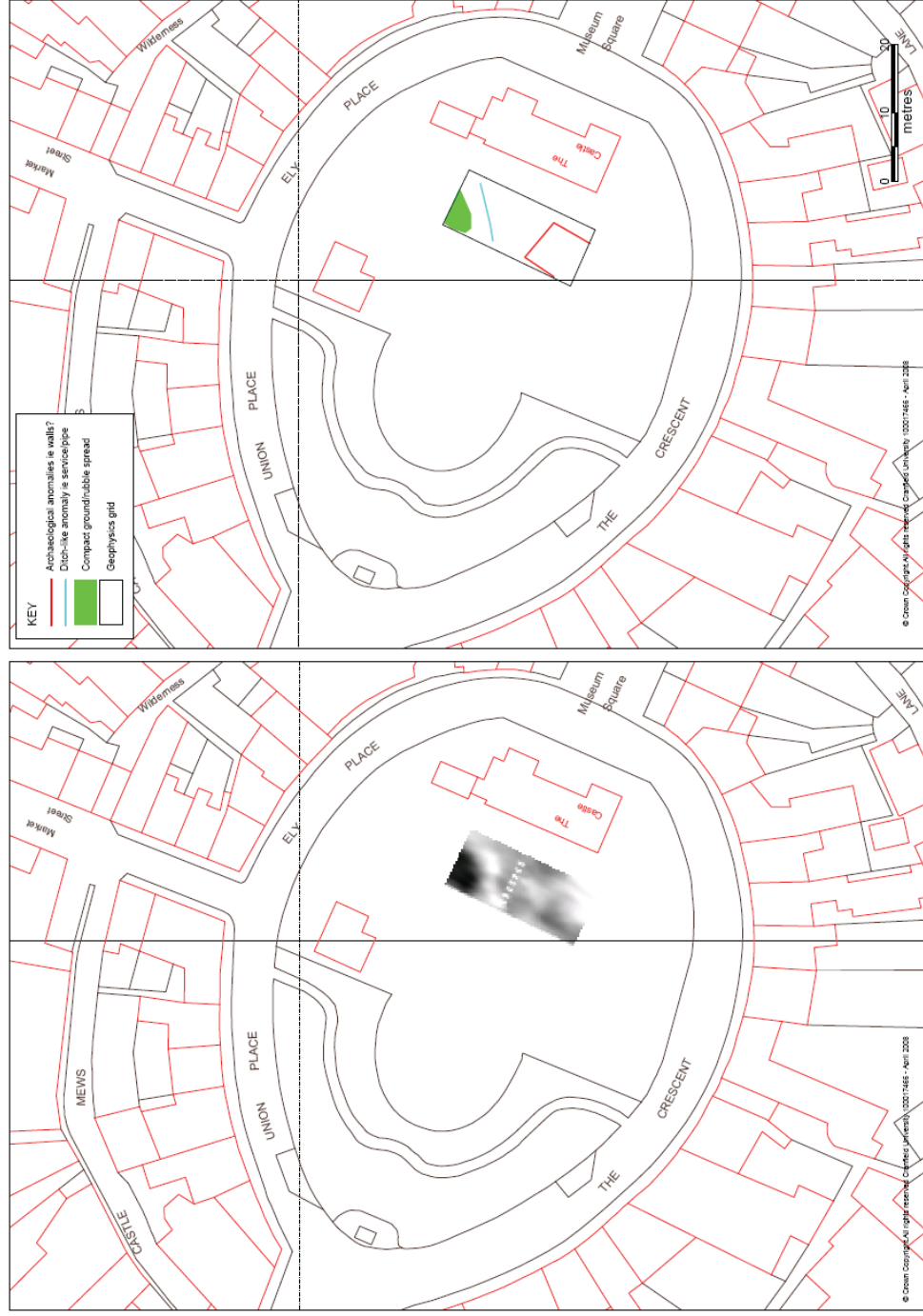
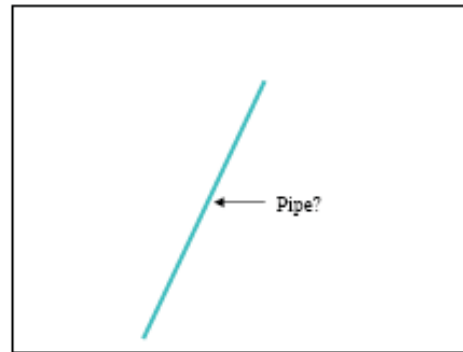
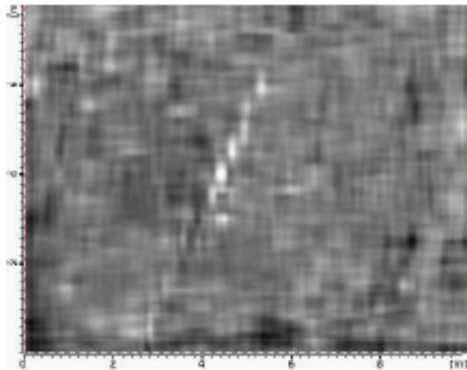
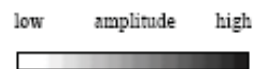
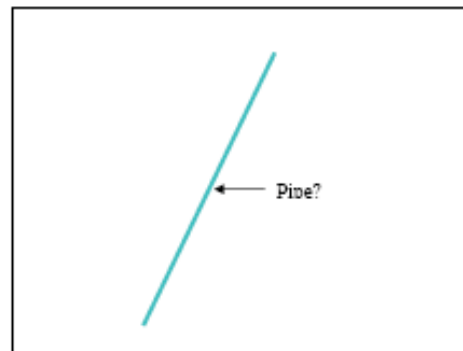
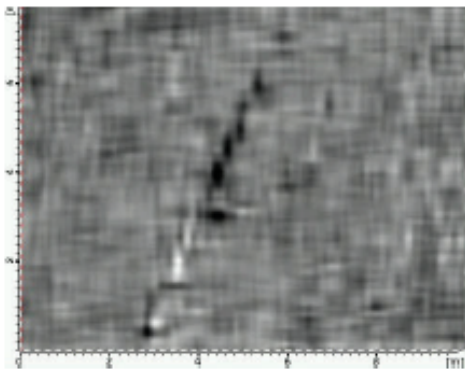


Figure 13. Location of resistance survey and interpretation of results

Depth c.0.50m



Depth c. 0.56m



Depth c.0.71m

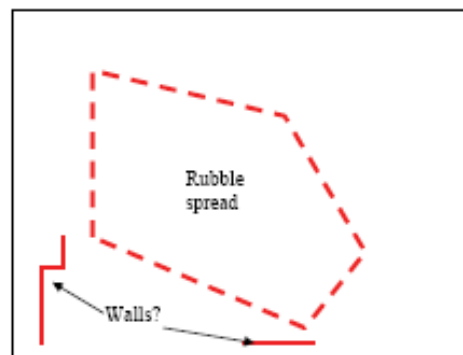
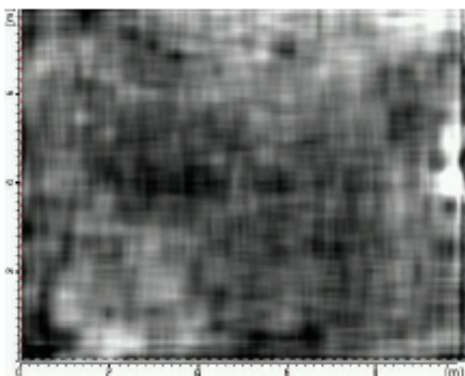


Figure I4. GR1 Horizontal time-scales with interpretation

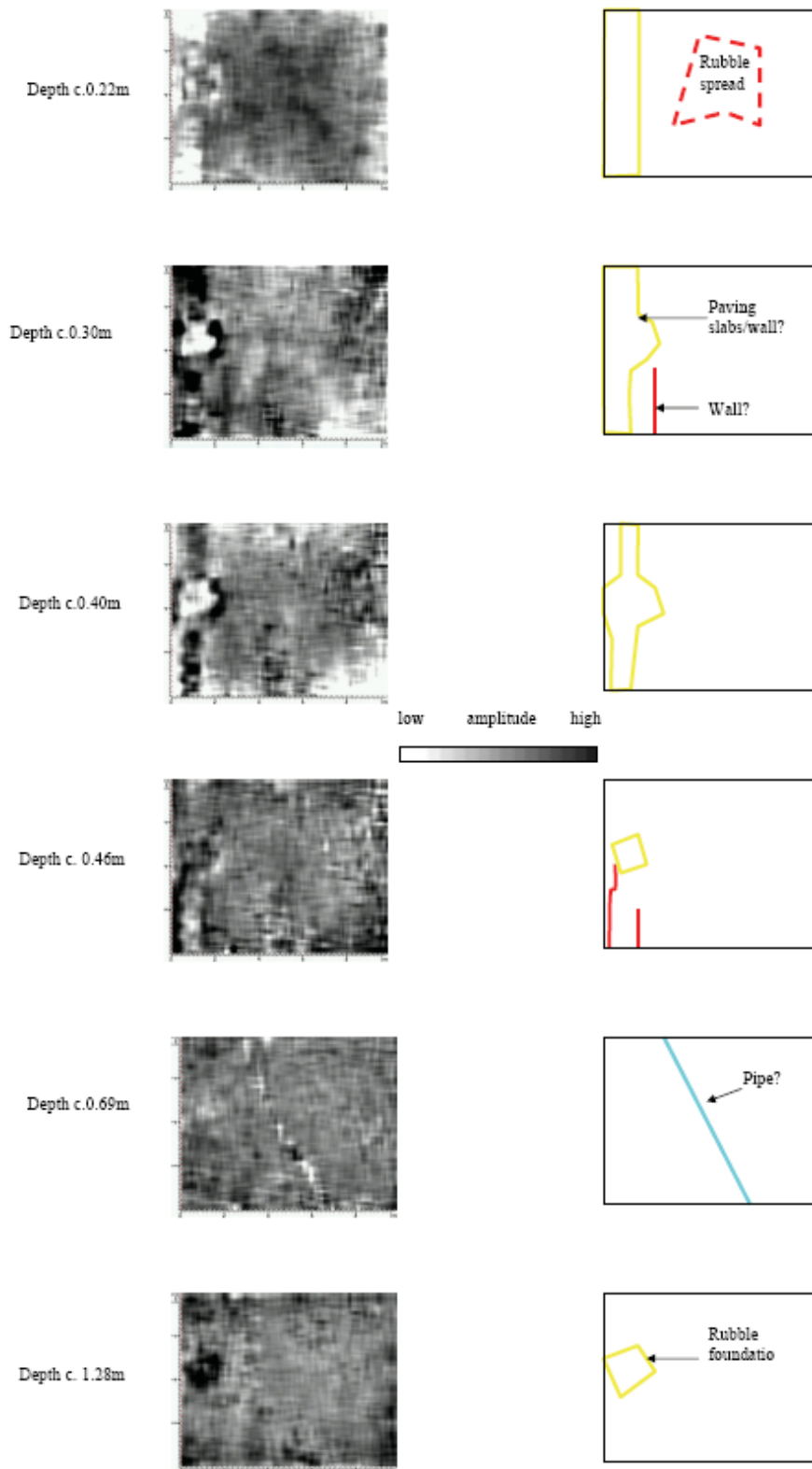


Figure 15. GR2 Horizontal time-scales with interpretation

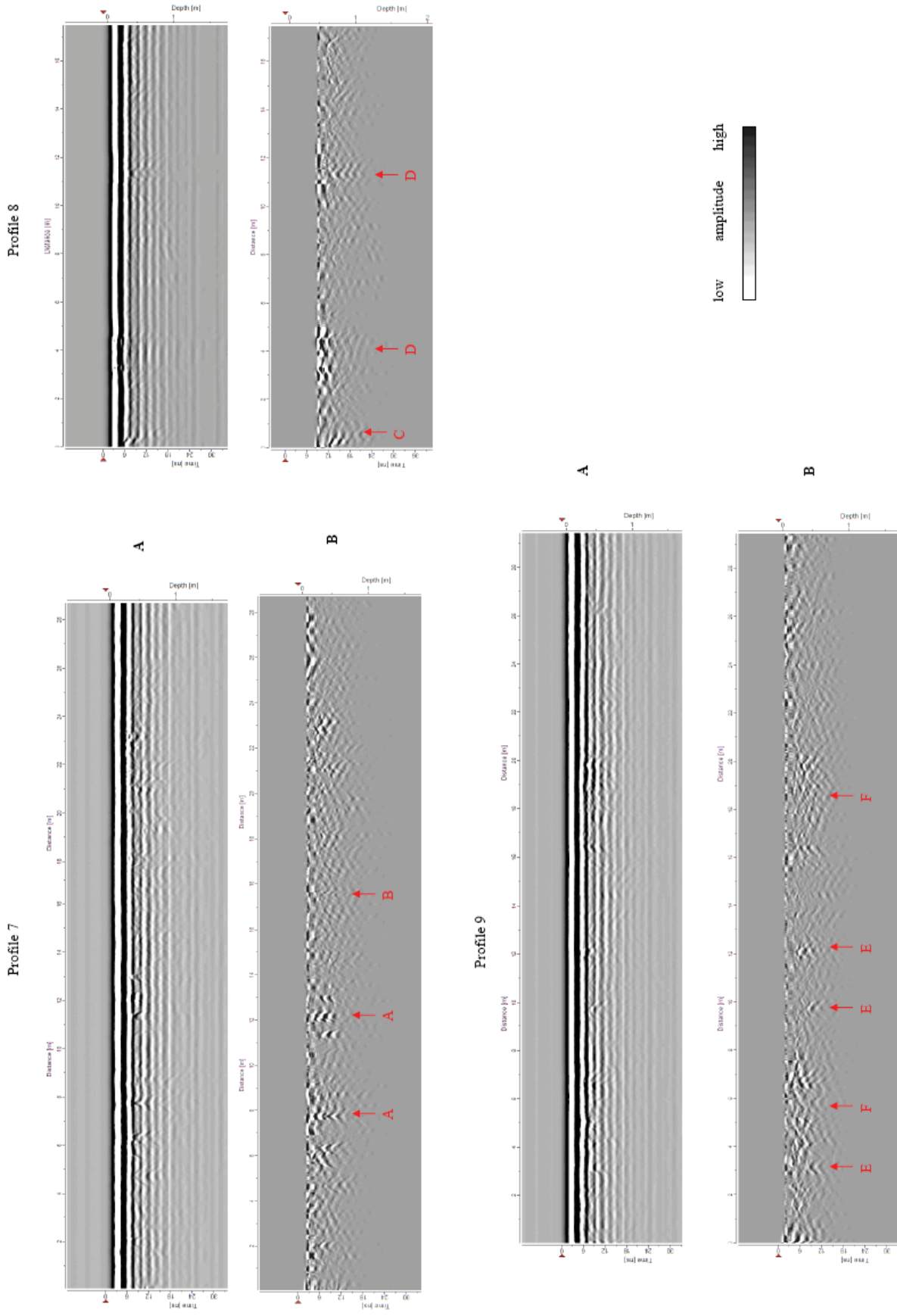


Figure 16. Profiles 7-9 – unprocessed reflection profile (A) and adjusted profile (B)

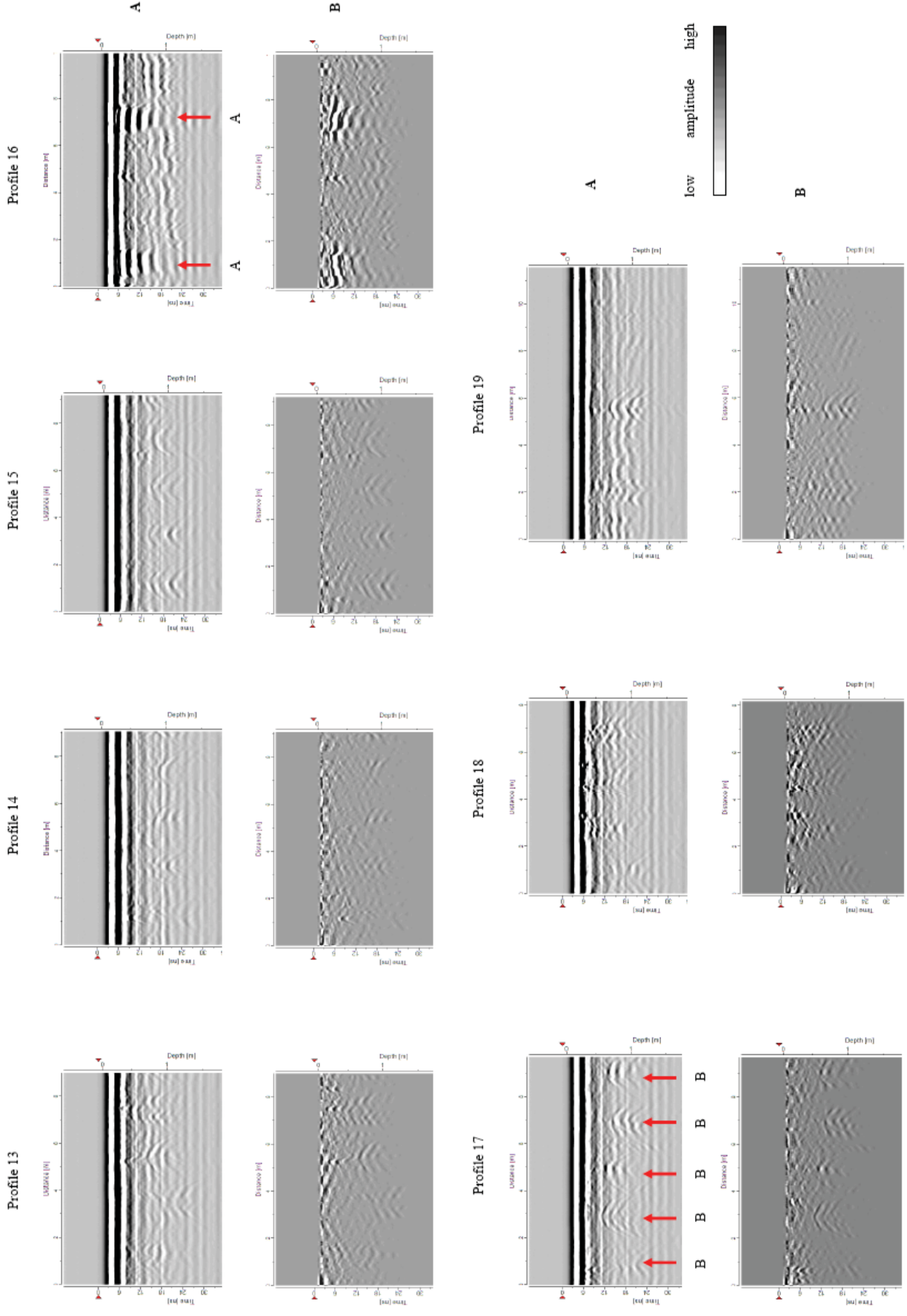
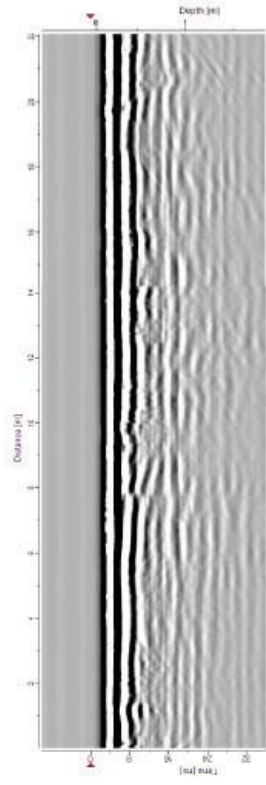
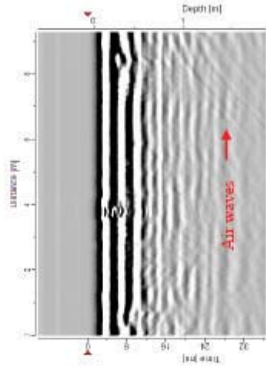


Figure 17. Profiles 13-19 – unprocessed reflection profile (A) and adjusted profile (B)

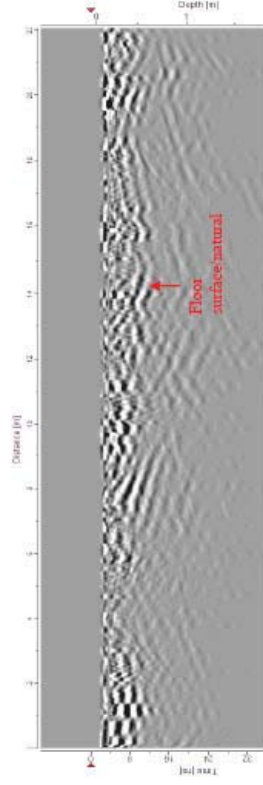
Profile 22



Profile 23



A



B

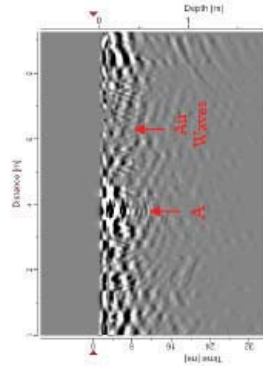


Figure 18. Profiles 22-23 – unprocessed reflection (A) and adjusted profile (B)

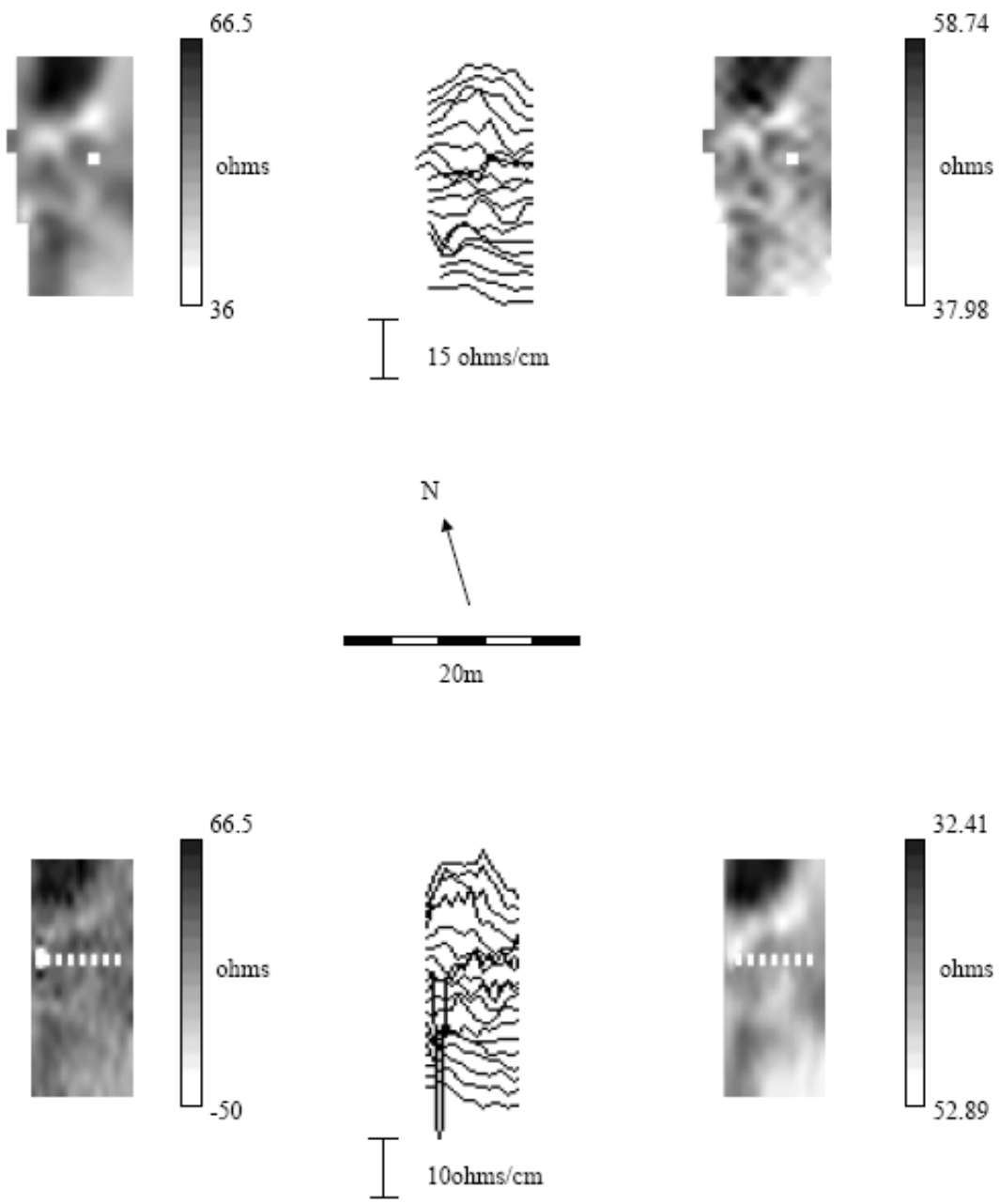


Figure 19. Resistance Survey – Grey scale and trace plots of raw and enhanced data, top 1m x 1m bottom 1m x 0.5m.

Appendix J. OASIS REPORT FORM

All fields are required unless they are not applicable.

Project Details

OASIS Number	<input type="text" value="oxfordar3-75524"/>		
Project Name	<input type="text" value="Archaeological Investigations at Wisbech Castle - A Community Archaeology Project"/>		
Project Dates (fieldwork) Start	<input type="text" value="16-09-2009"/>	Finish	<input type="text" value="29-09-2009"/>
Previous Work (by OA East)	<input type="text" value="No"/>	Future Work	<input type="text" value="No"/>

Project Reference Codes

Site Code	<input type="text" value="WISCAS09"/>	Planning App. No.	<input type="text" value="n/a"/>
HER No.	<input type="text" value="ECB 3252"/>	Related HER/OASIS No.	<input type="text"/>

Type of Project/Techniques Used

Prompt	<input type="text" value="Grant application (eg. management plan)"/>
Development Type	<input type="text" value="Other"/>

Please select all techniques used:

<input type="checkbox"/> Aerial Photography - interpretation	<input type="checkbox"/> Grab-Sampling	<input type="checkbox"/> Remote Operated Vehicle Survey
<input type="checkbox"/> Aerial Photography - new	<input type="checkbox"/> Gravity-Core	<input checked="" type="checkbox"/> Sample Trenches
<input checked="" type="checkbox"/> Annotated Sketch	<input type="checkbox"/> Laser Scanning	<input checked="" type="checkbox"/> Survey/Recording Of Fabric/Structure
<input type="checkbox"/> Augering	<input checked="" type="checkbox"/> Measured Survey	<input checked="" type="checkbox"/> Targeted Trenches
<input type="checkbox"/> Dendrochronological Survey	<input type="checkbox"/> Metal Detectors	<input checked="" type="checkbox"/> Test Pits
<input checked="" type="checkbox"/> Documentary Search	<input type="checkbox"/> Phosphate Survey	<input type="checkbox"/> Topographic Survey
<input checked="" type="checkbox"/> Environmental Sampling	<input type="checkbox"/> Photogrammetric Survey	<input type="checkbox"/> Vibro-core
<input type="checkbox"/> Fieldwalking	<input checked="" type="checkbox"/> Photographic Survey	<input type="checkbox"/> Visual Inspection (Initial Site Visit)
<input checked="" type="checkbox"/> Geophysical Survey	<input type="checkbox"/> Rectified Photography	

Monument Types/Significant Finds & Their Periods

List feature types using the [NMR Monument Type Thesaurus](#) and significant finds using the [MDA Object type Thesaurus](#) together with their respective periods. If no features/finds were found, please state "none".

Monument	Period	Object	Period
<input type="text" value="masonry"/>	<input type="text" value="Post Medieval 1540 to 1901"/>	<input type="text" value="CBM"/>	<input type="text" value="Post Medieval 1540 to 1901"/>
<input type="text" value="ditch"/>	<input type="text" value="Post Medieval 1540 to 1901"/>	<input type="text" value="pottery"/>	<input type="text" value="Post Medieval 1540 to 1901"/>
<input type="text" value="pit"/>	<input type="text" value="Medieval 1066 to 1540"/>	<input type="text"/>	<input type="text" value="Select period..."/>

Project Location

County	Cambridgeshire	Site Address (including postcode if possible)
District	Fenland	Wisbech Castle, Museum Square Wisbech Cambridgeshire, PE13 1EH
Parish	Wisbech	
HER	Cambridgeshire	
Study Area	250sq m	National Grid Reference TF 4621 0956

Project Originators

Organisation	OA EAST
Project Brief Originator	n/a
Project Design Originator	Stephen Macaulay
Project Manager	Stephen Macaulay
Supervisor	Taleyna Fletcher

Project Archives

Physical Archive	Digital Archive	Paper Archive
CCC Stores, Landbech	OA East Offices, Bar Hill	CCC Stores, Landbech
WISCAS09	WISCAS09	WISCAS09

Archive Contents/Media

	Physical Contents	Digital Contents	Paper Contents
Animal Bones	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ceramics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Human Bones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leather	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Stratigraphic		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Survey		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Textiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worked Bone	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Worked Stone/Lithic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Digital Media	Paper Media
<input checked="" type="checkbox"/> Database	<input type="checkbox"/> Aerial Photos
<input type="checkbox"/> GIS	<input checked="" type="checkbox"/> Context Sheet
<input checked="" type="checkbox"/> Geophysics	<input checked="" type="checkbox"/> Correspondence
<input checked="" type="checkbox"/> Images	<input type="checkbox"/> Diary
<input checked="" type="checkbox"/> Illustrations	<input checked="" type="checkbox"/> Drawing
<input type="checkbox"/> Moving Image	<input type="checkbox"/> Manuscript
<input type="checkbox"/> Spreadsheets	<input checked="" type="checkbox"/> Map
<input checked="" type="checkbox"/> Survey	<input type="checkbox"/> Matrices
<input checked="" type="checkbox"/> Text	<input type="checkbox"/> Microfilm
<input type="checkbox"/> Virtual Reality	<input type="checkbox"/> Misc.
	<input checked="" type="checkbox"/> Research/Notes
	<input checked="" type="checkbox"/> Photos
	<input checked="" type="checkbox"/> Plans
	<input checked="" type="checkbox"/> Report
	<input checked="" type="checkbox"/> Sections
	<input checked="" type="checkbox"/> Survey

Notes:



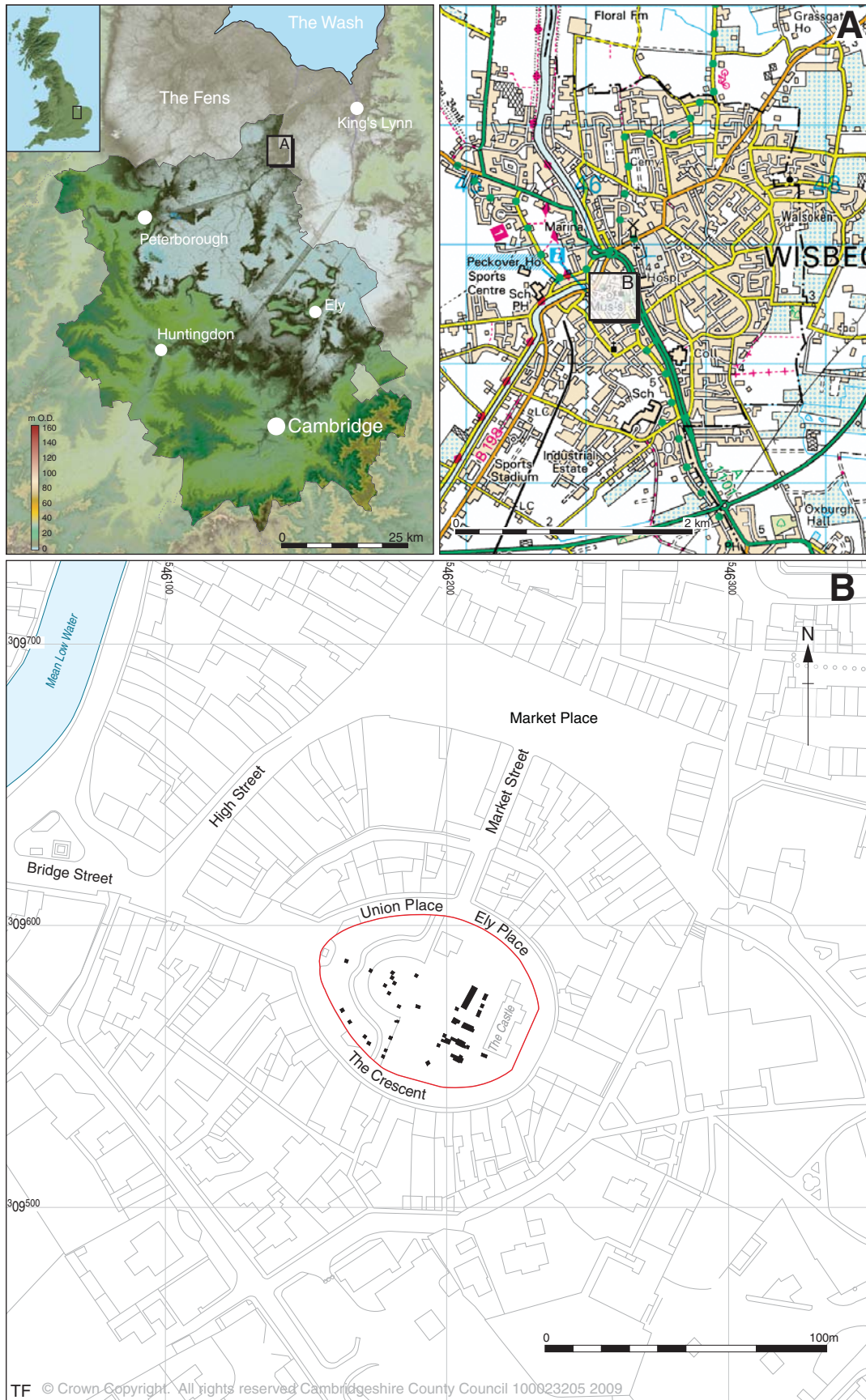


Figure 1: Site location map showing investigation area (red) with trenches and test pits (black)



Figure 2: Plan of the Castle Estate, 1795



Figure 3: Extract from Speed's Map, 1607, showing the Bishops Palace (?) at Wisbech

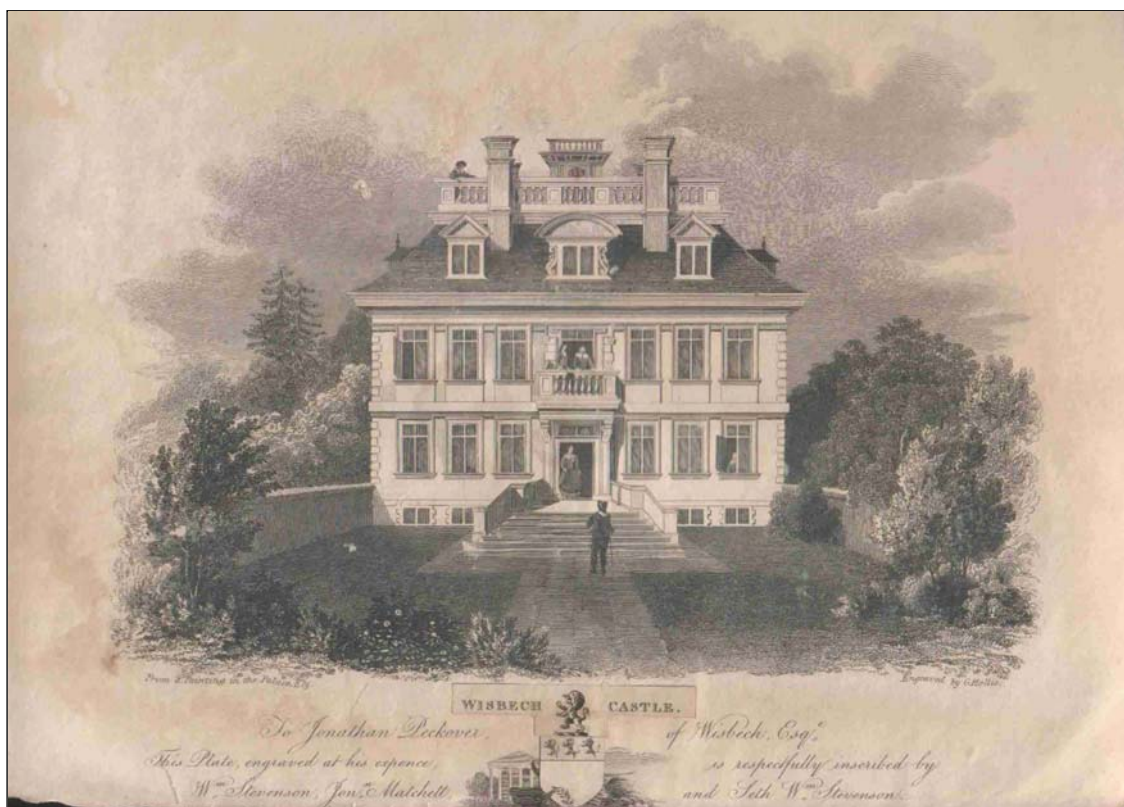


Figure 4: Engraving of Thurloe's mansion

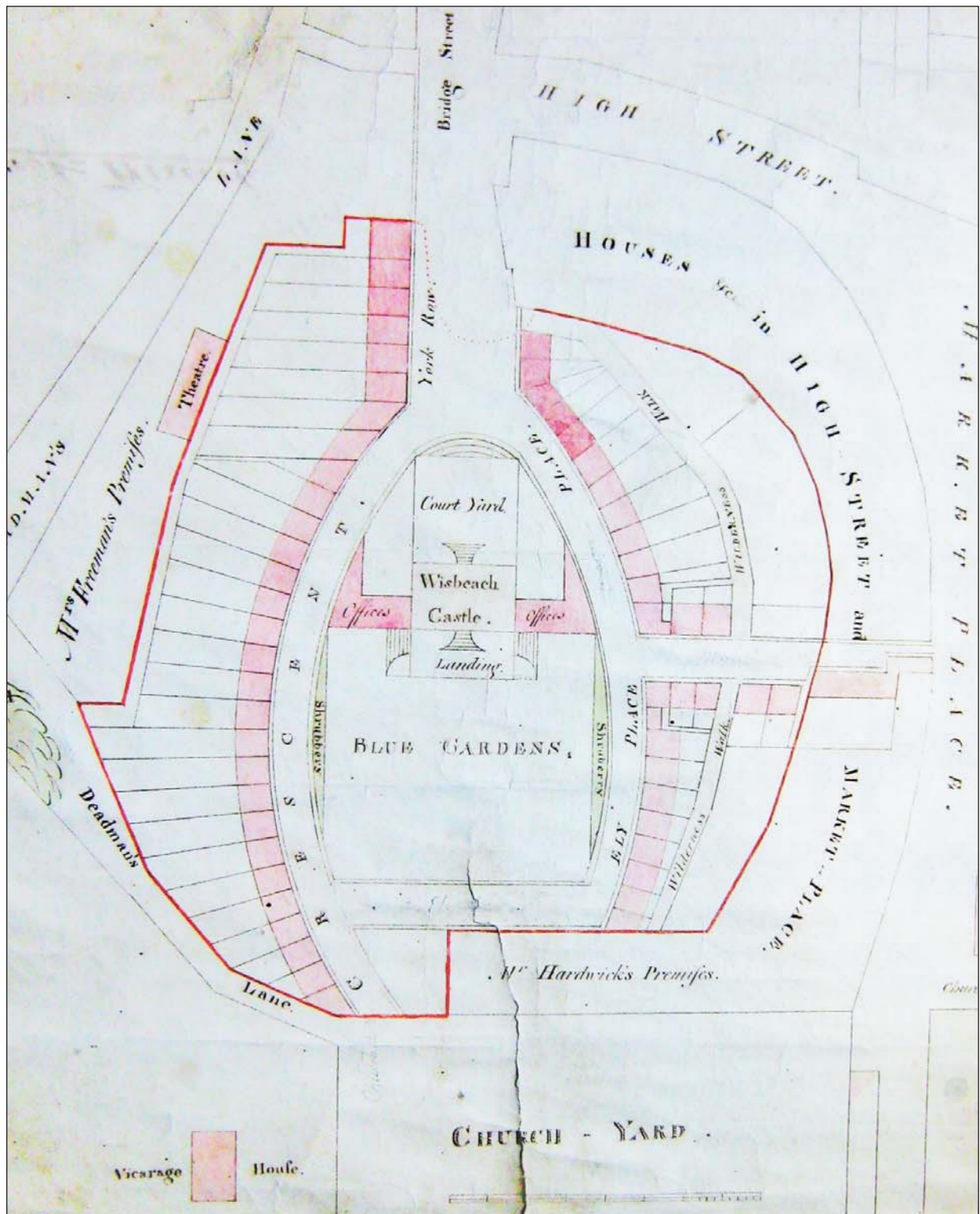


Figure 5: Proposed layout of castle by Joseph Medworth c.1800

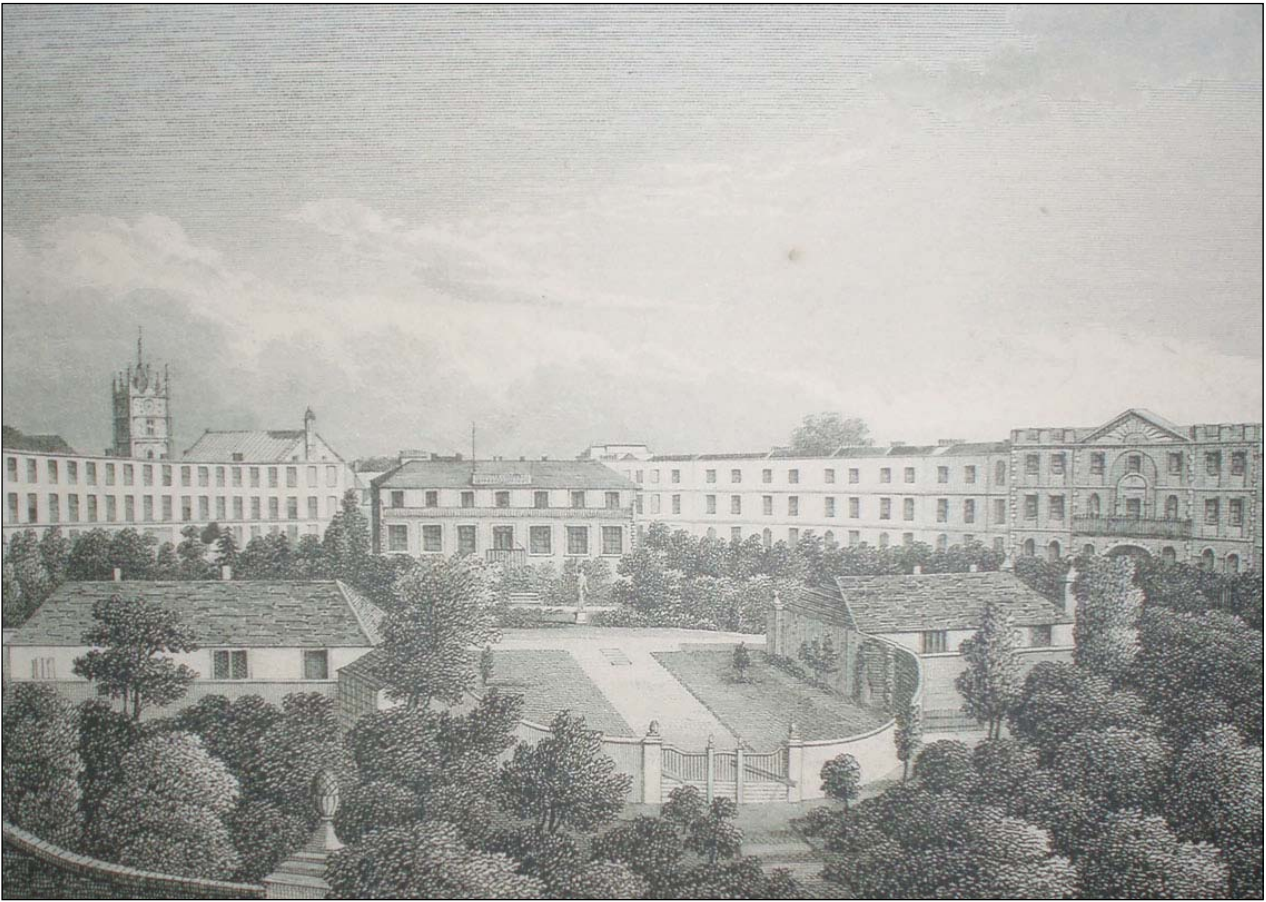


Figure 6: Engraving of The Crescent, 1827

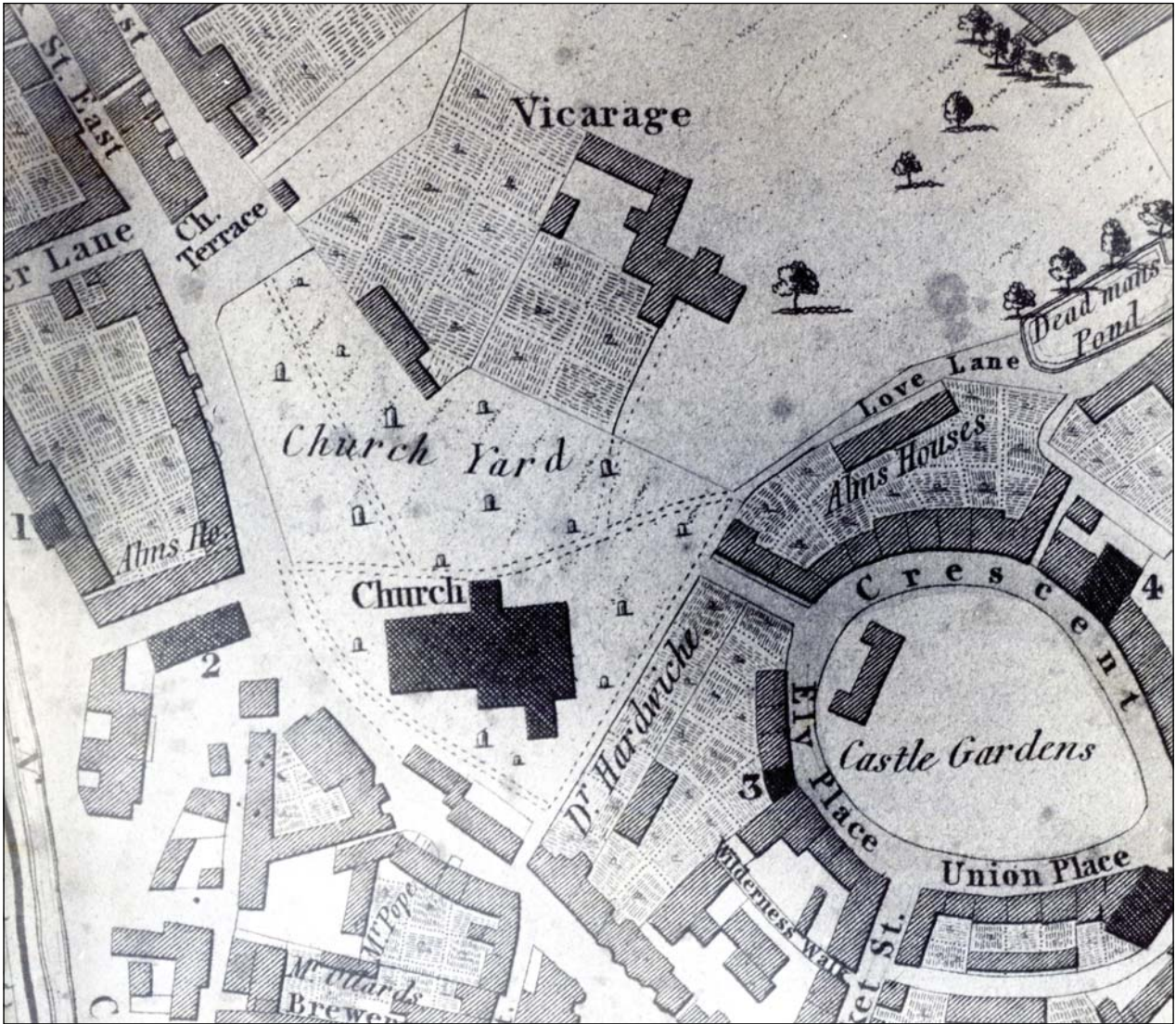


Figure 7: Wood's Map of Wisbech 1830

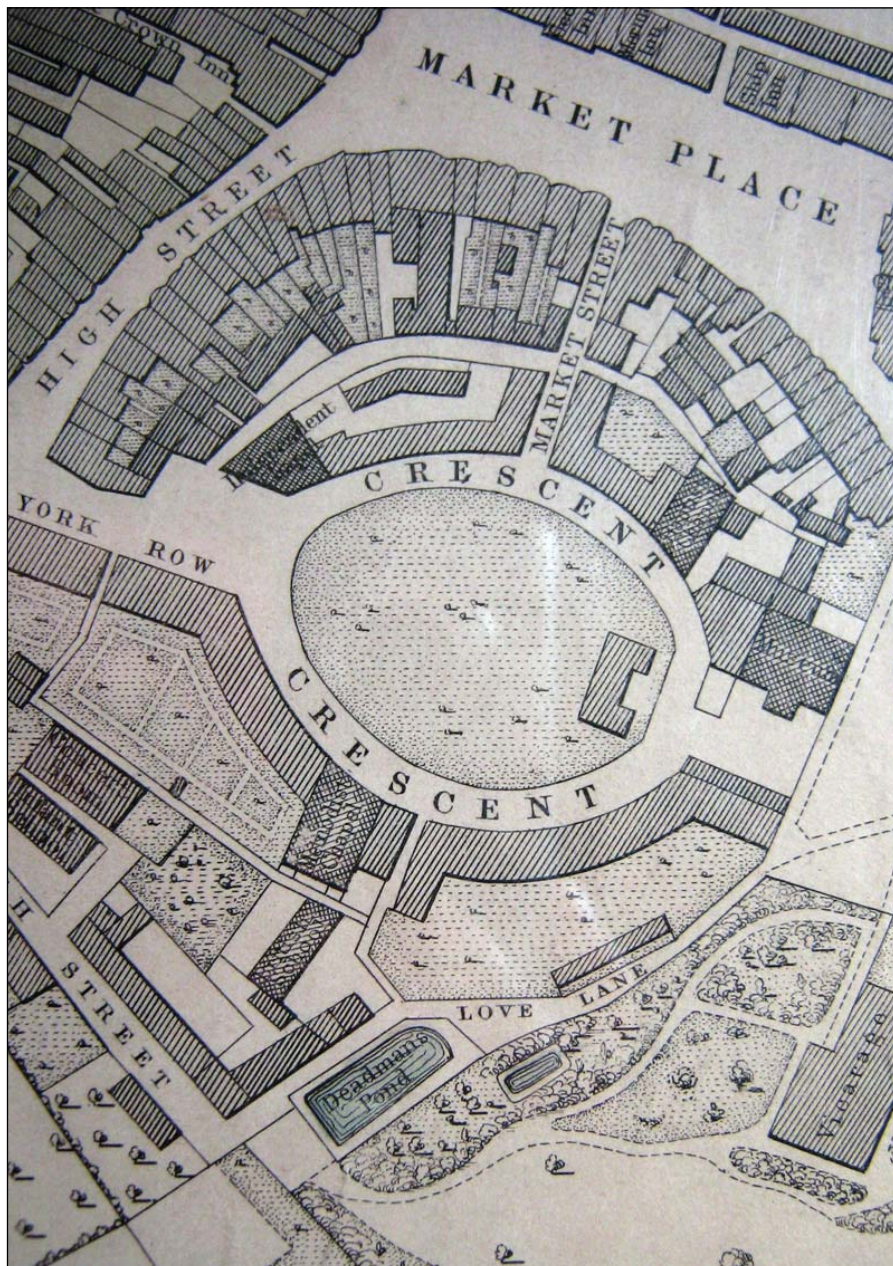


Figure 8: Uttings plan of Wisbech, 1850



Figure 9: Wisbech Board of Health map, 1853

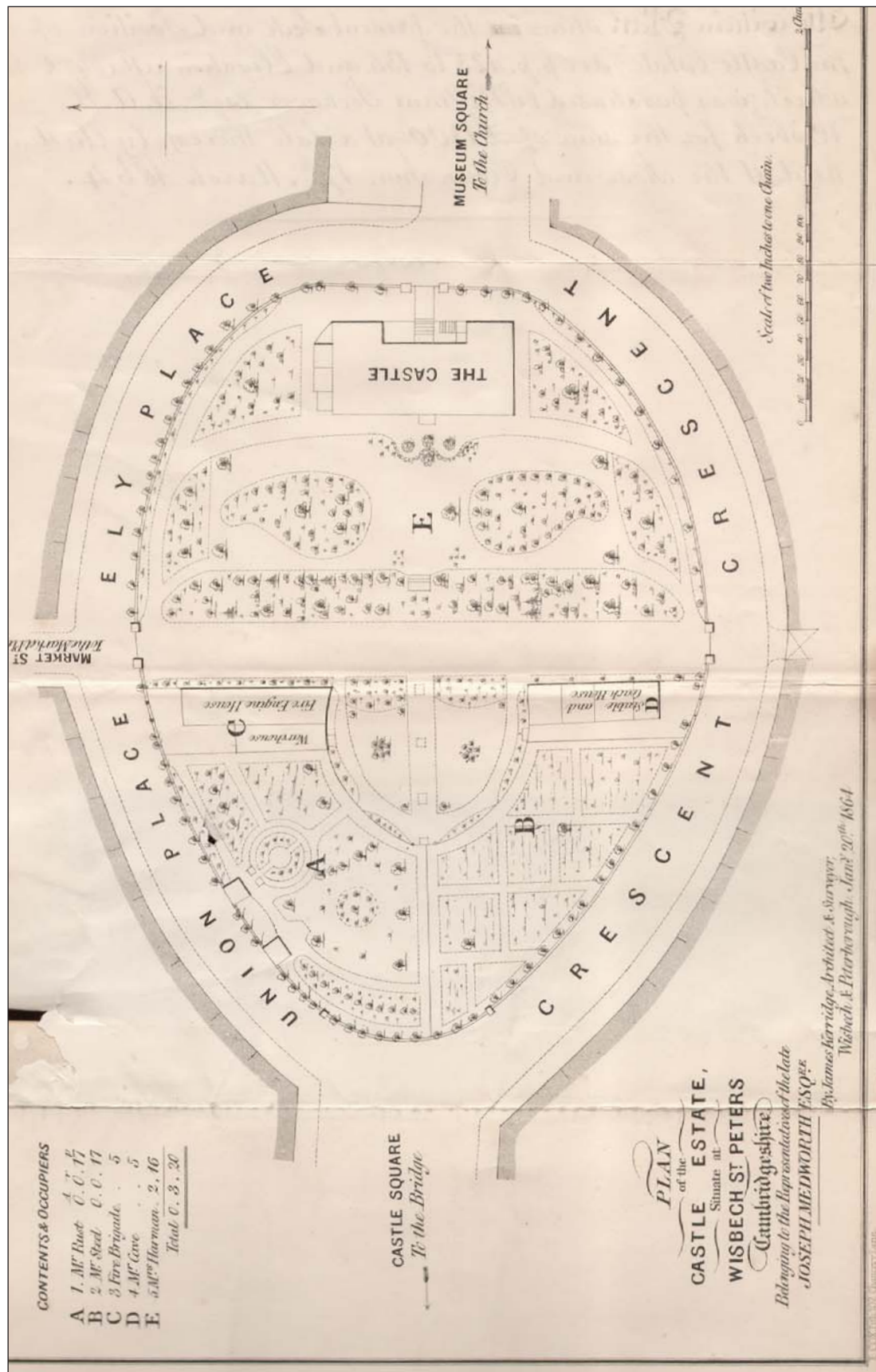


Figure 10: Wisbech Castle estate map, 1864

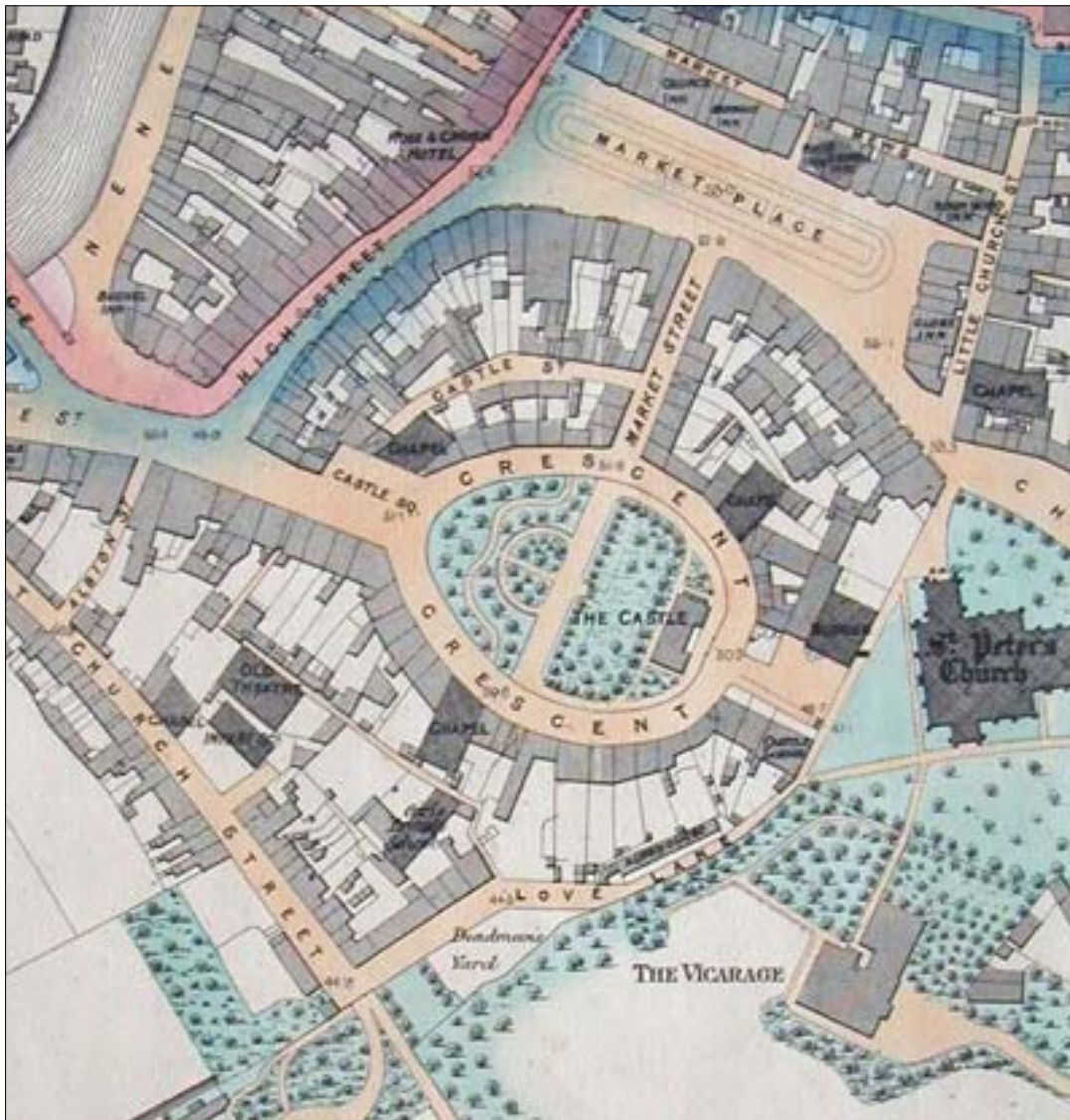


Figure 11: Mumford's map of Wisbech Castle, 1867



Figure 12: 1st Edition Ordnance Survey map, 1886

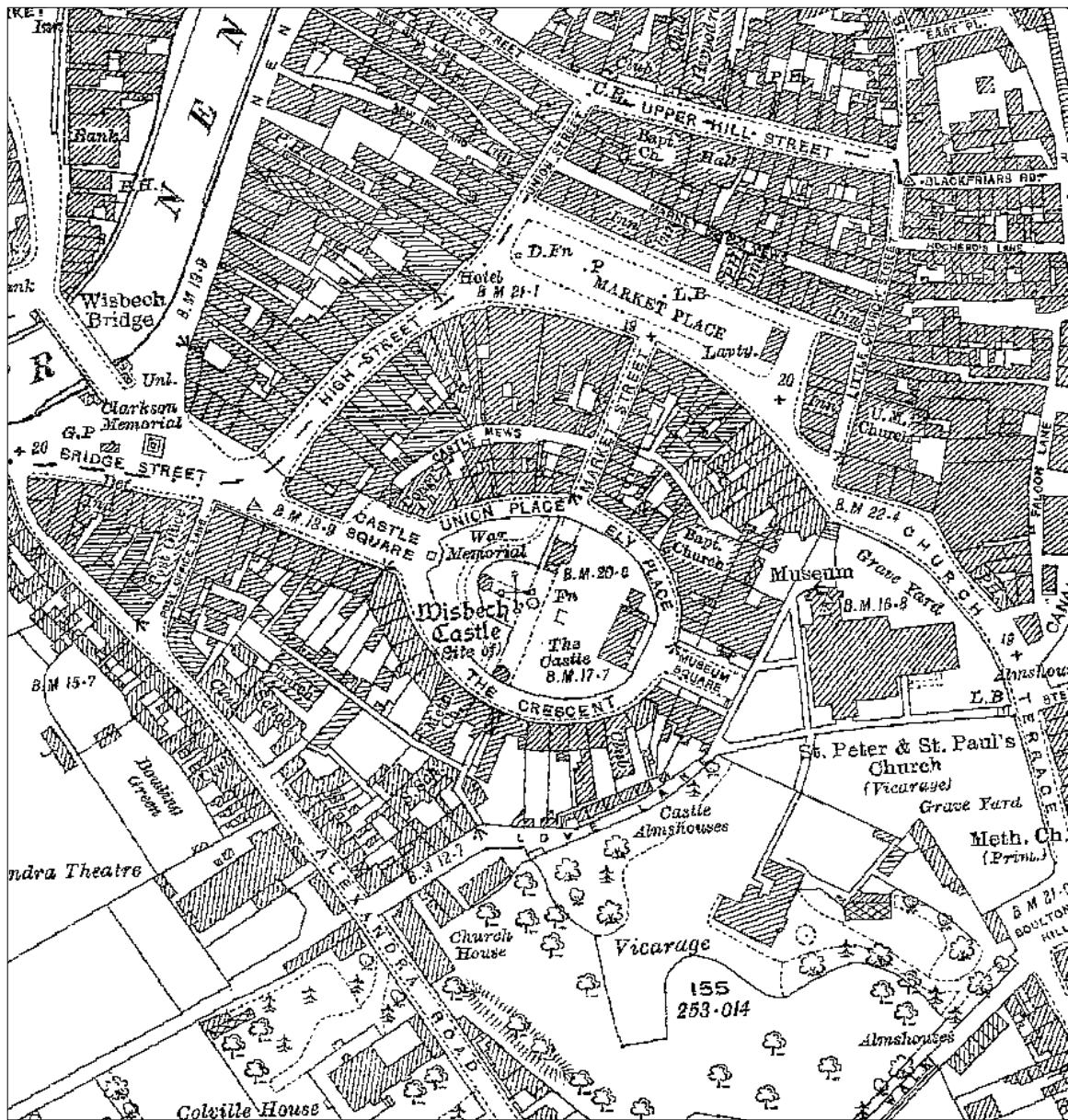


Figure 13: 1927 Ordnance Survey map



Figure 14: Plan of test pits and trenches, lower garden

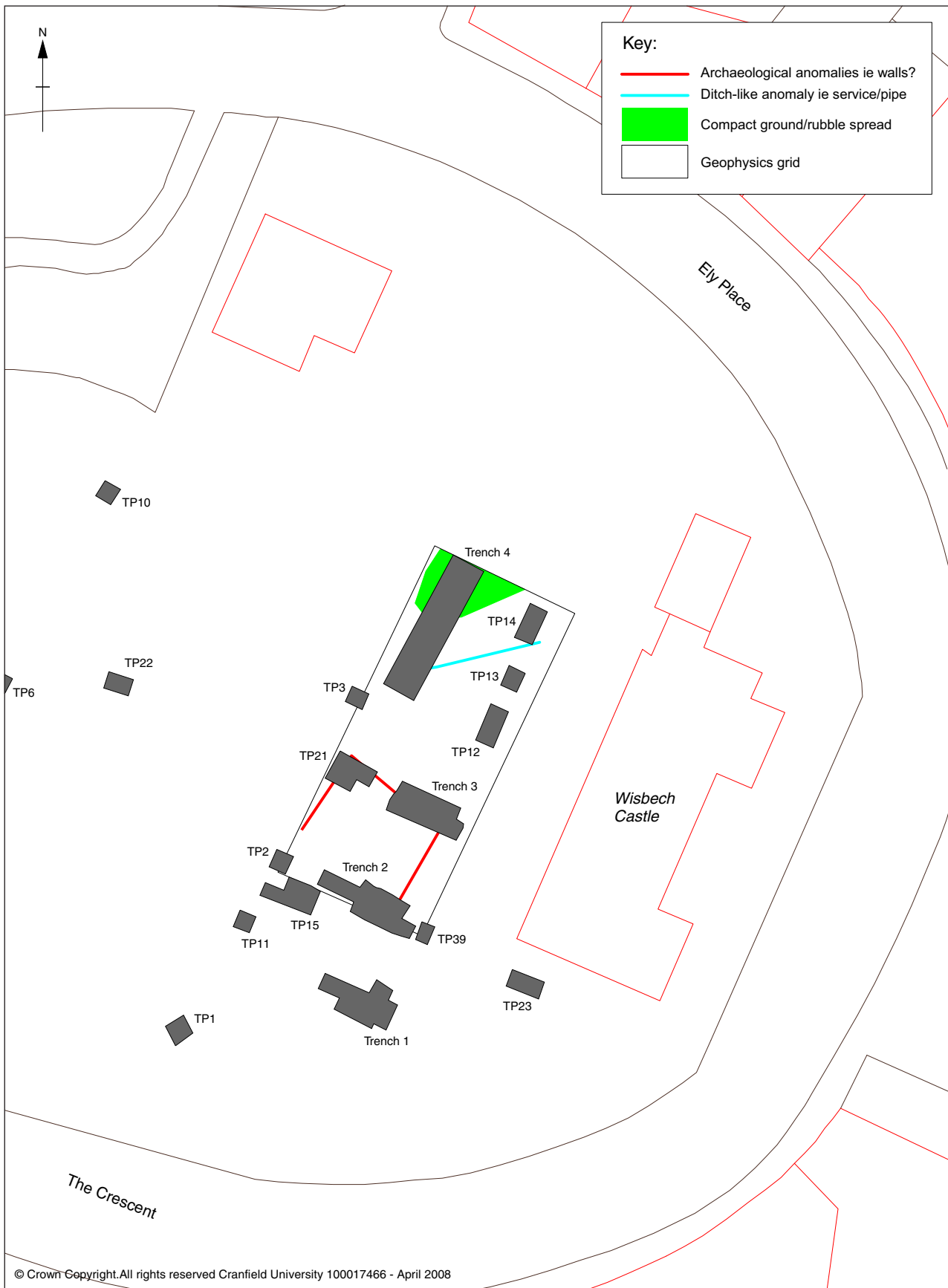


Figure 15: Location of trenches and test pits (grey) and geophysics results, lower garden

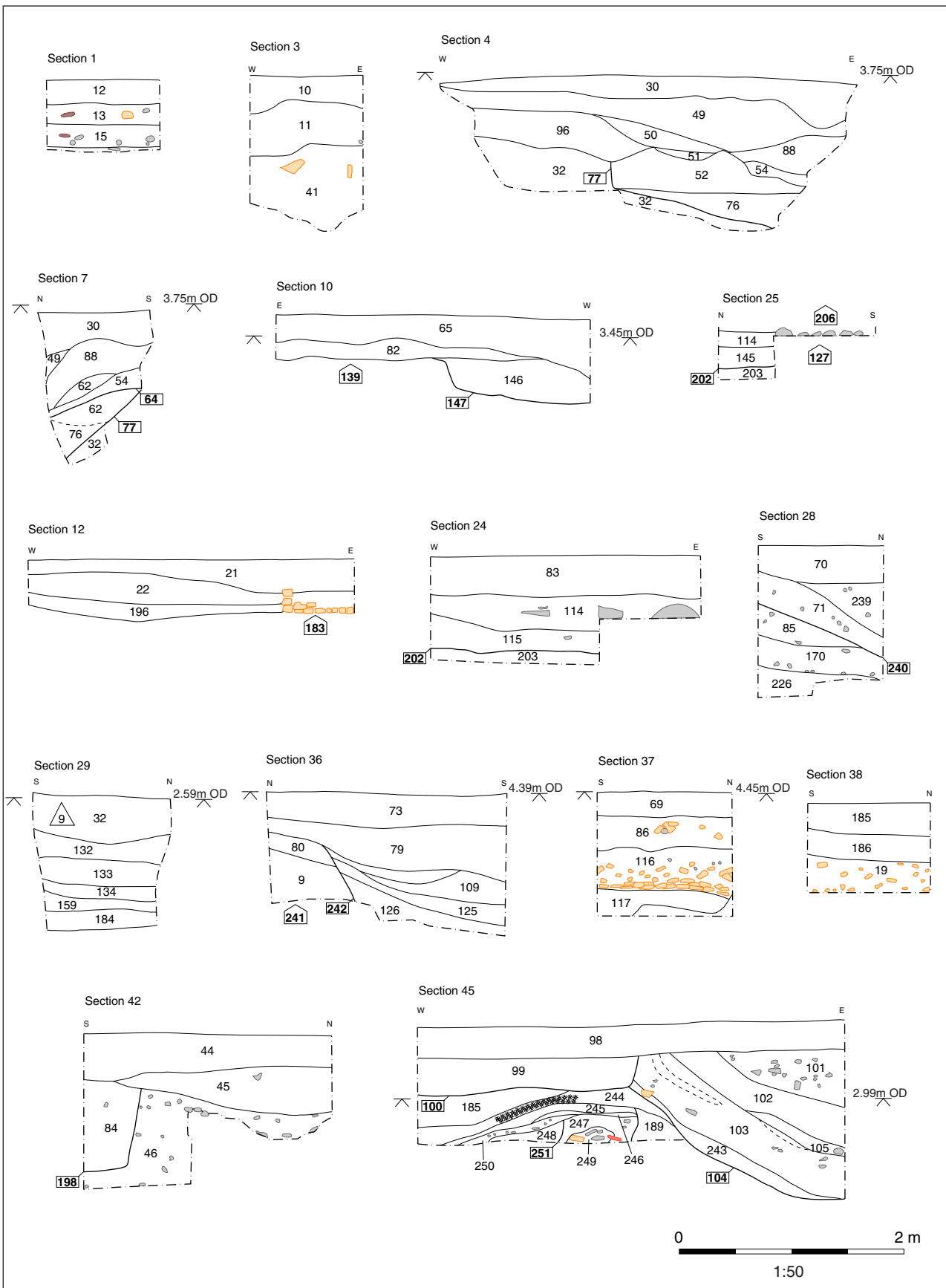


Figure 16: Sections from lower garden

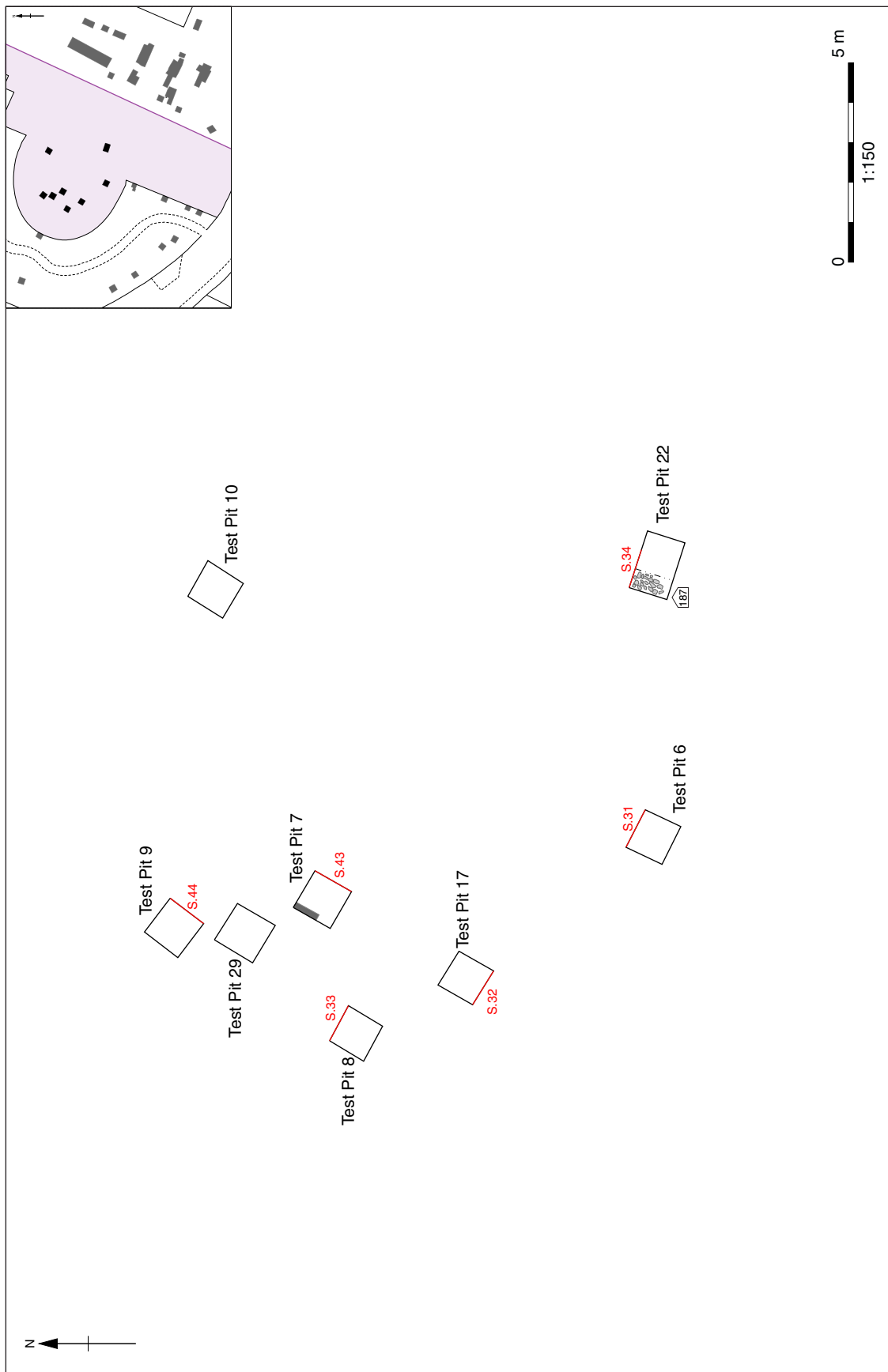


Figure 17: Plan of test pits, upper garden

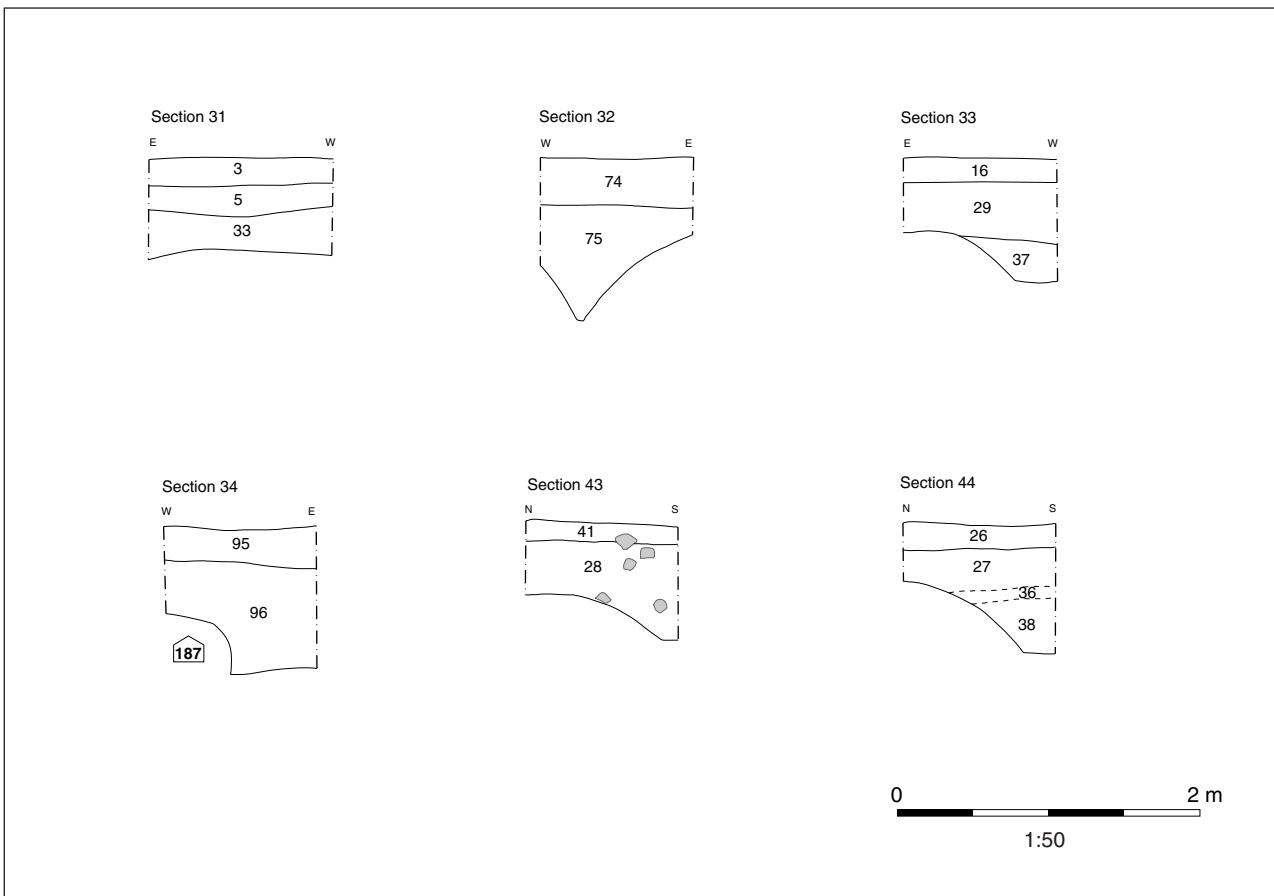


Figure 18: Sections from upper garden

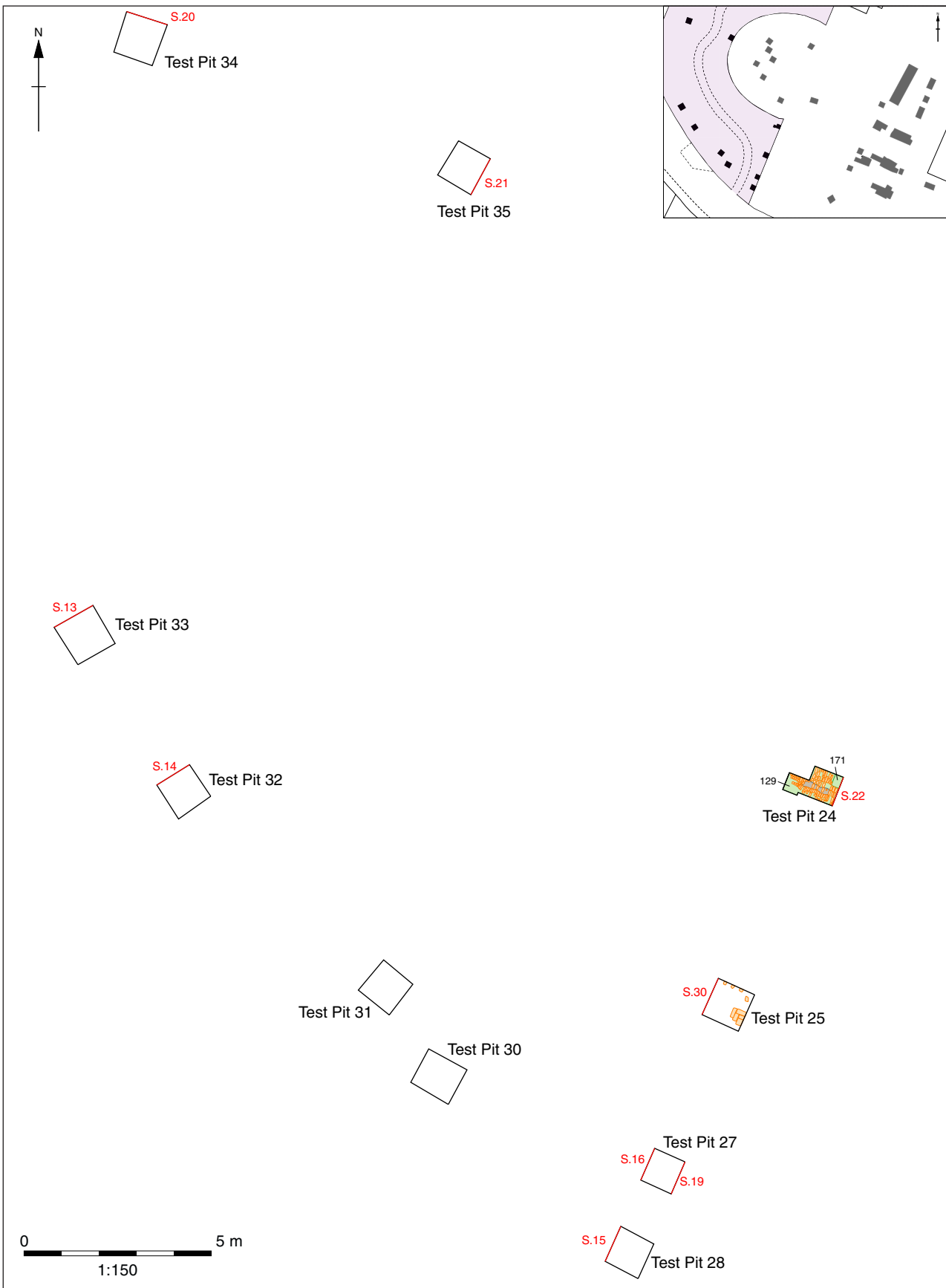


Figure 19: Plan of test pits, memorial garden

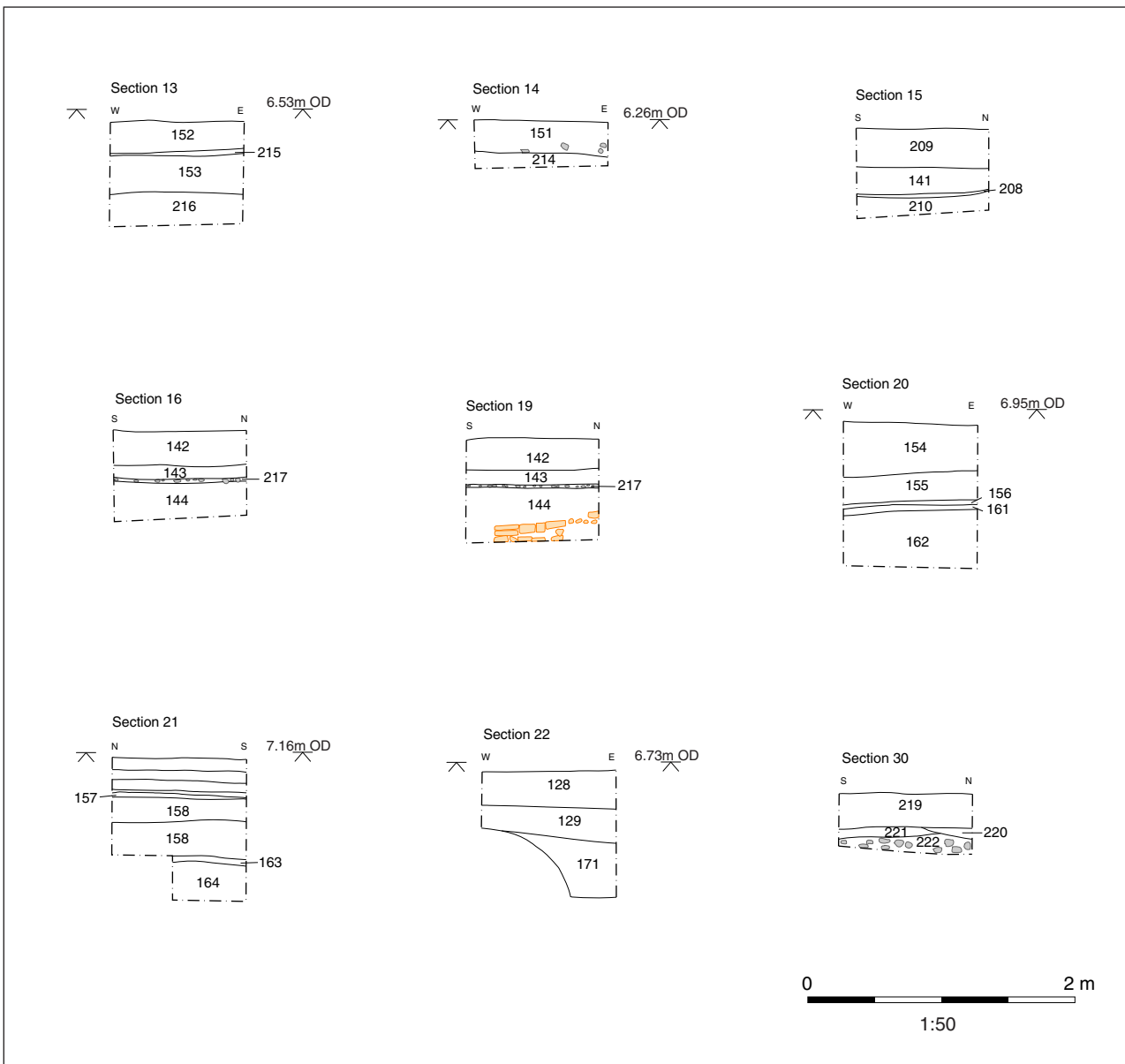


Figure 20: Sections from memorial garden

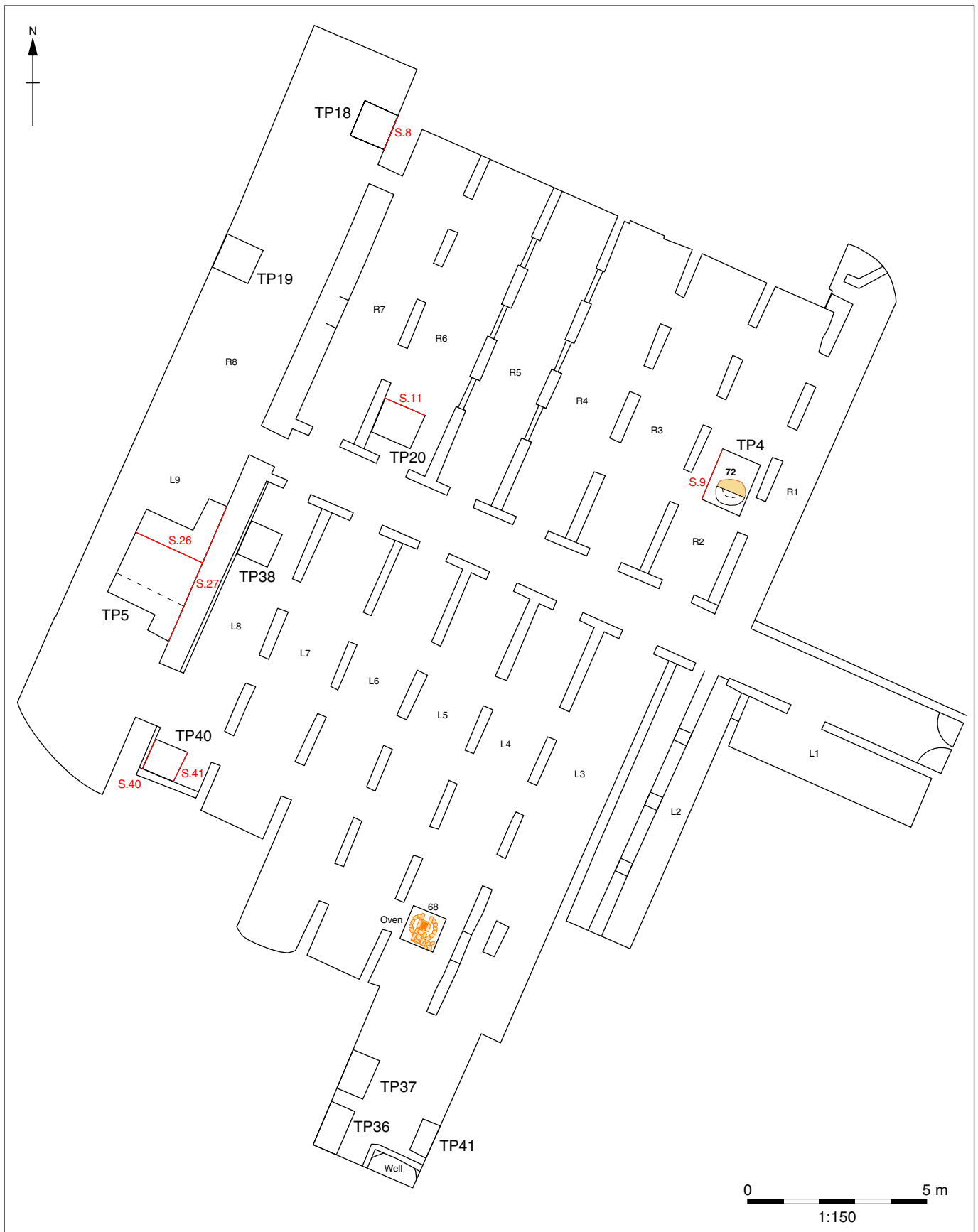


Figure 21: Plan of vaults showing location of test pits

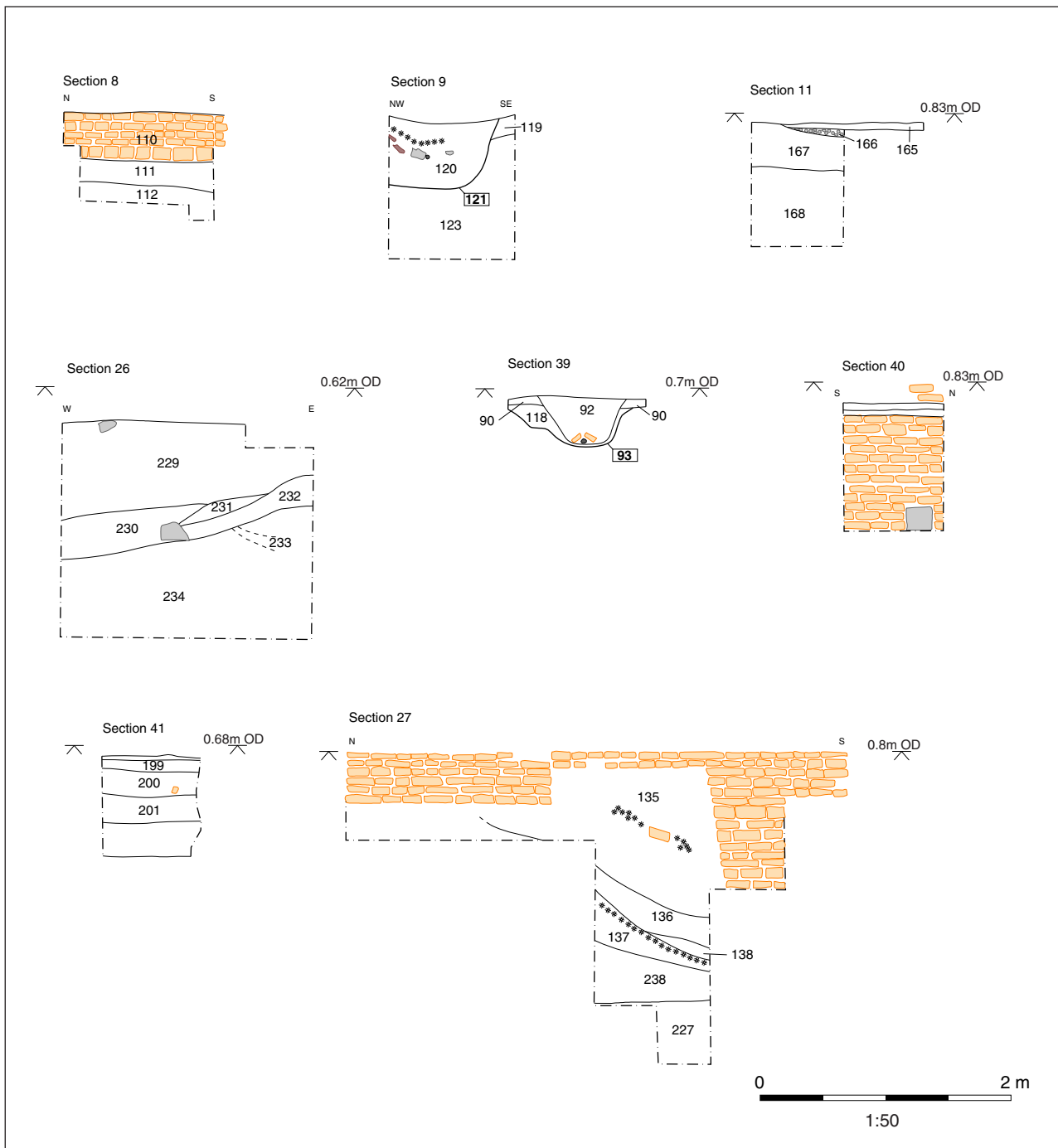


Figure 22: Sections from vaults



Plate 1: Seal of the constable of Wisbech Castle, 1409



Plate 2: The present "Wisbech Castle", from rear



Plate 3: The present "Wisbech Castle", taken from Museum Square



Plate 4: Brick structure/foundations, Trench 1, lower garden



Plate 5: Pre-excavation shot of south-facing section, Trench 2, lower garden



*Plate 6: Elizabethan Silver Coin (SF1)
found in Trench 2, lower garden*



Plate 7: Working shot: Emma excavating test pit in Trench 2, lower garden



Plate 8: Fragment of decorative brick



Plate 9: Brick/rubble foundations, Test pit 12, lower garden



Plate 10: Curved brick from an oven or hearth



Plate 11: Brick/rubble foundations, Test pit 14, lower garden



Plate 12: Brick/rubble foundations, Test pit 15, lower garden



Plate 13: Brick/rubble foundations, Test pit 21, lower garden



Plate 14: Top of vaults, Test pit 7, upper garden



*Plate 15: Top of vaults,
Test pit 17, upper garden*



*Plate 16: Top of vaults,
Test pit 14, upper garden*



Plate 17: Top of vaults, Test pit 24, upper garden



Plate 18: Brick wall foundations, Test pit 25, memorial garden



Plate 19: Chess piece and counter (SF16), from Test pit 28, memorial garden



Plate 20: Remains of earlier road surface, Test pit 34, memorial garden



Plate 21: Working shot: Digging in the vaults



Plate 22: Base of brick "oven" recorded in the vaults



Plate 23: Small iron door from the oven



Plate 24: Flood silt layers and possible pit, Test pit 5, vaults



Plate 25: Flood silt layers and possible pit, Test pit 5, vaults



Plate 26: Access to the vaults, lower garden



Plate 27: The vaults, R6



Plate 28: End tunnel L9, the vaults



Plate 29: Fragment of ridge tile



Plate 30: Fragment of roof tile



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