

**An Archaeological Evaluation at the former East Anglian Hotel,
Blackfriars Road, King's Lynn, Norfolk**

**Site Code: 405 02 KLY
Central National Grid Reference: TF 6222 2008**

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1 ABSTRACT

- 1.1 This report details the results of an archaeological evaluation undertaken by Pre-Construct Archaeology Limited on the site of the former East Anglian Hotel, Blackfriars Road, King's Lynn, Norfolk (Fig 1).
- 1.2 The archaeological work was undertaken in advance of a proposed redevelopment of the site by Rexstone Properties Ltd. The site is situated within the medieval and later town walls which are located approximately 150m to the east. Cartographic evidence suggests that this area of the town remained open ground until the 19th century. However, excavations situated to the northwest of the site, on the west site of Blackfriars Road, indicated that the Blackfriars area of the town may have been intensively inhabited by the 16th century¹.
- 1.3 Two trenches measuring 3m by 3m were excavated, representing roughly 5% of the area due for redevelopment. Although the areas covered by these trenches had been heavily impacted upon by 19th century foundations, basements and drainage features, pockets of truncated archaeological deposits were extant between the modern intrusions. No evidence of structures pre-dating the 19th was discovered. The archaeological sequence consisted principally of discarded domestic and industrial waste dating from the 17th century onwards. These deposits had been dumped above marsh and alluvial deposits which represented the silting up of a stream or large drainage ditch. The earliest excavated alluvial fills dated to the late medieval or early post-medieval period.

¹ Hutcheson, A. April 2004 *Brief for archaeological evaluation by trial trenching at East Anglian Hotel King's Lynn Norfolk pp3* Unpublished document for Norfolk Museums and Archaeology Service

2 INTRODUCTION

- 2.1 An archaeological evaluation was undertaken by Pre-Construct Archaeology Limited on the site of the former East Anglian Hotel, Blackfriars Road, King's Lynn, Norfolk. The evaluation was conducted between the 21st of June and 9th of July 2004, and the commissioning client was Rexstone Properties Ltd.
- 2.2 The initial phase of fieldwork was undertaken in compliance with the archaeological condition placed on the Planning Permission granted by the local authority. This process complies with national, regional and local planning policies relating to archaeology as outlined in:
- Department of Environment Nov 1990 *Planning Policy and Guidance 16, Archaeology and Planning*
 - Norfolk County Council Oct 1999 *Norfolk Structure Plan, policy ENV 13*
 - The Borough of King's Lynn and West Norfolk Nov 1998 *Local Plan Adopted Version, policies 4/9-11*
- 2.3 The evaluation consisted of two trenches each measuring 3m by 3m, one on the frontage of Blackfriars Road the other facing onto Portland Street (see Fig 2). The location of the trenches was determined by the Brief issued by the Norfolk Museums and Archaeology Service. Minor variations to the locations of the trenches resulted from the need to avoid live sewerage and the logistical layout of the site.
- 2.4 The National Grid Reference of the centre of the site is TF 6222 2008.
- 2.5 The site was assigned the unique code 405 02 KLY.
- 2.6 The evaluation was supervised by Douglas Killock, assisted by Strephon Duckering and subsequently Tony Baxter. Jon Butler for Pre-Construct Archaeology Limited managed the project. Andy Hutcheson monitored the project for the Norfolk Museums and Archaeology Service.

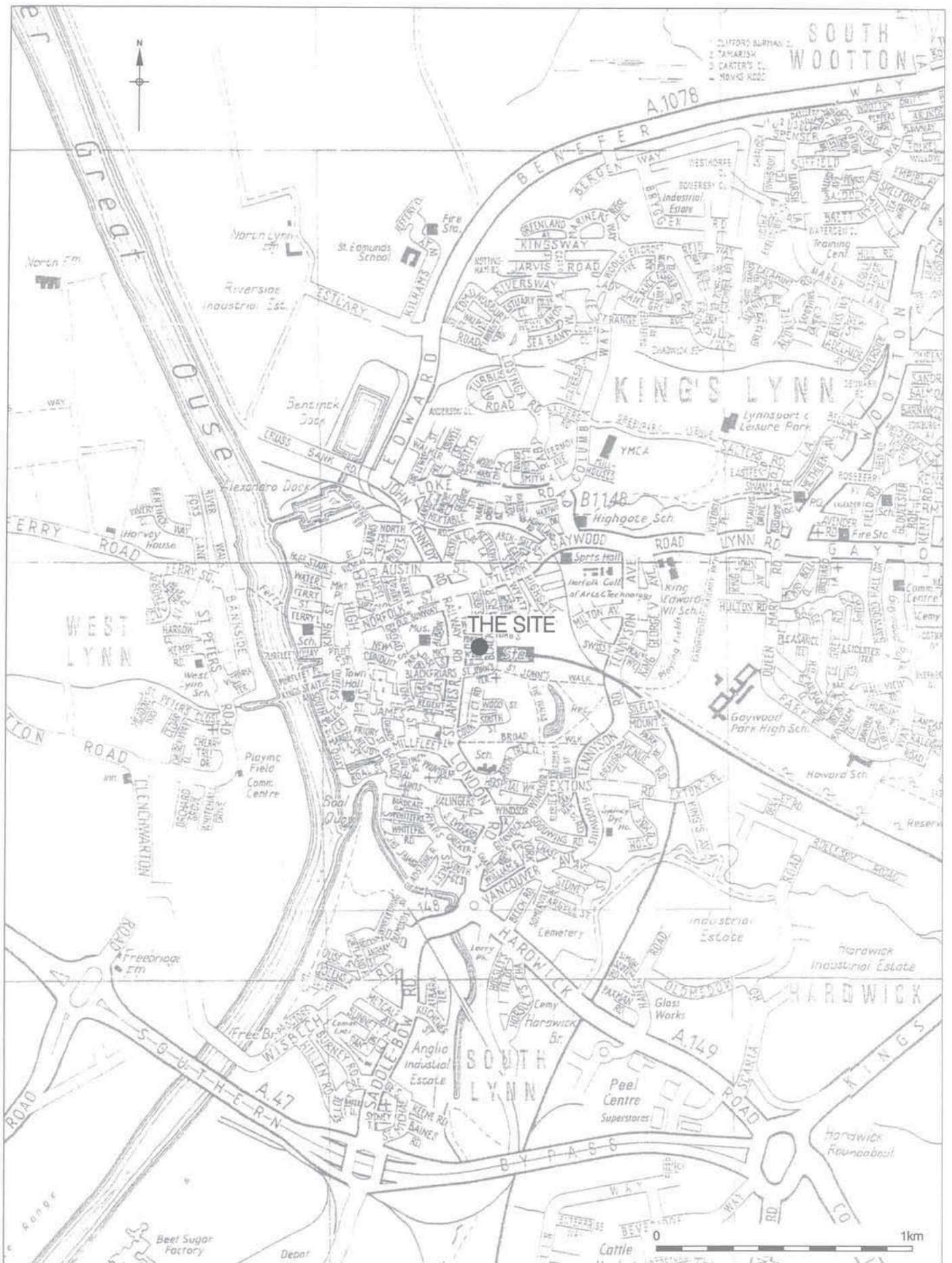
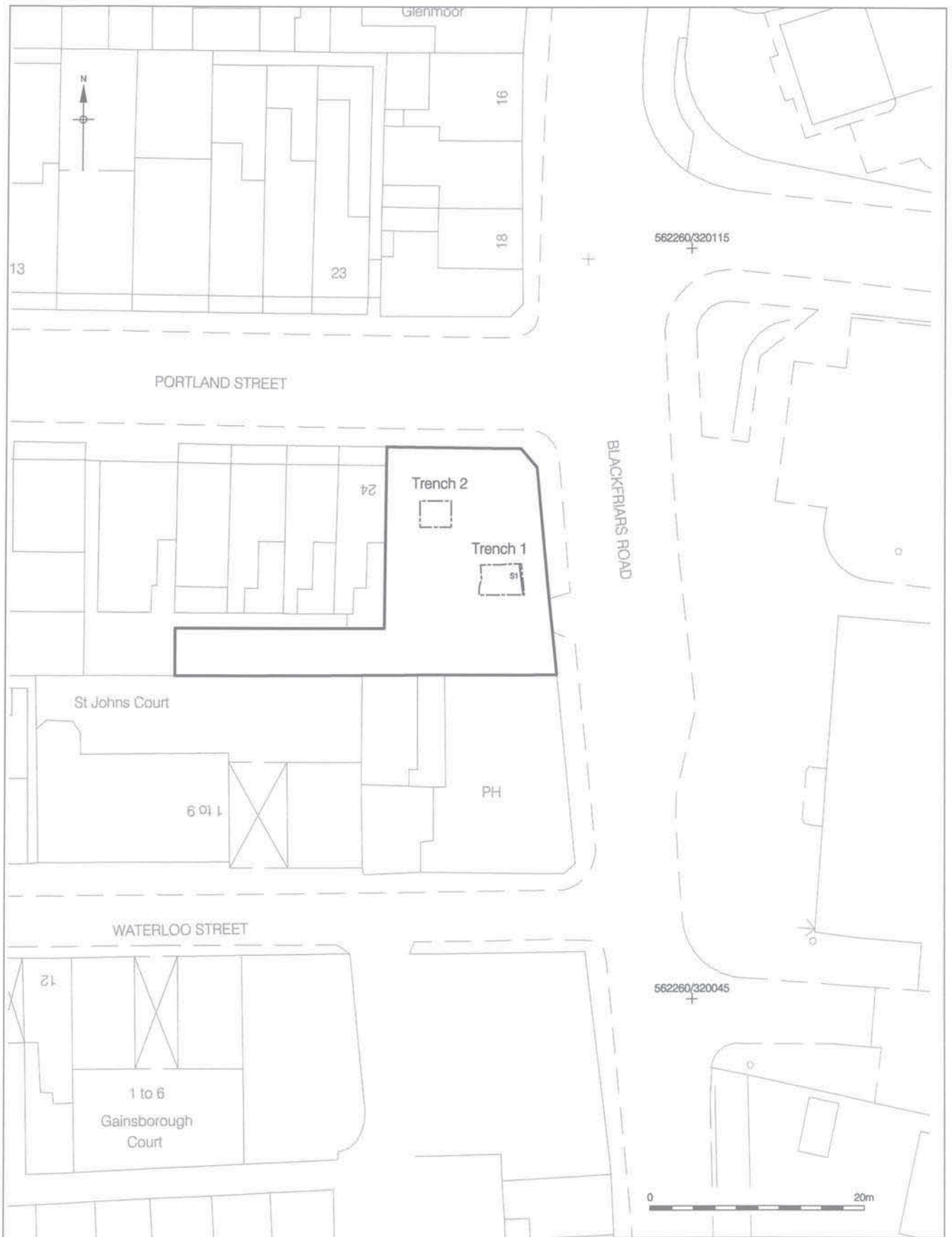


Figure 1
Site Location
1:20,000



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Figure 2
Trench Locations
1:500

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 3.1 The early history of King's Lynn has been the subject of numerous publications and is far too extensive a subject to discuss in detail here. A very brief extract concerning the development of the town should suffice to place the East Anglian hotel site in its historical context.
- 3.2 Although there is little evidence of urban development before the 12th century the future prosperity of the medieval town may have originated in the salt trade which was prospering when the Domesday Book was compiled in 1086². The tidal shallows around the south of the Wash would have been well suited to this industry. However, at the time of Domesday only 12 houses were recorded in Lynn, although the recorded level of salt exports suggests a somewhat larger population already engaged in trade³. The situation changed rapidly from the late 11th century onward when the Bishop of Norwich established a church and priory in the town, adjacent to the site of a pre-existing market place and fair⁴. The town grew rapidly in the 12th century, trade prospered and commercial links were established with ports along the northern Atlantic seaboard and the Baltic.
- 3.3 Bishop's Lynn continued to thrive throughout the medieval period, commerce expanded and the foundation of numerous religious foundations in the town undoubtedly added to its prosperity. The diversion of inland waterways in the 13th century favoured Lynn, linking it to the rich agricultural hinterland. Foreign merchants imported timber, furs, wine and cloth in exchange for corn, wool, salt and fish. Wool was a particularly valuable export and close ties were forged with the cloth-producing regions of the Low Countries, and the wine exporters of Gascony. Lynn also developed strong links to the Baltic through the granting of liberties to the Hanseatic League in 1271. Although this trading relationship was not always tranquil it offered opportunities to Lynn merchants that would not have been available to other English traders. Further trade links were forged with Scotland, Scandanavia and Iceland⁵.
- 3.4 The focus of the development of the medieval town was the east bank of the Ouse channel. The dumping of rubbish, natural silting and the construction of timber

² Margeson, S, Seillier, F and Rogerson, A 1994, *A The Normans in Norfolk* pp102-103, Fig 108

³ Richards, P 1990 *King's Lynn* pp1

⁴ Margeson, Seillier and Rogerson, 1994 *The Normans in Norfolk* 86-87

⁵ Richards 1990, pp18-24

waterfronts and merchants houses all contributed to the consolidation of the riverbank. An economic downturn toward the end of the 15th century, possibly as a result of the Black Death and other economic factors, left some properties on the waterfront derelict and threatened the integrity of the sea wall. The Dissolution would have dealt another blow to the town as monasteries were closed and some of the towns most imposing buildings torn down. Although Lynn never regained the prosperity it had enjoyed in the late medieval period the town was extensively rebuilt between 1550 and 1650 as timber structures were replaced with brick, and stone quarried from the defunct friaries. The export of agricultural produce, particularly grain, remained prominent and the tonnage of shipping registered at Lynn increased dramatically in the late 16th century⁶.

- 3.5 The inhabitants of the medieval town felt a need defend the settlement they had strived so hard to reclaim from the sea and the adjacent marshes. Some form of defences, in the shapes of banks and ditches, were in place by the mid 12th century and are evident on the earliest known map of Lynn (See Fig 3). These were periodically reinforced by the construction of walls and gates, responding to diverse threats, up to the 17th century and throughout the course of the Civil War. However, much of the enclosed area on the eastern and southern sides of the town remained open ground throughout the 18th and 19th centuries. William Raistrick's plan of Lynn in 1725 shows large areas of open ground extending westward into the centre of the town along the north bank of the Purfleet. The East Anglian Hotel site undoubtedly falls within this area.
- 3.6 The reliability of early cartography can, however, be tested against the archaeological record. Recent excavations on the east side of Blackfriars Street have shown that some buildings must have existed here. The discovery of a 16th century cellar indicated that the area had once been settled, although it is of course possible that these dwellings were subsequently abandoned before the compilation of Raistrick's survey. A map of Lynn included in Faden's map of Norfolk, 1797, indicates that the area around the site was still open ground at that time (See Fig 4).
- 3.7 The open ground found on both sides of the town wall persisted well into the 19th century. Longbottom's plan of Lynn, compiled in 1846, shows that even after the construction of the railway much of the surrounding area was still undeveloped and shown as meadows (see Fig 5). It has been suggested that the land north of the Purfleet, known as the Newland in the medieval period, was extremely marshy and

⁶ Richards 1990 pp 9, 32

this may have impeded the urbanisation of this zone. Clarke and Carter suggested that this area was no marshier than the earliest focus of settlement around the Saturday market place, located south of the Purfleet⁷. This may well be the case, but some of the open areas still existing in the town, located to the east of the town wall in The Walks park, were so poorly drained that they were regularly covered in standing water for much of the winter even as late as the 1970s⁸.

- 3.8 The cartographic evidence suggests that the site was not urbanised until the second half of the 19th century. The introduction to Faden's map of Norfolk of 1797 notes that the extent of the urbanised area had hardly altered since the compilation of Raistrick's map in 1725, or indeed since an earlier survey of 1683⁹. The marshy nature of the land may have precluded its inclusion within the urbanised zone, but this had hardly been the case elsewhere in the town. It may simply be that the pressure of population was never strong enough to warrant building in this area before the construction of the railway provided a new focus for its development.

⁷ Hutcheson 2004, pp3 quoting:

Clarke, H and Carter, A 1977 Excavations in King's Lynn 1963-1970

⁸ Pers comm. The author can vouch for this following seven years of trips to school on foot during this period

⁹ Faden's Map of Norfolk, First Printed in 1797 Introduction by J.C. Barringer 1989 pp 8

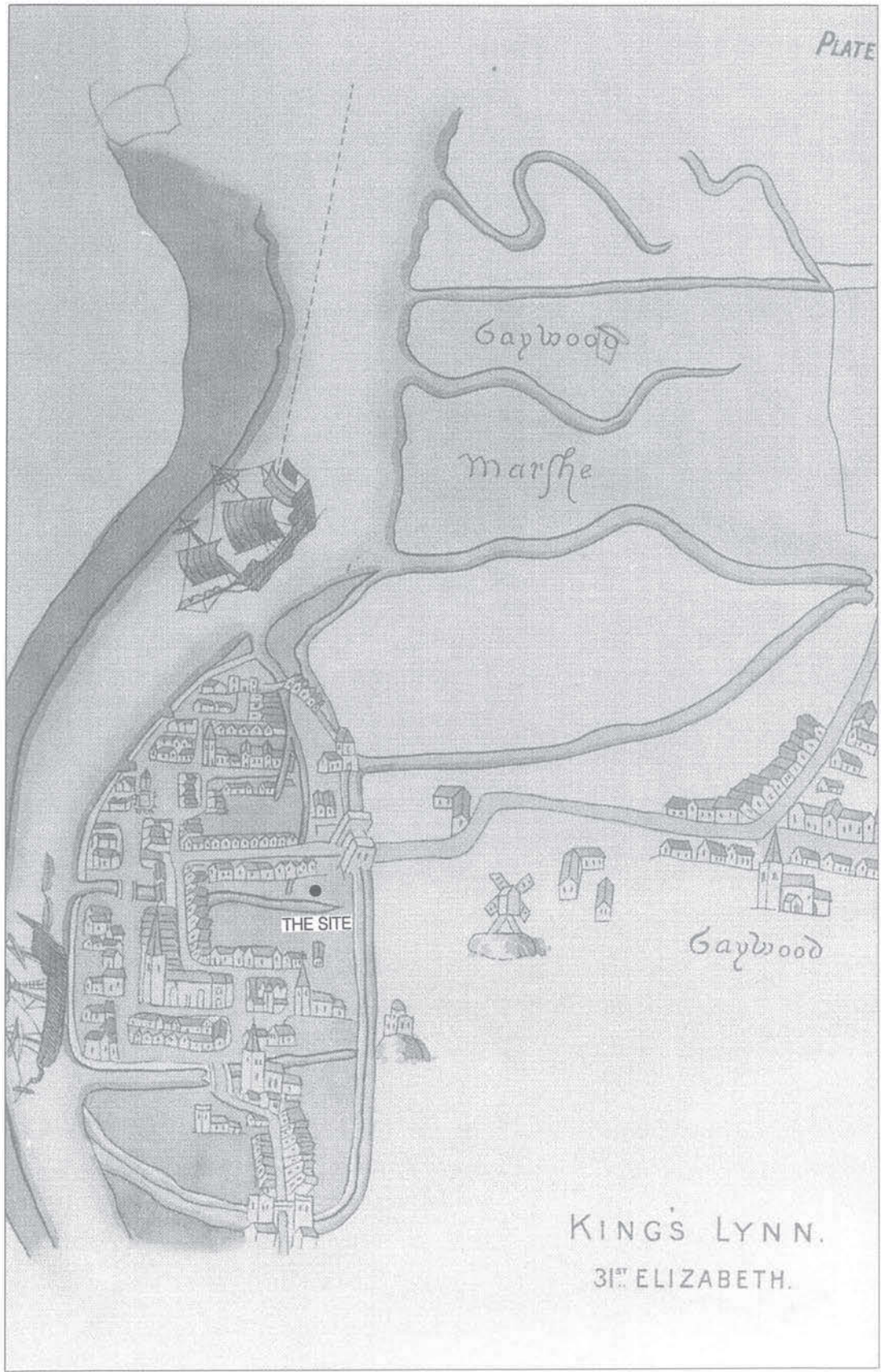


Figure 3
Map of 1588
approx. 1:20,000



Figure 4
Faden's Map 1797
1:10,000

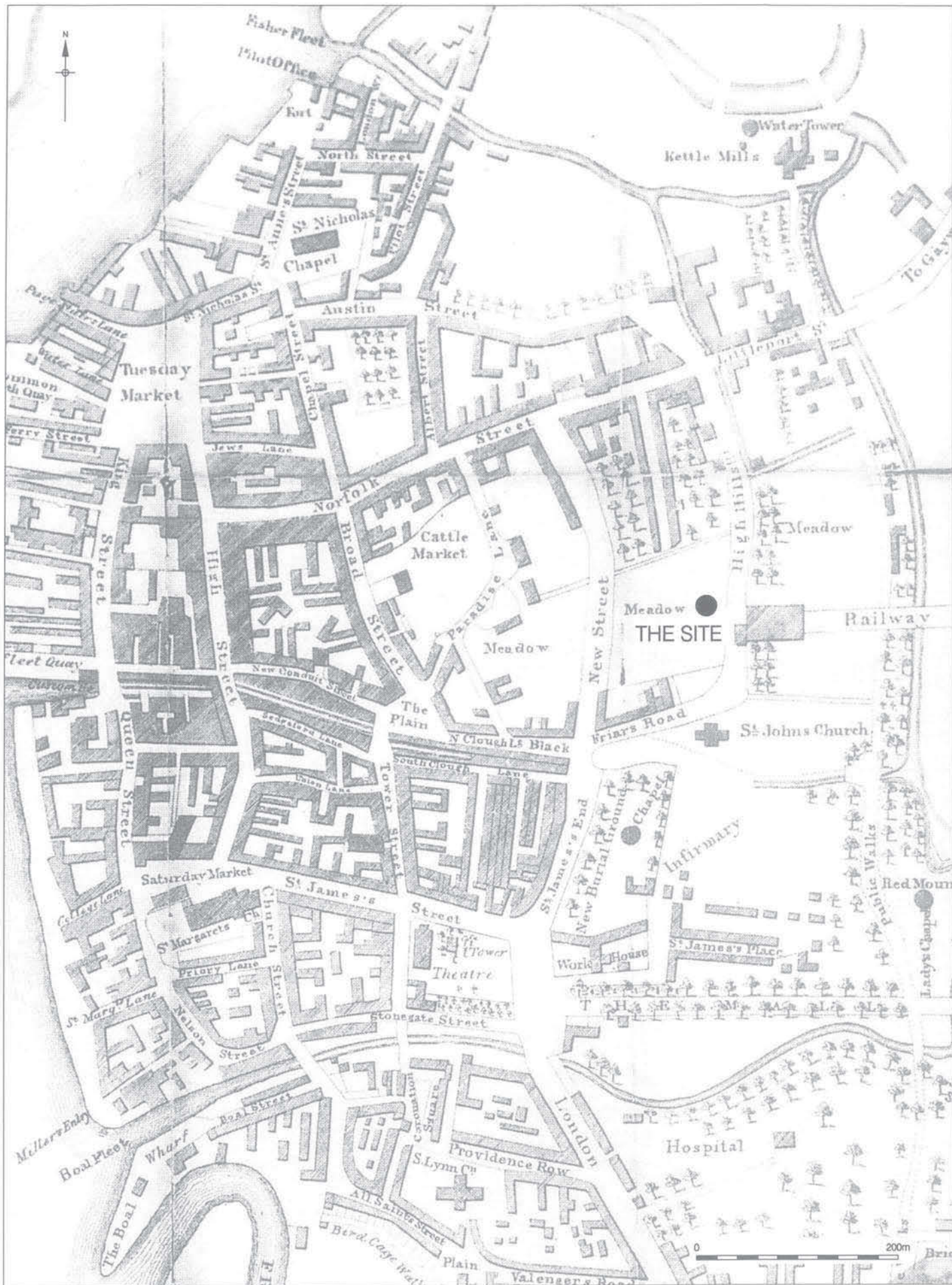


Figure 5
 Map of Lynn in 1846
 1:5,000

4 METHODOLOGY

- 4.1 The fieldwork was designed to assess the presence or absence of significant archaeological remains, which may require further investigation. The excavation of two trenches, representing approximately 5% of the area due for redevelopment, followed the Brief issued by Andy Hutcheson on behalf of the Norfolk Museums and Archaeology Service. Variations to the original scheme were agreed in advance with the monitoring body.
- 4.2 All works were undertaken in accordance with the guidelines set out in:
- English Heritage 1991, *Management of Archaeological Projects 2*
 - Institute of Field Archaeologists, 1997 *Code of approved practice for the regulation of contractual arrangements in field archaeology*
 - Institute of Field Archaeologists 2000, *Code of Conduct*
 - Gurney, D. 2003, *Standards for Field Archaeology in Eastern England (E. Anglian Archaeol. Occ. Pap 14)*
 - Glazebrook, J. (ed) 1997, *Research and Archaeology: A Framework for the Eastern Counties, 1. Resource assessment (E. Anglian Archaeol. Occ. Pap 3)*
 - Brown, N. and Glazebrook, J. (eds), 2000, *Research and Archaeology: a Framework for the Eastern Counties 2. Research agenda and strategy (E. Anglian Archaeol. Occ. Pap 8)*
- 4.3 The presence of underground services was taken into consideration and the area scanned using a Cable Avoiding Tool prior to excavation. However, this proved to be fruitless as the site had been covered in a black shingle type material that contained metal slag. This material produced positive readings on the CAT scanner across wide areas of the site. Extreme caution was therefore used in the opening of trenches. A live sewer run, orientated east west, was also found in the southern half of the site and the nearest trench relocated to avoid damaging it.
- 4.4 Trench 2 required shoring due to the extremely unstable nature of the surrounding rubble backfill, and the depth required to adequately characterise the archaeological deposits exposed during excavation. The proximity of this trench to the adjoining building was also a source of concern to representatives of the Borough Council. However, a structural engineer employed by the Council visited the site and was satisfied that the location of the trench, with supporting engineering works, did not pose a threat to the structural integrity of the adjoining property.

- 4.5 Under archaeological supervision, a mechanical excavator was used to remove the undifferentiated overburden that sealed deposits which demonstrated archaeological potential. The features identified within the trenches were then cleaned and investigated by hand. Where possible deposits were at least partially excavated in order to characterise their nature and recover dating and environmental evidence.
- 4.6 Every attempt was made to follow the Brief, which required that both trenches measure 3m by 3m at the base. However the frequency of modern foundations and drainage features in Trench 1 precluded this, and no significant archaeological remains were extant in this area. Trench 2 was divided into three separate areas by modern foundations. The central and eastern areas were both investigated, whilst that to the west remained unexcavated. The extant stratigraphy in the western bay measured at most 0.30m wide and would almost certainly have replicated the sequence excavated in the two adjacent bays. The stratigraphy extant in the western bay was therefore left *in situ* in order to concentrate resources on the investigation of the adjacent area. The excavation of the lower alluvial levels was abandoned due to flooding and the extreme difficulty of removing spoil without the introduction of mechanised winches (the lowest excavated levels were approximately 3m below ground level). These variations to the original strategy were agreed with Andy Hutcheson of Norfolk Landscape Archaeology.
- 4.7 All archaeological features (layers, cuts, fills, structures) were recorded either in plan or section, as appropriate, using standard recording methods. A photographic record was made in black and white print and colour slide format.
- 4.8 A temporary benchmark with a value of 4.46m OD was established on to the site by means of a single traverse from the Ordnance Survey Benchmark, located on the southwest corner of the railway station. The value of the Ordnance Survey Benchmark is 5.12m OD.
- 4.9 Following the completion of the works, the trenches were backfilled with the excavated material.

5 GEOLOGY AND TOPOGRAPHY

- 5.1 Modern ground level on the site is found at c 4.40m OD. Undisturbed natural deposits devoid of anthropogenic material were not exposed during course of the evaluation.
- 5.2 It is assumed that the surface geology of the site is made up of alluvium. Outcrops of the lower greensand beds occur to the north and east of the town but the floodplain of the Great Ouse almost certainly underlies the entire urbanised area.

6 ARCHAEOLOGICAL SEQUENCE

6.1 Summary

- 6.1.1 The earliest deposits in the sequence consisted of alluvial silts within a watercourse. These had later developed into a marshy ground surface, once the watercourse had silted up. The north side of a ditch cutting these alluvial and marsh deposits was exposed in Trench 2. A sequence of dumped material was recorded filling and levelling the top of the ditch. Similar deposits continued as more horizontal layers above the level of the ditch, interspersed with marshy soil formations. The earliest alluvial deposits probably date to the late medieval period. The ditch and all subsequent deposits are later than 1600.

6.2 Phase 1: Medieval Alluvial Silts

- 6.2.1 The earliest deposits were excavated in Trench 2 and consisted of grey alluvially deposited clay and silt. These deposits were divided into two distinct units, recorded as layers [25] and [24] in the central bay of the trench. The lowest layer [25] was very similar to [24], differing from it only slightly in colour and distinguished by the absence of blue-grey organic flecks, which may have resulted from root action. The highest level recorded on the top of [25] was 1.63m OD, it continued below a height of 1.38m OD, at which point excavation ceased as it was no longer practicable. Layer [25] contained a very small quantity of pottery dated to the 15th-16th centuries. Layer [24] did not contain any pottery but did produce small quantities of building stone and ceramic building materials dated at the earliest to the very late medieval period. The highest level recorded on the top of layer [24] was 1.98m OD.
- 6.2.2 An identical sequence of deposits was partially excavated in the eastern bay of Trench 2, separated from the central bay by a modern foundation. The alluvial deposits in this area were recorded as layers [29] and [30]. No pottery was recovered from these deposits; layer [29] contained some medieval roof tile dated c. 1180-1480. The highest levels recorded on the top of layers [30] and [29] were 1.58m OD and 2.15m OD respectively.
- 6.2.3 No dimensions have been given for these deposits because they extended beyond the limits of excavation in all directions. These layers were interpreted as the silting up of a natural watercourse or a very large drainage ditch, which was clearly wider than the trench. Excavation of the alluvial silts was abandoned due to flooding.

- 6.2.4 A hand auger was used to drill a hole through the silts in order to investigate the depth of the channel. The auger hole was sunk from a level of 2.00m OD. No significant changes in the stratigraphy were observed before a depth of c. 2.00m was attained, at which point the deposits changed to a silty peat type formation. The top of the silty peat was therefore at c 0.00m OD. The drilling of the auger hole ceased at this point as the suction caused by the soft silts rendered removal of the auger bit virtually impossible.
- 6.2.5 The environmental assessment of samples taken from these deposits was crucial to their valid interpretation (see Appendix 9). The lithostratigraphical analysis of layers [24] and [25] demonstrated that they were deposited in a virtually stationary body of water and are typical of sediments found within floodplains or abandoned channels. The peat formation [41] taken from the auger sample demonstrated an earlier stabilisation of the ground surface.
- 6.2.6 Analysis of the pollen preserved in the alluvial silts indicated that the local landscape consisted principally of salt marsh and open grassland with few trees. The environment immediately in and around the stream was illustrated by studying the remains of molluscs, ostracods and foraminifera, all of which are sensitive to salinity and other environmental factors. Most of the molluscs were land snails but other species indicated that the watercourse was a salt marsh channel, probably connected to the sea but not itself tidal. Further analysis of the land snails showed that there was no evidence of marsh conditions and that the salt marsh was mostly dry, possibly inundated only in the spring. A wide range of micro-environments would have existed within the general salt marsh regime, such as brackish pools, ditches and small steams.

6.3 Phase 2: Late Medieval/Early Post-Medieval Marsh Deposits

- 6.3.1 A stiff mid brown silty clay deposit sealed the grey alluvial silts in both the central and eastern bays of Trench 2, where it was recorded as layers [28] and [23] respectively. The highest recorded level on the top of these deposits was 2.15m OD; the maximum thickness of this layer was 0.10m. Layer [28] contained pottery fragments dated to the 14th-15th centuries but these are almost certainly residual as this layer also produced a clay tobacco pipe stem, which is unlikely to pre-date 1580. However it is also possible that this ground level remained unaltered for a considerable period of time thus allowing for the accumulation of materials from more than one period in the upper levels of a marshy ground surface.

- 6.3.2 It is probable that these layers of brown clay and silt represent a marsh formation that developed on the surface of the alluvial silts below. The latter were seen to change colour from grey to a mid-brown when exposed to air for a day or more. There was very little, if any, difference in composition between the grey alluvial silts and the brown marsh horizon, the distinctive change in colour was almost certainly the result of the oxidation on the surface of the grey alluvial silts.
- 6.3.3 A brown clay layer [13], very similar in appearance to [28] and [23], was recorded in Trench 1 (see Fig 7, Section 1). This deposit was distinguished from the later backfills of modern construction and drainage trenches ([2], [4] and [1]) by its cleaner appearance and the absence of frequent inclusions such as fragments of ceramic building materials and mortar. The highest level recorded on the truncated top of this layer was 2.97m OD. Layer [13] was originally interpreted as the highest surviving remnant of the marsh sequence. However, the levels indicate that this deposit is considerably higher than those interpreted as marsh deposits in Trench 2. This may indicate that layer [13] was itself redeposited, as were all the fills recorded around it, or that the marsh levels observed in Trench 2 developed on the top of a silted up watercourse which would obviously have been contained within its own small valley.

6.4 Phase 3: C17th Drainage Ditch

- 6.4.1 The north side of a northwest-southeast aligned ditch extended 3m through Trench 2 and continued beyond the limits of excavation to both the east and west. The two truncated sections of the ditch were recorded as [22] and [27]. The width of the ditch was not established as it extended beyond the southern limits of excavation. However it appeared that the ditch was quite a substantial feature as the excavated portion measured at least 1.17m wide and the base was not evident. If the ditch was symmetrical it must have been at least c. 2.5m wide. The feature as seen was shallow but as stated above its full depth was not established. The highest recorded level taken on the ditch was 2.15m OD, the lowest in the base 1.87m OD.
- 6.4.2 The earliest fill of the ditch, [21], excavated in the central bay of Trench 2 consisted of a mottled grey-brown mix of clay and demolition debris. The latter was made up of discarded building stone as well as fragments of brick and tile. The pottery recovered from this fill was dated 1480-1550 but it is almost certainly residual, derived from the disturbance of earlier alluvial and marsh deposits. The ditch had truncated layer [28], which did not pre-date 1580. The original excavation of the ditch is therefore unlikely to predate the beginning of the 17th century. An equivalent fill, [26], was excavated in the eastern bay of Trench 2.

- 6.4.3 Fill [20] sealed [21], it consisted of a mid grey, mottled with green and brown, slightly silty clay. This deposit contained very few inclusions of any sort but did produce a small quantity of pottery dated 1600-1700. The green mottling may have been the result of staining from cess. The deposit extended slightly to the north of the ditch's edge, suggesting that it had been dumped in from that side. The highest level recorded on this fill was 2.16m OD.
- 6.4.4 The upper fill of the ditch, [19], was a dark grey mixture of silt and cinders, with some green mottling. A sherd of Dutch tin glaze post-dating 1650 was recovered from this deposit. The pottery may have been produced as late as the early 18th century but it is impossible to be more precise given the size of the assemblage. It seems probable that the ditch had gone out of use and was being systematically backfilled toward the end of the 17th century.
- 6.4.5 Layer [18] sealed the upper fill of the ditch [19]. There was no apparent difference in colour or composition between these two deposits, they were divided simply because one was apparently confined within the bounds of the ditch and the other was not.
- 6.4.6 The alignment of the ditch did not relate to the present day road layout, nor indeed had it influenced the zoning of the area. The ditch had gone out of use by the early 18th century at the latest and the alignment followed by it clearly belonged to an earlier system of land division, probably one that pre-dated the establishment of Portland Street.

6.5 Phase 4: Late 17th to Early 18th Refuse Disposal and Marsh Deposits

- 6.5.1 As stated above, horizontal deposits identical in composition to the upper fills of the ditch were evident in both the areas investigated in Trench 2. These were recorded as layers [9] and [18]. Layer [9] undoubtedly also formed the upper fill of the ditch but was not divided into two elements as this was not immediately apparent during excavation (see Section 2, Fig 7). Layers [9] and [18] contained elevated quantities of cinders mixed with grey silt, partially combusted coal fragments were also apparent in both layers. A piece of un-diagnostic iron-working waste was recovered from layer [18] (see Appendix 7). This indicated that iron casting or smithing had probably been taking place in the vicinity. The cindery fills and layers may have derived from the raking out of fires used for iron-working, as well as those used for cooking. Layers [9] and [18] both contained pottery dated 1600-1700. The clay tobacco pipe recovered from this layer, which was dated 1680-1700, indicated a more precise date of

deposition. The highest levels recorded for these deposits were 2.24 m OD on layer [18] and 2.33m OD on layer [9].

- 6.5.2 A dark grey silt deposit sealed the cindery layers in both bays of Trench 2, it was recorded as contexts [10] and [17]. The maximum thickness of this layer was 0.10m; the surface of the layer sloped from east to west, probably reflecting the gradual compaction and settlement of the underlying ditch fills. The pottery recovered from both layers had the broad date range 1600-1700. Layer [17] also contained clay tobacco pipe dated 1680-1700. This horizon was interpreted as a marshy soil formation that developed on top of the dumped material below. However, it is possible that this silt was deposited by flooding. The highest levels recorded on these layers were 2.42m OD for layer [10] and 2.30m OD on layer [17].
- 6.5.3 A second level of dumped cinders, approximately 0.25m thick, sealed the soil horizon described above. These deposits were recorded as layers [11] and [16]. These deposits were very similar to layers [9] and [18], although layer [16] contained pottery broadly dated to the 18th century, which made it somewhat later than the deposits recorded lower down in the sequence. This may simply represent the continuation of the same, or similar industries, operating on the periphery of the town. The highest levels recorded on these layers were 2.54m OD for layer [10] and 2.34m OD on layer [17].
- 6.5.4 A layer of demolition debris, [15], sealed the cindery horizon in the central bay of Trench 2. This deposit was not evident in the eastern bay of the trench. Layer [15] contained pottery dated 1700-1800 and clay tobacco pipe dated 1680-1700. Part of a mid 17th century tin-glaze albarello was recovered from this layer. This vessel appears to have kept for some time prior to disposal; its date of manufacture does not represent the deposition date of this layer. Further fragments of the albarello were recovered from layers [10] and [16], suggesting that all three were roughly contemporary.
- 6.5.5 A small fragment of furnace lining was also recovered from layer [15]. The type of industry from which it derived is not known, although it does not appear to have been iron working. This further suggests that industrial waste was being mixed with the domestic rubbish represented by the ceramics and animal bone found in the sequence of dumps.
- 6.5.6 A second more substantial dark grey silt horizon, a maximum of 0.20m thick, sealed the discarded cindery material described above. This was recorded as layers [12] and

[14]. Pottery dated from 1720-1780 was recovered from both layers; the forms represented probably date to the mid 18th century. The highest recorded level for these deposits was 2.72m on layer [12]. Layer [14] survived to a height of 2.63m OD but a modern basement floor had truncated the top of this deposit. This silt deposit may have represented the development of another marshy soil horizon above the second level of discarded fire rake-out. Alternatively the silt may have been deposited by flooding. If the latter interpretation is correct the thickness of the deposit would indicate a major inundation.

6.5.7 The vast majority of the animal bone recovered during the evaluation derived from fills and layers deposited in Phases 3 and 4 (see Appendix 6). With the exception of a feral or domestic cat all of the animal bone represents food debris. The dominant component of the diet was beef or veal with smaller quantities of mutton or lamb. A relative paucity of porcine remains was notable, although pig did occur in small quantities along with chicken, goose, turkey and fish. Not surprisingly, given the location of the town, shellfish also formed a relatively important component of the diet. The size of some of the oyster shells showed that they were almost certainly farmed rather than simply being harvested (see Appendix 8).

6.6 Phase 5: 19th Century Levelling Preceding Construction

6.6.1 A series of levelling layers, [31]-[34] and [40], sealed the top of the marsh horizon represented by layers [12] and [14]. These deposits consisted principally of demolition rubble, ash and cinders. They were not excavated by hand but had been removed by machine and were later recorded in Section 2. No finds were recovered from these deposits with the exception of layer [31], which contained a sherd of a transfer printed ware jug dated from the mid-late 19th century. Layer [31] also produced clay tobacco pipe dated to 1820-1840.

6.6.2 These layers were interpreted as levelling and ground-raising dumps which formed part of the construction process for the 19th buildings which were represented on the site as foundations. The highest level recorded on these dumps was 3.68m OD, but this merely represented the depth of machine clearance around the edge of the Trench.

6.7 Phase 6: 19th Century Construction

- 6.7.1 Walls [35], [37] and [39] were recorded in Trench 2, Section 2. They probably formed part of the East Anglian Hotel. The ash and demolition debris recorded as fills [36] and [38] probably date to the 20th or 21st centuries, although no artefacts were recovered from these deposits.
- 6.7.2 The features and deposits recorded in Trench 1 almost exclusively form part of Phase 6 (Fig 7, Section 1). They either relate to the construction of the brick culvert [6] or the excavation and backfilling of construction trenches for modern foundations.

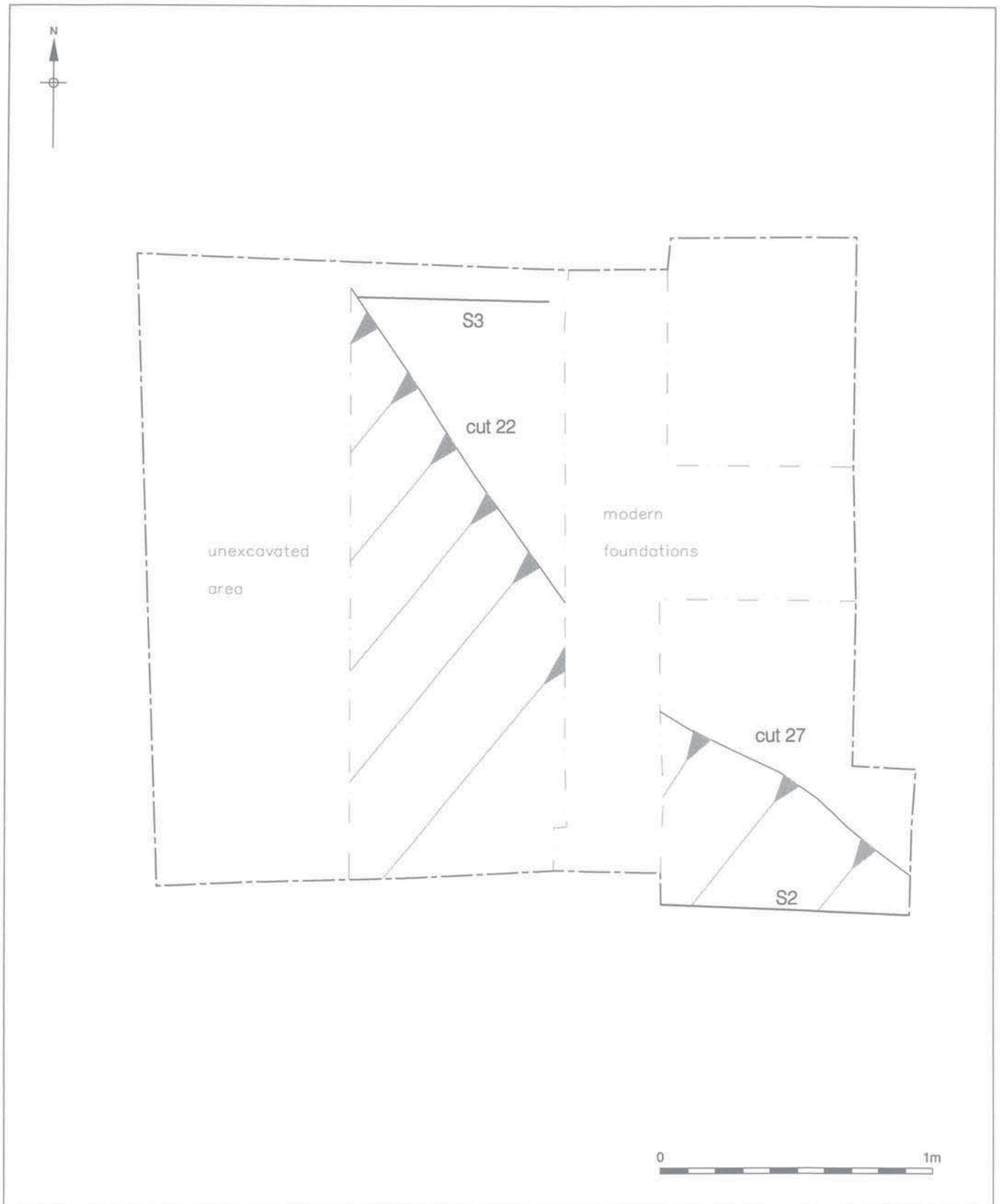


Figure 6
Plan of Trench 2
1:20

from the underlying channel fills. A clay tobacco pipe stem was also embedded in this layer, suggesting that this surface remained in use until the 17th century.

- 7.1.9 The environmental assessment is instructive regarding the development of the land surrounding the watercourse. The examination of the molluscs suggested that by the late 15th or 16th centuries the marsh had been successfully managed and drained. The land species found within the ditch indicated that the ditch was bounded by dry or damp grassland. The interpretation of the ground surface formed above the channel fills as a marsh may be erroneous.
- 7.1.10 A northwest-southeast aligned ditch had been cut through the marsh and underlying alluvial deposits. Only a small portion of the ditch was excavated in Trench 2, rendering interpretation somewhat speculative. The feature was probably a drainage ditch cut in the first half of 17th century. It continued in use until the late 17th or early 18th century. The alignment of the ditch was very obviously not related to the modern street pattern, or the proposed alignment of the stream. The cutting of this ditch may therefore represent a change in landuse and division in the area. The small pottery assemblage recovered from the ditch largely represented local production, either Grimston or West Norfolk Bichrome Ware, or imports from Holland and Belgium. Further evidence of trading contact with the Low Countries was evident in the form of Flemish brick, although this material was residual dating from c. 1380-1500.
- 7.1.11 The sequence above the ditch represented the periodic disposal of rubbish, from both domestic and industrial sources, and the development of new soil horizons on top of the dumped material. The silty soil horizons may be evidence of flooding and could potentially be linked to historical events. No evidence of buildings was discovered and it is probable that the area was still low-lying open ground. The lower part of this sequence developed during the late 17th or early 18th centuries, the latest deposits in this sequence probably date to the mid 18th century. Most of the pottery was of local origin or demonstrated links to Holland, Belgium or Germany. The increasing importance of the Midlands pottery industry is demonstrated by the inclusion of Staffordshire salt-glazed stoneware in latest assemblages recovered from the upper levels of this sequence.
- 7.1.12 The upper levels of the ground surface that developed above the silted-up watercourse in the late medieval period were found at c 2.15m OD. Ground level had been raised to at least 2.72m OD by the mid 18th century. Above this level only material associated with 19th century construction was evident, although earlier

deposits may have been truncated during building works. Modern ground level lies at c 4.40m OD.

7.2 Recommendations

- 7.2.1 Significant structural remains pre-dating the 19th century were not encountered during the course of the evaluation and are unlikely to exist on the site. Archaeological survival had also been severely compromised by the frequency of 19th century foundations. Unless all of the archaeological levels are likely to be destroyed by the building of basement structures an area excavation of the site might not be considered an appropriate mitigation strategy.
- 7.2.2 However, the construction work for the new buildings is almost certain to require piling, regardless of the depth of basement structures. Pile locations would have to be cleared of obstructions, such as the existing foundations. This will inevitably result in the disturbance and destruction of archaeological levels adjacent to these structures
- 7.2.3 The probable alignment of the stream and the direction in which it drained cannot be proven from the remains uncovered during the course of the evaluation. The height of the ground surface associated with the watercourse is also unknown. A Watching Brief monitoring the pile probing which will almost certainly precede full-scale construction could resolve these questions. Alternatively an excavation of limited scope designed specifically to chart the course of the stream might be deemed appropriate. This would probably be a machine-led exercise potentially covering an area that would be impacted upon by a row or clusters of piles. However, the proximity of the presumed alignment of the stream to the adjacent property on Portland Street would require any such scheme to be approved in advance by a structural engineer.

8 ACKNOWLEDGEMENTS

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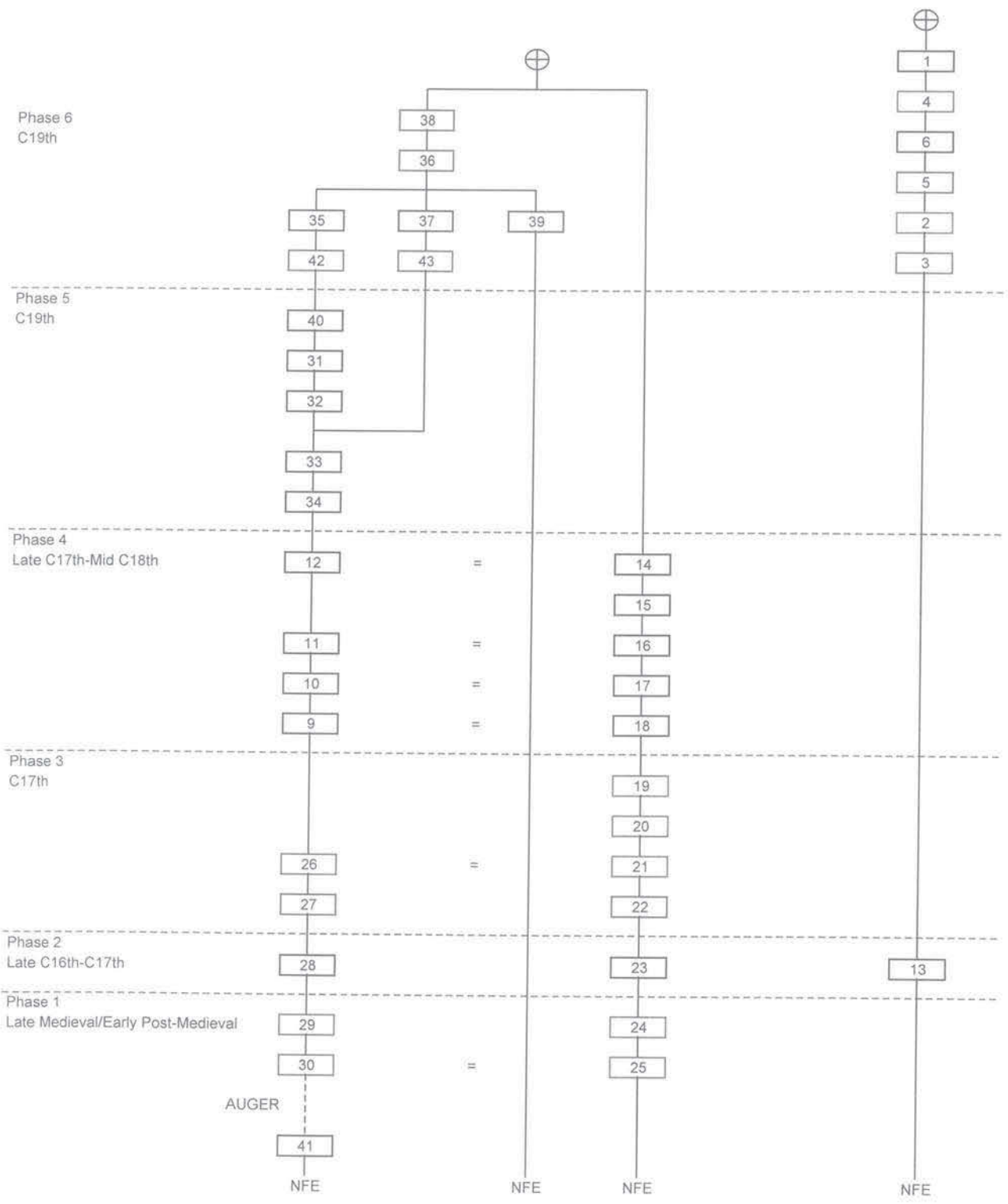
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APPENDIX 1: SITE MATRIX

East Anglian Hotel
405 02 KLY

TRENCH 2

TRENCH 1



APPENDIX 2: CONTEXT DESCRIPTIONS

Context	Trench	Type	Phase	Description
1	1	Layer	6	Redeposited clay and rubble, backfill within foundations
2	1	Fill	6	Fill of modern construction trench [3]
3	1	Cut	6	Construction cut for C19th basement walls
4	1	Fill	6	Backfill of construction cut [6] for brick culvert [5]
5	1	Cut	6	Construction cut for brick culvert [6]
6	1	Masonry	6	East-West aligned brick culvert
7	0	VOID	0	0
8	0	VOID	0	0
9	2	Layer	4	Dump/levelling deposit or possibly an upper fill of cut [27]
10	2	Layer	4	Dump/levelling deposit or soil formation resulting from flood
11	2	Layer	4	Dump/levelling deposit
12	2	Layer	4	Dump/levelling deposit or soil formation resulting from flood
13	1	Layer	2	Natural brown clay and silt, poss top of marsh
14	2	Layer	4	Dump/levelling deposit or soil formation resulting from flood
15	2	Layer	4	Demo debris
16	2	Layer	4	Dump/levelling deposit or possibly an upper fill of cut [22]
17	2	Layer	4	Dump/levelling deposit or soil formation resulting from flood
18	2	Layer	4	Dump/levelling deposit or possibly an upper fill of cut [22]
19	2	Fill	3	Soft cindery silt, very similar to [19] fill of drainage ditch [22]
20	2	Fill	3	Mid grey silty clay, fill of drainage ditch [22]
21	2	Fill	3	Mix of demolition debris and clay, fill of drainage ditch [22]
22	2	Cut	3	NW-SE aligned ditch, same as [27]
23	2	Layer	2	Mid grey brown silty clay, top of marsh? Oxidised alluvium
24	2	Fill	1	Prob upper fill of watercourse. Prob same [23] but grey
25	2	Fill	1	Secondary fill of watercourse
26	2	Fill	3	Fill of ditch [27]
27	2	Cut	3	NW-SE aligned ditch, same as [22]
28	2	Layer	2	Mid brown silt and clay, top of marsh. Same as [23]
29	2	Fill	1	Dark bluish grey alluvial silt. Prob upper fill of watercourse
30	2	Fill	1	Mid bluish grey alluvial silt. Secondary fill of watercourse
31	2	Layer	5	Dump/levelling layer, mostly ash and cinders
32	2	Layer	5	Dump/levelling layer, demolition debris
33	2	Layer	5	Dump/levelling layer, demolition debris
34	2	Layer	5	Dump/levelling layer
35	2	Masonry	5	Brick wall
36	2	Fill	6	Sandy ash deposit between walls [35] and [37]
37	2	Masonry	6	Brick wall
38	2	Fill	6	Demolition debris between walls [35] and [37]
39	2	Masonry	6	Brick wall
40	2	Layer	6	Dump/levelling layer, demolition debris
41	2	Layer	1	Alluvial/organic deposits recovered from auger hole
42	2	Cut	6	Construction cut for wall [35]
43	2	Cut	6	Construction cut for wall [37]

APPENDIX 3: POTTERY REPORT

By Chris Jarrett

ASSESSMENT OF THE POTTERY FROM EAST ANGLIAN HOTEL, BLACKFRIARS ROAD, KINGS LYN, NORFOLK (Site code: 405 02 KLY)

By Chris Jarrett

Introduction

A small sized assemblage of pottery was recovered from the site (1 box). Most sherds are in a good condition, small to large in size, indicating they had not been subject to much redeposition, but a small number of abraded sherds are also present. There is only one vessel with a complete profile. All the individual contexts produced small sized (under 30 sherds) groups of pottery.

All of the pottery (70 sherds, of which 2 are unstratified) was examined macroscopically and microscopically using a binocular microscope (x20), and recorded in an ACCESS 2000 database, by fabric, form, decoration, sherd count and estimated number of vessels, using standard Norfolk Post-Roman fabric codes. The pottery is discussed by the types and its distribution.

THE POTTERY TYPES AND THEIR FORMS

Medieval fabrics and forms

There are twelve sherds of medieval pottery, mostly from the Grimston industry, but additionally there are wares of a Potterspur type, a sherd of Scarborough ware and an unidentified fabric.

Grimston-type wares

A number of kilns dating to the late Saxon and medieval period have been excavated at Grimston (Leah 1994), some five miles to the north east of Kings Lynn, and this was the main supplier of pottery to the area during these periods. The pottery types of this industry present on this site are a single body sherd of Grimston unglazed ware (GRIMU) dated from the 11th to mid 13th centuries and Glazed Grimston-type ware (GRIM), dated late 12th to the 14th century. Three of these sherds are from jugs, the other is abraded. Finally, Late Grimston-type ware (GRIML), dated to the late 14th and 15th centuries occurs as the rim and shoulder of a jug with an external green-glaze.

Non-local wares

Medieval Potterspury-type ware (POTS), is present as a single 13th-century highly decorated jug sherd with incised lines and applied rib. There is also a single sherd of Scarborough ware (SCAR) of the Phase II type with an applied vertical rib and a quality green-glaze, which is dated c.1225-1350.

Late medieval wares

Late medieval transitional type wares (LMT) occur as two sherds and include part of the neck of a jug. This type of pottery is dated to between the 15th-late 16th centuries.

Unidentified wares

There is a single unidentified sherd in an unglazed, buff-coloured sandy fabric.

Post-Medieval fabrics and forms

There are 58 sherds of post-medieval pottery described under different groups; local earthenwares, non-local wares, tin-glazed earthenwares, stonewares, industrial finewares and imports.

Local earthenwares

There are eighteen sherds of glazed post-medieval earthenwares (PMR), dated to between c.1600-1900, but many are of a 17th-century date. The forms are difficult to be certain of but a handled bowl is present with thumb decoration on the loop handle as well as a rounded jar with an external (flanged) lid-seated rim, the vessel glazed inside and out. There are eight sherds of West Norfolk bichrome ware (WNBC), dated to the 17th-century. Their shapes are uncertain, but include a closed form with external cordoning and a drinking vessel, besides a rounded jar with an internal lid-seated rim. There are two sherds of Post-medieval slip-trailed redware (PMSW), dated to the 17th-19th centuries. One sherd is in the form of a drinking vessel. Black-glazed red earthenwares (PMBL) are present as two sherds, probably from the shoulder of a jug and the rilled surface of a probable tyg. These wares date to the 17th and 18th centuries.

Non-local wares

There are two sherds of non-local pottery, first as the rim of a Brill ware (BRIL) bowl with an internal yellow-glaze. This is externally sooted and so used for cooking, it probably dates to the 17th century. Secondly, there is a sherd from a Staffordshire slipware dish (STAF), dated 1650-1800.

Tin-glazed earthenware

The thirteen sherds of tin-glazed earthenware (TGE) date to the 17th and 18th-century. One of the earliest vessels is a mid 17th-century albarello with fragments found in several deposits; [10], [15] and [16], it is the only vessel on the site with a complete profile. It is decorated with purple bands and a cable border on white. Plain whitewares, dated from c.1630 are in the form of a small flared bowl (possibly a porringer), a chamber pot and an abraded ointment pot base, while a plain blue chamber pot is also present and probably dates to the 18th century. There are also sherds of open forms decorated in dark blue on light blue, generally dating from c.1690-1800, but these examples most probably date to the mid 18th-century. Some of these wares are of a very good quality and could be Dutch imports.

Stonewares

The only English stoneware represented on the site is Staffordshire white salt-glazed stoneware (SWSG), dated to 1720-80 and it occurs as three sherds from flared and rounded shape bowls and a tea bowl.

Industrial finewares

These wares were made in the Midlands and elsewhere and date to the late 18th and 19th centuries. They are present as a burnt sherd of Refined white earthenware (REFW), dated from 1800 and a sherd of Transfer printed ware (TPW), dated from 1780, but here in the form of a mid to late 19th century jug rim with a landscape design.

Imports

Dutch redware (DUTR), dated to the 15th-17th centuries occurs as two sherds. One of these is from a cooking vessel because it is externally sooted and the other is in the form of a bowl-shape. A sherd of Dutch tin-glazed earthenware is present as the rim of a dish with a blue and white, probable Chinese, design and dates to the late 17th or early 18th century.

German stonewares occur as the thumbed base of a Raeren stoneware (RAER) jug with a thumbed base, the form dated 1480-1550 and a body sherd of a Frechen stoneware jug (FREC), dated 1550-1700. Westerwald stoneware (WEST) occurs as two sherds from a probable jug and is in a light buff fabric decorated with floral and leaf moulds and incised lines, but there is no evidence for the use of cobalt. Westerwald stoneware was imported between 1590-1800, but this example is mid 18th-century in date.

DISTRIBUTION

Table 1 shows the contexts containing pottery and an entry for the size of the group, the date range of the pottery, the latest pottery type and a deposition date for each context. Pottery occurs in Phases 1-5 and its distribution is discussed below.

Context	Size	Phase	Date range of pottery	Date of latest fabric	Deposition date
[9]	S	4	1600-1900	1600-1900	1600-1700
[10]	S	4	1600-1800	1600-1800	1600-1700
[12]	S	4	1200-1800	1720-1780	1720-1780
[14]	S	4	1300-1800	1720-1780	1720-1780
[15]	S	4	1600-1800	1600-1800	1700-1800
[16]	S	4	1600-1800	1600-1800	1700-1800
[17]	S	4	1550-1900	1600-1900	1600-1700
[18]	S	4	1600-1800	1600-1800	1600-1700
[19]	S	3	1600-1800	1600-1800	1600-1700
[20]	S	3	1300-1900	1600-1900	1600-1700
[21]	S	3	1250-1600	1480-1600	1480-1550
[25]	S	1	1400-1580	1400-1580	1400-1580
[28]	S	2	1000-1500	1300-1500	1300-1400
[31]	S	5	1780-1900	1800-1900	1800-1900

Table 1. 405 02 KLY: distribution of pottery showing the size of the group, the date range of the pottery and the latest pottery-type in the context and the deposition date. S: small (1-30 sherds), M: medium (31-100 sherds), L: large (over 101 sherds).

Phase 1

The alluvial layer [25] produced a single sherd of Late medieval transitional ware (LMT) from the neck of a jug that is dated to between the 15th and late 16th-century.

Phase 2

Deposit [28] produced six sherds of medieval pottery and except for one unidentified buff, sandy ware, all the other pottery are Grimston-type wares. The earliest is a sherd of Unglazed Grimston-type ware (GRIMU), dated from the 11th to mid 13th century. There are four sherds of glazed Grimston-type ware (GRIM), dated to the late 12th and 14th centuries, three of the sherds coming from jugs, and one sherd is abraded. Also present is the rim and shoulder of a Late Grimston-type ware (GRIL) jug of a 14th or 15th century date. This pottery would appear

to be residual as the Phase two deposits sealed the alluvial layers containing 15th-late 16th century pottery. A clay pipe stem was also recovered from layer [28].

Phase 3

The drainage ditch [22] produced a number of fills containing pottery. The earliest fill [21] contained a sherd of medieval Grimston ware (GRIM) but this was associated with the base of a Raeren jug, a type fossil for the period 1480-1550. Above fill [21], fill [20] produced two sherds of pottery, the first as a Dutch Redware (DUTR) fragment and the second has a closed form in West Norfolk bichrome redware (WNBC). Both sherds could be contemporary and date this fill to the 17th century. The latest fill in the drainage ditch is [19] which produced three sherds of pottery. One was a small, unidentified sherd of a pink fabric with a clear-glaze, a sherd of a Post-medieval black-glazed redware and a sherd of Dutch Tin-glazed earthenware dating to the late 17th-century. This appears to date the final infilling of the ditch.

Phase 4

A period of levelling then appears to occur on the site. The earliest layers [9] produced four sherds of Post-medieval redware, two sherds of West Norfolk bichrome redware (WNBC) and a sherd of a drinking form in Post-medieval slip-trailed redware (PMSW). Layer [18] contained a sherd of Post-medieval redware and a rounded jar rim in West Norfolk bichrome redware. Above layer [9], from deposit [10] there is a drinking vessel in West Norfolk bichrome redware and a Tin-glazed earthenware (TGE) 17th-century albarello with a purple band and cable design, with other fragments of this vessel in subsequent levelling layers [16] and [15]. Over layer [18], deposit [17] contained three sherds of pottery as Post-medieval redware and a sherd of Frechen stoneware (FREC). All of these levelling layers had pottery more characteristic of the 17th and perhaps the early 18th century, but the later dump layers produced ceramics typically dated to the mid 18th-century. The latest pottery type in layer [15] is a plain blue Tin-glazed earthenware chamber pot rim, which probably dates to after c.1700, while Staffordshire white salt-glazed stoneware (SWSG) is present as the latest datable ceramic in deposits [12] and [14] and therefore indicate deposition between 1720-80, besides the Westerwald stoneware jug fragment also found in deposit [12].

Phase 5

The latest deposit to contain pottery on the site is [31] and it produced the rim of a Transfer-printed ware jug and a burnt sherd of Refined white earthenware indicating a 19th-century date.

Potential, Significance, Research Aims and Recommendations

Potential

The pottery has the potential to date the contexts in which they were found and provide a sequence for them.

Significance of the Pottery

The pottery has very little significance, as the assemblage is small, there are no complete vessels present and the wares are what would be expected for the area.

Research Aims

No research aims have been formulated for the pottery.

Recommendations for further work

No further work is recommended for the pottery and should a publication be requested for the site then information should be taken from this report.

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APPENDIX 4: CERAMIC BUILDING MATERIALS REPORT

By Berni Sudds

ASSESSMENT OF THE BUILDING MATERIALS FROM THE EAST ANGLIAN HOTEL, KING'S LYNN (Site Code: 405 02 KLY)

by Berni Sudds

Total number of boxes: 4.

Total count and weight: 71 fragments, 12,678g.

Total number of contexts producing building material: 15.

Methodology

Fabrics local to King's Lynn have been classified and described below using provisional fabric codes. Where parallels can be demonstrated with fabrics identified in London the building materials were recorded using the London system of classification. In this system a fabric number is allocated to each object, specifying its composition, form, method of manufacture and approximate date range. Examples of the fabrics can be found in the archives of PCA and/or the Museum of London.

The assemblage was examined under magnification (x20) and quantified by number, weight and dimension. A database cataloguing this information has been generated using Microsoft Access 2000.

Introduction and condition

The small assemblage of ceramic and stone building material covers a date range from the late 12th to 18th century, although much is likely to date from the 13th to 16th century. The material is in mixed condition, but despite being entirely fragmentary the majority demonstrates little sign of abrasion.

Type	Number	%	Weight	%
Brick	2	2.8	58	0.5
Moulded brick	1	1.4	726	5.7
Unfrogged brick	10	14.1	3185	25.1
Faced / moulded stone	4	5.6	1301	10.2
Unfaced stone	10	14.1	4134	32.6
Roof tile	43	60.5	3267	25.7
Wall tile	1	1.4	7	0.1
Totals	71		12678	

Table 1: The building material forms quantified by count and weight

A breakdown in the composition of assemblage is provided in Table 1 suggesting that roof tile represents the most commonly occurring type, followed by unfrogged brick and building stone.

The Material

Brick

The small assemblage of brick recovered includes both local and possibly imported examples. Although the group is quite fragmentary both early hand-cut and later stock-moulded examples are evident, all unfrosted.

Some of the earliest bricks recovered from site occur in a local oxidised red brickearth fabric. The fabric is very close to the London 3033 variant but with the addition of calcareous inclusions, indicating a localised origin. The unfrosted examples, where diagnostic, are large medieval types. At least one example has been hand-cut suggesting an early date, although it is smaller in dimension than medieval great bricks brick and thus is likely to post-date c.1225. A few examples were evidently stock-moulded, providing a slightly later start date of around c.1380, but similarly to the hand-cut examples it is possible that these were made up until c.1500. The remaining local 3033 unfrosted examples are too fragmentary to date precisely. A single moulded brick was also identified in this fabric. The example is chamfered and was stock-moulded. The dimension and form indicate a date from c.1450/80 to 1666/ 1700.

Two pale yellow unfrosted Flemish bricks were also recovered. In London these are classified as fabric 3031 and date from c.1350 to 1450/ 1500. The earliest dated examples in England, however, are from Norwich, dating to around 1260 (Drury 2000, 60). The distribution of Flemish bricks in England, confined largely to the east, is a direct reflection of their origin. In this context their occurrence at King's Lynn is perhaps to be expected given that the town was an important North Sea port with strong trading connections to the Low Countries. The examples from site are abraded but appear to be stock-moulded, suggesting a slightly later date from c.1380 to 1500. Unusually, one example has purple surfaces.

The final brick fabric identified on site is similar to post-Great Fire 3032 examples from London. Similarly to the earlier local brickearth examples the fabric also contains calcareous inclusions. Unfortunately, the fragments recovered from King's Lynn are non-diagnostic but the fabric and firing suggest a date during the 18th or 19th century is most likely.

Faced/ moulded stone

The fragments of faced or moulded stone are all of non-local origin but are generally small and non-diagnostic. Two chamfered fragments of sandy shelly oolitic limestone were recovered that represent architectural mouldings but these have evidently been reused as building rubble. A further moulded architectural fragment has been identified in brown fine-

grained oolitic limestone but the fragment is too small to identify. The final fragment of worked stone is a thin sub-rectangular slab of fine-grained sandy limestone that demonstrates diagonal tool marks to one face.

Unfaced/ building stone

The unfaced building stone includes fragments of both local and non-local minerals. The fragments of carstone, coarse-grained ferruginous sandstone and possibly the Lower Greensand sandstone (?Hassock stone) may all be derived from the local Lower Greensand geology. Regionally imported stone is represented by fragments of sandy shelly oolitic limestone, shelly limestone, sandy limestone, shale and red micaceous laminated sandstone.

Roof tile

The roof tile fabrics, described below, are all local and characterised by iron oxide and calcareous or silt inclusions. Fabrics T1, T2 and T4 are likely to be medieval in date. Examples in this fabric are very coarsely made, unevenly fired and some demonstrate splash glaze. A provisional date range from c.1180 to 1480 is therefore suggested. Fabric T3 is finer, more evenly fired and has finer moulding sand, suggesting a transitional date range from c.1480 to 1600.

- T1: Coarse, gritty fabric. Colour: Examples usually have a reduced grey or black core and oxidised pink and/or yellow surfaces. Some tiles are pink and/ or yellow throughout and one is oxidised orange. Inclusions: coarse quartz and black iron oxide, moderate calcareous inclusions.
- T2: Hard, hackly fabric. Colour: Usually shades of pink and yellow, often in the same tile. Inclusions: Black iron oxide, silt and calcareous inclusions.
- T3: Hard, fairly fine fabric. Colour: White-firing clay and red-firing clays mixed together producing a marbled yellow and pinkish/ red colour. Some examples are yellow throughout. Inclusions: Few inclusions including calcite.
- T4: As fabric T1 but with finer and less frequent quartz inclusions.

The majority of the group is comprised of peg tiles and where diagnostic the peg holes are round. No other form types were identified.

Wall tile

A single fragment of blue painted tin-glazed wall tile was recovered from site. The example is small and it is not possible to decipher the design but an 18th century date is probable.

Distribution

Phase 1: Alluvium (Contexts [24], [29])

Alluvial fill [24] contained fragments of unfaced carstone, local unfrogged 3033 brick fragments and medieval roof tile (fabric T1 and T2), but the additional presence of a few fragments of transitional T3 tile suggest a deposition date post c.1480. Alluvial silt [29] produced two fragments of medieval roof tile (T1) providing a broad c.1180 to 1480 date range.

Phase 2: Marsh (Contexts [23], [28])

Two of the marsh horizons produced building material. Both layers [23] and [28] contained fragments of medieval roof tile in fabrics T2 and T4, dating from c.1180 to 1480, but the latter also produced a fragment of chamfered, stock-moulded brick probably dating from c.1450/80 to 1666/ 1700.

Phase 3: Drainage ditch (Contexts [19], [21], [26])

The basal fill of drainage ditch [22], fill [21], contained fragments of brick, roof tile and faced and unfaced building stone. The stone includes moulded fragments of sandy shelly oolitic limestone and fine-grained sandy limestone but these cannot be independently dated. The unfaced building stone is comprised of further sandy shelly oolitic limestone, sandy limestone, shelly limestone and Lower Greensand Sandstone or Hassock stone. The roof tile and bricks are medieval in date including T2 type roof tile and fabric 3031 and 3033 bricks. The 3033 bricks are large medieval types and include an early hand-cut example. Other 3033 examples from the same group are, however, stock-moulded and together with the stock-moulded Flemish 3031 brick also recovered, suggest a date from the late 14th to 15th century. Fill [19] contained a fragment of unfaced red micaceous laminated sandstone and a residual piece of medieval roof tile (fabric T2).

The fill of ditch [27], fill [26], contained two fragments of medieval tile and a non-diagnostic local 3033 brick fragment suggesting only a broad date range.

Phase 4: Dumping / marsh (Contexts [9], [10], [12], [14], [15], [16], [17], [18])

The largest group of building material from site was recovered from the phase 4 dumping horizons but excluding a fragment of 18th century tin-glaze wall tile and local 3032 brick from layer [14] the entire assemblage is residual. Both medieval and later transitional roof tile was recovered from these layers, in addition to a large medieval 3033 type brick. The stone

includes a moulded fragment of brown fine-grained oolitic limestone and unworked fragments of coarse-grained ferruginous sandstone, red micaceous laminated sandstone and shale.

Discussion

Brick and tile were in use in King's Lynn by at least the 13th century but until The Great Fire of 1331 their use was not widespread (Richards 1990, 3). Even after this date timber and thatch continued to be used as a cheap and readily available method of construction (Ibid). This remained the case until brick became widely available during the 16th century. Consequently, the recovery of brick and tile of 13th to 15th century date is of some interest and it is likely that the material was originally derived from a structure or structures of some status.

Unfortunately, as the assemblage of building material is largely re-deposited and much has evidently been re-used prior to deposition little can be concluded in this respect.

Although local Lower Greensand stone types are evident in the assemblage it is clear that a diversity of regional stones were imported to King's Lynn for structural use, namely architectural fragments for use in the dressing of buildings.

Potential and recommendations

The assemblage is relatively small and although not directly related to structural remains the presence of medieval brick and roof tile is of some importance. As part of a stratified sequence the material can add to an understanding of evolution of building materials used in King's Lynn and consequently the group merits some discussion at publication level. The local fabrics will require comparison to the local type fabric series in order to refine dating and establish provenance. Given the coastal location of the town and presence of imported fabrics this will be particularly important. The stone types recovered, both local and regional, will also require further analysis to establish provenance.

One illustration of the medieval hand-cut brick (context [21]) will be required for publication.

Dating table

Context	Phase	No.	Wght	Date range		Latest dated type		Context Date
9	4	2	258	1180	1480	1180	1480	1180 – 1480 [R]
10	4	3	359	1180	1500	1380	1500	1380 – 1500 [R]
12	4	1	51	1180	1480	1180	1480	1180 – 1480 [R]
14	4	7	362	1180	1900	1666/ 1700	1900	1700 - 1800
15	4	8	1656	1180	1500	1200	1500	1200 – 1500 [R]
16	4	9	189	1480	1600	1480	1600	1480 – 1600 [R]
17	4	1	90	1180	1480	1180	1480	1180 – 1480 [R]
18	4	5	452	1180	1480	1180	1480	1180 – 1480 [R]

Context	Phase	No.	Wght	Date range		Latest dated type		Context Date
19	3	2	143	1180	1480	1180	1480	1180 – 1480 [R]
21	3	12	5724	1180	1500	1380/ 1400	1500	1380/ 1400 – 1500
23	2	2	53	1180	1480	1180	1480	1180 – 1480
24	1	11	1933	1180	1700	1480	1600	1480 – 1600
26	3	3	567	1180	1700	1200	1700	1200 – 1700
28	2	3	745	1180	1666/ 1700	1450/ 80	1666/ 1700	1450/ 80 – 1666/ 1700
29	1	2	96	1180	1480	1180	1480	1180 - 1480

Table 2. List of contexts containing building material, size of context assemblage, date range of building material, date range of the latest fabric and suggested deposition date. [R] = Material considered to be residual.

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APPENDIX 5: CLAY TOBACCO PIPE REPORT

By Chris Jarrett

ASSESSMENT OF THE CLAY TOBACCO PIPES FROM EAST ANGLIAN HOTEL, BLACKFRIARS ROAD, KINGS LYNN, NORFOLK (Site code: 405 02 KLY)

By Chris Jarrett

INTRODUCTION

A small sized assemblage of clay tobacco pipes were recovered from the site (1 box). The assemblage is in a fairly good condition; consisting mostly of stems and a number of bowls which could be confidently assigned to a type. The condition of the pipes indicates that most were discarded soon after their breakage into the deposits they recovered from. All the contexts produced small groups of tobacco pipes, fewer than 30 fragments.

All the clay tobacco pipes (51 fragments: two nibs, thirteen bowls and 26 stems) were recorded in an ACCESS 2000 database and classified by Atkinson and Oswald's (1969) typology (AO) but further referenced to the local study of tobacco pipes (Atkins 1985). The pipes are further coded by decoration and quantified by fragment count. They are discussed by type and distribution.

THE CLAY TOBACCO PIPE TYPES

Stems are solely present in contexts [18] and [28] but are thick and more likely to be 17th century in date. There are also two deliberately green-glazed nibs, which stop the smokers lips sticking to the pipe while he was smoking the pipe. However, Atkins (1985, 124) points out that pipes from Kings Lynn have a green flash glaze where they were fired in potters kilns, but this does not seem to be the case here.

1680-1700

The vast majority of bowls (eight examples) on the site are of a type dated 1680-1700 (Atkins 1985, 126, 133, Fig. 25-26). These bowls are a consistent group reflecting the local pipe industry in Kings Lynn, but also similar in their general shape to others of a same date from other Norfolk towns such as Wells and Great Burcham. They have a short heel, rounded in plan, a slightly bulbous and waisted bowl and most are plain, except for milling around the rim at the back of the bowl. However, two bowls have stamps, the first only survives as a small part of an incuse stamp on a fragmentary part of a heel, while the second is complete as a circular stamp with the initials R W separated by a tobacco leaf. There are two contemporary Kings Lynn makers with these initials, first Robert Whitehead, 1672-1712 and secondly Robert Williams, 1675 (Atkins 1985, 149).

1820-1840

There is a single, large, plain, spurred AO 28 type bowl.

DISTRIBUTION

The distribution of the clay tobacco pipes on the site are shown in Table 1 where the size of the group, the date range of the pipes and the latest bowl type are listed for each context and what phase it occurs in. The distribution of the pipes are further discussed by phase.

Phase 2

A single tobacco pipe stem was recovered from the marsh deposit [28]. This stem could be intrusive, as the pottery recovered from this Phase dated to the 14th and 15th centuries. However, it seems probable that the pottery is residual as the 17th century ditch [22]/[27] is cut from this level.

Phase 4

The majority of clay tobacco pipes on the site come from this phase of dumping on the marsh. The earliest dump layer [18] produced only stems, which appear to be 17th-century in date by their thickness and size of stem bores. Sealing the latter a soil horizon [17] produced a single bowl datable to the 1680-1700 period and six of these bowls occurred in the subsequent layer [16], together with a contemporary bowl heel and eight stem fragments of a 17th-century date. Layer [16] equates to deposit [11] and this produced a single fragment of a late 17th-century bowl. Above [16], layer [15] contained seven 17th-century stems and a fragment of a 17th-century bowl heel. The latest deposit [12/14] in this phase produced two bowls dated 1680-1700. Both are the examples with stamps, one marked R W (see above). Additionally there are nine stems in these deposits and interestingly the base of an unmarked pipe clay figurine, perhaps as the base of a tree from [14].

Phase 5

Only one deposit in this phase; [31] produced clay tobacco pipes, firstly as a damaged 1680-1700 bowl and secondly as the plain AO 28 tobacco pipe, dated 1820-40. A green-glazed nib is also present and is probably dated by the AO 28 bowl.

Context	Phase	Size	Date range of pipes	Latest pipe date	Comments
[11]	4	S	1680-1700	1680-1700	
[12]	4	S			17 th -century stems
[14]	4	S	1680-1700	1680-1700	
[15]	4	S	1680-1700	1680-1700	
[16]	4	S	1680-1700	1680-1700	
[17]	4	S	1680-1700	1680-1700	
[18]	4	S	1680-1700	1680-1700	
[28]	2	S			17 th -century stems
[31]	5	S	1680-1840	1820-1840	

Table 1. 405 02 KLY, contexts containing datable fragments, size: (S) small, (M) medium.

Potential, Significance, Research Aims and Recommendations

Potential

The clay tobacco pipes have some use as a dating tool.

Significance Of The Collection

The significance of the clay tobacco pipe assemblage from the site is of some local interest, but generally it is restricted to two types of bowls, mostly as the 1680-1700 type and the single AO 28 bowl, dated to 1820-40. Of interest is the 1680-1700 R W stamped bowl referring to a local tobacco pipe maker.

Research aims

- Has the R W stamp on the 1680-1700 bowl been previously recorded and can it be matched to one of the two documented contemporary Kings Lynn makers?

Recommendations For Further Work

The clay tobacco pipes from this site are a small assemblage with a narrow range of types. Should a publication text be required from the site then this report will provide the necessary information without the need for much further work. However, further work is required for the 1680-1700 RW stamped bowl to find out if it has been previously published. If it has not then it would require illustrating.

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APPENDIX 6: ANIMAL BONE REPORT

By Philip Armitage

ASSESSMENT OF THE ANIMAL BONES, EAST ANGLIAN HOTEL, KING'S LYNN (Site code: 405 02 KLY)

by Philip L. Armitage

INTRODUCTION

Numbers of identified bone elements/fragments and species represented

A total of 70 hand-collected bone elements/fragments were submitted for assessment. Using routine zooarchaeological methodological procedures, 55 bones (78.6% of the total) are identified to species and anatomy, and 15 (21.4%) remain indeterminate (including 4 spines probably from one fish, from context 17 [Phase 4]).

Seven species are represented (4 mammalian and 3 bird): cattle **Bos** (domestic); sheep **Ovis** (domestic); pig **Sus** (domestic); cat **Felis** (domestic); domestic goose **Anser anser** (domestic); domestic fowl **Gallus gallus** (domestic); turkey **Meleagris gallopavo** (domestic).

A summary of the numbers of identified bone elements/fragments (NISP) by species and site phase is given in Table 1. Summaries of the distributions of the skeletal elements of the main domesticates by phase/context are given in Table 2 (cattle), Table 3 (sheep) and Table 4 (pig). In addition to the cattle, sheep and pig bones documented in these tables, the following elements are identified:

A single metatarsal (hind foot bone) represents an adult pet/feral cat from context [9] (Phase 4).

A single scapula represents domestic goose – an adult bird from context [15] (Phase 4).

A single femur represents domestic fowl – an adult chicken from context [24] (Phase 1).

A single sternum (breastbone) represents domestic turkey – an adult bird from context [17] (Phase 4).

PRESERVATION

Overall, the preservation of the bone elements/fragments is assessed as fair to good. Three bones exhibit the effects of weathering and abrasion: a domestic fowl femur from context [24] (Phase 1), a sheep innominate bone from context [21] (Phase 3) and a cattle long-bone shaft fragment from context 15 (Phase 4). The bones from context 19 (Phase 3) are slightly encrusted with silty/sandy material consistent with their recovery from the fill of a drainage ditch, whilst the sheep innominate bone from context [21] (also from a fill of drainage ditch [22]) is stained brown with dark patches and is eroded. None of the other bones from Phases 1, 3 and 4 however exhibits any physical evidence of post-depositional modification (leaching, dark staining etc.) generally associated with water lain deposits.

Dogs have gnawed six bones, all from Phase 4 contexts:

2 cattle ribs – context [11]

1 cattle innominate bone – context [12]

1 cattle rib – context [15]

1 cattle femur (unfused/detached distal epiphysis) – context [17]

1 turkey sternum with tooth puncture marks probably made by a small dog – context [17]

There is an isolated piece of pig/sheep sized long-bone shaft from context [18] (Phase 4) that has been severely burnt/calced (with fissuring of the bone surface). No other bones appear to have been charred or burnt.

A cattle lumbar vertebra from context [16] (Phase 4) has a white deposit, which is possibly lime or plaster/mortar? Post-depositional contact with objects made of copper alloy is indicated in the following bones (all from Phase 4 contexts) by patches of green staining: 1 cattle rib (context [11]), another cattle rib (context [15]) and a piece of cattle mandible (context [18]).

INTERPRETATION AND DISCUSSION

Apart from a single metatarsus representing the remains of a pet/feral cat, all the bones from this site are recognised as discarded food debris – indicating a diet comprising beef/veal and mutton/lamb as the staples, supplemented with pork, poultry, and fish.

Five calf bones (listed below) provide evidence of veal consumption:

1 femur and 1 metatarsus from context [19] (Phase 3)

1 innominate bone from context [12] (Phase 4)

1 tibia and 1 metacarpus from context [16] (Phase 4)

A single metacarpus from context [19] (Phase 3) indicates lamb was eaten in lesser amounts than veal.

Seven chopped bones (5 cattle and 2 sheep – all from Phase 4) indicate the cutting up of joints of meat for cooking/consumption. Four bones (2 cattle, 1 sheep and the 1 turkey sternum – all from Phase 4 contexts) exhibit superficial knife cut marks on them, indicating removal of the flesh from the bone either before or after cooking.

**Table 1: East Anglian Hotel, King's Lynn.
Summary counts of the identified bone elements (NISP) by species and site phase**

Species	Phase	1	3	4	Totals
cattle			5	26	31
sheep		1	4	9	14
pig			1	5	6
cat				1	1
domestic goose				1	1
domestic fowl		1			1
turkey				1	1
unidentified mammal				11	11
unidentified fish				4	4
TOTALS		2	10	58	70

Phase 1: Contexts 24 & 29
Phase 3: Contexts 19, 20, 21 & 26
Phase 4: Contexts 9, 10, 11, 12, 14, 15, 16, 17 & 18

**Table 2: East Anglian Hotel, King's Lynn.
Skeletal element (NISP) distributions of cattle by phase/context.**

	Phase	3	3	4	4	4	4	4	4	4	4	Totals
	Context	19	20	9	11	12	14	15	16	17	18	
skull		2										2
maxilla											1	1
mandible											1	1
incisor							1					1
upper cheektooth											2	2
thoracic						1			1	1		3
lumbar				1					1		1	3
rib				1	2	1		2				6
radius											1	1
metacarpus									1			1
innominate						1						1
femur		1								1		2
tibia									1			1
metatarsus		1										1
phalanx I							1					1
phalanx II			1									1
long bone shaft fragment				1			1	1				3
TOTALS		4	1	3	2	3	3	3	4	2	6	31

**Table 3: East Anglian Hotel, King's Lynn
Skeletal element (NISP) distributions of sheep by phase/context.**

	Phase	1	3	3	3	4	4	4	4	4	4	4	Totals
	Context	29	19	21	26	9	10	11	12	14	16	18	
upper cheektooth												1	1
lower cheektooth										1			1
lumbar						1					1		2
rib			1						1		1		3
humerus								1					1
metacarpus			1		1								2
innominate				1									1
femur							1						1
metatarsus		1											1
long bone shaft fragment												1	1
TOTALS		1	2	1	1	1	1	1	1	1	1	3	14

**Table 4: East Anglian Hotel, King's Lynn.
Skeletal element (NISP) distributions of pig by phase/context**

	Phase	3	4	4	4	Totals
	Context	19	11	14	15	
skull		1				1
radius			1			1
rib				1	3	4
TOTALS		1	1	1	3	6

APPENDIX 7: METAL SLAG REPORT

By Lynne Keys

THE SLAG FROM AN EVALUATION AT THE EAST ANGLIAN HOTEL, KING'S LYNN (Site code: 405 02 KLY)

Lynne Keys, July 2004

A small quantity of material (just under 1kg) was recovered during evaluation work at the above site. For this report the assemblage was examined by eye and categorised on the basis of morphology. Details are given in the table below.

context	Identification	Wt. (g)	Len. (mm)	Br. (mm)	Dep. (mm)
15	Furnace lining	203			
18	Undiagnostic	796	155	105	60

The lump of ferruginous slag from [18] is too flat to be a smithing hearth bottom but may represent waste from iron casting or smithing. The surface corrosion includes small fragments of burnt coal.

The fragment recovered from context [15] is highly vitrified furnace lining. On both sides a whitish powder or silica based material remain; this becomes a yellowish vitreous concretion where it has been subjected to great heat. The fragment does not appear to represent waste from iron working but the industry it represents could be identified using laboratory XRF analysis of the surface deposits. This is not a recommended at this stage.

The assemblage probably represents material brought in as part of land reclamation. This was a common occurrence, particularly in the post-medieval period, when dumps of industrial waste could be cleared away in one area and put to use as reclamation or levelling material elsewhere.

Although the present group is not of great significance, any further material recovered may shed light on post-medieval industries in the town for which no other evidence has survived.

APPENDIX 8: SHELLFISH REPORT

By Rebecca Lythe

ANALYSIS OF THE SHELLFISH ASSEMBLAGE FROM EAST ANGLIA HOTEL, KINGS LYNN (Site code: 405 02 KLY)

By Rebecca Lythe

Aims

The following report outlines the results of the preliminary analysis of marine mollusc remains recovered from East Anglia Hotel (405 02 KLY), a medieval to post-medieval archaeological evaluation near Kings Lynn. The main aims of this report are:

1. To identify all recovered mollusc remains to genus, or where possible, species level.
2. To consider their potential modes of deposition.
3. To consider their usefulness as a resource to past populations and to consider potential modes of harvesting.

Methodology

In order to keep sampling representative and systematic, shellfish from all contexts on site were collected according to the following strategy.

For every context that contained marine molluscs, one in five of each species was recovered. Where multiple fragments of material from the same species were found, only fragments with complete umboes were counted so as to avoid over-representation of heavily fragmented individuals. The material was then sent back to the laboratory and analysed in the following way.

The genus and, where appropriate, the species of each mollusc was noted. Numbers of individuals per species per context were then counted. As bivalvia (such as cockles and mussels) have two shells and prosobranchs (such as whelks and limpets) have one, the two classes cannot be compared directly. Consequently, all bivalve shells were assigned a value of 0.5 and all prosobranch shells were assigned a value of 1 to allow balanced comparison. These values were recorded in figure 2. The ecological niche occupied by each species was then identified, and hypothetical modes of deposition within the various contexts across site were postulated in light of this information. Potential uses for the marine molluscs were then speculated upon, as were harvesting techniques that could have been employed to retrieve them. Changes in resource use over time were not considered owing to the small size of the assemblage.

Results

Six species of marine mollusc were identified across site. These were *Buccinum undatum* (common whelk), *Cerastoderma edule* (common cockle), *Lepton squamosum* (a variety of coin shell), *Mytilus edulis* and *Mytilus galloprovincialis* (common mussels) and *Ostrea edulis* (flat oyster). As *Mytilus edulis* and *Mytilus galloprovincialis* commonly grow together and frequently hybridise with one another (Hayward *et al* 1996), they have been recorded as *Mytilus sp.* in Figures 1 and 3. The percentage values of each species collected across all contexts on site are shown in Figure 1.

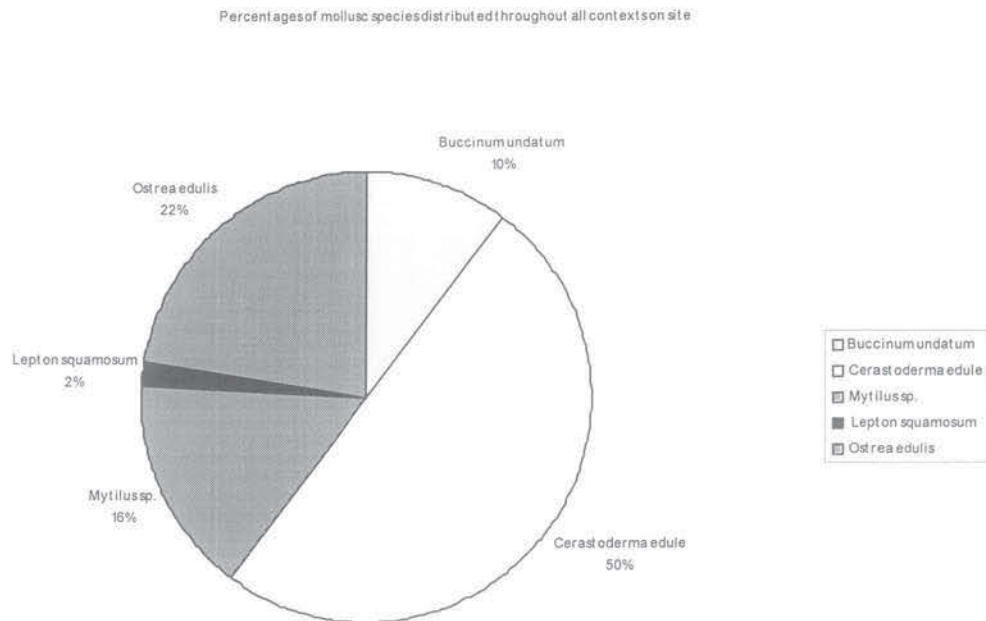


Figure 1

The total number of shells per species per context was recorded in Figure 2. The "values" of each species were calculated by multiplying the number of shells collected by a factor of 0.5 (bivalvia) or by a factor of 1.0 (prosobranchs). These "values" were also recorded in Figure 2.

Context	Context Type	Context Date	Species Present	No. of shells collected	Value
9	Dump layer	Post-Medieval	<i>Cerastoderma edule</i>	2	1
			<i>Mytilus edulis</i>	3	1.5
11	Dump layer	Post-Medieval	<i>Cerastoderma edule</i>	4	2
			<i>Mytilus galloprovincialis</i>	2	1
			<i>Ostrea edulis</i>	2	1
14	Dump layer or soil horizon	Post-Medieval	<i>Buccinum undatum*</i>	1	8
			<i>Cerastoderma edule</i>	16	
15	Demolition debris	Post-Medieval	<i>Cerastoderma edule</i>	2	1
			<i>Lepton squamosum</i>	1	0.5
			<i>Mytilus sp</i>	1	0.5
			<i>Ostrea edulis</i>	2	1
16	Dump layer	Post-Medieval	<i>Cerastoderma edule</i>	1	0.5
			<i>Ostrea edulis</i>	1	0.5
17	Dump layer or soil horizon	Post-Medieval	<i>Ostrea edulis</i>	3	1.5
19	Cindery silt fill of drainage ditch	Post-Medieval	<i>Mytilus edulis</i>	1	0.5
23	Oxidised alluvium	Early	<i>Cerastoderma edule</i>	1	0.5
		Post-Medieval	<i>Ostrea edulis</i>	1	0.5
28	Oxidised alluvium	Early	<i>Buccinum undatum*</i>	1	1
		Post-Medieval	<i>Ostrea edulis</i>	2	1

Figure 2

Table to show shellfish distribution throughout all contexts

**Each individual assigned a value of 1.0. All other species assigned a value of 0.5 per individual.*

The "values" of all species present per context were also recorded as a bar chart (see Figure 3).

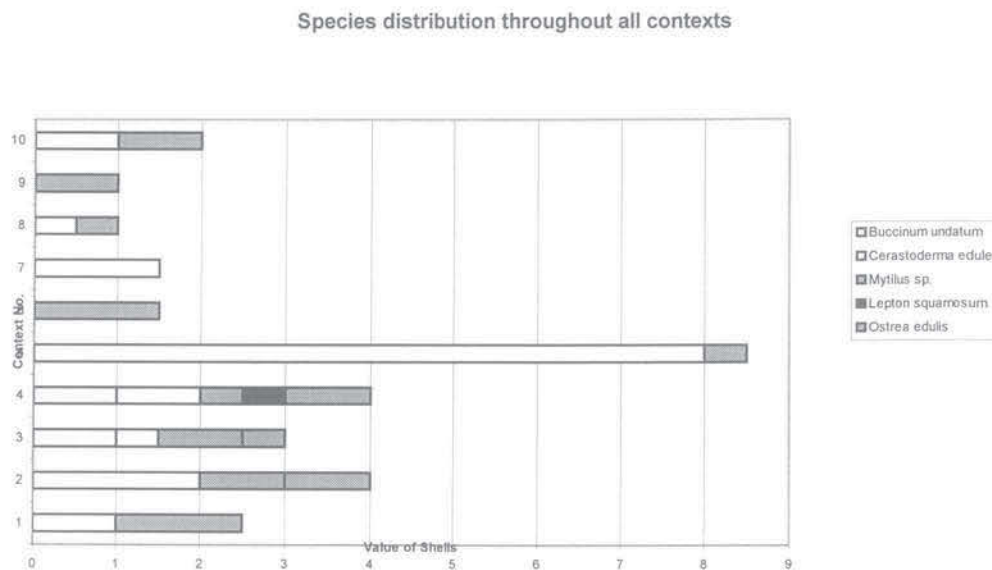


Figure 3

The natural habitats of the species found on site were as follows¹:

1. ***Buccinum undatum***: occurs mainly between the sublittoral zone and the continental shelf, but can also be found in the intertidal zone up to the spring tide low water mark. It can live in muddy sand and gravel, or on rocks. It is commonly found on all British coasts.
2. ***Cerastoderma edule***: found mainly in the intertidal zone from the mid-tide level down, in sandy environments. It is commonly found on all British coasts.
3. ***Lepton squamosum***: found mainly in silty sands and gravels in the lower intertidal and shallow sublittoral zones. It is found all around Britain, but is more common to the south and west coasts.
4. ***Mytilus edulis / galloprovincialis***: Occurs on rocky coasts between the mid-tide level in the intertidal zone and the shallow sublittoral zone.
5. ***Ostrea edulis***: Occurs in coarse sediment between the spring tide extreme low water mark and a maximum of 50m into the sub-littoral zone.

Inferences

When the natural habitats of the shellfish are considered, it becomes obvious that the assemblage cannot have been deposited naturally as the archaeological site was located within a marsh-like environment at the time of occupation. The assemblage must therefore have been imported to site by human action. As the shellfish were recovered from dumped

¹ Hayward *et al* 1996

deposits containing domestic waste and all the species found (with the exception of *Lepton squamosum*) are edible, it seems likely that the shellfish were exploited as a food resource.

Lepton squamosum is relatively uncommon on the east coast of Britain (Hayward *et al* 1996). It is therefore hypothesised that this particular shell may have been collected for its aesthetic value and later discarded on site.

Cerastoderma edule could have been easily collected by hand from local sandy facies during low tide. In good conditions, like large sheltered bays, populations are often very dense (up to 10,000 per square metre), enabling quick and easy collection of many individuals (Hayward *et al* 1996). This may account for the fact that *Cerastoderma edule* formed 50% of the entire assemblage (see figure 1).

Mytilus edulis could also have been collected by hand from rocky shores during low tide. Owing to the sites coastal position, it too could have been collected locally.

Buccinum undatum may also have been collected by hand, but only around the time of the spring tide, making its retrieval relatively difficult in comparison to *Mytilus* and *Cerastoderma*. This may be reflected in the overall assemblage, of which *Buccinum* comprises only 10%.

It is hypothesised, due to the unusually large size of some of the *Ostrea edulis* shells within the assemblage (the largest being 114mm wide and 115mm long) that some or all of them were farmed. In the wild, the species does not normally have a diameter in excess of 100mm (Hayward *et al* 1996). Oyster farming was common practice in the Post-Medieval period and would have required considerably less effort than collection from sublittoral environments.

Whilst the total number of shells recovered from site was small (47 in total), the area of excavation was also very small. Two three metre square trenches were excavated, only one of which contained any evidence of occupation. The density of shellfish within the archaeologically sensitive areas of the evaluation was therefore very high. Consequently, it is inferred that the importance of shellfish to diet during the Post-Medieval to Late Medieval periods was greater than the number of individuals in the assemblage suggests at first glance. Further excavation is required in order to verify this assumption.

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APPENDIX 9: ENVIRONMENTAL REPORT

By G.E. Swindle, E. Turton, D. Keen, J. Athersuch, N.P. Branch and C.P. Green

AN ENVIRONMENTAL ARCHAEOLOGICAL ASSESSMENT AT KINGS LYNN, NORFOLK

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INTRODUCTION

This report summarises the findings arising out of the environmental archaeological assessment at a site opposite Kings Lynn railway station, Norfolk (National Grid Reference: TF 6222 2008). An archaeological evaluation conducted by Pre-Construct Archaeology Ltd provided evidence for late medieval human activity at the site based upon the recovery of ceramic building materials contained within grey silt approximately 2m in depth (1.95-0.00m AOD). A silty peat at approximately 0.00m AOD underlay this deposit. The grey silt is thought to represent marshy ground in the immediate vicinity of a medieval settlement. However the depth and nature of this deposit suggests that it could represent the fill of a previously unknown channel. The aims of this environmental archaeological assessment were to determine whether the grey silt represents a channel fill or marshland, and to provide a preliminary reconstruction of the local environment.

A single column sample (<3>) was taken through 0.5m of the upper grey silt from 1.45-1.95m AOD. A bulk sample (<4>, context 41) was taken from the silty peat using an auger (approximately 0.00m AOD). The environmental archaeological assessment consisted of:

1. Recording of the lithology from column sample <3> and bulk sample <4> to provide a preliminary reconstruction of the sedimentary history
2. Pollen assessment of column sample <3> and bulk sample <4> to provide a preliminary reconstruction of the former vegetation cover and land-use history
3. Mollusca assessment of column sample <3> and bulk sample <4> to provide a preliminary reconstruction of the local environment, such as evaluate the potential for reconstructing water flow velocity, depth and temperature, as well as changes in the local vegetation cover
4. Foraminifera and Ostracoda assessment of column sample <3> and bulk sample <4> to provide a preliminary reconstruction of changes in water flow velocity, temperature, salinity and other chemical attributes
5. Diatom assessment of column sample <3> and bulk sample <4> to provide a preliminary reconstruction of the salinity

GEOLOGICAL CONTEXT

The site is in the middle of the built-up area of Kings Lynn. Bedrock here is the Kimmeridge Clay, possibly a somewhat sandy variant. Kings Lynn is on the eastern edge of the alluvial Fen Basin and the site is mapped as being underlain by alluvium. The River Great Ouse flows northward immediately to the west of Kings Lynn and enters the Wash a few kilometres to the north of the

town. The site is only c.750m to the east of the river at a level of 4-5m AOD and is probably on the Holocene floodplain of the Great Ouse and underlain by the alluvium of the river.

METHODS

Lithostratigraphy

The lithostratigraphy was recorded in the laboratory using standard procedures for the characterisation of unconsolidated sediment and peat. This involved noting the physical properties (e.g. colour), composition (gravel, sand, silt, clay, peat and organic detritus), peat humification (degree of organic matter decomposition), and the nature of changes across lithostratigraphic unit boundaries, and inclusions (e.g. artefacts). The results are presented in Table 1.

Pollen Assessment

Sub-samples for the pollen assessment were extracted throughout column sample <3> (1.45-1.46, 1.50-1.51, 1.60-1.61, 1.70-1.71, 1.80-1.81, 1.90-1.91m AOD) and from sample <4> (0.00m AOD).

The pollen was extracted as follows:

1. Sampling a standard volume of sediment (5ml)
2. Deflocculation of the sample in 1% Sodium pyrophosphate
3. Sieving of the sample to remove coarse mineral and organic fractions ($>125\mu$)
4. Removal of finer mineral fraction using Sodium polytungstate (specific gravity of 2.0g/cm^3)
5. Mounting of the sample in glycerol jelly

Each stage of the procedure is preceded and followed by thorough sample cleaning in filtered distilled water. Quality control is maintained by periodic checking of residues, and assembling sample batches from various depths to test for systematic laboratory effects. Pollen grains and spores were identified using the Royal Holloway (University of London) pollen type collection and the following sources of keys and photographs: Moore *et al* (1991); Reille (1992). Plant nomenclature follows the Flora Europaea as summarised in Stace (1997). The results are presented in Table 2.

Mollusca Assessment

Five continuous 10cm sub-samples were taken from column sample <3> for Mollusca assessment (1.45-1.55, 1.55-1.65, 1.65-1.75, 1.75-1.85, 1.85-1.95m AOD). A sub sample was also taken from bulk sample <4> (0.00m AOD). The samples were dried at 100°C, weighed, then disaggregated using 5% H₂O₂ (Hydrogen peroxide) for one hour, before being sieved through a 125µm mesh and finally dried again at 100°C. The retained sediments were sorted under a 10-60x power binocular microscope. The molluscan counting conventions follow Sparks (1961) in which each complete shell or gastropod apex counts as a single individual. The taxonomic nomenclature used follows Kerney (1999). The results are presented in Table 3.

Foraminifera and Ostracoda Assessment

The sub-samples (0.00, 1.45-1.55, 1.55-1.65, 1.65-1.75, 1.75-1.85, 1.85-1.95m AOD) processed for the Mollusca assessment were also assessed for foraminifera and ostracods (for procedure see Mollusca assessment above). The residues were examined by placing the sample residue on a tray and examining it under a low power zoom stereo- microscope. Specimens were removed and placed for reference in glass covered cardboard slides and glass tubes. The assessment involved identification of the main taxa present in the samples and an evaluation of their relative concentration (abundance) and preservation. The results are presented in Tables 4 and 5.

Diatom Assessment

Sub-samples for the diatom assessment were extracted from column sample <3> from (1.45,1.50,1.55,1.60,1.65,1.70,1.75,1.80,1.85,1.90) and from sample <4> (c.0.00m OD). The diatom preparation involved the following procedures:

1. Treatment of the sub-sample (0.2g) with Hydrogen peroxide (30%) to remove organic material and Hydrochloric acid (50%) to remove remaining carbonates
2. Centrifuging the sub-sample at 1200 rpm for 4 minutes and washing with distilled water (4 washes)
3. Removal of clay from the sub-samples in the last wash by adding a few drops of Ammonia (1%)
4. Two slides prepared, each of a different concentration of the cleaned solution, were fixed in mounting medium of suitable refractive index for diatoms (Naphrax)

The assessment procedure consisted of scanning the prepared slides and recording the concentration and state of preservation of the diatom frustules, and principal diatom taxa. The results are presented in Table 6.

RESULTS AND INTERPRETATION

Lithostratigraphy

The sequence recorded in column sample <3> is composed of mineral-rich sediments (Table 1). These sediments indicate deposition within a fluvial environment. This interpretation is confirmed by the presence of fine-grained sediments (clay and silt) that would have been deposited from a suspended sediment load within in a virtually stationary ('low-energy') water body. The mineral deposits have occasional fragments of organic detritus, representing either long-distance transportation of organic matter or *in situ* deposition of detritus from plants growing within, or on the margins of, an open water body. These sediments are typically found as floodplain deposits and abandoned channel fills. The formation of peat (bulk sample <4>) is of particular importance since this represents a more terrestrial environment and stabilisation of the land-surface.

Pollen Assessment

The pollen preservation and concentration in the samples assessed was generally good. The abundance of *Chenopodium* type pollen indicates that the local environment probably consisted of salt marsh vegetation (e.g. *Salsola kali*), although the presence of waste ground species also found in the Chenopodiaceae family cannot be excluded (e.g. *Chenopodium album*). The presence of high concentrations of Poaceae (grass) pollen, and the low abundance of arboreal pollen, indicates that the vegetation was open in character. The presence of cereal pollen is interesting, and may indicate either local cultivation or the deposition of waste materials rich in cereal pollen into the feature.

Mollusca Assessment

The bulk of the Mollusca species present are land snails (Table 3), but the assemblage was clearly deposited in a brackish salt marsh channel as indicated by the presence of the two species of *Hydrobia* present. The majority of these are of *Hydrobia ventrosa* which lives within salinity limits of 5 and 25‰, but is at its optimum at around 12‰ (Kerney, 1999), suggesting a marsh drain in connection with the sea, but perhaps not directly open to tide water. The few fragments of marine bivalves are all of species tolerant of low salinities and could have lived in similar conditions. The one numerous freshwater species (*Lymnaea peregra*) is tolerant of some degree of dissolved salt and is found in lagoons and estuaries with some connection to the sea. The land assemblage is one of damp to dry grassland. There are no indicators of marsh conditions suggesting that the salt marsh was mostly dry, but inundated only by spring tides. A number of the species (e.g. *Pupilla muscorum*, *Vertigo pusilla*) are typical of the sort of dry grassland found on fixed dunes, although not exclusive to this environment.

Ostracoda and Foraminifera Assessment

The Foraminifera and Ostracod assemblages suggest a wide range of niches within a salt marsh environment - brackish pools, ditches and small streams, etc. The ostracods are all delicate and there are ranges of growth stages (instars) both of which features suggest they are *in situ*. The foraminifera also have a fresh appearance and are also probably *in situ*. Some of the *Cyprideis torosa* specimens look rather corroded and may be redeposited as are *N. subulata* and *Loxococoncha* in one sample. The echinoid spines are extremely durable and may be from redeposited marine sands.

Diatom Assessment

Unfortunately no diatoms were preserved in the sediments.

CONCLUSIONS

The results of the environmental archaeological assessment indicate that the sediments were deposited in a brackish salt marsh channel, probably a marsh drain in connection with the sea, but perhaps not directly open to tide water. The surrounding landscape probably consisted of

intermittently inundated salt marsh, with nearby grassland. The presence of cereal pollen indicates human activity in close proximity to the site.

REFERENCES

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Stace, C. (1997) *New Flora of the British Isles*. Cambridge: Cambridge University Press.

Table 1: Lithostratigraphic description of column sample <3> and bulk sample <4>

Depth (m AOD)	Context Number	Sample Number	Lithostratigraphic Description
0.00	41	<4>	Dark grey silt mixed with lenses of dark brown moderately humified peat.
1.45-1.58	25	<3>	Dark bluish grey silt, patches of organic material; Mollusca, diffuse contact with upper unit
1.58-1.65	25	<3>	Dark bluish grey sandy clayey silt, patches of organic material; Mollusca, occasional charcoal diffuse contact with upper unit
1.65-1.95	24	<3>	Dark bluish grey slightly sandy clayey silt, Mollusca; occasional charcoal

Table 2: Pollen assessment

Depth (m AOD)	Context Number	Sample Number	Main Pollen Taxa	Concentration	Preservation
0.00	41	<4>		---	----
1.45-1.46	25	<3>	<i>Sphagnum</i> , <i>Chenopodium</i> type, Poaceae, <i>Ulmus</i> , <i>Cereale</i> type, Cruciferae, <i>Silene</i> type, Caryophyllaceae, <i>Quercus</i> , <i>Pinus</i> , <i>Salix</i>	----	----
1.50-1.51	25	<3>	Poaceae, Lactuceae, <i>Pinus</i> , <i>Corylus</i> type	----	----
1.60-1.61	25	<3>	<i>Chenopodium</i> type, <i>Silene</i> type, Caryophyllaceae	----	----
1.70-1.71	24	<3>	<i>Chenopodium</i> type, Poaceae, <i>Cereale</i> type, <i>Salix</i> , <i>Calluna vulgaris</i> , Caryophyllaceae, Lactuceae, Cruciferae	----	----
1.80-1.81	24	<3>	Cruciferae	----	----
1.90-1.91	24	<3>	Poaceae, <i>Chenopodium</i> type, <i>Sphagnum</i> , <i>Plantago</i> , Cruciferae, <i>Cereale</i> type, <i>Typha latifolia</i> , Lactuceae	----	----

Key:

- = Poor

-- = Moderate

---- = Good

Table 3: Mollusca assessment

Sample Depth (m OD)	1.85-1.95	1.75-1.85	1.65-1.75	1.55-1.65	1.45-1.55	0.00
Sample Number	3	3	3	3	3	4
Context Number	24	24	24	25	25	41
Land species						
<i>Cochlicopa</i> spp.		1				
<i>Vertigo pusilla</i> Müller, 1774	2	4	15			
<i>Vertigo pygmaea</i> (Draparnaud, 1801)	4	1	8			
<i>Vertigo</i> spp.	1		11	1		
<i>Pupilla muscorum</i> (Linné, 1758)	1	1	2	1		
<i>Lauria cylindracea</i> (da Costa, 1778)				1	1	
<i>Vallonia costata</i> (Müller, 1774)		1	1			
<i>Vallonia pulchella</i> (Müller, 1774)	7	2	3		1	
<i>Vallonia</i> spp.	1	9	5			
<i>Punctum pygmaeum</i> (Draparnaud, 1801)	1					
<i>Vitrina pellicuda</i> (Müller, 1774)			1			
<i>Nesovitreia hammonis</i> (Ström, 1765)					1	
<i>Aegopinella nitidula</i> (Draparnaud, 1805)	1		3			
Zonitidae undet.	1	1		1		
<i>Limax</i> spp.	1	2	3		1	
<i>Cecilioides acicula</i> (Müller, 1774)		1				
<i>Trichia hispida</i> (Linné, 1758)	1	6	5	1	1	20
Type 1						
Freshwater species						
<i>Bithynia tentaculata</i> (Linné, 1758) opercula	1					
<i>Lymnaea peregra</i> (Müller, 1758)	22			1		
Brackish species						
<i>Hydrobia ventrosa</i> (Montagu, 1803)	8	1	4	1	4	
<i>Hydrobia ulvae</i> (Pennant, 1777)		1	1	1		
<i>Hydrobia</i> spp.	8	1		1	1	
Marine species						
<i>Mytilus edulis</i> (Linné, 1758)			1	1		
<i>Ostrea edulis</i> (Linné, 1758)			1	1		
<i>Cerastoderma edule</i> (Linné, 1758)	1					
Total taxa = 21 : (14 land, 2 freshwater, 2 brackish, 3 marine)	60	32	64	10	11	

Table 4: Ostracoda assessment

Depth (m AOD)	Context Number	Sample Number	Main Ostracod Species	Concentration	Preservation	Dry Weight (g)
0.00	41	<4>	<i>Cyprideis torosa</i> , <i>Heterocypris salina</i> , <i>Loxococonch elliptica</i>	***	----	345
1.45-1.55	25	<3>	<i>Candona angulata</i> , <i>Heterocypris salina</i> , <i>Cyprideis torosa</i> , <i>Iliocypris bradyi</i>	***	----	656
1.55-1.65	25	<3>	Species not identified	***	----	433
1.65-1.75	24	<3>	Species not identified	***	----	536
1.75-1.85	24	<3>	<i>Candona neglecta</i> , <i>Heterocypris salina</i> , <i>Iliocypris bradyi</i> , <i>Neocythereis subulata</i> , <i>Loxococoncha sp. Cyprideis torosa</i>	***	----	546
1.85-1.95	24	<3>	<i>Candona angulata</i> , <i>Heterocypris salina</i> , <i>Cyprideis torosa</i> , <i>Iliocypris bradyi</i>	***	----	637

Key:

* = <10
 ** = 11-50
 *** = >51
 - = Poor
 -- = Moderate
 ---- = Good

Table 5: Foraminifera assessment

Depth (m AOD)	Context Number	Sample Number	Main Foraminifera Species	Concentration	Preservation	Dry Weight (g)
0.00	41	<4>	<i>Ammonia beccarii</i> , <i>Elphidium williamsoni</i>	***	----	345
1.45-1.55	25	<3>	<i>Nonion germanica</i> , <i>Ammonia beccarii</i> , <i>Elphidium williamsoni</i> <i>Cibicides</i>	***	----	656
1.55-1.65	25	<3>	Species not identified	***	----	433
1.65-1.75	24	<3>	Species not identified	***	----	536
1.75-1.85	24	<3>	<i>Nonion germanica</i> , <i>Ammonia beccarii</i> , <i>Elphidium williamsoni</i>	***	----	546
1.85-1.95	24	<3>	<i>Nonion germanica</i> , <i>Ammonia beccarii</i> , <i>Elphidium williamsoni</i> <i>Cibicides</i>	***	----	637

Key:

* = <10
 ** = 11-50
 *** = >51
 - = Poor
 -- = Moderate
 ---- = Good

Table 6: Diatom assessment

Depth (m AOD)	Context Number	Sample Number	Main Diatom Species	Concentration	Preservation
0.00	41	<4>	-	-	-
1.45-1.46	25	<3>	-	-	-
1.50-1.51	25	<3>	-	-	-
1.55-1.56	25	<3>	-	-	-
1.60-1.61	25	<3>	-	-	-
1.65-1.66	24	<3>	-	-	-
1.70-1.71	24	<3>	-	-	-
1.75-1.76	24	<3>	-	-	-
1.80-1.81	24	<3>	-	-	-
1.85-1.86	24	<3>	-	-	-
1.90-1.91	24	<3>	-	-	-

Key:

-- = Poor

--- = Moderate

---- = Good