ARCHAEOLOGICAL WATCHING BRIEF AT BLUBBERHOUSE CREEK, KING'S LYNN, NORFOLK (ENF 124816)

Work Undertaken For
King's Lynn and West Norfolk
Borough Council

February 2011

Report Compiled by
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ARCHAEOLOGICAL PROJECT SERVICES

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1. SUMMARY

A watching brief was undertaken during groundworks at Blubberhouse Creek, King's Lynn, Norfolk. The watching brief monitored the landscaping of the creek and the area surrounding the River Nar.

The site lies immediately south of the medieval (AD 1066-1540) defences of the town which in this locality used the River Nar. These defences were enhanced and refortified during the Civil War (1642-45) and ramparts were constructed in the vicinity of the site. During the 18th century, the site lay adjacent to a whale oil factory and shipyards were also located along the Nar. During the mid 19th century, a railway was constructed across the site and remained in use until the 1960s. Previous evaluation in the area had recorded deposits associated with the construction of the railway and quayside revetments.

The watching brief revealed a sequence of undated, medieval and early and late post-medieval deposits. Undated deposits include two ditches, alluvial deposits and two other features. The ditches share alignments with ditches identified as medieval and are probably contemporary with them. Medieval deposits comprise dumped layers, alluvial deposits, three ditches and two hollows. Many medieval deposits contained fragments of fired and scorched silt and clay as well as slag indicating an industrial process, most probably iron smithing, was being undertaken in the vicinity.

Two ditches, a bank, a metalled track and a buried soil were assigned to the early post-medieval period. One ditch and the bank may be a remnant sea-bank or possibly related to the Civil War defences of the town. These had been sealed beneath an extensive former topsoil layer.

Deposits assigned a late post-medieval date include the former southern edge of the River Nar and deposits relating to the creation of a quayside and the introduction of the railway in the mid 19th century.

Finds retrieved during the investigation include a small quantity of medieval pottery, mainly of local production but including a single sherd of Stamford ware. Medieval tile and post medieval brick and tile were also found. A significant amount of material relating to iron smithing was also found which included fired clay, hearth bases and linings and slag. Other finds include a glass bottle and a small assemblage of faunal remains.

2. INTRODUCTION

2.1 Definition of a Watching Brief

An archaeological watching brief is defined as *"a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits maybe disturbed or destroyed."* (IfA 2008).

2.2 Planning Background

Archaeological Project Services was commissioned by King's Lynn and West Norfolk Borough Council to undertake a watching brief at Blubberhouse Creek, King's Lynn, Norfolk, during remodelling of the creek and area surrounding the River Nar. The work was undertaken between the 3rd August and 11th November 2010 in accordance with a specification prepared by Archaeological Project Services (Appendix 1) and approved by the Development Control Archaeologist, Norfolk Landscape Archaeology.

2.3 Topography and Geology

King's Lynn is located 36km west of East Dereham and 17km north of Downham Market alongside the River Great Ouse, Norfolk (Fig. 1).

The site lies 630m south of the centre of King's Lynn as defined by the parish church of St Margaret at National Grid Reference TF 6195 1919 (Fig. 2). The area of investigation lies on the south bank of the River Nar, northwest of Wisbech Road at heights of between 2.74m and 4.07m OD.

King's Lynn lies on marine and freshwater silts which overlay the Kimmeridge Clay of the Fen basin (GSGB 1978). As the site lies within an urban area, local soils have not been mapped.

2.4 Archaeological Setting

The site lies outside the medieval core of King's Lynn. During the medieval period the River Nar formed the southern line of defences to the town which was also marked by an earthen bank on the northern side of the river (Smith 1970, 60).

During the English Civil War (1643-45) the town defences had extended further south into the investigation area. This defensive circuit was begun by the Royalist garrison in 1643 but was unfinished by the time of the Parliamentary siege in August of that year (Clarke and Carter 1977, 437). It has been suggested that the defences were incomplete for a plan of the southern defences dating to 1645 was for this work (*ibid.*). However, south of the Nar the profile of the defences show an elaborate scheme with two ditches, the main rampart with a covered way (Kent 1988, 230). An angled bastion lay to the west of the site with a square bastion occupying an area to the southwest and an outwork to the South Gate existed to the east. Early maps of the area and its vicinity show the defensive earthworks as still present as late as the 18th century (Raistrick 1725). By the time of the 1st edition Ordnance Survey plan of 1888, there appears no visible trace of the Civil War defences.

The loop of the River Nar was home to the Lynn whaling fleet, established around 1774. Associated with this were two blubber houses, one of which disappeared before 1900 (Richards 1997, 35). One blubber house stood on the southwest bank of Blubberhouse Creek and is depicted on maps from 1889. Additionally, a map of 1830 shows shipyards to the north of the Nar and immediately southwest of South Gates, east of the site.

Railways were introduced in 1849 to serve the Boal Quay and extended through the area southwest of the current investigation. The harbour section of the railway became disused during the 1960s.

A watching brief undertaken just to the west during Trial Pit and borehole excavations identified 19th century deposits relating to a brick surface and railway embankments with evidence for widespread dumping of refuse which continued into the 20th century (Cope-Faulkner 2003, 10). Evaluation of the Harding's Pits and Blubberhouse Creek in 2009 identified further deposits relating to the railway and sequences of dumped layers of probable mid 19th century date adjacent to Blubberhouse Creek (Cope-Faulkner 2009, 6). Further evaluation in 2010 at the junction of Blubberhouse Creek and the River Nar recorded quayside revetments and deposits associated with land reclamation and stabilisation which were likely to be of 19th century date. Alluvial accretion was also recorded within the channels of the Nar and Blubberhouse Creek (Cope-Faulkner 2010, 5).

3. AIMS

The aim of the archaeological investigation was to ensure that any archaeological features exposed during the groundworks should be recorded and, if present, to determine their date, function and origin.

4. METHODS

The area of groundworks was lowered by machine to depths required for the remodelling of the area adjacent to the River Nar (Figs. 3 to 5). Following excavation the stripped surface was examined for archaeological remains and the area cleaned by hand. A drainage trench was also monitored at the base of the stripped area (Fig. 6). Selected deposits were excavated further to retrieve artefactual material and to determine their function. Each deposit was allocated a unique reference number (context number) with an individual written description. A list of all contexts and their descriptions appears as Appendix 2. A photographic record was compiled and sections were drawn at scales of 1:10, 1:20, 1:50 and 1:100. Recording was undertaken according to standard Archaeological Project Services' practice.

The locations of individual features and the limits of the works were surveyed using a Thales Global Positioning System (GPS). A base receiver was established over a temporary survey station which logged satellite data while a roving receiver was used to record points of detail. This was processed using N4ce (version 1.11) software to produce CAD drawings.

Environmental samples were taken at the discretion of the site supervisors using guidelines established by English Heritage (2002). The methodology for the subsequent processing of the samples is outlined in the environmental report (Appendix 4).

Following excavation finds were examined and a period date assigned where possible (Appendix 3). The records were also checked and a stratigraphic matrix produced. Phasing was assigned based on the nature of the deposits and recognisable relationships between them and supplemented by artefact dating.

5. RESULTS

Following post-excavation analysis six phases were identified;

Phase 1	Alluvial deposits
Phase 2	Undated deposits
Phase 3	Medieval deposits
Phase 4	Early post-medieval deposits
Phase 5	Late post-medieval deposits
Phase 6	Recent deposits

Archaeological contexts are listed below and described. The numbers in brackets are the context numbers assigned in the field.

Phase 1 Alluvial deposits

The earliest deposit encountered towards the north of the site within the drainage trench was a layer of grey silt (180), which was over 50mm thick (Fig. 11, Section 27). This was overlain by further grey silt (170) followed by bluish grey silt (178), greyish brown silt (177), mixed greyish and yellowish brown silt (176) and finally sealed by yellowish brown silt (175).

Towards the south of the site, alluvial deposits comprised a layer of light brown clayey silt (157) that measured over 0.15m thick (Fig. 11, Section 22). This was overlain by a 0.16m thick layer of grey organic clayey silt (156), followed by brown sandy silt (155) then grey/black organic clayey silt (154) and finally greyish brown clayey silt (153 and 174).

Possibly overlying these sequences of

alluvial deposits was an alluvial grey silt (114) which was exposed in the central part of the stripped area. This was further overlain by a general spread of alluvium across the site comprising laminated brown silt (071, 077, 125 and 135), brown sandy silt (076 and 089), brownish grey sandy silt (082), greyish brown silt (095), greyish brown sandy silt (101 and 108), greyish brown clayey silt (075 and 138), and yellowish brown silt (187).

Phase 2 Undated deposits

Located towards the south of the site was an east-west aligned ditch (141) cut into alluvium (138). This was over 19m long, by 0.63m wide and 0.17m deep (Fig. 11, Section 20; Plate 3). A single fill of mixed grey, bluish grey and brown clayey silt, sandy silt and scorched silt (142) was recorded.

Lying parallel to ditch (141) some 10m to the south was ditch (150) that had a visible length of 18.5m and was 0.7m wide and 0.13m deep (Fig. 11, Section 23; Plate 4). This contained a single fill of dark grey/black organic clayey silt (151).

An alluvial deposit recorded towards the northwest of the drainage trench comprised yellowish brown laminated silt (183). Within this deposit were lenses of grey/black silt with charcoal (182 and 185) and red burnt silt (184). These lenses measured less than 100mm thick.

Cutting the alluvial deposit (187) within the drainage trench was an indeterminate feature (190). This was 2.55m wide and over 0.35m deep (Fig. 12, Section 28; Plate 5). Two fills were recorded, a lower of yellowish brown silt (191) and an upper of grey silt (192).

Immediately to the northwest of feature (109) was another indeterminate feature (188). This measured 1.15m wide by 0.35m deep (Fig. 12, Section 28; Plate 5) and contained a single fill of mixed red silt and burnt silt (189).

A sequence of alluvial deposits was recorded during the insertion of the drainage trench within the centre of the former channel of Blubberhouse Creek. At the base of the sequence was a layer of mixed grey/black and bluish grey silty clay (201) that was over 1.4m thick (Fig. 12, Section 30). This was sealed by a similar deposit containing abundant waterlogged twigs (200). These were then sealed by grey/black and bluish grey silty clay (198 and 199) and grey black silt (202).

Phase 3 Medieval deposits

At the north end of the site, overlying alluvium (082) was a dumped deposit of brownish grey and brown sandy silt with frequent mussel shell (078). This was 40mm thick (Fig. 7, Section 9; Plate 6) and contained 12th – late 13th century pottery. An alluvial deposit of greyish brown sandy silt (081) sealed the dumped layer.

The alluvial deposit was in turn cut by a rectangular feature (080) that was over 7.45m long by 0.15m deep that contained a single fill of greyish brown sandy silt (079).

Cut into the alluvium towards the centre of the site was a sub-rectangular feature (102). Measuring 7.5m wide by 0.5m deep (Fig. 9, Section 11) containing a single fill of brown silt (103). Finds from the fill included a single sherd of 13th – 15th century Grimston ware, animal bone, slag and burnt silt.

This feature was sealed beneath a dumped deposit of grey/black charcoal and fired silt (088) that measured 20mm thick. This was in turn overlain by an alluvial deposit consisting of brown sandy silt (087) that was 60mm thick.

A further dumped deposit overlay the alluvium and comprised yellowish red scorched silt with charcoal and fired clay

(083) and grey scorched silt and charcoal (094). These measured between 20mm and 100mm thick. Grimston ware pottery of 13th – 15th century date was collected from (083) as were fragments of iron smithing slag, fired clay and hearth lining.

This dumped deposit was sealed beneath alluvium of brown sandy silt (086) and grey sandy silt (093). This deposit thickened towards the north where it was identified as a brown silt (100) measuring 0.8m thick. This was further overlain by a dumped deposit of brown silt with frequent small fragments of fired silt (085) that measured 0.23m thick (Fig. 9, Section 11).

Located towards the centre of the site and cut into alluvial deposit (108) was an east-west aligned ditch (113). This measured 2.8m wide by 1.15m deep (Fig. 8, Section 11; Plate 7). Two fills were recorded, a lower of red fired clay and silt (111) and an upper of greyish brown silt (112). Vitrified furnace lining and iron smithing slag was retrieved from (111). This ditch was sealed beneath a layer of brown silt (104) that measured 49m in extent and 0.4m thick and sloped down to the northeast. A 13th -15th century Grimston ware jug fragment was retrieved from this layer.

At the southern end of the site and cut into the alluvial layer (135) was an east-west aligned ditch (134 and 137) that measured over 20m long, by 6.9m wide and 0.2m deep (Fig, 5; Fig. 10, Section 19; Plate 8). Fills comprised red and black fired silt fragments (126) and red fired and scorched silt (127). A number of fired clay fragments were retrieved from these deposits some with wattle impressions as well as iron smithing slag fragments. A Gault clay floor tile was also recovered. Environmental analysis indicates that the land was wet grassland or marsh which was flooded by freshwater on a regular basis (Appendix 4). The ditch had then been sealed by a layer of alluvium comprising greyish brown clayey silt (133 and 136) that was 0.4m thick.

A northwest-southeast aligned ditch (148) turning northwards at its east end (163) cut alluvium (153). This had a combined length of 35m and was 2.2m wide by 0.52m deep (Fig. 11, Section 22; Plate 9). Recorded fills comprised a lower of grey/black organic clayey silt (152) overlain by deposits of brownish grey clayey silt (149) and grey organic clayey silt (162). Pottery of 13th – 15th century date and a fired clay hearth base were retrieved from (149).

Cutting the northern return of this ditch and into alluvial deposits (133 and 136) was ditch (145/146/161) which turned to the south at its east end and had a total visible length of 60.77m. A maximum width of 4.65m was recorded as was a depth of 0.5m (Fig. 11, Section 21; Plate 10). Where it was recorded in the batter to the west, two fills were identified, one a grey clayey silt (144) overlain by brownish grey silt (143). To the east fills comprised grey/black organic silt (147 and 160). This was overlain by an alluvial deposit comprising a 0.5m thick layer of greyish brown sandy silt (132).

Located at the very south of the stripped area was a D-shaped hollow (173) which measured 9m long by 6m wide and over 0.34m deep (Fig. 11, Sections 25 and 26; Plate 11). One section revealed a sequence of deposits beginning with a lower layer of brownish grey and scorched silt (172) followed by grey silty clay (171), brown sandy silt with fired silt and charcoal (170), grey/black sandy silt and charcoal (169) and finally red scorched and fired silt (168). On the east side of this feature, a fill of orange red burnt silt and clay (159) was identified that contained 13th – 15th century pottery. This was overlain by dumped deposits of orange red fired clay (166) and greyish brown clayey silt (167) and sealed beneath alluvial deposits of brown silt with lenses of burnt clay (165)

and greyish brown silt (164).

Phase 4 Early post-medieval deposits

Cutting the alluvium (093/100) was an east-west aligned ditch (091). The ditch measured 4.5m wide by 1.3m deep (Fig. 9, Section 11; Plate 12) and contained a single fill of bluish grey clayey silt with frequent small flint pebbles (092). This deposit contained medieval roof tile and brick of 16th – 18th century date.

Perhaps created from the upcast of digging ditch (091) was a bank (099). This was located to the north and measured 1.11m high (Plate 12). Developed over the bank and ditch fill was a former topsoil comprising a 100mm thick layer of brown silt (098). Overlying the topsoil in the ditch was a further infill deposit of brown sandy silt (097).

A northwest-southeast aligned ditch (106/110/193) cut deposit (104). It had a visible length of over 28m and was up to 0.44m deep (Figs. 8 and 9, Section 11; Fig. 10, Section 13; Fig. 12, Section 28). Fills comprised flint pebbles (105 and 109) and grey/black silt with gravel (194).

Running parallel to ditch (106/110/193) to the west and overlying the dumped deposit (104) and alluvial layer (132) was a band of grey flint pebbles (107 and 131). Probably representing a metalled track, this was up to 0.25m thick (Fig. 10, Section 13). Medieval roof tile and post-medieval brick was also retrieved from the probable track.

Overlying the medieval deposits and encountered across the site was a former topsoil comprising greyish brown silt (070), grey sandy silt (090), brown silt (096) and brownish grey silt (130). This measured between 0.1 and 0.15m thick. The formation of this deposit is likely to have continued into the subsequent phase.

Phase 5 Late post-medieval deposits

Overlying the former medieval topsoil along the western edge of the stripped area was an extensive dumped deposit comprising brown silt (069 and 073), brown and grey sandy silt and clayey silt (084) and brown silt and clayey silt (129). This measured up to 1m thick and provided a level surface for a layer of rammed chalk (068, 124 and 128) associated with the construction of the harbour railway. The chalk was partly overlain by grey cinders and coal (067), followed by grey ballast and coal (123), then flint pebbles and sandy clay (122) and grey ballast and coal (121).

Cutting a number of medieval and undated features along the northeast edge of the stripped area was the post-medieval channel of the River Nar (118 and 140). The exposed width of this cut suggests that the Nar was at least 16m wider than at present. Deposits infilling the channel (Plate 14) consisted of grey clay and silty clay with preserved timber faggots (115), white chalk (116), coal, cinders and stone (117) and grey silty clay (139). This latter deposit produced a late 19th – early 20th century glass bottle.

Inserted into the infilled Nar channel were a number of timber posts, particularly along the easternmost point of the stripped area where they relate to extant timber revetments. Not all posts were individually recorded, although most were planned. Rammed chalk, for example deposits (204) and (205), was then placed around the timbers to stabilise and level the ground.

Phase 6 Recent deposits

Sealing all post-medieval deposits were layers of made-ground. These comprised dumped layers of orange brown stone and rubble (120) and stone, cinders and coal (119) that were sealed by the current topsoil of brown silt with modern rubbish (063).

Sealing the undated alluvial sequence within Blubberhouse Creek was a recently dumped deposit of brown silt (197) that measured 0.7m thick.

6. DISCUSSION

Natural deposits comprise silts, clayey silts and sandy silts of the underlying natural alluvium. Previous survey has indicated that much of the alluvial cover around King's Lynn is post-Roman in date and had sufficiently stabilised to form a land surface by the Late Saxon period (Silvester 1988, 23). However, the site's proximity to the Nar and Ouse would suggest that continued deposition of alluvial deposits occurred into later periods. It is possible, however, that earlier deposits may survive at depth.

A number of features are undated (Phase 2) due to a lack of artefactual material. These comprise two ditches, alluvial deposits and two indeterminate features. The ditches share similar alignments to ditches dated to the medieval period and are probably contemporary with these. Similarly, the two indeterminate features and the lenses of cultural material within the alluvial deposit towards the north of the site are also likely to be medieval based on their stratigraphic position. However, the alluvial sequence recorded within the former channel of Blubberhouse Creek was also identified during previous evaluation at the site. As such, the alluvial sequence is likely to post-date the construction of the timber revetment and was probably deposited after the quayside was no longer used.

Medieval deposits (Phase 3) include dumped deposits, alluvial deposits, three ditches and two hollows. Ditches located towards the south of the site were largely parallel to each other and probably contemporary with two undated ditches on similar alignments. These ditches may be agricultural in origin, though may also have served to drain the immediate area into a forerunner of the Nar.

The two hollows, as well as fills of the ditches, and a number of the dumped deposits incorporated fired and scorched silt and clay fragments some of which was associated with slag. The presence of this material suggests some industrial activity at or near the site (Appendix 3) with some fired clay being associated with hearth structures and slag deriving from iron smithing. Environmental samples indicate that coal was the most likely fuel being used.

Two ditches, one with a flanking bank, a track and an extensive former topsoil were assigned an early post-medieval date (Phase 4). The bank with internal ditch located towards the north of the stripped area may be a remnant sea-bank alongside the River Ouse, although the full width of the bank was not exposed by the works. The ditch and bank share common characteristics with the portion of sea-bank excavated at Clenchwarton as part of the Fenland Management Project. Here, an internal ditch was recorded that was 1.5m wide and 0.8m deep with the bank measuring 18m across and 1.7m high and dated to the Late Saxon period (Crowson *et al.* 2005, 195). Alternatively, the bank and ditch may be related to the Civil War defences of the town and represent an internal ditch with the main rampart. However, the postulated course of the defences would indicate that the bank and rampart should be aligned north to south at this point.

A second ditch may have served a boundary or drainage function and is unusual in having a parallel metalled track on its western side.

Late post-medieval deposits (Phase 5) relate to the canalisation of the Nar and to the construction of the harbour railway in 1849. The former channel of the Nar was wider and cut medieval deposits,

indicating that the medieval course of the river may have lain further northeast. The edge of the former channel of the Nar closely corresponds with the edge shown on the earliest Ordnance Survey plan indicating that it was infilled after 1889. A significant number of vertically set timber posts were recorded during the watching brief. Many can be associated with wharf revetments, which also include a parallel line of timbers set back to tie in the quayside. Other timbers are more randomly placed. However, these correspond to the lines of railways recorded on early Ordnance Survey maps and are likely to represent piles to help support the railway lines (Fig. 13).

Finds retrieved from the investigation include a small collection of medieval pottery and roof tile. Post-medieval brick was also recovered, usually with the medieval roof tile. Other finds include significant amounts of fired clay and slag, a glass bottle and a small collection of faunal remains.

7. CONCLUSION

An archaeological watching brief was undertaken at Blubberhouse Creek, King's Lynn, as the site lay adjacent to a post-medieval whale oil factory with associated quayside revetments and in an area in which defences of the Civil War garrisoning of the town may survive.

Medieval features, comprising ditches, hollows and dumped deposits, were revealed during the watching brief. Many of these deposits contained fired clay and slag which suggests industrial activity at or close to the site in the form of iron smithing. A number of alluvial deposits were recorded indicating that the area was prone to flooding during this period.

Early post-medieval deposits include a ditch and bank, possibly a sea-bank, although it may relate to the Civil War defences of King's Lynn, though these should lie further south and west than the site. A further ditch with a parallel metalled track and an extensive buried soil were also encountered.

Later post-medieval deposits were largely associated with the mid 19th century railway and quayside development of the River Nar.

Finds from the investigation include small quantities of medieval pottery and tile, principally of 12th – 15th century date. A significant quantity of fired and scorched silt and clay was also retrieved which along with slag indicate iron smithing was occurring in the vicinity of the site during the medieval period.

Results of environmental sampling indicate that industrial processes were being carried out at high temperatures using coal and charcoal as fuel. The area was largely wet grassland or marsh that was subject to freshwater flooding on a regular basis.

8. ACKNOWLEDGEMENTS

Archaeological Project Services wishes to acknowledge the assistance of Mr David Hardy, Regeneration Programme Manager, Borough Council of King's Lynn and West Norfolk for commissioning the fieldwork and post-excavation analysis. Thanks are also extended to the staff of King's Lynn Central Library for providing background information and copies of early Ordnance Survey maps and historic photographs of the area. The work was coordinated by Gary Taylor who edited this report along with Tom Lane. Dave Start kindly allowed access to the library maintained by Heritage Lincolnshire.

9. PERSONNEL

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Environmental processing: Jonathon Smith
Photographic reproduction: Sue Unsworth
Illustration: Paul Cope-Faulkner
Post-excavation analysis: Paul Cope-Faulkner

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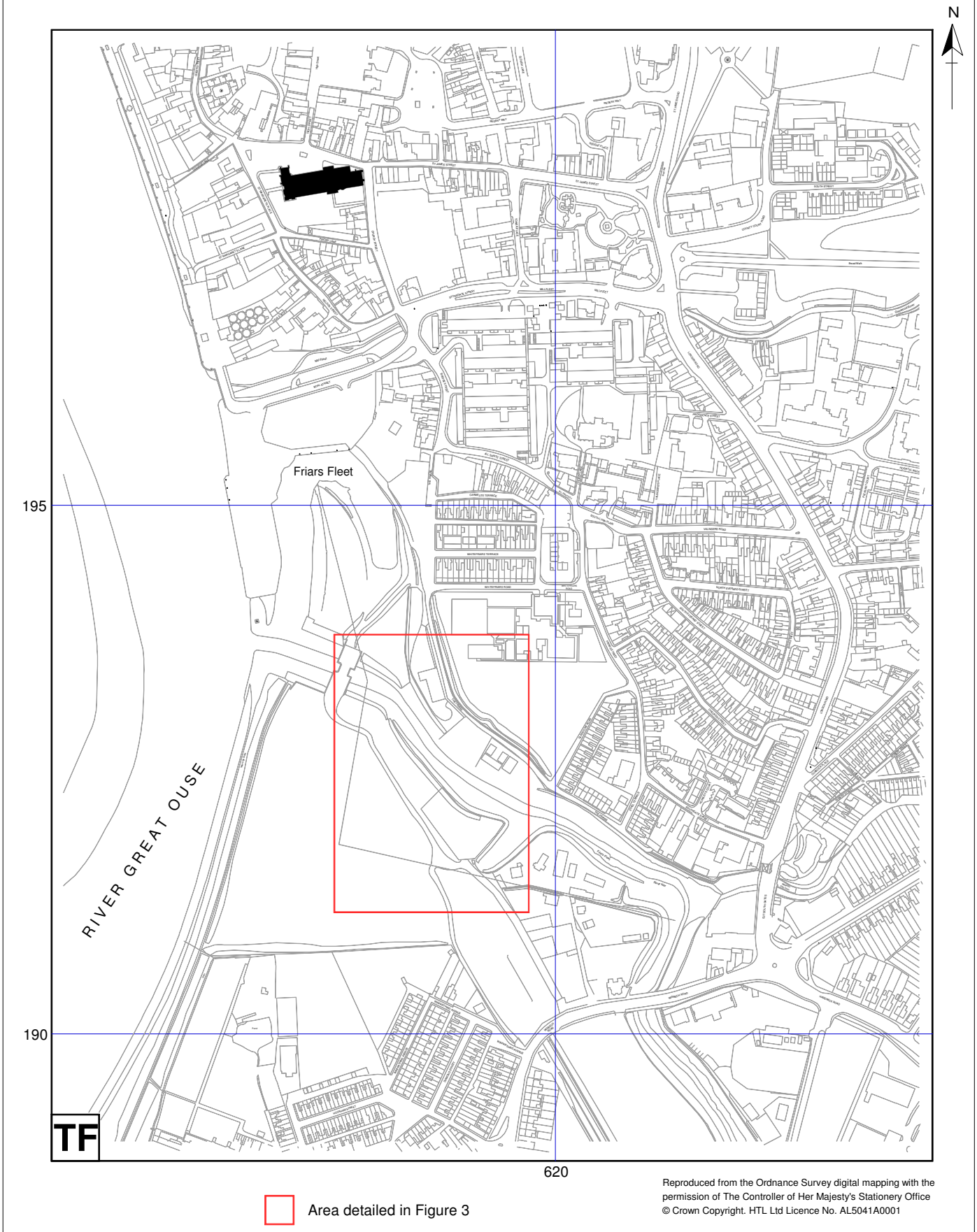
11. ABBREVIATIONS

APS	Archaeological Project Services
GSGB	Geological Survey of Great Britain
IfA	Institute for Archaeologists

Figure 1 - General location plan



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Scale 1:5000	Drawn by: PCF	Report No: 17/11

Figure 2 - Site location plan

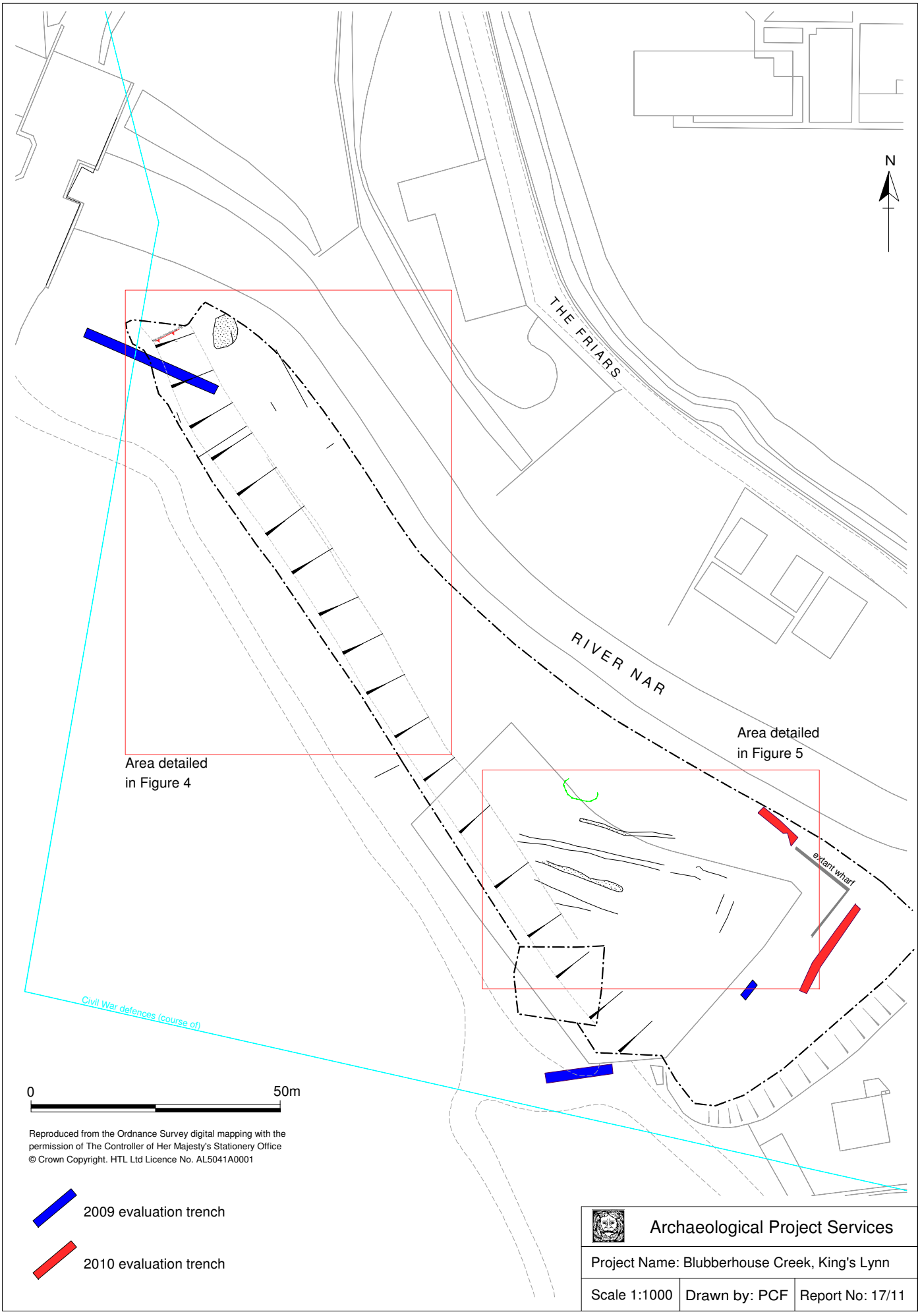

Figure 3 - Plan showing the extent of groundworks

Figure 4 - Plan showing features towards the north of the site

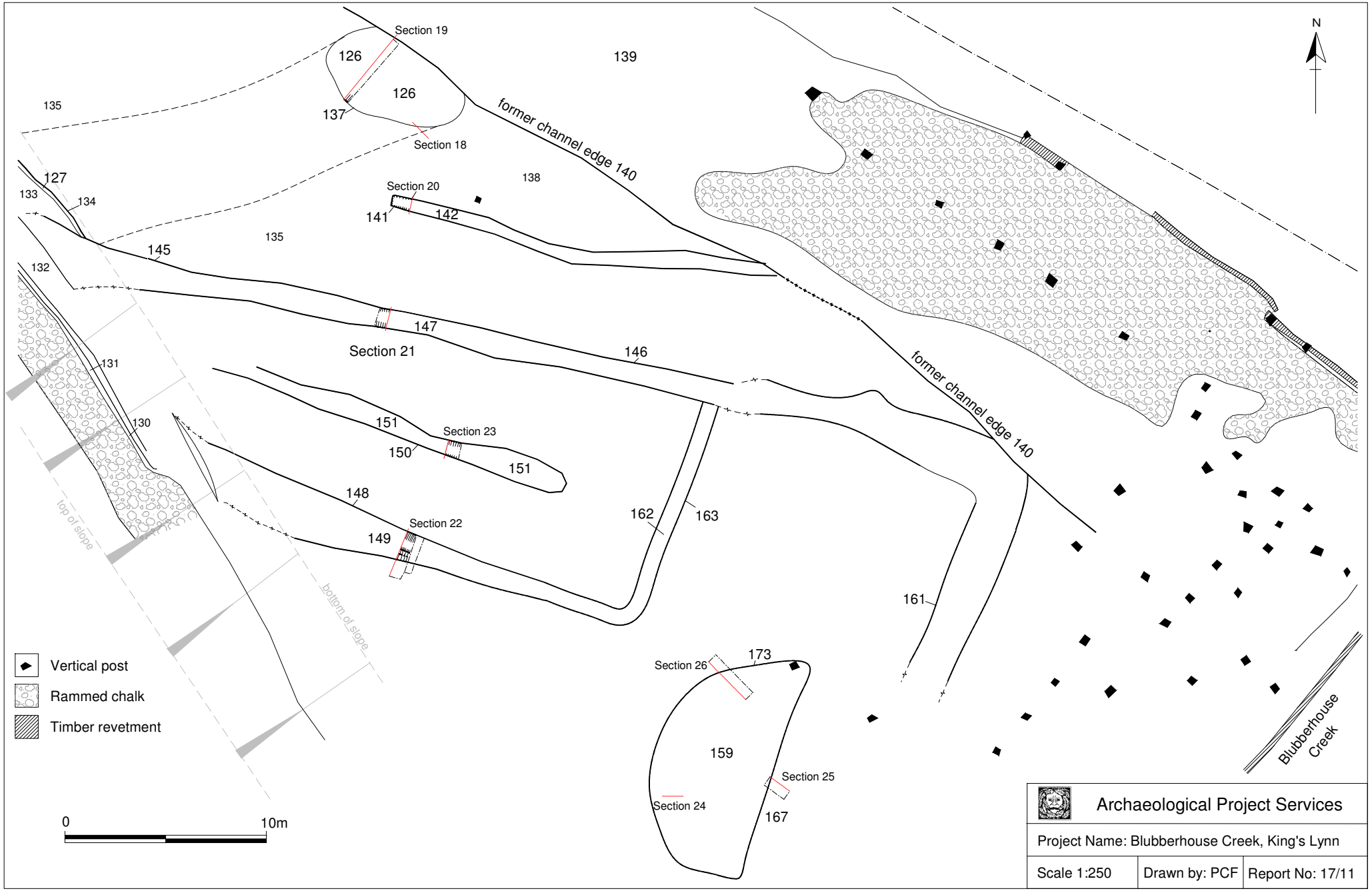

Figure 5 - Plan showing features towards the south of the site

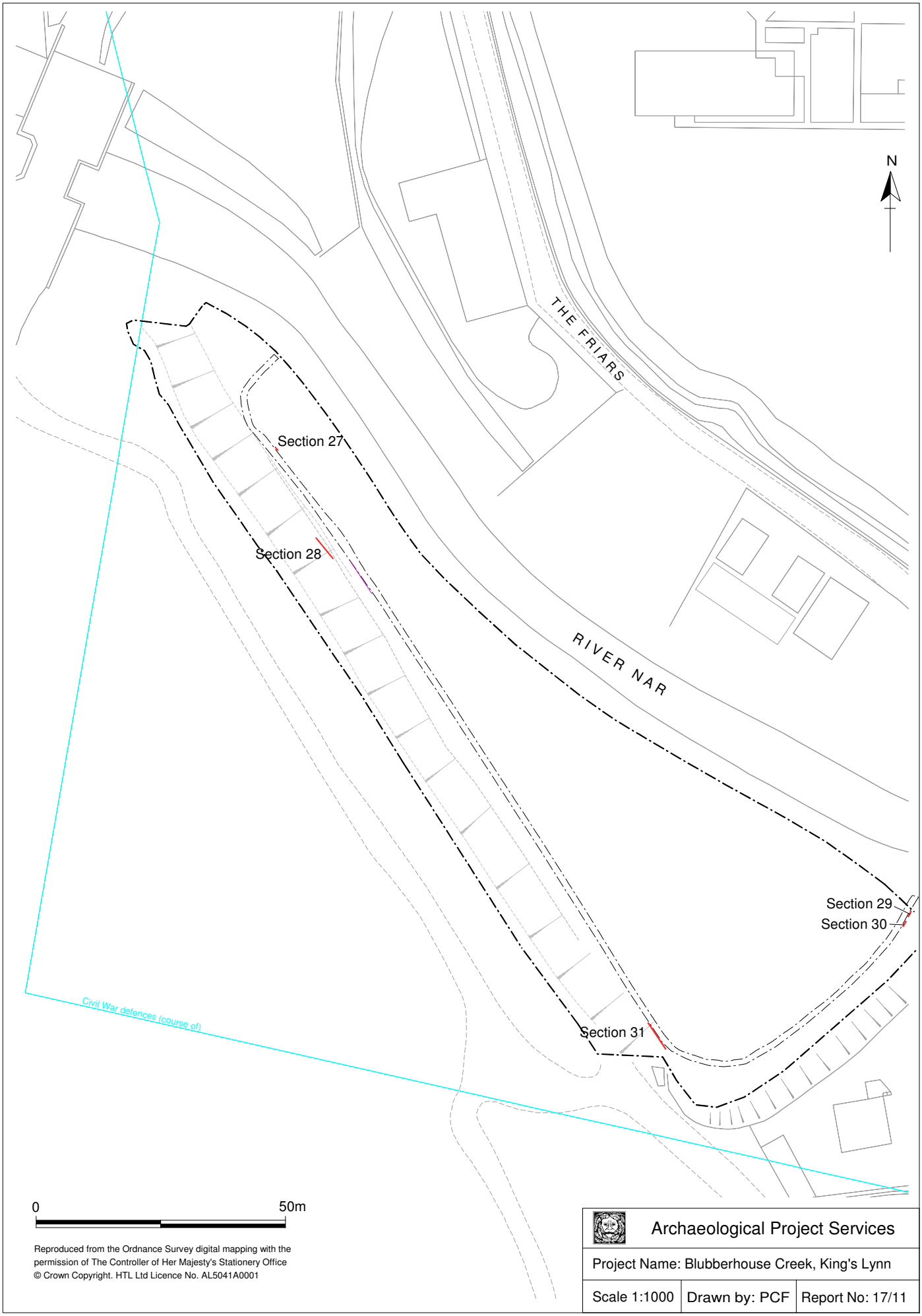

Figure 6 - Plan of the drainage trench showing section locations

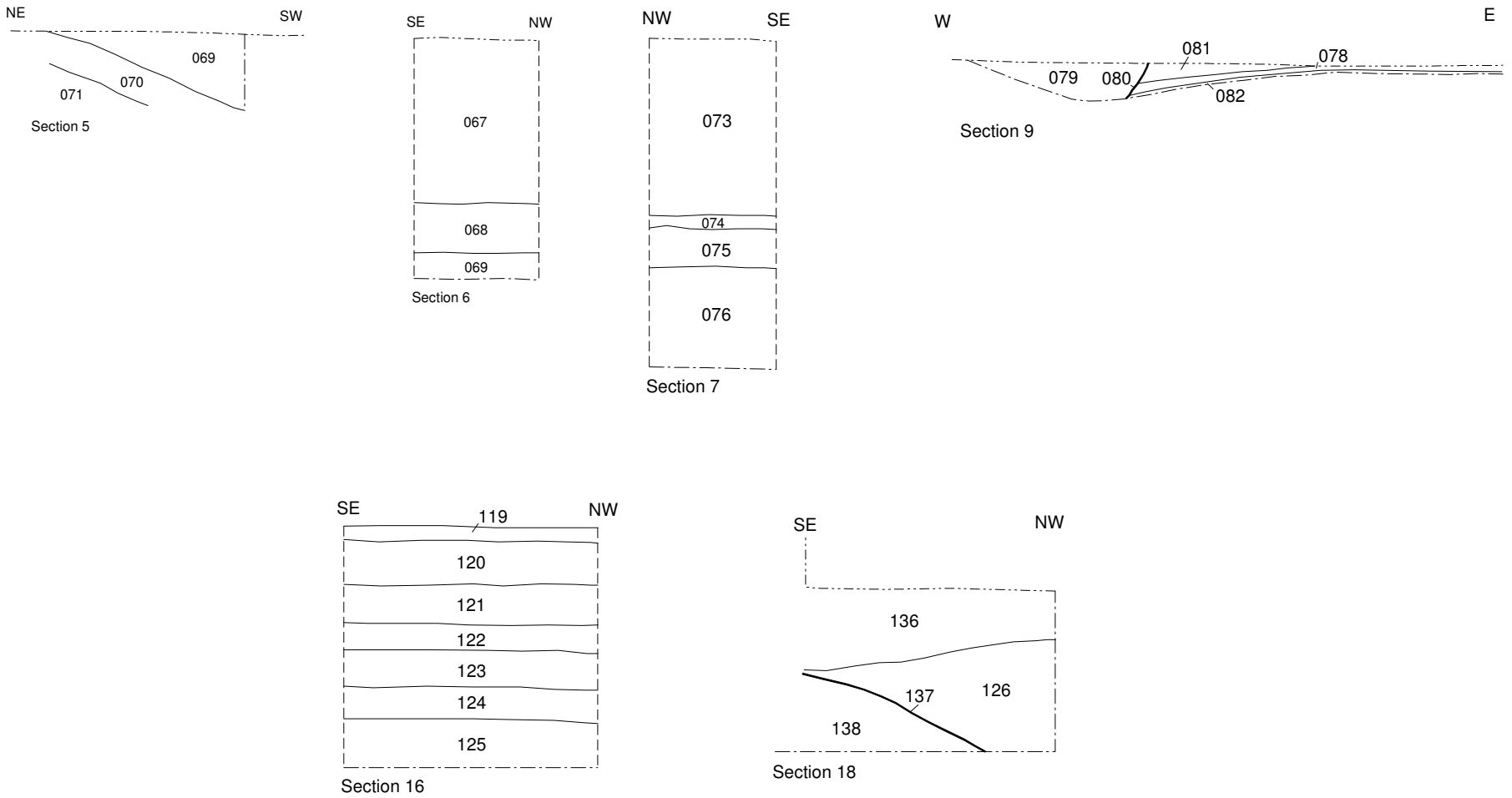

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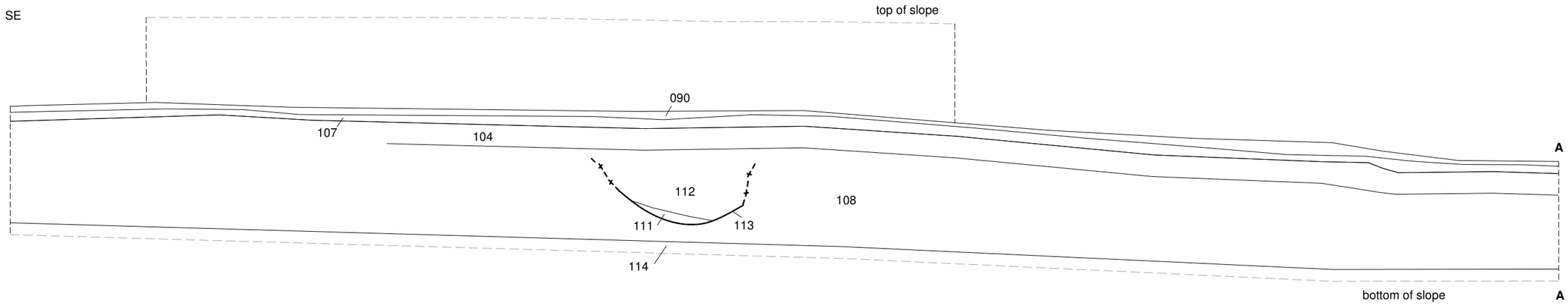
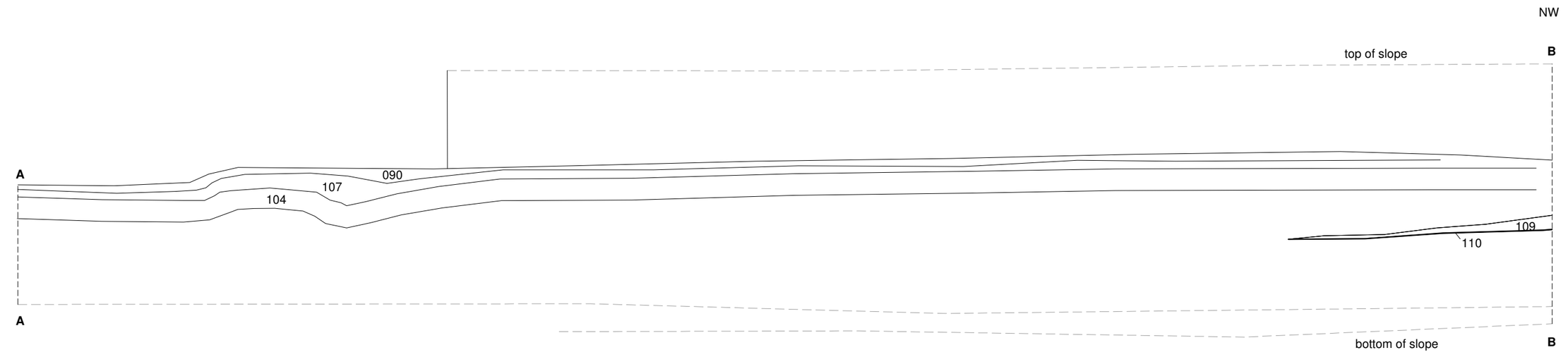
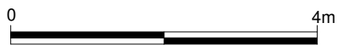
Figure 7 - Sections 5 to 7, 9, 16 and 18







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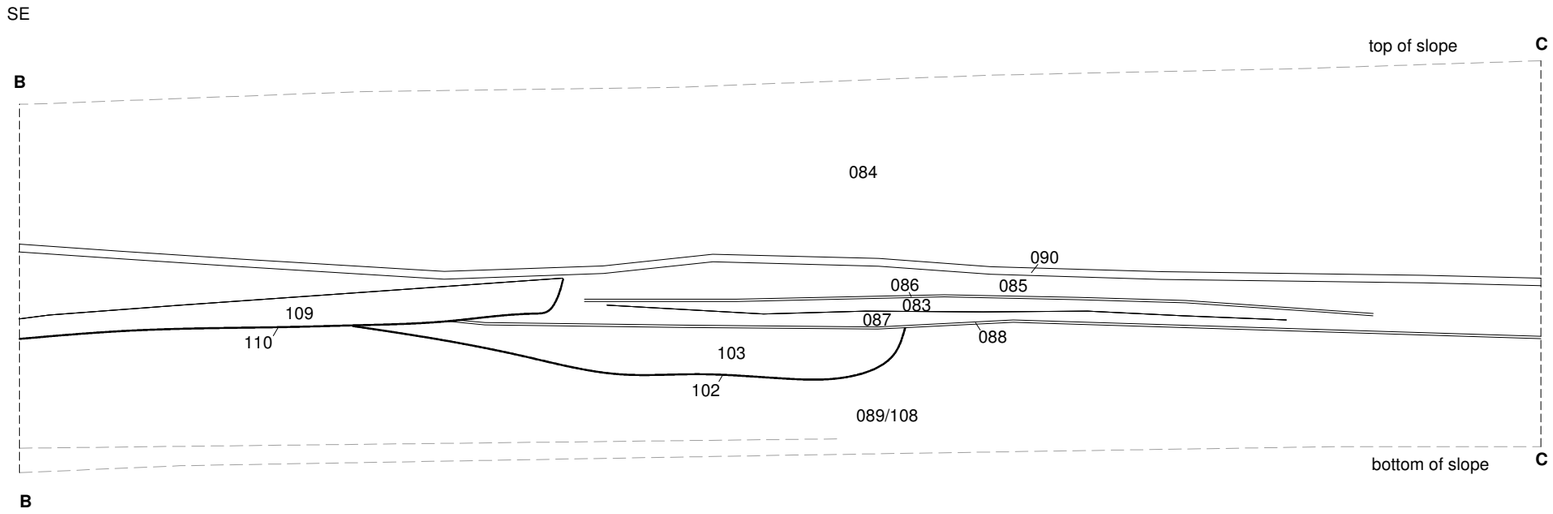
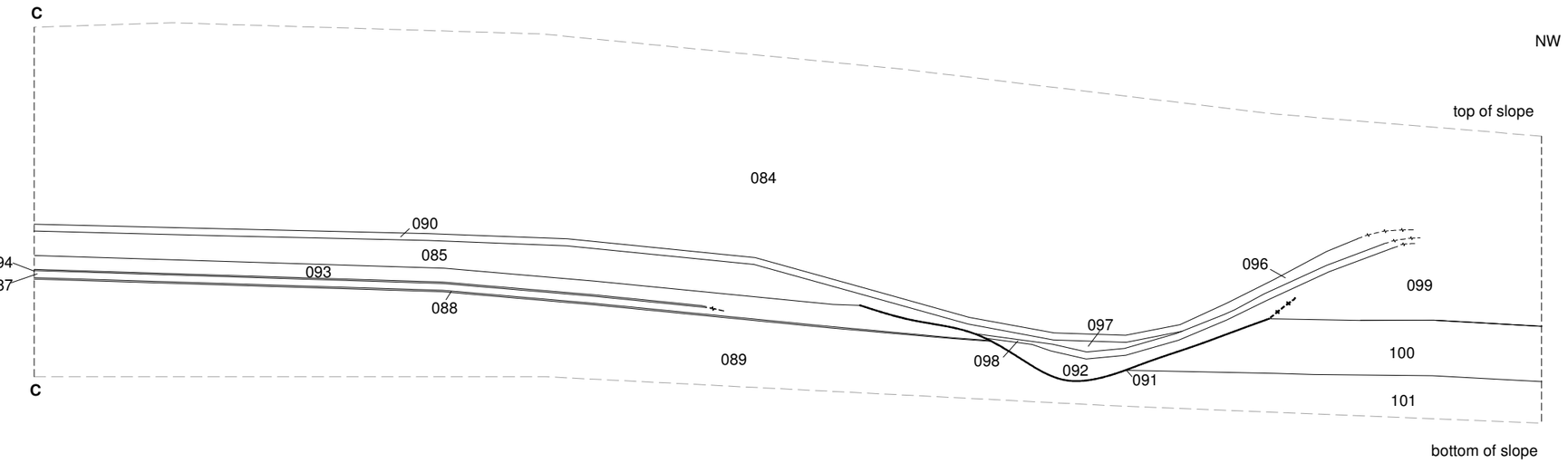
Project Name: Blubberhouse Creek, King's Lynn		
Scale: 1:80	Drawn by: PCF	Report No: 17/11

Figure 8 - Section 11





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Project Name: Blubberhouse Creek, King's Lynn		
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Figure 9 - Section 11 continued

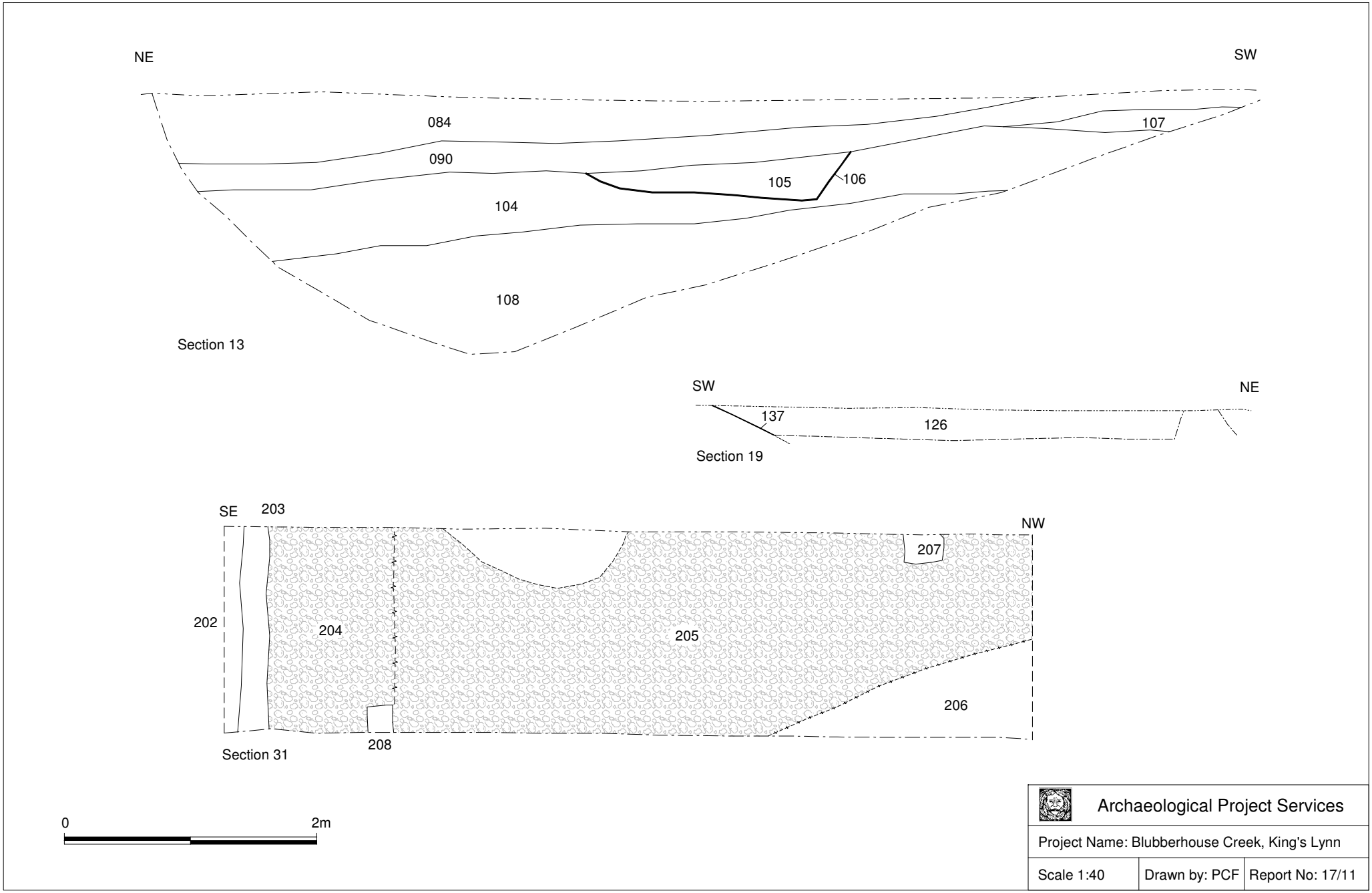


Figure 10 - Sections 13, 19 and 31

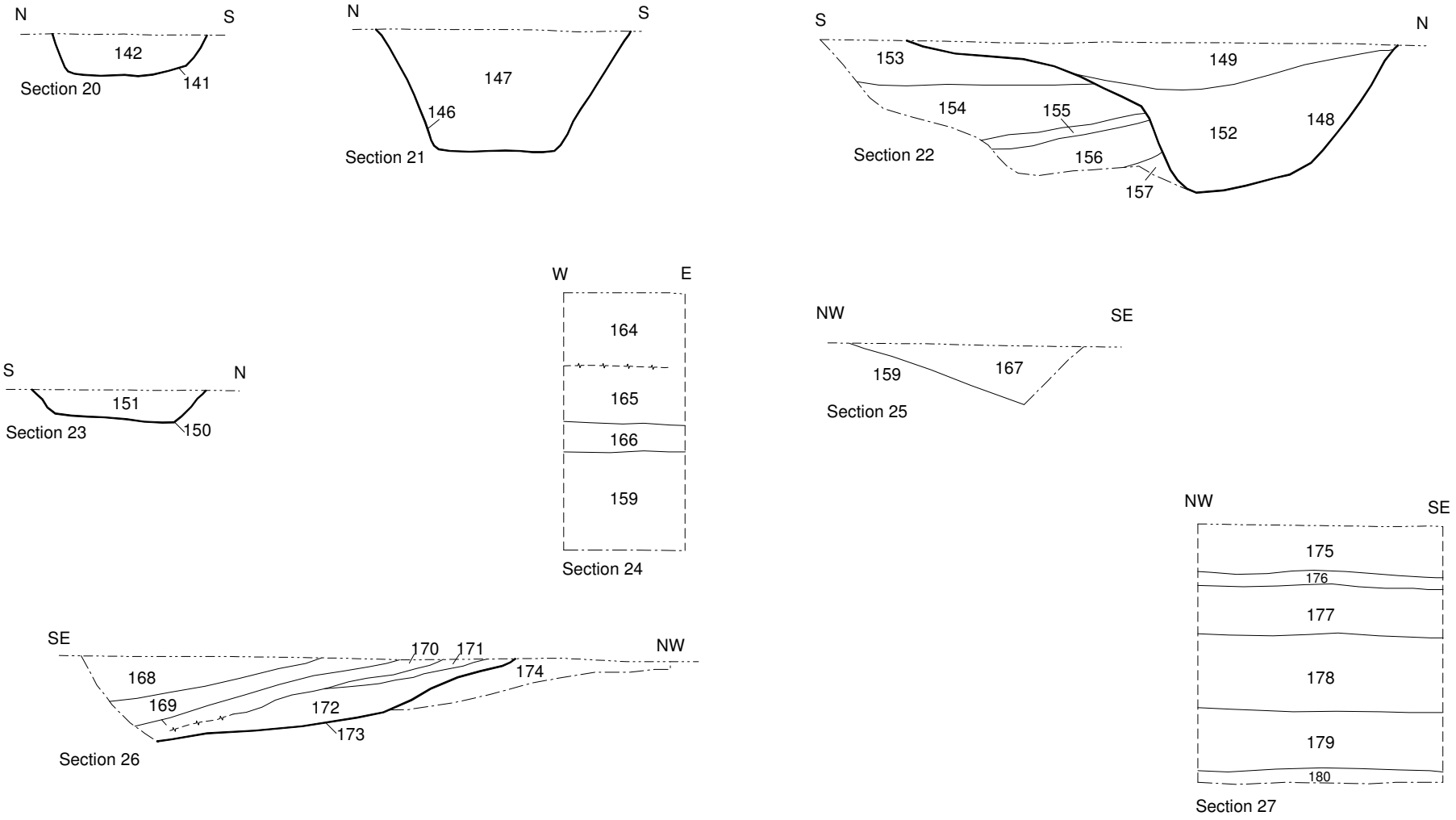
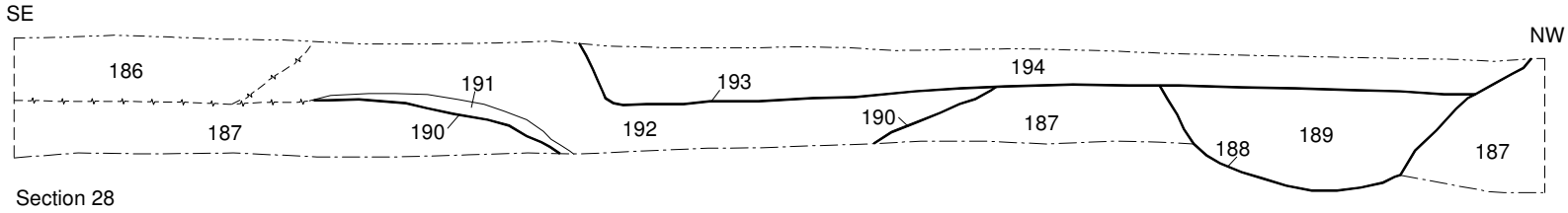
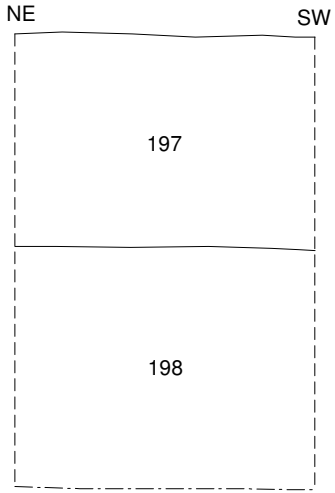


Figure 11 - Sections 20 to 27



Section 28



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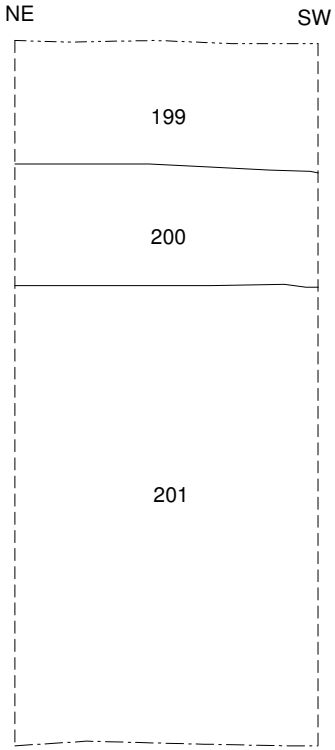

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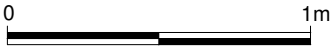

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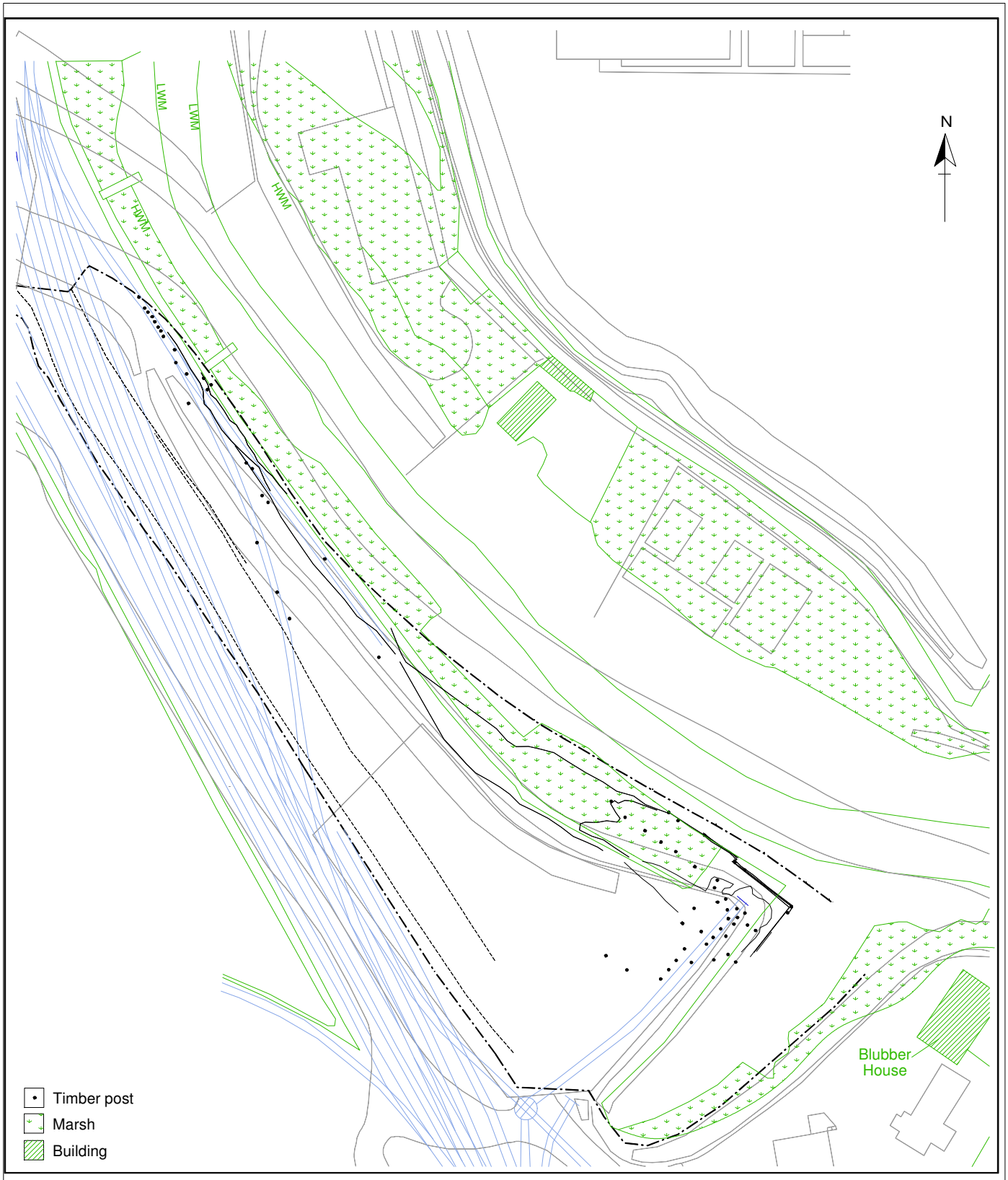
Project Name: Blubberhouse Creek, King's Lynn		
Scale 1:25	Drawn by: PCF	Report No: 17/11

Figure 12 - Sections 28 to 30



grey denotes modern Ordnance Survey mapping
black denotes results from watching brief
blue denotes railways from 1889 Ordnance Survey map
green denotes other features from 1889 Ordnance Survey map

0 50m

Archaeological Project Services		
Project Name: Blubberhouse Creek, King's Lynn		
Scale 1:1000	Drawn by: PCF	Report No: 17/11

Figure 13 - Plan showing relation of timber posts to features recorded on the 1889 Ordnance Survey map

Plate 1- General view across the area of works, looking south

Plate 2 – View showing works in progress, looking east

Plate 3 – Section 20 showing undated ditch (141), looking east

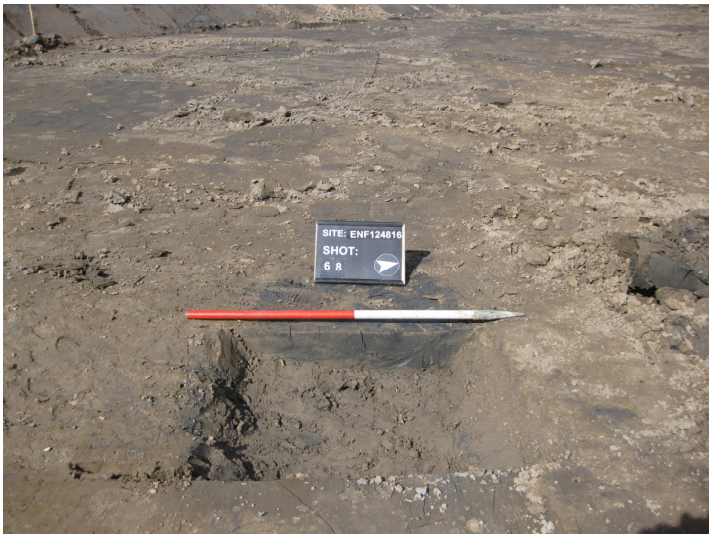


Plate 4 – Section 23 showing undated ditch (150), looking west

Plate 5 – Section 28 showing undated features (188) and (190), looking south

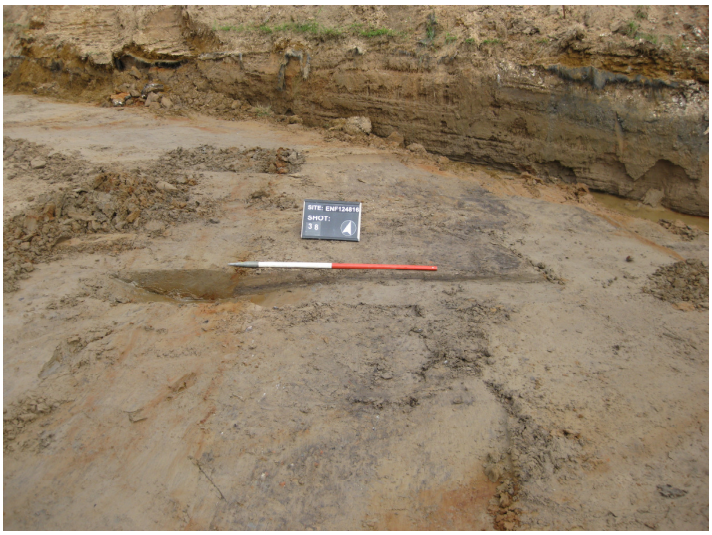


Plate 6 – Section 9 showing hollow (080), looking north

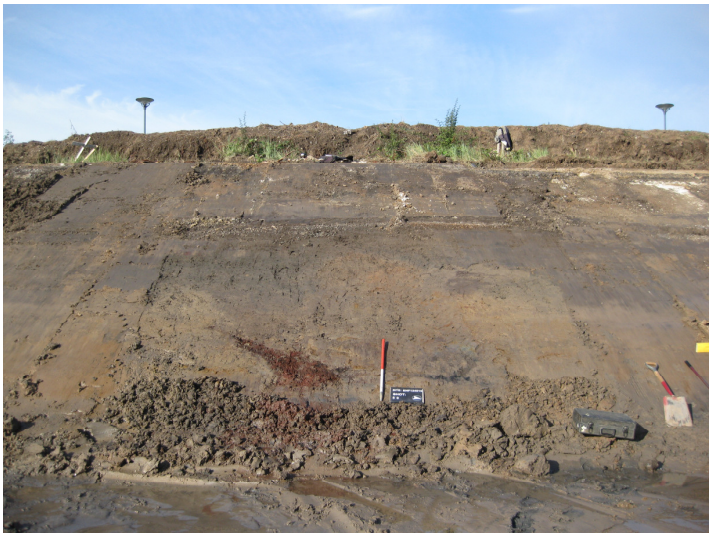


Plate 7 – View showing medieval ditch (113), looking southwest

Plate 8 – Section 19 showing medieval ditch (137), looking northwest

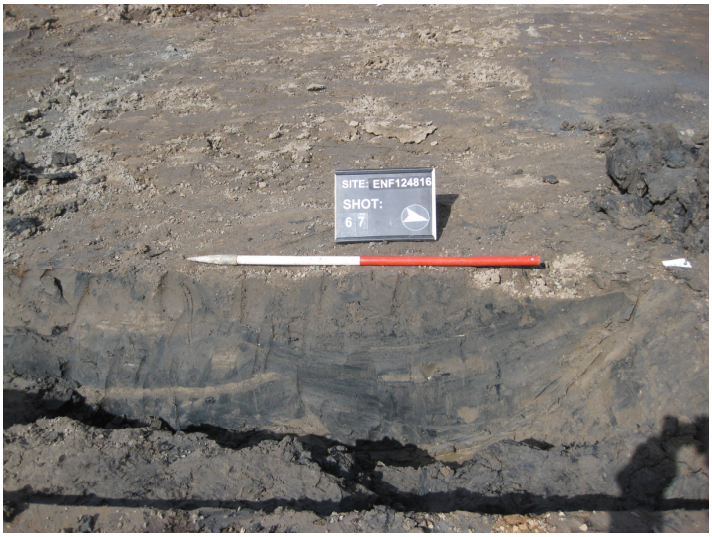


Plate 9 – Section 22 showing medieval ditch (148), looking west

Plate 10 – Section 21 showing medieval ditch (146), looking east

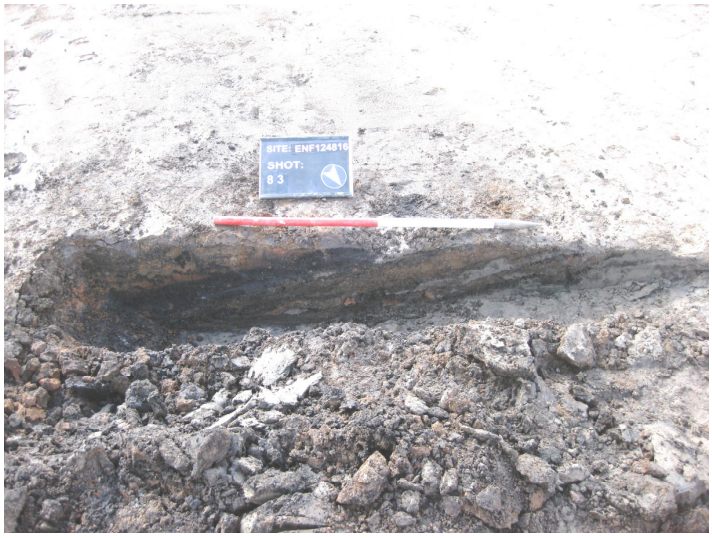


Plate 11 – Section 26 showing medieval hollow (173), looking southwest

Plate 12 – View showing the early post-medieval ditch (091) and bank (099), looking south

Plate 13 – Timber post of quayside revetment

Plate 14 – Fills of the former Nar channel including preserved timber faggots, looking northwest

Appendix 1

SPECIFICATION FOR ARCHAEOLOGICAL WATCHING BRIEF AT BLUBBERHOUSE CREEK, KING'S LYNN, NORFOLK

1 SUMMARY

1.1 *An archaeological watching brief is required during groundwork to lower and widen the bank side around Blubberhouse Creek and the River Nar, at King's Lynn, Norfolk.*

1.2 *The area is archaeologically sensitive, containing remnants of structures associated with the whaling industry and timber revetments. Previous investigations on the bank of Blubberhouse Creek revealed dumped deposits that were contemporary, and perhaps associated, with the whale oil industry.*

1.3 *The investigation will involve monitoring of ground reduction. Deposits and remains exposed will be recorded in writing, graphically and photographically.*

1.4 *On completion of the fieldwork a report will be prepared detailing the results of the investigation. The report will consist of a narrative supported by illustrations and photographs.*

2 INTRODUCTION

2.1 This document comprises a specification for an archaeological watching brief during groundwork at the confluence of the River Nar and Blubberhouse Creek, King's Lynn, Norfolk.

2.2 This document contains the following parts:

2.2.1 Overview.

2.2.2 Stages of work and methodologies.

2.2.3 List of specialists.

2.2.4 Programme of works and staffing structure of the project

3 SITE LOCATION

3.1 King's Lynn is located at the western edge of Norfolk, at the southeastern corner of The Wash. The investigation site is located on the southwestern side of the town, by the Nar-Ouse confluence, at TF 6182 1915.

4 PLANNING BACKGROUND

4.1 The site is the subject of a planning application for regeneration of the area. Previous evaluation and research indicated the potential for quayside structures, revetments, and remains associated with the whale oil industry. As a result, Norfolk Landscape Archaeology has advised that an archaeological watching brief is required during development groundwork.

5 SOILS AND TOPOGRAPHY

5.1 The site is on fairly flat and level land at c. 5m OD. Local soils have not been mapped as the area is urban. The town sits on deep marine and freshwater silts that overlie Kimmeridge Clay (GSGB 1978).

6 ARCHAEOLOGICAL OVERVIEW

6.1 The site is outside the medieval core of King's Lynn, whose southern defence was provided by

the River Nar. During the Civil War the defences were extended south of the river in to the present investigation area. The defences in this area comprised banks, ditches and bastions. The defences were probably short-lived and seem to have been eradicated by 1744. In the 19th century quarry pits were excavated throughout the area and a rail track, part of the King's Lynn Harbour Railway, was constructed. Monitoring of trial pits and boreholes indicated that the quarrying was very widespread and may have removed all traces of the Civil War defences. The railway embankment was also identified and modern dumped waste occurred extensively (Archaeological Project Services 2003). Built in 1775 and demolished in 1960, the Old Blubber House, associated with the whaling industry, was located in the area. The timber revetment around the creek also survives (Roe 2005).

6.2 Previous investigations on the top of the bank at Blubberhouse Creek revealed deep dumped deposits, some contemporary and perhaps associated with the whale oil industry, but could not reach down to the level of the channel edge (Archaeological Project Services 2009).

7 AIMS AND OBJECTIVES

7.1 The aim of the work will be to record and interpret the deposits and any archaeological features exposed during the development groundwork.

7.2 The objectives of the investigation will be to:

- Determine the form and function of the archaeological features encountered;
- Determine the spatial arrangement of the archaeological features encountered;
- As far as practicable, recover dating evidence from the archaeological features, and
- Establish the sequence of the archaeological remains present on the site.

8 SITE OPERATIONS

8.1 General considerations

8.1.1 All work will be undertaken following statutory Health and Safety requirements in operation at the time of the investigation.

8.1.2 The work will be undertaken according to the relevant codes of practise issued by the Institute for Archaeologists (IfA), under the management of a Member of the institute (MIfA). Archaeological Project Services is IfA registered organisation no. 21.

8.1.3 All work will be carried out in accordance with accordance with *Standards for Field Archaeology in the East of England* (Gurney 2003) and any revisions of such received up to the acceptance of this specification. Additionally, the work will be undertaken in consideration of, and with reference to, the regional research agenda (Glazebrook 1997; Brown and Glazebrook 2000).

8.1.4 Any and all artefacts found during the investigation and thought to be 'treasure', as defined by the Treasure Act 1996, will be removed from site to a secure store and promptly reported to the appropriate coroner's office.

8.2 Methodology

8.2.1 The watching brief will be undertaken during the groundworks phase of development, and includes the archaeological monitoring of all phases of soil movement.

8.2.2 Stripped areas and trench sections will be observed to identify and record archaeological features that are exposed and to record changes in the geological conditions. The section drawings of the trenches will be recorded at a scale of 1:10. Should features be recorded in plan these will be drawn at a scale of 1:20. Written descriptions detailing the nature of the deposits, features and fills encountered will be

compiled on Archaeological Project Services pro-forma record sheets.

8.2.3 Finds recovered will be bagged and labelled for later analysis. A metal detector will be used to assist artefact recovery.

8.2.4 Throughout the investigation a photographic record will be compiled. The photographic record, in black and white print and colour digital images, will consist of:

- the site during the investigation to show specific stages of work, and the layout of the archaeology within the area.
- individual features and, where appropriate, their sections.
- groups of features where their relationship is important.

8.2.5 Should human remains be located they will be left *in situ* and only excavated if absolutely necessary. Should removal be required the appropriate Home Office licence will be obtained before the exhumation of the remains. In addition, the Local Environmental Health Department, coroner and the police will be informed, where appropriate.

9 POST-EXCAVATION

9.1 Stage 1

9.1.1 On completion of site operations, the records and schedules produced during the investigation will be checked and ordered to ensure that they form a uniform sequence forming a level II archive. A stratigraphic matrix of the archaeological deposits and features present on the site will be prepared. All photographic material will be catalogued and labelled, the labelling referring to schedules identifying the subject/s photographed.

9.1.2 All finds recovered during the fieldwork will be washed, marked and packaged according to the deposit from which they were recovered. Any finds requiring specialist treatment and conservation will be sent to the Conservation Laboratory at Lincoln.

9.2 Stage 2

9.2.1 Detailed examination of the stratigraphic matrix to enable the determination of the various phases of activity on the site.

9.2.2 Finds will be sent to specialists for identification and dating.

9.3 Stage 3

9.3.1 On completion of stage 2, a report detailing the findings of the investigation will be prepared.

9.3.2 This will consist of:

9.3.2.1 A non-technical summary of the results of the investigation.

9.3.2.2 A description of the archaeological setting of the investigation.

9.3.2.3 Description of the topography of the site.

9.3.2.4 Description of the methodologies used during the investigation.

9.3.2.5 A text describing the findings of the investigation.

9.3.2.6 A consideration of the local, regional and national context of the investigation findings.

9.3.2.7 Plans of the archaeological features exposed. If a sequence of archaeological deposits is encountered, separate plans for each phase will be produced.

9.3.2.8 Sections of the trenches and archaeological features.

9.3.2.9 Interpretation of the archaeological features exposed, and their chronology and setting within the surrounding landscape.

9.3.2.10 Specialist reports on the finds from the site.

9.3.2.11 Appropriate photographs of the site and specific archaeological features.

10 REPORT DEPOSITION

10.1 Copies of the report will be sent to: the client; to Norfolk Landscape Archaeology (3 hard copies and 1 digital on CD) - two copies for Norfolk Historic Environment Record and one for the local planning authority.

11 ARCHIVE

11.1 The documentation, finds, photographs and other records and materials generated during the investigation will be sorted and ordered in accordance with the procedures in the Society of Museum Archaeologists' document *Transfer of Archaeological Archives to Museums* (1994), and any additional local requirements, for long-term storage and curation. This work will be undertaken by the Finds Supervisor, an Archaeological Assistant and the Conservator (if relevant). The archive will be deposited with the receiving museum as soon as possible after completion of the project, and within 12 months of that completion date.

11.2 The archive will be microfilmed. The silver master will be transferred to the RCHME and a diazo copy will be deposited with the Norfolk Historic Environment Record.

11.3 Prior to the project commencing, Norfolk Museums Service will be contacted to obtain their agreement to receipt of the project archive and to establish their requirements with regards to labelling, ordering, storage, conservation and organisation of the archive.

11.4 Upon completion and submission of the investigation report, the landowner will be contacted to arrange legal transfer of title to the archaeological objects retained during the investigation from themself to the receiving museum. The transfer of title will be effected by a standard letter supplied to the landowner for signature.

12 PUBLICATION

12.1 Details of the investigation will be input to the Online Access to the Index of Archaeological Investigations (OASIS).

12.2 A note will also be submitted for publication to the journal *Norfolk Archaeology*.

12.3 If appropriate, notes on the findings will be submitted to the appropriate national journals: *Britannia* for discoveries of Roman date, and *Medieval Archaeology* for findings of medieval or later date.

13 CURATORIAL RESPONSIBILITY

13.1 Curatorial responsibility for the archaeological work undertaken on the site lies with Norfolk Landscape Archaeology. They will be given written notice of the commencement of the project.

14 VARIATIONS AND CONTINGENCIES

14.1 Variations to the proposed scheme of works will only be made following written confirmation of acceptance from the archaeological curator.

14.2 In the event of the discovery of any unexpected remains of archaeological importance, or of any changed circumstances, it is the responsibility of the archaeological contractor to inform the archaeological curator.

14.3 Where important archaeological remains are discovered and deemed to merit further investigation additional resources may be required to provide an appropriate level of investigation, recording and analysis.

14.4 Any contingency requirement for additional fieldwork or post-excavation analysis outside the scope of the proposed scheme of works will only be activated following full consultation with the archaeological curator and the client.

15 PROGRAMME OF WORKS AND STAFFING LEVELS

15.1 The investigation will be integrated with the programme of construction and is dependent on the developers' work programme, and also on the quantity and complexity of archaeological remains encountered. It is therefore not possible to specify the person-hours for the archaeological site. Post-excavation work is likewise dependent on the quantity and complexity of archaeological remains encountered.

15.2 An archaeological supervisor with experience of investigations of this type will undertake the work.

15.3 Post-excavation analysis and report production will be undertaken by the archaeological supervisor, or a post-excavation analyst as appropriate, with assistance from a finds supervisor, illustrator and external specialists.

16 SPECIALISTS TO BE USED DURING THE PROJECT

16.1 The following organisations/persons will, in principle and if necessary, be used as subcontractors to provide the relevant specialist work and reports in respect of any objects or material recovered during the investigation that require their expert knowledge and input. Engagement of any particular specialist subcontractor is also dependent on their availability and ability to meet programming requirements.

Task	Body to be undertaking the work
Conservation	Conservation Laboratory, Lincoln
Pottery Analysis	Prehistoric – D Trimble, APS/ Trent & Peak Archaeological Trust Roman – A Beeby, APS/B Precious, Independent Specialist Post-Roman -A Boyle, APS
Non-pottery Artefacts	J Cowgill, Independent Specialist/G Taylor, APS
Animal Bones	P Cope-Faulkner, APS
Environmental Analysis	J Rackham, Independent Specialist
Human Remains Analysis	J Kitch, Independent Specialist

17 INSURANCES

17.1 Archaeological Project Services, as part of the Heritage Trust of Lincolnshire, maintains Employers Liability Insurance of £10,000,000, together with Public and Products Liability insurances, each with indemnity of £5,000,000. Copies of insurance documentation can be supplied on request.

18 COPYRIGHT

18.1 Archaeological Project Services shall retain full copyright of any commissioned reports under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it hereby provides an exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project as described in the Project Specification.

18.2 Licence will also be given to the archaeological curators to use the documentary archive for educational, public and research purposes.

18.3 In the case of non-satisfactory settlement of account then copyright will remain fully and exclusively with Archaeological Project Services. In these circumstances it will be an infringement under the Copyright, Designs and Patents Act 1988 for the client to pass any report, partial report, or copy of same, to any third party. Reports submitted in good faith by Archaeological Project Services to any Planning Authority or archaeological curator will be removed from said planning Authority and/or archaeological curator. The Planning Authority and/or archaeological curator will be notified by Archaeological Project Services that the use of any such information previously supplied constitutes an infringement under the Copyright, Designs and Patents Act 1988 and may result in legal action.

18.4 The author of any report or specialist contribution to a report shall retain intellectual copyright of their work and may make use of their work for educational or research purposes or for further publication.

19 BIBLIOGRAPHY

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Gurney, D, 2003 *Standards for Field Archaeology in the East of England*, ALGAOEE

Roe, A, 2005 *Nar Ouse Regeneration Area: Cultural Heritage Recommendations for Future Strategy and Works*, unpublished Scott Wilson report D104633

Specification: Version 1, 31-03-10

Appendix 2

CONTEXT DESCRIPTIONS

No.	Description	Interpretation
063	Soft mid brown silt with frequent modern debris, 0.3m thick	Topsoil
064	Timber post, vertically set, 350mm x 350mm x >2m long	Revetment
065	Timber beam, horizontal, 350mm x 350mm x 4.3m long, circular section at one end	Revetment
066	Iron chain, 3.5m long	-
067	Firm dark grey cinders and coal, 0.65m thick	Made ground
068	Firm white chalk, 0.2m thick	Levelling deposit
069	Firm light brown silt	Levelling deposit
070	Firm dark greyish brown silt, 0.15m thick	Former topsoil
071	Soft light brown silt	Alluvial deposit
072	Timber posts, vertically set, 0.25m diameter, spaced 1m apart	Revetment
073	Firm light brown silt, 0.7m thick	Dumped deposit
074	Firm dark orange burnt silt with frequent charcoal flecks, 50mm thick	Dumped deposit
075	Firm light greyish brown clayey silt, 0.15m thick	Alluvial deposit
076	Soft light brown sandy silt, 0.4m thick	Natural deposit
077	Soft light brown silt, 1.8m thick	Alluvial deposit
078	Soft mixed dark brownish grey and light brown sandy silt with frequent mussel shell, 40mm thick	Dumped deposit
079	Soft light greyish brown sandy silt	Fill of (080)
080	Rectangular feature, >7.45m long by 0.15m deep, steep sides and rounded base	Hollow
081	Soft light greyish brown sandy silt, 70mm thick	Alluvial deposit
082	Soft mid brownish grey sandy silt, >0.12m thick	Alluvial deposit
083	Soft mid yellowish red scorched silt with frequent charcoal and fired clay, 100mm thick	Dumped deposit
084	Firm mixed light brown and mid grey sandy silt and clayey silt, 0.55m thick	Levelling deposit
085	Soft dark brown silt with frequent small fragments of fired silt, 0.23m thick	Dumped deposit
086	Soft light brown sandy silt, 20mm thick	Alluvial deposit
087	Soft light brown sandy silt, 60mm thick	Alluvial deposit
088	Soft dark grey/black charcoal and fired silt, 20mm thick	Dumped deposit
089	Soft light brown sandy silt, >0.5m thick	Alluvial deposit
090	Soft dark grey sandy silt, 100mm thick	Former topsoil

No.	Description	Interpretation
091	Linear feature, aligned east-west, 4.5m wide by 1.3m deep, steep sides and concave base	Ditch
092	Firm dark bluish grey clayey silt with frequent small flint pebbles	Fill of (091)
093	Firm mid grey sandy silt, 0.2m thick	Alluvial deposit
094	Soft dark grey scorched silt and charcoal, 20mm thick *(continuation of (083))*	Dumped deposit
095	Soft mid greyish brown silt, 100mm thick	Alluvial deposit
096	Soft dark brown silt, 100mm thick *(same as (090))*	Former topsoil
097	Soft light brown sandy silt, 0.3m thick	Dumped deposit
098	Soft dark brown silt, 100mm thick	Former topsoil
099	Soft light brown silt, 1.11m high	Bank
100	Soft light brown silt, 0.8m thick	Alluvial deposit
101	Soft light greyish brown sandy silt	Alluvial deposit
102	Sub-rectangular feature, >7.5m wide by 0.5m deep, steep sides and flattish base	Hollow
103	Soft light brown silt	Fill of (102)
104	Soft mid to light brown silt, 0.4m thick	Dumped deposit
105	Firm dark grey flint pebbles	Fill of (106)
106	Linear feature, aligned northwest-southeast, 2.09m wide by 0.39m deep, gradual and steep sides and sloping base *(same as (110) and (193))*	Ditch
107	Firm dark grey flint pebbles, 0.25m thick	Metalled surface
108	Soft light greyish brown sandy silt, >1m thick	Alluvial deposit
109	Firm dark grey flint pebbles	Fill of (110)
110	Linear feature, aligned northwest-southeast, >26m long by 1.85m wide by 0.44m deep, steep sides and flattish base *(same as(106) and (193))*	Ditch
111	Loose dark red fired clay and silt	Fill of (113)
112	Firm light greyish brown silt	Fill of (113)
113	Linear feature, aligned east-west, 2.8m wide by 1.15m deep, steep sides and rounded base	Ditch
114	Firm mid grey silt	Alluvial deposit
115	Firm mid too dark grey clay and silty clay with bundles of timber faggots	Fill of (118)
116	Compacted white chalk	Fill of (118)
117	Loose black coal, cinders and stone	Fill of (118)
118	Linear feature, aligned northwest-southeast	Former channel of River Nar
119	Compacted dark grey stones, cinders and coal, 50mm thick	Dumped deposit
120	Firm mid orange brown stone and rubble, 170mm thick	Made-ground
121	Compact dark grey ballast and coal, 150mm thick	Dumped deposit

No.	Description	Interpretation
122	Firm light brown flint pebbles and sandy clay, 110mm thick	Made-ground
123	Compact dark grey ballast and coal, 140mm thick	Made-ground
124	Compacted white chalk, 120mm thick	Levelling deposit
125	Firm mid brown silt, 0.2m thick	Dumped deposit
126	Soft and loose mid red and black fired silt fragments, 0.2m thick	Dumped deposit
127	Loose and friable dark red fired and scorched silt, 0.15m thick	Fill of (134)
128	Mixed deposit of stone and cinders and rammed chalk	Made-ground
129	Firm mid to light brown silt and clayey silt, 1m thick	Levelling deposit
130	Soft dark brownish grey silt, 0.15m thick	Former topsoil
131	Loose mid grey flint pebbles, 100mm thick	Metalled surface
132	Soft mid greyish brown sandy silt, 0.5m thick	Alluvial deposit
133	Firm mid to light greyish brown clayey silt, 0.4m thick	Alluvial deposit
134	Linear feature, aligned east-west, >20m long by 6.9m wide and 0.19m deep, gradual sides and rounded base *(same as (137))*	Ditch
135	Firm mid to light brown silt	Alluvial deposit
136	Firm light greyish brown clayey silt, 0.3m thick	Alluvial deposit
137	Linear feature *(same as (134))*	Ditch
138	Firm light greyish brown clayey silt, 0.3m thick	Alluvial deposit
139	Firm mid to dark grey silty clay	Fill of (140)
140	Curvilinear feature, aligned northwest-southeast	Former channel of River Nar
141	Linear feature, aligned northwest-southeast, >19m long by 0.63m wide and 0.17m deep, steep sides and flat base	Ditch
142	Firm to stiff mixed dark grey, light bluish grey and light brown clayey silt, sandy silt and scorched silt	Fill of (141)
143	Firm mid brownish grey silt	Fill of (145)
144	Firm to stiff dark grey clayey silt	Fill of (145)
145	Linear feature, aligned east-west, >10m long by 4.68m wide, steep sides and rounded base *(continuation of (146) and (161))*	Ditch
146	Linear feature, aligned east-west, >20m long by 1.05m wide and 0.5m deep, steep sides and flat base *(continuation of (145) and (161))*	Ditch
147	Firm to stiff, dark grey/black organic clayey silt	Fill of (146)
148	Linear feature, aligned east-west, >23.6m long by 2.2m wide by 0.52m deep, steep sides and rounded base	Ditch
149	Firm to stiff mid to dark brownish grey clayey silt	Fill of (148)
150	Linear feature, aligned east-west, >18.5m long by 0.7m wide by 0.13m deep, steep sides and flattish base	Ditch

No.	Description	Interpretation
151	Firm to stiff dark grey/black organic clayey silt	Fill of (150)
152	Firm to stiff dark grey/black organic clayey silt	Fill of (148)
153	Firm mid greyish brown clayey silt, 0.19m thick	Alluvial deposit
154	Firm dark grey/black organic clayey silt, 0.2m thick	Alluvial deposit
155	Soft light brown sandy silt, 40mm thick	Alluvial deposit
156	Firm dark grey organic clayey silt, 0.16m thick	Alluvial deposit
157	Firm light brown clayey silt, >0.15m thick	Alluvial deposit
158	Timber piling	Revetment
159	Soft mid orange red burnt silt and clay, 0.6m thick	Dumped deposit
160	Plastic dark grey organic clayey silt	Fill of (161)
161	Linear feature, aligned north-south, >11m long by 2.2m wide, not excavated *(continuation of (145) and (146))*	Ditch
162	Firm and plastic dark grey organic clayey silt	Fill of ditch (163)
163	Linear feature, aligned northeast-southwest, 0.8m wide *(continuation of (148))*	Ditch
164	Firm mid greyish brown silt, 0.3m thick	Alluvial deposit
165	Firm light brown silt with lenses of burnt clay/silt, 0.25m thick	Alluvial deposit
166	Soft light orange red fired clay/silt, 0.12m thick	Dumped deposit
167	Firm light greyish brown clayey silt, 0.24m thick	Dumped deposit
168	Soft mid red scorched and fired silt/clay	Fill of (173)
169	Soft dark grey/black sandy silt and charcoal	Fill of (173)
170	Soft mid brown sandy silt with fired silt and charcoal	Fill of (173)
171	Firm and plastic light grey silty clay	Fill of (173)
172	Soft dark brownish grey silt and scorched silt	Fill of (173)
173	D-shaped feature, 9m long by 6m wide by >0.34m deep, gradual sides, not fully excavated	Hollow
174	Firm light greyish brown clayey silt, >0.2m thick	Alluvial deposit
175	Soft light yellowish brown silt, 0.2m thick	Alluvial deposit
176	Soft light greyish and yellowish brown silt, 50mm thick	Alluvial deposit
177	Soft light greyish brown silt, 0.2m thick	Alluvial deposit
178	Soft mid bluish grey silt, 0.3m thick	Alluvial deposit
179	Soft light and mid grey silt, 0.25m thick	Alluvial deposit
180	Soft light grey silt, >50mm thick	Alluvial deposit
181	Unstratified finds retrieval	
182	Soft dark grey/black silt with charcoal *(lense within (183))*	Dumped deposit

No.	Description	Interpretation
183	Soft light yellowish brown laminated silt	Alluvial deposit
184	Soft dark to mid red burnt silt *(lense within (183))*	Dumped deposit
185	Soft dark grey/black silt with charcoal *(lense within (183))*	Dumped deposit
186	Soft light yellowish brown laminated silt, 0.2m thick	Alluvial deposit
187	Soft light yellowish brown silt, >0.2m thick	Alluvial deposit
188	Feature, 1.15m wide by 0.35m deep, steep sides and rounded base	Indeterminate feature
189	Soft mid red silt and burnt silt	Fill of (188)
190	Feature, 2.55m wide by >0.35m deep, gradual sides, not fully excavated	Indeterminate feature
191	Soft light yellowish brown silt	Fill of (190)
192	Soft light grey silt	Fill of (190)
193	Feature, 3.2m wide by 0.2m deep, steep sides and flat base *(same as (106) and (110))*	Ditch
194	Soft dark grey/black silt and gravel	Fill of (195)
195	Brick structure	Cellar
196	Brick structure	Cellar
197	Soft dark brown silt, 0.7m thick	Dumped deposit
198	Soft dark grey/black and mid to dark bluish grey silty clay, >0.8m thick	Alluvial deposit
199	Soft dark grey/black and mid to dark bluish grey silty clay, >0.4m thick	Alluvial deposit
200	Soft dark grey/black and mid to dark bluish grey silty clay with twigs, 0.4m thick	Alluvial deposit
201	Soft dark grey/black and mid bluish grey silty, >1.4m thick	Alluvial deposit
202	Soft dark grey/black silt, 1.5m thick	Alluvial deposit
203	Row of vertically set timbers, rectangular in shape	Revetment
204	Compacted white chalk	Levelling deposit
205	Compacted white chalk and flint, 1.6m deep	Levelling deposit
206	Soft dark grey clayey silt, >0.8 thick	Alluvial deposit
207	Timber post, 300mm by 240mm	Revetment

Appendix 3

THE FINDS

POST ROMAN POTTERY

By Anne Boyle and Lavinia Green

Introduction

All the material was recorded at archive level in accordance with the guidelines laid out in Slowikowski *et al.* (2001). The pottery codenames (Cname) are in accordance with the Post Roman pottery type series for Lincolnshire, as published in Young *et al.* (2005). A total of 16 sherds from 13 vessels, weighing 340 grams was recovered from the site.

Methodology

The material was laid out and viewed in context order. Sherds were counted and weighed by individual vessel within each context. The pottery was examined visually and using x20 magnification. This information was then added to an Access database. A summary of the pottery is included in Table 1, with an archive included in Archive Catalogue 1. The pottery ranges in date from the Medieval to the Late Medieval period.

Condition

On the whole the pottery is fairly fresh and in small to medium pieces, except from two sherds from context (149) and (159) which are burnt and overfired. The average sherd weight is 21.25 grams.

Results

Table 1, Summary of the Post Roman Pottery

Cname	Full name	Earliest date	Latest date	NoS	NoV	W(g)
EMHM	Early Medieval Handmade ware	1100	1250	6	4	7
GRIM	Grimston ware	1200	1550	7	6	264
LMU	Local Medieval Unglazed ware (generic)	1200	1450	1	1	57
MISC	Unidentified types	-	-	1	1	8
ST	Stamford Ware	970	1200	1	1	4
Totals				**16**	**13**	**340**

Provenance

The core of material came from dumped deposits (078), (083), (104) and (159). Features [102] and [148] also produced pottery.

Range

Early Medieval

Six sherds of Early Medieval Handmade ware were recovered from context (078), all having remains of soot or a carbonised material adhering to them. A possible sherd of Stamford ware from (181) has a thick greeny glaze.

Medieval or Late/Medieval

Contexts (083), (103), (104) and (159) produced Grimston ware (GRIM), including one sherd impressed with a circular stamp. One body sherd of Local Medieval Unglazed ware (LMU) from (149) is slightly burnt with possible concretions. A miscellaneous sherd (MISC) with a fine shell-tempered fabric came from context (159): although the exact ware type is uncertain it most likely dates from the 13th to 15th centuries.

Potential

This material should be retained and should pose no long term storage problems.

Summary

Pottery dating between the 13th to 15th centuries was of the highest percentage including material from dumped deposits and two features.

CERAMIC BUILDING MATERIAL

By Anne Boyle and Lavinia Green

Introduction

All the material was recorded at archive level in accordance with the guidelines laid out by the ACBMG (2001). A

total of 9 fragments of ceramic building material, weighing 1409 grams was recovered from the site.

Methodology
The material was laid out and viewed in context order. Fragments were counted and weighed within each context. The ceramic building material was examined visually and using x20 magnification. This information was then added to an Access database. An archive list of the ceramic building material is included in Table 2

Condition
The material is in mixed condition and contains fresh and abraded fragments.

Results
Table 2, Ceramic Building Material Archive

Cxt	Cname	Full Name	Fabric	NoF	W (g)	Description	Date
092	PNR	Peg, nib or ridge tile	Gault	1	17	Flat roofer	12th – 15th
092	PNR	Peg, nib or ridge tile	OX/R/OX, medium sandy	1	33	Flat roofer	12th – 15th
092	BRK	Brick	Oxidised, fine-medium sandy	1	194	Abraded	16th – 18th
092	BRK	Brick	Oxidised, fine sandy	1	187	Abraded	16th – 18th
092	BRK	Brick	Oxidised, medium sandy	1	710	Abraded, 50mm depth, 110 mm wide	16th – 18th
107	PNR	Peg, nib or ridge tile	Gault	2	66	Flat roofers	12th – 15th
107	BRK	Brick	Oxidised, fine sandy	1	109	Very abraded, with mortar adhering	16th – 18th
126	FLOOR	Floor tile	Gault	1	93	Highly vitrified, ferrous material fused to the tile	Medieval-post-medieval

Provenance
Brick fragments and PNR tile pieces were retrieved from fill (092) of a linear feature [091] and metalled surface/possible track (107). A single piece of possible floor tile was retrieved from a dumped deposit (126).

Range
Medieval/Late Medieval
Peg, nib or ridge tile fragments were collected from contexts (092) and (107) dating to between the 12th and 15th centuries, all of the tile pieces were fairly fresh compared to the brick fragments. A single floor tile fragment from (126), a deposit containing red and black fired silt fragments, had been subjected to a high temperature. These fragments indicate an industrial process has taken place on the site such as iron smithing.

Post Medieval
Mainly brick fragments were collected from this period from contexts (092) and (107), all of which were abraded.

Potential
There is limited potential for further work. The Post-medieval material is suitable for discard.

Summary
Four Medieval/Late Medieval PNR tile fragments and a possible floor tile fragment were found during the work undertaken at Blubberhouse Creek; the remaining material comprised four post-medieval brick fragments.

FAUNAL REMAINS
By Paul Cope-Faulkner

Introduction
A total of 10 (224g) fragments of animal bone and 19 (295g) of mollusc shell were recovered from stratified contexts.

Provenance
The faunal remains were retrieved from the fill of a hollow (103), a dumped deposit (126), and a ditch fill (127).

Condition
The overall condition of the remains was good to moderate.

Results
Table 3, Fragments Identified to Taxa

Cxt	Taxon	Element	Number	W (g)	Comments
103	cattle	metatarsus	1	93	
	cattle	phalange	1	37	
	large mammal	rib	2	36	
	large mammal	scapula	1	15	
	large mammal	skull	1	7	
126	large mammal	vertebra	1	23	
	large mammal	rib	1	13	
	oyster	shells	3	263	1 has shucking notch; another very burnt at one end
126<2>	fish	-	1	<1	mid sized
	unidentified	unknown	1	<1	
	mussel	shell	12	26	
	tellin	shell	1	1	
127<3>	Mussel	Shell	3	5	

Summary
As a small assemblage the faunal remains are uninformative, other than to say cattle, large mammal (cattle or horse) and fish were evident on the site. The faunal remains should be retained as part of the site archive.

GLASS
By Gary Taylor

Introduction
A single piece of glass weighing 402g was recovered.

Condition
Although naturally fragile the glass is in good condition.

Results
Table 4, Glass Archive

Cxt	Description	NoF	W (g)	Date
139	Pale green Codd bottle, embossed 'EYRE'S BREWERY L^{TD}, KINGS LYNN', together with embossed makers' mark: 'P.WADDINGTON & SONS, MAKERS, MEXBORO'	1	402	Late 19th-early 20th century

Provenance
The glass was recovered from the fill of a former channel of the River Nar. It is trademarked as containing a local King's Lynn product.

Range
A single Codd bottle was found. This is broken at the neck, probably to remove the glass 'marble' stopper. The Codd bottle design was patented in 1872.

Embossed trademarks indicate the bottle contained a product of the Eyre's Brewery of King's Lynn. The Eyre's brewery was founded in 1820, and by 1830 the company was trading as Slagg & Eyre. By 1845 he was trading as Eyre and Chester, but began to trade on his own until his death in 1864 where it became Elijah Eyre & Co. A limited company was registered in June 1896 as Eyre's Brewery Ltd but four years later was sold to Morgans, who continued to use the Eyre's name until 1904 (www.norfolkbottles.com).

Potential
A single bottle was retrieved. Other than providing dating evidence the bottle is of very limited potential and could be discarded.

OTHER FINDS
By Gary Taylor

Introduction
A large quantity of other finds, 146 items weighing a total of 3881g, was recovered.

Condition
Although in generally good condition the other finds are all friable and crumbly.

Results
Table 5, Other Materials

Cxt	Material	Description	NoF	W (g)	Date
083	slag	Iron smithing slag	4	280	
	Ferrous concretion	Ferrous concretion	1	47	
	Fired clay	Fired sandy silty clay, frequent vegetation impressions, 1 with flat surface	5	84	
	Fired clay	Vitrified hearth lining, pale greenish glaze	1	9	
083<1>	slag	Iron smithing slag	3	11	
	slag	Indeterminate slag/vitrified furnace lining	13	95	
	Fired clay	Fired silty clay, some flat surfaces	21	38	
103	slag	Indeterminate slag/vitrified furnace lining	7	45	
	Fired clay	Fired sandy silty clay, rare vegetation impressions, 1 with flat surface	3	40	
	Fired clay	Vitrified hearth lining, 1 with pale greenish glaze	2	12	
107	stone	Building stone, ironstone, roughly squared? mortared	1	515	
111	slag	Vitrified furnace lining/iron smithing slag	5	224	
126	slag	Iron smithing slag	10	438	
	Fired clay	Fired fine sandy silty clay, moderate vegetation impressions, several with flat surfaces	10	233	
	Fired clay	Fired fine sandy silty clay, flat surface with purplish 'salt colour'	1	25	
	Fired clay?	Stained black, 2 ?wattle impressions at approx tight angles	1	34	
126<2>	Fired clay	Fired fine sandy silty clay, occcasional vegetation impressions, several with flat surfaces	17	51	
	Fired clay	Fired fine sandy silty clay, with purplish or off-white 'salt colour', 1 with flat surface	2	3	
127<3>	Fired clay	Fired fine sandy silty clay, several with purplish or greyish 'salt colour', a few flat surfaces	32	136	
149	Fired clay	Hearth base, fired sandy silty clay, frequent vegetation impressions, flat surfaces that are burnt whitish-greenish over pink-orange, up to 110mm thick	7	1561	

Provenance
The other finds were retrieved from dumped deposits (083, 126), the fill of a hollow (103), a metalled surface (107), and ditch fills (111, 127, 149).

Range
All of the other finds appear to be associated with industrial activities. A moderate quantity of iron smithing slag was recovered, in a number of cases associated with vitrified hearth lining. This material indicates the smithing of iron at the site.

A larger amount of fired clay, some of it clearly pieces of hearth lining, was also collected. Some of these have 'salt colours', often associated with briquetage and salt making. However, none of this material is briquetage (T Lane, per comm.) and it is likely that the salt colours derive from the use of naturally salt-bearing estuarine silty clays. It is not clear what these hearths may have been used for.

Potential
The other finds have moderate potential and significance. They indicate industrial processes, including iron

smithing, in the investigation area.

SPOT DATING

The dating in Table 6 is based on the evidence provided by the finds detailed above.

Table 6, Spot dates

Cxt	Date	Comments
078	12th – late 13th century	
083	13th – 15th century	
092	16th – 18th century	
103	13th – 15th century	
104	13th – 15th century	
107	16th – 18th century	
111	undated	
126	Late medieval – early post-medieval	
127	undated	
139	Late 19th-early 20th century	Based on 1 glass
149	13th – 15th century	
159	13th – 15th century	
181	?12th – 13th century	

ABBREVIATIONS

ACBMG	Archaeological Ceramic Building Materials Group
BS	Body sherd
CBM	Ceramic Building Material
CXT	Context
NoF	Number of Fragments
NoS	Number of sherds
NoV	Number of vessels
W (g)	Weight (grams)

REFERENCES

~ 2001, *Draft Minimum Standards for the Recovery, Analysis and Publication of Ceramic Building Material*, third version [internet]. Available from http://www.geocities.com/acbmg1/CBMGDE3.htm

Slowikowski, AM, Nenk, B and Pearce, J, 2001 *Minimum Standards for the Processing, Recording, Analysis and Publication of Post-Roman Ceramics*, Medieval Pottery Research Group Occasional Paper **2**

ARCHIVE CATALOGUES

Archive catalogue 1, Post Roman Pottery

Cxt	Cname	Form	NoS	NoV	W(g)	Part	Dec	Description	Date
078	EMHM	Jar	6	4	7	BS		All sherds have the remains of soot or carbonised material on them	12th to late 13th
083	GRIM	Jug	3	2	174	BS;HANDLE	1 Sherd with a circular stamp and cordon. ribbed and stabbed handle with finger impressions	Patchy green glaze, strap handle	13th to 15th
083	GRIM	Jug/Jar	1	1	10	BS			13th to 15th
103	GRIM	Jug	1	1	5	BS			13th to 15th
104	GRIM	Jug/Jar	1	1	5	BS			13th to 15th
149	LMU	Jar	1	1	57	BS		Slightly burnt with possible concretions	13th to 15th
159	GRIM	Jug	1	1	70	BS		With broken strap handle	13th to 15th
159	MISC	Jug/Jar	1	1	8	BS		Fine shell tempered fabric, burnt and overfired	-
181	ST	Jug/Jar	1	1	4	BS		A/D fabric, thick greeny glaze, ID? Poss import?	12th to 13th

Appendix 4

AN EVALUATION OF THE PLANT MACROFOSSILS AND OTHER REMAINS

By Val Fryer

Introduction and method statement

A watching brief at Blubberhouse Creek was undertaken by Archaeological Project Services as part of an ongoing programme of archaeological investigations. The work recorded a number of features and discrete deposits of possible medieval date. Samples for the evaluation of the content and preservation of the plant macrofossil assemblages were taken from a dumped deposit (context [083]) and from a fill within ditch [134 and 137].

The samples were bulk floated by Archaeological Project Services and the flots were collected in a 300 micron mesh sieve. Although waterlogged macrofossils were present within two assemblages, the remains were dried prior to sorting. The flots were scanned under a binocular microscope at magnifications up to x 16 and the plant macrofossils and other remains noted are listed in Table 1. Nomenclature within the table follows Stace (1997). Both charred and de-watered remains were recorded, with the latter being denoted within the table by a lower case 'w' suffix.

Results

Cereal grains/chaff and seeds of common weeds and wetland/aquatic plants were present at a low to moderate density within all three assemblages. Preservation was reasonably good, although some of the waterlogged remains were crushed and misshapen, probably as a result of the compaction of the deposits. The charred remains were puffed and fragmented, and all appeared to have been burnt at a high temperature.

Individual charred oat (*Avena* sp.) grains were noted within samples 1 and 2, but as neither retained an intact floret base, it was not possible to ascertain whether they were from a cultivated or wild species. Sample 3 contain a charred barley (*Hordeum* sp.) rachis node and two fragments of probable wheat (*Triticum* sp.) rachis.

Weed seeds were more common within the two waterlogged assemblages (samples 2 and 3), but even here the density of material was relatively low. Ruderal weeds and grassland herbs, including thistle (*Cirsium* sp.), wild carrot (*Daucus carota*), cinquefoil (*Potentilla* sp.), buttercup (*Ranunculus* sp.) and nettles (*Urtica* sp.), were predominant, although a small number of segetal weeds (namely corn cockle (*Agrostemma githago*), orache (*Atriplex* sp.) and cornflower (*Centaurea* sp.)) were also recorded. Wetland/aquatic plants were only recorded within the assemblages from samples 2 and 3, with taxa noted including club-rush (*Bolboschoenus/Schoenoplectus* sp.), sedge (*Carex* sp.), rush (*Juncus* sp.), bog bean (*Menyanthes trifoliata*) and water dropwort (*Oenanthe* sp.). Charcoal/charred wood fragments were present throughout, although at a very low density. Waterlogged root/stem fragments were common within the assemblages from samples 2 and 3. Other plant macrofossils were scarce, but did include heather (Ericaceae) florets, moss fronds, wood fragments and charred culm nodes.

The black porous and tarry residues, which were present within all three assemblages, were all very hard and brittle and were probable residues of the combustion of coal. Ferrous fragments, including a small number of spherules indicative of smithing residues, were common or abundant throughout along with concretions of a grey/green silica rich material commonly called fuel ash 'slag'. Waterlogged arthropod remains were noted within the assemblages from samples 2 and 3.

Conclusions

In summary, the few charred remains recorded all appear to have been burnt at a very high temperature. This, along with the presence of ferrous residues and fuel ash 'slag', may indicate that this area of Kings Lynn was either utilised for a limited range of industrial activities during the medieval period, or was used for the deposition of waste products from these industries. Smithing residues do appear to be present, but there is an insufficient density of material (including charcoal/charred wood fragments) to suggest that any large-scale iron working was taking place. Fuel ash 'slag', which is commonly created when silica rich ash is heated to very high temperatures, is often associated with salt production, but there does not appear to be any further evidence for this industry either. The waterlogged macrofossils within samples 2 and 3, which are most likely to be partly

or wholly derived from plants growing in the near vicinity, are indicative of a wet grassland or marsh habitat which probably flooded on a reasonably regular basis. However, it should be noted that such flooding was probably fluvial rather than marine, as halophyte plants are largely absent.

Although the current assemblages are somewhat limited, they clearly illustrate that well-preserved plant macrofossils are present within the archaeological horizon in the Blubberhouse Creek area. The other remains within the assemblages also raise some very interesting questions about how this area was used during the medieval period. Therefore, if further interventions are planned, it is strongly recommended that additional plant macrofossil samples of approximately 20 litres in volume are taken from all well-sealed and dated contexts.

Table 1: Results

Sample No.	**1**	**2**	**3**
Context No.	**083**	**126**	**127**
Feature No.		**137**	**134**
Feature type	**Dump/layer**	**Ditch**	**Ditch**
Cereals			
Avena sp. (grains)	xcf	x	
Hordeum sp. (rachis node)			x
Triticum sp. (rachis node frags.)			x
Cereal indet. (grain)			x
Dry land herbs			
Agrostemma githago L.		xcfw	
Apiaceae indet.		xw	xw
Asteraceae indet.		xw	xw
Atriplex sp.		xcfw	
Centaurea sp.	xcf		
Chenopodiaceae indet.		xw	
Cirsium sp.			xcfw
Daucus carota L.		xw	
Potentilla sp.		xw	
Prunella vulgaris L.		xw	
Ranunculus sp.	xw		
Urtica dioica L.		xw	xw
U. urens L.		xw	xcfw
Wetland/aquatic plants			
Bolboschoenus/Schoenoplectus sp.		xw	x
Carex sp.		xw	x xxw
Eleocharis sp.			xw
Hydrocotyle vulgaris L.		xw	
Juncus sp.		xw	xxxw
Menyanthes trifoliata L.		xw	xw
Oenanthe sp.			xw
O. aquatica (L.)Poiret		xcfw	
O. fistulosa L.		xcfw	
Potamogeton sp.		xw	
Other plant macrofossils			
Charcoal <2mm	x	x	xx
Charcoal >2mm	x		x
Charred root/stem	x	x	x
Waterlogged root/stem		xxxx	xx
Ericaceae indet. (floret)		xw	
Indet.culm nodes		x	x
Indet,moss		xw	
Indet.seeds			xw
Wood frags.<10mm			xw
Wood frags.>10mm		xw	
Molluscs			
Terrestrial species			
Pupilla muscorum	x		
Vallonia sp.	x		x
V. costata	x		

Sample No.	1	2	3
Context No.	**083**	**126**	**127**
Feature No.		**137**	**134**
Feature type	**Dump/layer**	**Ditch**	**Ditch**
Brackish water species			
Hydrobia ulvae	x		x
Other remains			
Black porous 'cokey' material	x		x
Black tarry material	xxx	x	x
Burnt/fired clay		x	
?Faecal material			xcf
Ferrous fragments/globules	xxx	xxx	xx
Fish bone	x		
?Fuel ash 'slag'		xx	x
Small coal frags.	xx		
Vitreous material	x		
Waterlogged arthropod remains		x	x
Sample volume (litres)	**10**	**10**	**10**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**	**100%**

Key to Table

x = 1 – 10 specimens xx = 11 – 50 specimens xxx = 51 – 100 specimens xxxx = 100+ specimens
cf = compare w = waterlogged

Reference

Stace, C, 1997 *New Flora of the British Isles*. Second edition. Cambridge University Press

Appendix 5

GLOSSARY

Alluvium — A deposit (usually clay, silts or sands) laid down in water. Marine alluvium is deposited by the sea and freshwater alluvium by streams, rivers or within lakes.

Briquetage — A term given to fragments of ceramic equipment and hearth/oven remains from the processing of salt.

Context — An archaeological context represents a distinct archaeological event or process. For example, the action of digging a pit creates a context (the cut) as does the process of its subsequent backfill (the fill). Each context encountered during an archaeological investigation is allocated a unique number by the archaeologist and a record sheet detailing the description and interpretations of the context (the context sheet) is created and placed in the site archive. Context numbers are identified within the report text by brackets, *e.g.*(004).

Cut — A cut refers to the physical action of digging a posthole, pit, ditch, foundation trench, *etc*. Once the fills of these features are removed during an archaeological investigation the original 'cut' is therefore exposed and subsequently recorded.

Dumped deposits — These are deposits, often laid down intentionally, that raise a land surface. They may be the result of casual waste disposal or may be deliberate attempts to raise the ground surface.

Fill — Once a feature has been dug it begins to silt up (either slowly or rapidly) or it can be back-filled manually. The soil(s) which become contained by the 'cut' are referred to as its fill(s).

Iron Age — A period characterised by the introduction of Iron into the country for tools, between 800 BC and AD 50.

Layer — A layer is a term to describe an accumulation of soil or other material that is not contained within a cut.

Medieval — The Middle Ages, dating from approximately AD 1066-1500.

Natural — Undisturbed deposit(s) of soil or rock which have accumulated without the influence of human activity.

Post-medieval — The period following the Middle Ages, dating from approximately AD 1500-1800.

Prehistoric — The period of human history prior to the introduction of writing. In Britain the prehistoric period lasts from the first evidence of human occupation about 500,000 BC, until the Roman invasion in the middle of the 1st century AD.

Saltern — Salt producing site typified by ash, derived from fuel needed to evaporate sea water, and briquetage.

Appendix 6

THE ARCHIVE

The archive consists of:

144	Context sheets
6	Photographic record sheet
1	Section record sheet
1	Plan record sheet
40	Daily record sheets
18	Sheets of scale drawings
1	Box of finds
1	Stratigraphic matrix

All primary records and finds are currently kept at:

Archaeological Project Services
The Old School
Cameron Street
Heckington
Sleaford
Lincolnshire
NG34 9RW

The ultimate destination of the project archive is:

Norfolk Museums Service
Union House
Gressenhall
Dereham
Norfolk
NR20 4DR

The archive will be deposited in accordance with the document titled *County Standards for Field Archaeology in Norfolk*, produced by Norfolk Landscape Archaeology.

Norwich Castle Museum Accession Number: 2010.316

The discussion and comments provided in this report are based on the archaeology revealed during the site investigations. Other archaeological finds and features may exist on the development site but away from the areas exposed during the course of this fieldwork. *Archaeological Project Services* cannot confirm that those areas unexposed are free from archaeology nor that any archaeology present there is of a similar character to that revealed during the current investigation.