Lynnsport 1: Land South of Aconite Road, King's Lynn, Norfolk

Archaeological Evaluation Report

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Lynnsport 1: Land South of Aconite Road, King's Lynn, Norfolk

Archaeological Evaluation Report

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Contents

List of Figures

List of Plates

List of Tables

Summary

Oxford Archaeology (OA) East carried out an archaeological evaluation between 8th and 14th May 2018 at Lynnsport 1: Land South of Aconite Road, King's Lynn, Norfolk, PE30 3PJ. This work was commissioned by Lovell Partnerships Ltd. The site comprised 3.61ha of undeveloped land, within the urban reach of King's Lynn, proposed for residential redevelopment.

The current site constitutes the fourth (and final) evaluated area within a wider scope of works (Lynnsport 1, 3-5) scheduled to be investigated by OA East. These works lie in a significant area of industrial archaeological remains relating to later Saxon and medieval salt-making.

Norfolk Heritage Environment Record (NHER) data along with topographical survey indicated that the remains of two saltern mounds, resulting from salt-making activities (NHER 13785 and 27895), wholly lie within the bounds of the proposed development. The evaluation confirmed the presence of saltern NHER 13785 (Saltern 12). However, the trench and test pit excavated within the footprint of saltern NHER 2795 only encountered a recent build-up of made ground overlying the natural tidal flat deposits. In addition, salt-making features and deposits comprising two further saltern mounds (Salterns 10 and 11) were identified, located wholly within the development area. As well as revealing waste deposits from the salt-making process constituting the mounds, the evaluation also uncovered *in-situ* remains of clay-lined tanks within Saltern 10 and a pit within Saltern 11. These remains are typical of the known later Saxon and medieval salt-making evidence previously excavated in the area by OA East.

The evaluation also investigated the modern drainage channel traversing the western part of the site that was found, upon inspection of historical records, to have followed the course of a pre-existing plot boundary/land division. However, it is possible an earlier cut of this ditch alignment may potentially follow the course of a former creek related to the saltworking.

Two extensive areas of recent truncation of the underlying natural deposits were identified in the northern and southeastern parts of the site, with associated backfilling with recent material.

Acknowledgements

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The project was managed for Oxford Archaeology by Matthew Brudenell. The fieldwork was directed by Katherine Blackbourn and Graeme Clarke, who were supported by Andrej Zanko and Edmund Cole. Survey was carried out by Sarita Louzolo and the illustrations were produced by Séverine Bézie. Thank-you to the teams of OA staff that cleaned and packaged the finds under the management of Natasha Dodwell, processed the environmental remains under the management of Rachel Fosberry, and prepared the archive under the management of Katherine Hamilton.

1 INTRODUCTION

1.1 Scope of work

1.1.1 Oxford Archaeology (OA) was commissioned by Lovell Partnerships Ltd to undertake a trial trench evaluation at the site of Lynnsport 1: Land South of Aconite Road, King's Lynn, Norfolk, PE30 3PJ (TF 63371 21278; Fig. 1); an area of known later Saxon and medieval salt-working.

1.1.2 The work was undertaken as a condition of Planning Permission (planning ref. 16/02227/FM) to inform the Planning Authority in advance of a submission of a Planning Application. A Written Scheme of Investigation (WSI) was prepared by OA East (and approved by Norfolk County Council/Heritage Environment Service (NCC/HES)) detailing the programme of work required on the site (Brudenell 2016). This document outlines how OA implemented the specified requirements.

1.2 Location, topography and geology

1.2.1 The site is located within the urban reach of King's Lynn, *c*. 2km east of the River Great Ouse (Fig. 1). The site covers 3.61ha on a flat area of ground at approximately 3m OD. The site is bounded by the Bawsey Drain to the south and east (with recreational fields beyond), a minor drain to the north (with residential development on Aconite Road beyond), and Greenpark Road to the west.

1.2.2 The underlying geology of the site comprises Jurassic Kimmeridge Clay Formation mudstone overlain by layers of clay and silt, which were deposited by tidal action during the Quaternary period. British Geological Survey borehole data from the site (TF 62900 20900 and TF 63060 20890) revealed a typical Flandrian sequence of deposits, with an amorphous peat horizon (1.60/1.88m-3.10/3.35m below the ground surface) overlain by saltmarsh deposits of brown fine-grained silts and sands of the Terrington Beds.

1.2.3 The investigations carried out by OA East in 2018 on the nearby Lynnsport 3 development (to the southwest; Fig. 2) revealed natural saltmarsh deposits at a height of between 1.57-2m OD (Clarke 2018b).

1.3 Archaeological and historical background

1.3.1 The following sections summarise the data obtained from the Norfolk Historic Environment Record (NHER; Fig. 2) for the WSI (Brudenell 2016), and the results of the previous phases of archaeological investigations on Lynnsport 3 (Clarke 2018b; ENF 138254) and Lynnsport 4 and 5 (Clarke 2017a-b; ENF 139746 and ENF141949) to the southwest of the site.

1.3.2 Although the surrounding landscape provides evidence of prehistoric and Roman activity in the vicinity of the site (with stray finds of a Roman coin, c.350m to the northeast (NHER 11990), and a Late Neolithic/Early Bronze Age arrowhead c.380m to the southwest (NHER 5494)), much of this area was unsuitable for occupation during the later prehistoric and Romano-British periods, with any earlier traces of activity sealed beneath thick marine and freshwater Flandrian deposits (the arrowhead was

recovered from a drain cutting these deposits). Whilst not discounting the importance of these deposits, and the potential buried prehistoric land surfaces/shore-lines they protect, the immediate archaeological significance of the area falls largely within the Anglo-Saxon, medieval and post-medieval periods when the area was a saltmarsh environment.

1.3.3 Of particular significance are the traces of a former salt-making industry that flourished between the Anglo-Saxon and post-medieval periods around the Wash coastline. The remains of this industry are primarily revealed in the form of saltern mounds, some of which still survive as earthworks, or are visible as pale oval or floriform soilmarks. The mounds, which can be up to 200m across, were formed by the piling up of waste sand from salt filtration in the 'sand washing' or 'sleeching' process of salt extraction.

1.3.4 An extensive swathe of saltern mounds is recorded around North Lynn, first identified by the National Mapping Programme (NMP) survey (Albone *et al.* 2007, 116). These not only reflect the importance of the salt industry, but the location and progressive land reclamation along the Anglo-Saxon and medieval coast line. Until recently, most of the saltern mounds were thought to be medieval or later in origin, particularly the western examples towards the current line of the Great Ouse. However, radiocarbon dating from the recent Lynnsport 4 and 5 excavations to the southwest of the site have revealed that some of the mounds in this area have a Middle Saxon origin, pushing the date of the salt industry in this landscape back by several hundred years (Clarke 2017a-b; Fig. 2, ENF139746 and ENF141949). Mid to Late Saxon radiocarbon dates were also achieved for a saltern excavated at Marsh Lane, *c*. 250m to the north (Fig. 2, NHER 27899; Clarke and Clarke forthcoming; Clarke 2016), demonstrating that this was not a one-off, but evidence of a developed Anglo-Saxon saltworking landscape.

1.3.5 Clay-lined pits, filtration units and brine boiling hearths of various forms were found at both these sites, with differences in the size and shape of these features possibly indicating changes in manner and scale of production over time.

1.3.6 A sense of the extent of this industry is revealed by the fact that most records in the NHER recorded within a 500m radius of the site, relate to saltern mounds or salt-making activity (e.g. NHER 5524, 27886, 27893-6, 27899-902, 27906-912 and 38265). Saltern mounds are recorded on the north, west and south of the site. More significantly, two saltern mounds have been mapped on the site itself. The largest lies in the north (NHER 27895) and is recorded from 1947 RAF vertical aerial photographs. The low mound is described as sub-rounded in plan with a maximum diameter of 80m. Immediately north is a course of a former salt marsh channel (possibly an earlier course of the Gaywood River, see NHER 28800), the line of which is preserved in the shape of the site's meandering northern perimeter boundary. Along the north-eastern edge of the site, this channel skirts the second smaller saltern mound, described as being 40m in diameter (NHER 13785). The channel itself is/was banked, though this may have been destroyed (NHER 13785).

1.3.7 The salt-making industry declined during the post-medieval period, however, several of the saltern mounds were put to other uses during this time, some being incorporated into the King's Lynn siege defences during the Civil War (e.g. NHER 13785,

not illustrated). It has been suggested that the bank associated with the salt marsh channel could represent an unfinished siegework (part of a bastion) dating to 1643 when the River Gaywood was fortified. However, this is unlikely as the feature is 1.1km from the Lynn town wall, which is beyond the effective range of mid-17th century cannon (NHER 13785).

1.3.8 The subsequent drainage of the Fens during the 17th century exposed a large area of land in the environs of the site and made it available for cultivation and extended permanent grazing pastures. Remnant ridge and furrow or 'lazybedding' agricultural features are recorded to the southeast of the site (NHER 2789-1), with further examples further south (NHER 27865). Earthworks of possible medieval banks, ditches and drains in the area also attest to the process of land reclamation which made the area habitable (e.g. NHER13785 and 27891).

1.3.9 The Inclosure award map of 1810 (Fig. 3) shows the site as parcels of open farmland, traversed in the southwestern corner by the historical routeway of *Salters Lode* (Norfolk Records Office (NRO) BL14-41). This routeway is also indicated to have been named *Bullcote Waie* on a reproduction of a map of 1488 (NRO BL55-1). Part of the boundary for one of these plots of land corresponds with the course of the broadly north-south aligned drainage ditch traversing the western part of the site (Fig. 5).

1.3.10 The south-eastern part of the site was crossed by the route of the Midland and Great Northern Joint Railway, opened in 1864 and dismantled in 1886 (NHER 13581). This joined the King's Lynn to Hunstanton Branch line at the Gaywood Junction, to the southwest of the site, crossing the Bawsey Drain near the southeast corner of the current all weather sports pitch (the concrete support of the crossing still being present in the drain). The 1884 OS map of the area shows the route of the railway and the banked salt marsh channel at the north of the site. It also shows a road/track crossing the southwest corner of the site, corresponding to *Salters Lode/Bullcote Waie*, and a second drain running approximately north-south toward the western end of the site, corresponding to the pre-existing plot boundary described above.

1.3.11 The OS series maps from 1927- 1951 shows the site largely covered in trees, with the line of the dismantled railway marked. The course of the railway, road/track and drains traversing the site are also shown on a 1946 aerial photograph of the site (Plate 1). On the 1951 map, overhead power lines are shown along the line of the former railway. By 1974 the track that was once marked in the southwest corner of the site is now labelled a drain, and this is no longer present on the 1990 map. Lynnsport was opened in 1982, and the current site layout with the all weather sports pitch was established in the 1990s.

2 EVALUATION AIMS AND METHODOLOGY

2.1 Aims

2.1.1 The project aims and objectives defined in the Written Scheme of Investigation (WSI; (Brudenell 2015) are as follows:

i. provide sufficient coverage and exposure to enable excavation to establish the approximate form, date and purpose of any archaeological deposits, together with extent, localised depth and quality of preservation. It will also examine the deeper, Flandrian sequence of deposits at the site;
ii. provide sufficient coverage and exposure to evaluate the likely impact of past land uses, and the possible presence of masking deposits;
iii. provide sufficient coverage and exposure to provide information to construct an appropriate archaeological conservation/mitigation strategy, dealing with preservation, the recording of archaeological deposits, working practices, timetables and order of cost; and
iv. set results in the local, regional, and national archaeological context.

Research frameworks

2.1.2 More broadly, the site investigation takes place within, and will contribute to the goals of Regional Research Frameworks relevant to this area.

• Research and Archaeology: A Framework for the Eastern counties: 2. Research Agenda and Strategy (Brown & Glazebrook 2000, East Anglian Archaeology Occasional Papers 8):

2.1.3 *'*(p27) *From the Middle Anglo-Saxon period onwards there is evidence of both urban and rural craft production and industry. Is there a relationship between the two? To what extent was urban production city-serving and rural production largely conducted by itinerant craftsmen?'*

2.1.4 *'*(p31) *The rich material culture of towns, often present in dense quantities, must continue to be assessed and the results analysed and synthesised in order to increase understanding of the economic foundations of towns. Research work must target: evidence for commercial and industrial activity; definition, specialisation, marketing and distribution of products; linkages between social and political development and economic activity; and communications between towns and with the hinterland*.'

2.1.5 *'*(p31) *Industrial output, either from craft industries or early modern large-scale processes, will affect the urban environment. The impact of the economy can therefore be explored by: examination of evidence for industrial zoning; study of the relationship of industrial and commercial sites to distribution routes; and correlation of evidence for status with product specialisation and output*.'

2.1.6 *'*(p31) *Within urban culture, as in the rural hinterland, the church with its organisation, its role in society and its economic power deserves special attention. The following areas of research need to be amplified:..... the economic influence of the church.'*

• Research and Archaeology Revisited: A Revised Framework for the East of England (Medlycott 2011, East Anglian Archaeology Occasional Papers 24):

2.1.7 '(p67) *The Norfolk Coast and Broads NMP projects recorded large numbers of saltern mounds within The Wash and, to a lesser extent, around Breydon Water and the former Great Estuary (Albone et al. 2007). This has made a significant contribution to the study of this important medieval industry, and represents the first comprehensive identification and analysis of such sites within the county. The recognition of evidence for the possible Late Saxon origins of some of the saltern mounds provides further evidence for the early development of this form of salt-making (i.e sand washing).*'

2.2 Methodology

2.2.1 In accordance with the WSI (Brudenell 2016) a total of 460m of linear trenching was excavated (Trenches 1-10), representing a 2.5% sample of the 3.61ha proposed development area. Four trenches (Trenches 1, 4, 7 and 8) were 40m long by 2m wide, five trenches (Trench 2, 3, 5, 6 and 9) were 50m long by 2m wide and one trench (Trench 10) was 25m long by 2m wide.

2.2.2 During the excavation an additional trench (Trench 11), was placed across the extant drain traversing the western part of the site, to determine its antiquity and original dimensions. Test Pits 1 and 2 were also excavated into low earthworks along the northern boundary of the site that may represent possible further salt-making sites (mounds).

2.2.3 Machine excavation was carried out under constant archaeological supervision with a 360º mechanical excavator using a 2m-wide toothless ditching bucket.

2.2.4 The site survey was carried out using a Leica GPS GS08 with SmartNET.

2.2.5 Spoil, exposed surfaces and features were scanned with a metal detector, however no metalwork was recovered from the evaluation.

2.2.6 All archaeological features and deposits were recorded using OA's pro-forma sheets. Trench locations, plans and sections were recorded at appropriate scales and digital SLR photographs were taken of all relevant features and deposits.

2.2.7 A total of 18 bulk samples were taken from the excavated deposits. These each totalled 10-20L and were processed by flotation at OA's environmental processing facility at Bourn.

2.2.8 Site conditions were good, with rain at times.

3 RESULTS

3.1 Introduction and presentation of results

3.1.1 Descriptions of the ground conditions encountered, features identified and artefacts recovered are presented below and described numerically by trench. As described above, this site forms part of a wider context of research into the salt-making landscape of Gaywood currently being undertaken for the Lynnsport development by OA East (Brudenell and Clarke 2017). Salterns 1-4 were identified during an earlier phase of excavations at the Lynnsport 4 and 5 developments (Clarke 2017a-b; Fig. 2, ENF139746 and ENF141949). These wider investigations also encompass Salterns 5-8 identified by OA East on the neighbouring school development at Greenpark Avenue to the west (Clarke 2018a; Fig. 2, ENF143325). Saltern 9 was identified during the excavation at the Lynnsport 3 development (Clarke 2018b; Fig. 2; ENF 138254). Consequently, the salt-making deposits encountered on this site are described numerically as Salterns 10-12, with Salterns 1-9 lying wholly outside the current investigation area. Further context descriptions with dimensions are given in Appendix A, Table 2. Reports on the finds and environmental remains recovered from the site are presented in Appendices B and C respectively.

3.1.2 Figure 2 shows the location of the site in relation to the Norfolk Heritage Environment Records (NHER) for the area and other Lynnsport sites. Figure 4 presents the topographical model of the site resulting from the earthwork survey carried out by drone prior to the trenching works. Figure 5 provides an overall plan of the results of the evaluation and Figures 6-8 provide a more detailed plan of the salt-making deposits encountered within each trench. Selected sections of features are given in Figure 9, with locations shown on Figs 5-8.

3.2 General soils and ground conditions

3.2.1 The underlying natural deposits (350) were found to be consistent with the descriptions given for natural saltmarsh deposits indicated on the BGS website (Section 1.2.2).

3.2.2 The overlying soil sequence within all trenches was fairly uniform. The natural geology was overlain by post-medieval subsoil 351 (Fig. 9, Section 126) which in turn was overlain by topsoil/ploughsoil (352).

Deposit model for the site

3.2.3 The deposits revealed during the borehole and trenching investigations have been grouped into 11 units, described stratigraphically below:

- **Group 350**: Natural tidal flat deposits underlying the saltern mounds;
- **Group 351**: Subsoil;
- **Group 352**: Topsoil;
- **Group 353**: Modern truncation of the pre-existing land surface across the northern part of the site, encompassing Trenches 1-3, and the western part of Trench 6;

- **Group 354**: Made ground overlying the truncation of the pre-existing land surface observed in the northern part of the site, encompassing Trenches 1-3, and the western part of Trench 6;
- **Group 355**: Saltern 10, salt-making deposits;
- **Group 356**: Saltern 11, salt-making deposits;
- **Group 357**: Saltern 12, salt-making deposits;
- **Group 358**: Modern truncation of the pre-existing land surface across the southeastern part of the site, encompassing Trench 9;
- **Group 359**: Made ground overlying the truncation of the pre-existing land surface observed in the southeastern part of the site, encompassing Trench 9;
- **Group 401**: Made ground making up the raised earthwork extending across the northwestern corner of the site, in the vicinity of Test Pit 1; and
- **Group 402**: Made ground making up the raised earthwork extending across the northern boundary of the site, in the vicinity of Test Pit 2.

3.2.4 Ground conditions throughout the evaluation were generally dry, with only localised flooding of the lower-lying parts of trenches. Archaeological features, where present, were easy to identify against the underlying natural geology.

3.3 General distribution of archaeological deposits

3.3.1 Figure 5 provides an overall plan of the results of the investigation. The topographical survey of the site (Fig. 4) along with NHER data indicated that the remains of two saltern mounds (including NHER 13785 and 27895) lay within the bounds of the proposed development. The evaluation confirmed the presence of NHER 13785 (Saltern 12, Trench 10) but the absence of any remains relating to NHER 27895. In addition, the evaluation revealed the remains of two further saltern mounds in Trenches 7/11 and 8 (Salterns 10 and 11 respectively).

3.3.2 These mounds comprised deposits derived from silt filtration and brine boiling techniques considered to be diagnostic of the salt-making tradition of the later Saxon and medieval periods. Notably, the northern ends of both Trenches 7 and 8 and the northwestern end of Trench 10 (Salterns 10-12 respectively) contained concentrations of burnt hearth waste material resulting from brine boiling that produced fragments of fired clay, fuel ash slag and charcoal. The remains of clay-lined water tanks indicative of silt filtration activity were also revealed in Trenches 7 and 8 (Salterns 10 and 11 respectively). One of the hearth waste deposits comprising Saltern 12 produced an undiagnostic body sherd of medieval pottery dated to *c*.AD 1050-1400. A moderately abraded Thetford type ware sherd (dated to *c*.AD 1050-1200) was also recovered from the topsoil overlying Saltern 12.

3.3.3 The extant ditch (**394**) traversing the western part of the site, on a north-south orientation, was excavated by machine in Trench 11. Two sherds of early modern pottery were recovered from this feature, which represents a division for the plots of open land shown on historical maps dating from 1810 (see Section 1.3.9). This feature

appeared to be a re-cut of a more substantial ditch (**390**) of greater antiquity that did not produce any datable artefacts.

3.3.4 In addition to these remains, two substantial areas of modern truncation were identified that encompassed the areas of Trenches 1-3, and the western part of Trench 6 (**353**) and Trench 9 (**358**). Furthermore, the site of a possible further saltern mound identified in the northwestern corner of the site proved to be composed of recent made ground (Test Pit 1). The slight rise in topography along the northern boundary of the site corresponding to the purported site of saltern mound NHER 27895 was similarly found to comprise a recent build-up of made ground (Test Pit 2).

3.4 Borehole results

3.4.1 Three boreholes were drilled by OA East (WS15-18; Fig. 5) using a hand-augur into Salterns 10-12 respectively to determine the extent of the salt-making deposits comprising these mounds.

3.4.2 Borehole WS15 was drilled in Trench 7 at a height of 3.58m OD.

- 0-0.38m below ground level (bgl): made ground/dumped topsoil (Group 352)
- 0.38-0.65m bgl: topsoil (Group 352)
- 0.66-1.11m bgl: mid brown filtration waste silts (Group 355)
- 1.11-1.45m bgl: fill of water tank **365** (Group 355)
- 1.45-1.65m bgl: mid brown filtration waste silts (Group 355)

  1.65-1.67m bgl: dark grey organic silt (Group 355)
- 1.67m+ bgl: natural mud flat deposits (Group 350)

3.4.3 Borehole WS16 was drilled in Trench 8 at a height of 3.48m OD.

- 0-0.3m bgl: topsoil (Group 352)
- 0.3-0.62m bgl: mid brown silts with modern rooting (Group 351)
- 0.62-0.91m bgl: vertical bands of dark grey/pale grey hearth waste and peat ash (Group 356)
- 0.91-1.21m bgl: mid brown waste silt (Group 356)
- 1.21m+ bgl: natural marine sand deposits (Group 350)

3.4.4 Borehole WS17 was drilled in Trench 10 at a height of 3.96m OD.

- 0-0.3m bgl: made ground/dumped clay and topsoil (Group 352)
- 0.3-0.62m bgl: topsoil (Group 352)
- 0.62-0.79m bgl: dark rooted subsoil mixed with mid brown filtration waste silts (Group 351)
- 0.79-1.13m bgl: mid brown filtration waste silts (Group 357)
- 1.13-1.19m bgl: dark grey sandy filtration waste silts (Group 357)
- 1.19-1.37m bgl: mid brown filtration waste silts (Group 357)

- 1.37-1.55m bgl: dark grey sandy filtration waste silts (Group 357)
- 1.55-1.63m bgl: mid brown filtration waste silts (Group 357)
- 1.63-1.67m bgl: dark grey filtration waste silts (Group 357)
- 1.67m+ bgl: natural marine sand deposits (Group 350)

3.5 Trench results

3.5.1 A total of 11 trenches and two test pits were excavated on the site (Trenches 1-11, Test Pits 1-2; Fig. 5; Table 1). Subsoil was only observed underlying the topsoil in Trench 10, up to 0.17m thick. Trench 10 was shortened to 22m in length due to obstruction by dense undergrowth overlying Saltern 10. Trench 11 was extended westwards from Trench 7 to investigate the extant drainage ditch **390**/**394**. Trench 5 was devoid of archaeological features and found to be located over the natural marine/tidal flat deposits of Group 350.

Trench/Test Pit number	Length (m)	Average topsoil depth (m)	Archaeological summary	Finds
Tr.1	40	0.3	Modern truncation **353** overlain by made ground 354.	(354) **353** modern refuse (not retained)
Tr.2	50	0.25	Modern truncation **353** overlain by made ground 354.	(354) **353** modern refuse (not retained)
Tr.3	50	0.15	Modern truncation **353** overlain by made ground 354.	(354) **353** modern refuse (not retained)
Tr.4	40	0.5	Thin burnt deposit 360.	(360) fuel ash slag fragments
Tr.5	50	0.3	No archaeology	None
Tr.6	50	0.3	Modern truncation **353** overlain by made ground 354.	(354) **353** modern refuse (not retained)
Tr.7	40	0.2	Later Saxon/early medieval Saltern 10 (deposits 355, 361-64). Clay-lined water tanks **365**, **368** and **374**. Modern ditch **371**	(361 & 363) fuel ash slag fragments; (361 & 363), (367) **365** fired/burnt clay fragments including fired clay object/brick?/support?
Tr.8	50	0.15	Later Saxon/early medieval Saltern 11 (deposits 356, 376-378 and 386). Pit **379**.	(376, 378 & 386) fuel ash slag fragments; (378) fired/burnt clay fragments (377 & 386) large mammal bone fragments

Trench/Test Pit number	Length (m)	Average topsoil depth (m)	Archaeological summary	Finds
				(385) **379** edible mussel shell fragment
Tr.9	50	0.2	Modern truncation **358** overlain by made ground 359.	(359) modern refuse (not retained)
Tr.10	40	0.2	Later Saxon/early medieval Saltern 12 (deposits 357, 387, 388, 397 and 398). Buried old topsoil (400).	(352, topsoil) Thetford-type pottery (*c*.AD 1050-1200); (357) fired/burnt clay fragments and frog bone; (387) medieval pottery (*c*.AD 1050-1400) and cockle shell
Tr.11	8	0.3	Possible tidal creek/channel **390** cut by post-medieval/modern drainage ditch **394**.	(396) **394** early modern pottery
TP.1	3.5	-	Earthwork composed of recent made ground (401)	(401) modern refuse (not retained)
TP.2	3.5	0.3	Earthwork composed of recent made ground (402)	(402) modern refuse (not retained)

Table 1: Summary trench descriptions

Trenches 1-3 (Fig. 5)

3.5.2 In the northern part of the site, Trenches 1-3 revealed recent truncation (**353**) of the pre-existing land surface and underlying natural deposits. The truncation was observed to reach depths of greater than 1m below ground level. The truncation level was overlain by layers of modern material (354) that contained fragments of concrete, plastic, metal and textile. This zone of truncation was observed to extend southwards to encompass the western part of Trench 6.

Trench 4 (Fig. 5)

3.5.3 To the east of Trenches 1-3, a very thin layer (0.05m thick) of red soil (360) was revealed in section at the southern end on Trench 4. It contained a small fragment (6g) of fuel ash slag and sparse charcoal. This burnt horizon lay between the overlying topsoil (352) and underlying natural tidal flat deposits (350).

Trench 6 (Fig. 5)

3.5.4 In the central part of the site, Trench 6 revealed the southern continuation of recent truncation of the pre-existing land surface and underlying natural deposits seen in Trenches 1-3 (**353**). The truncation, that extended across the western part of the trench, was observed to reach depths of greater than 1m below ground level. The truncation level was similarly overlain by layers of modern material that contained

fragments of concrete, plastic, metal and textile (354). The eastern part of the trench was underlain by natural tidal flat deposits (350).

Trench 7 (Fig. 6)

3.5.5 In the southwestern corner of the site, a mound of salt-making remains was uncovered that extended across the entire extent of Trench 7 (Saltern 10). Deposits of soft light yellowish brown sandy silt (355, 362 and 364) representing the build-up of discarded filtration waste extended across the majority of the trench. Two thinner bands of soft mid grey/dark brownish grey sandy silt (361 and 363) were also observed that probably represent tips of discarded brine-boiling hearth waste material. Both these burnt deposits contained small fragments of fuel ash slag (totalling 14g). Fragments of fired/burnt clay with vegetation impressions (80g) were also recovered from the burnt deposits with some fragments displaying curved surfaces suggesting these pieces may have formed part of a fired clay object. These burnt deposits and slag clearly indicate brine-boiling activity was being undertaken upon the saltern in the near vicinity. The fired/burnt clay artefacts probably originated from a broken-up (disused) brine boiling hearth. In addition, hearth waste deposit 361 produced charcoal, including charred stems that may be suitable for species identification and radiocarbon dating.

3.5.6 Towards the northern end of the trench, the remains of a sub-circular clay-lined pit (**365**) was observed to cut mound deposit 364 at a height of 3.45m OD (Plate 2). It measured up to 1.86m in length by 1.05m wide by 0.15m deep (Fig. 9, Section 122). The cut was lined with bluish grey clay (366) up to 0.1m thick. The backfill (367) consisted of soft mid yellowish brown sandy silt with charcoal inclusions and a fragment (6g) of fired/burnt clay.

3.5.7 To the north of pit **365** lay a further sub-circular clay-lined pit (**368**) that measured up to 1m in diameter. Although not excavated, the backfill, which consisted of mid reddish brown sandy silt (370), was observed to contain fragments of fired clay and charcoal.

3.5.8 To the south of pit **365**, lay a further heavily truncated sub-square pit (**374**), with only the basal clay-lining (375) present within the cut (Plate 3). This shallow feature measured up to 0.65m in diameter and 0.18m deep (Fig. 9, Section 121). The pit was truncated by ditch **371**, on a southwest-northeast alignment, that measured 0.77m wide and 0.08m deep (Fig. 9, Section 120). The fill (372) consisted of soft mid yellowish brown sandy silt.

3.5.9 None of these salt-making features or deposits produced any datable artefacts.

3.5.10 This mound of salt-making deposits was found to be overlain by a layer of made ground (373) that contained fragments of concrete, plastic, metal and textile.

Trench 8 (Fig. 7)

3.5.11 To the east of Trench 7, Trench 8 uncovered a further mound of deposits (Saltern 11) that consisted mostly of the build-up of mid yellowish brown waste filtration sandy silts (356 and 377). As described for the deposits encountered in Trench 7, these deposits are likely to be derived from silt filtration activity. Only a single fragment (1g) of large mammal bone was recovered from deposit 377. These deposits extended across the northern part of the trench with the southern part underlain by natural marine silts. Thick tips of burnt dark reddish brown/brownish grey sandy silt

representative of hearth waste material (376, 378 and 386; Fig. 9, Section 126) contained inclusions of fuel ash slag (totalling 15g), fired/burnt clay (18g) and charcoal (Plate 5). Layer 386 also produced three fragments (7g) of large mammal bone of which two are possibly debitage from bone working (Fig. 9, Section 126). The burnt deposits along with the slag and clay artefacts clearly indicate brine-boiling activity was being undertaken upon the saltern in the near vicinity.

3.5.12 Hearth waste deposit 378 was found to be truncated by a sub-circular pit (**379**) up to 0.8m in diameter and 0.3m deep (Plate 4). The cut, with no apparent clay-lining, contained a total of six backfills (Fig. 9, Section 123). Layers of light greyish/brownish yellow sandy silt (380, 382 and 384) were separated by thin lenses of mid grey sandy silt (381, 383 and 385) with charcoal inclusions. Fill 385 produced a fragment (2g) of edible mussel shell. Fill 384 contained foraminifera that suggests the yellow sandy silt deposits may originate from waste filtration silts whereas fill 385 contained charcoal and charred seeds of common dogwood and may therefore represent (along with the other grey sandy silt fills) the disposal of hearth waste material.

3.5.13 None of these salt-making features or deposits produced any datable artefacts. These deposits were overlain successively by 0.32m of brown sandy silt subsoil and topsoil up to 0.3m thick.

Trench 9 (Fig. 5)

3.5.14 In the southeastern part of the site, Trench 9 revealed a further area of recent truncation (**358**) of the pre-existing land surface and underlying natural deposits. The truncation was observed to reach depths of greater than 1m below ground level. The truncation level was overlain by layers of modern material (359) that contained fragments of concrete, plastic, metal and textile.

Trench 10 (Fig. 8)

3.5.15 To the northeast of Trench 9, Trench 10 revealed a mound of deposits (Saltern 12) that mostly comprised layers of loose light yellowish brown sandy silt (357, 397 and 398; Fig. 9, Sections 124-5). This deposit, similar to that revealed in Trenches 7 and 8, is a likely by-product of the filtration of salt-encrusted silts as part of the salt-making process. Unusually, filtration waste deposit 357 contained charred plant remains and charcoal. Deposit 357 also produced an assemblage (245g) of fired/burnt clay with some pieces displaying withy impressions. These structural pieces probably originate from the broken-up brine-boiling hearth. A single frog bone (1g) was also recovered from this deposit. Two thick tips of burnt dark reddish brown sandy silt representative of hearth waste material (387 and 388) were also observed (Plate 6) that contained inclusions of fired clay and charcoal along with a single cockle shell (3g). Deposit 387 was found to be rich in charcoal content. This deposit also yielded a single undiagnostic body sherd (3g) of medieval pottery (*c*.AD 1050-1400). The burnt deposits are indicative of brine-boiling activity in the near vicinity. This mound of salt-making deposits was found to be successively overlain by deposits of buried topsoil (400), modern made ground material (399) and topsoil (Fig. 9, Section 127). The topsoil (352) contained a single moderately abraded sherd (12g) of Thetford-type ware pottery (*c*.AD 1050-1200).

Trench 11 (Fig. 6)

3.5.16 Immediately to the west of Trench 7 and the salt-making deposit comprising Saltern 10 lay a ditch (**390**) that measured at least 1.4m wide and 0.6m deep with a U-shaped profile. The fill (391) consisted of firm light greyish/yellowish brown silty clay. The ditch appeared to be overlain successively by layers of light and mid yellowish brown clayey silt (392 and 393), each layer up to 0.2m thick. This ditch was found to have been truncated by an extant drainage ditch (**394**), broadly on a north-south alignment, that measured 5m wide and 0.75m deep, with a U-shaped profile (Fig. 9, Section 128). This ditch corresponds to the alignment of a pre-existing land division shown on a historical map (Section 1.3.9; Fig. 3). The fills (395 and 396) similarly consisted of soft mid greyish brown/dark brownish grey clayey silt. Fill 396 produced two sherds (44g) of early modern pottery dated from between the 17th-19th century.

Test Pit 1 (Fig. 5)

3.5.17 In the northwestern corner of the site, Test Pit 1 was placed over a low earthwork that extended across this part of the site. The trench revealed the earthwork to be a build-up of recent made ground (401), up to 1m thick, that contained fragments of concrete, plastic, metal and textile.

Test Pit 2 (Fig. 5)

3.5.18 To the east of Trench 4, Test Pit 2 was placed over a broad area of what appeared to an extensive build-up of made ground along the northern boundary of the site. The trench revealed a build-up of recent made ground (402), up to 1m thick, that contained fragments of concrete, plastic, metal and textile.

3.6 Finds summary

Slag and fuel by-products (Appendix B.1)

3.6.1 Fifteen fragments of fuel ash slag (0.035kg) were collected from layers of hearth waste (360 in Trench 4; 361 and 363 in Trench 7; 376, 378 and 386 in Trench 8) comprising Salterns 10 and 11. This low density, vesicular, slightly glassy fuel ash slag is mainly undiagnostic, with the exception of material from layer 361 (Saltern 10) where the greenish grey colouration indicates it relates to saltworking.

Pottery (Appendix B.2)

3.6.2 Archaeological works produced a small post-Roman pottery assemblage of four moderately abraded sherds, weighing 0.059kg, recovered from features in Trenches 10 (Saltern 12) and 11 (Ditch **394**). A small sherd of unglazed medieval coarseware (*c*.AD 1050-1400) was recovered from Saltern 12. The overlying topsoil also produced a single moderately abraded sherd of post-conquest Thetford-type ware (*c*.AD 1050-1200). The pottery recovered from the modern drainage ditch **394** dated from between the 17th-19th century. The assemblage is plain and fragmentary, indicating only a generalised background noise of early medieval and later activity, recovered from a non-domestic setting. The paucity of sherds suggests the material was incorporated into the features through reworking, rather than deliberate deposition.

Fired or burnt clay (Appendix B.3)

3.6.3 An assemblage of 21 fragments of fired/burnt clay, weighing 0.254kg, was recovered from Saltern 12 in Trench 10 along with a further 0.412kg recovered from filtration unit **365** (within Saltern 10) and other layers within Salterns 10-12. The bulk of the fired/burnt clay comprises salt-affected structural fragments, with identifiable surfaces and/or withy impressions, suggesting this assemblage to be the remains of salt-boiling hearths.

3.7 Environmental summary

Faunal remains (Appendix C.1)

3.7.1 Four fragments of bone, weighing 9g, were recovered from the site. Within Saltern 12, filtration waste layer 357 contained a frog bone. Large mammal bone fragments were also recovered from layers of filtration and hearth waste within Saltern 11. The fragments from Saltern 11 (386) included a burnt bone and two possible fragments of debitage resulting from bone working.

Marine mollusca (Appendix C.2)

3.7.2 A total of two bivalve shells (5g) was recovered from the site. Pit **379** within Saltern 11 produced a fragment (2g) of edible mussel *Mytilus edulis* and hearth waste layer 387 within Saltern 12 contained a cockle (3g) *Cerastoderma edule*. The shells may represent general discarded food waste, however the site's proximity to both the River Great Ouse and The Wash would suggest the number of shells should be greater, if used as a food source.

Environmental samples (Appendix C.3)

3.7.3 Eighteen bulk samples were taken from features associated with salterns within the site. Charcoal has been preserved with potential for species identification to indicate fuel type and also for radiocarbon dating (if required). The presence of fuel ash slag could indicate a different fuel choice such as seaweed. Preservation of plant remains is poor to moderate; many of the flots contain rootlets and other plant material that are untransformed (not charred). Charred seeds have been recovered indicating that there is potential for further recovery from future excavations. Foraminifera and ostracods are present and have the potential to provide information on salinity and environmental conditions. Mollusca have low potential in that the burrowing snail is frequent and other land and water snails are scarce.

4 DISCUSSION

4.1 Reliability of field investigation

4.1.1 The archaeological features and deposits were clearly visible within the evaluation trenches. The natural geological horizon beneath the topsoil and subsoil overburden on which the salt-making deposits lay and into which the drainage ditches and areas of modern truncation were cut were also clearly identifiable.

4.1.2 Therefore, the results of the evaluation trenching are considered to have a good level of reliability.

4.2 Evaluation objectives and results

4.2.1 The project aims and objectives defined in the WSI (Brudenell 2016) and listed in Section 2.1 are included below with summary statements outlining the remains encountered on the site and how these help in achieving these objectives.

Provide sufficient coverage and exposure to enable excavation to establish the approximate form, date and purpose of any archaeological deposits, together with extent, localised depth and quality of preservation. Trenching will also examine the deeper, Flandrian sequence of deposits at the site.

Provide sufficient coverage and exposure to evaluate the likely impact of past land uses, and the possible presence of masking deposits.

4.2.2 The evaluation has identified the presence of three salt-making sites within the development area (Salterns 10-12). Towards the eastern end of the site, the remains comprising Saltern 12 correspond to the previously identified probable salt-making site of NHER 13785 (see Section 1.3.6). The larger purported salt-making mound of NHER 27895, that lay towards the northern boundary of the site, was found not to be present. Within the footprint of this latter feature, the only remains that may have been related to salt-making were encountered at the southern end of Trench 4 where a very thin burnt red soil horizon was uncovered overlying the natural tidal flat deposits. This area was further investigated by Test Pit 2 that revealed only a build-up of made ground overlying the natural deposits. The two further salt-making sites of Salterns 10 and 11 identified by the evaluation were not previously listed by the NHER.

4.2.3 The borehole survey demonstrated the basal horizon of the saltern mounds commenced on the saltmarsh at a height of between *c*.1.91-2.29m OD. These heights are comparable with the previous investigations on the salterns to the southwest within the Lynnsport 3 (Saltern 9; Clarke 2018b) and Lynnsport 4 & 5 developments (Salterns 1-4; Clarke 2017a-b) that revealed the salt-making remains commenced between heights of *c*.1.57-2m OD.

4.2.4 The yellowish brown sandy silt deposits revealed by the borehole and trenching investigation through each mound's make-up is considered to be typical of waste silts produced by 'sleeching'. This was the sand washing process employed during the later Saxon and medieval periods for the stripping of muds collected from the intertidal zone (to the west) of their salt content for the production of concentrated brine. This activity was carried out in clay-lined tanks known as filtration units. The remains of

clay-lined tanks were uncovered cutting the waste silts of Saltern 10 in Trench 7. Further examples of features belonging to this period, along with dumps of the associated waste silts, have been found on the recent excavations into nearby saltern mounds (Lynnsport 4 and 5, Clarke 2017a-b; Marsh Lane, Clarke 2016; Former Mary's Nursing Home in King's Lynn, Cope-Faulkner 2014.

4.2.5 Significantly, an assemblage of structural, salt-affected fired clay was recovered along with small fragments fuel ash slag within burnt deposits containing charcoal. These distinctive deposits are usually found along with the sleeching remains that constitute saltern mounds and are indicative of the presence of brine boiling hearths. The remains of hearth sites are therefore likely to be present within all of the identified saltern mounds. The fired clay assemblage suggests these remains to be of the same enclosed hearth-type excavated at the former Queen Mary's Nursing Home (Cope-Faulkner 2014) and Marsh Lane (Clarke 2016), King's Lynn sites. This type of technology is considered typical of that employed during the later Saxon and medieval periods to boil the concentrated brine produced by filtration units.

4.2.6 Some of the fired clay pieces displayed curved surfaces suggesting these items may have formed parts of clay objects, possibly the remains of hearth furniture such as clay bricks or supports for lead brine-boiling pans. Examples of 'soft fired' bricks have been found previously on the nearby site of Marsh Lane (Clarke 2016) and further afield on the salt-making site excavated at Walpole St Peter, Norfolk (Clarke 2009).

4.2.7 Only a single datable artefact, an undiagnostic medieval body sherd (*c*.AD 1050-1400) was recovered from a filtration waste silt deposit comprising Saltern 12 in Trench 10. The paucity of artefactual remains is considered to be typical of these salt-making sites. For example, the excavations into the salterns within the Lynnsport 4 and 5 developments only produced a handful of Late Saxon pottery sherds (Clarke 2017b). The evaluation of Saltern 9 within Lynnsport 3 did not produce any datable artefacts (Clarke 2018b). Furthermore, the lack of any later artefacts from the current site also suggests that Salterns 10-12 may be of broadly contemporary date. However, the relative abundance of charcoal recovered from these salterns (Appendix C.3) demonstrates that a chronology for the salt-making activities uncovered by the evaluation is most likely to be provided by radiocarbon dating.

4.2.8 The salterns would have lain on the saltmarsh, close to the intertidal zone in order to exploit the salt-rich estuarine muds. This landscape pre-dated the diversion of the Great Ouse to King's Lynn in the 13th century, when the local coastal environment in the vicinity of Bishop's (King's) Lynn was fed by a series of smaller rivers such as the Old Wiggenhall Eau, the Nar and Gaywood rivers. Documentary sources demonstrate that prior to the River Gaywood's diversion along the southern margins of the historical North Marsh in 1425, it flowed through the marsh's central part (possibly along the northern boundary of the site (see Section 1.3.6)) where it was known as 'le Seadyck' (NRO reference BL 55/1). Within a title deed relating to land in the marsh dated to 1295 (NRO DCN/44/42/7), a fleet (creek/flowing stream) is named as the 'Quytingishe'. This name may possibly be equated to the 'Whiting Ee', named as the section of the river flowing from Gaywood Bridge to the sea, in the 1588 survey of Rising Chase (Bradfer-Lawrence 1932, 98). This estuary of the Great Ouse itself was itself canalised and diverted to its current course during the 18th century. The course

of the Bawsey drain, bordering the south of the site, that broadly follows the old course of the river, is indicated on historic OS maps as far back 1885 but is absent from the tithe map of 1838 (NRO DN-TA137).

4.2.9 A search of historical records (see Section 1.3.9; NRO BL14-41 and NRO BL55-1) shows that these salt-making sites were well connected to the wider landscape by the historical routeway of *Salters Lode*/*Bullcote Waie* - that traversed the southwestern corner of the site - along with the possible former course of the Gaywood River once passing along the northern boundary of the site. The Gaywood Dragge (survey) of 1487 (NRO BL/MA 2/2) also mentions many of the mostly extinct saltern mounds by name such as: Turncoults, Saltushill, Lancelotehill, Beldamshill, Finkinhill, 'three hills', Hashecoates, Gorishille, Twedis (Daies), Gannishill, Lambroatehill, Willyshill and Hibbronds.

4.2.10 The salterns are believed to have been connected and serviced by a network of tidal creeks and channels that facilitated the transport of salt-rich estuarine muds, fuels and other materials as well as labourers to salt-making sites. Such channels would also have been employed to take the salt to the local markets established at this time adjacent to the Bishop of Norwich's Palace at Gaywood and at the Bishop's Lynn (the current King's Lynn). Names of many of these channels that extended across the historical North Marsh (e.g 'le Bull', 'le Goole', 'le Salt Ea', 'salt rivallett', etc) are recorded in the Gaywood Dragge (survey) of 1487 (NRO BL/MA 2/2). However, no evidence for channels or creeks were identified in any of the trenches. The ditch running broadly north to south across the western part of the site is shown on the Inclosure award map of 1810 (NRO BL14-41) as a division of the plots of open farmland that once extended across the extent of the development area (see Section 1.3.9; Fig. 3). The original profile of this ditch was recorded as cut **390** in Trench 11 that could possibly represent the former course of a tidal creek. The current ditch represents the extant remains of re-cut **394** that yielded sherds of early modern pottery dated from between the 17th-19th century.

Provide sufficient coverage and exposure to provide information to construct an appropriate archaeological conservation/mitigation strategy, dealing with preservation, the recording of archaeological deposits, working practices, timetables and order of cost.

4.2.11 The topographical model of the site (Fig. 4) provides a final 'snapshot' of each saltern mound after salt-making activity on it had ceased. Salterns 10 and 12 were observed to survive as earthworks in the southwestern and eastern parts of the site respectively. Recent truncation of Saltern 10 was observed by the course of historical plot boundary/drainage ditch **390**/**394** that clearly demonstrates a 'kink' to its route around the western periphery of the mound. Recent truncation of the western part of Saltern 11 is likely to have taken place during construction of the hockey pitch immediately to the west of Trench 8. As this saltern does not appear to survive as an earthwork, it is possible the upper part of the saltern, to the north of Trench 8 may have been subject to further truncation. There appears to have been no recent truncation of Saltern 12/NHER 13785 as a result of the construction or demolition of the former railway in the southern part of the site. It is possible the absence of the purported salt-making site of NHER 27895 may have been due to the many episodes

of recent disturbance identified on the site. These include the construction/dismantling of the railway, the excavation/backfilling of the extensive areas of truncation, the levelling/construction of the hockey pitch, or the landscaping of the wider recreational environs of Lynnsport within which the site lies.

Saltern 10

4.2.12 Saltern 10 was observed to extend from Trenches 7 and 11 as a broad mound across a *c*.40m diameter area, in the southwestern part of the site. As stated above, borehole WS15 indicated the basal horizon of Saltern 10 lay at a height of 1.91m OD. Undisturbed salt-making deposits were present immediately beneath a layer of modern made ground to a maximum height of 2.93m OD. Therefore, the deposits comprising this mound survive up to 1.02m thick.

Saltern 11

4.2.13 Saltern 11 was observed to extend from the northern end of Trench 8. As salt-making deposits were not present in Trench 6, this salt-making site is tentatively projected across a *c*.40m diameter area, in the central part of the site. As stated above, borehole WS16 indicated the basal horizon of Saltern 11 lay at a height of 2.27m OD. Undisturbed salt-making deposits extended to a maximum height of 3.18m OD. Therefore, the deposits comprising this mound survive up to 0.91m in thickness.

Saltern 12

4.2.14 Saltern 12 was observed to extend from the northwestern end of Trench 10. As salt-making deposits are considered to possibly lie within an arc of the historical route of the Gaywood River on the northern boundary of the site, this salt-making site is considerd to lie across a *c*.30m diameter area, in the eastern extremity of the site. As stated above, borehole WS17 indicated the basal horizon of Saltern 12 lay at a height of 2.29m OD. Undisturbed salt-making deposits extended to a maximum height of 3.17m OD. Therefore, the deposits comprising this mound survive up to 0.88m in thickness.

Set results in the local, regional, and national archaeological context.

Research frameworks

4.2.15 As the summary statements above demonstrate, the evaluation has confirmed the presence of salt-making site NHER 13785 (Saltern 12), the absence of salt-making site NHER 27895, and the presence of two further previously unidentified salt-making sites (Salterns 10 and 11) within the current development. The identification of these salterns adds to the growing corpus of salt-making remains in the area with a high potential to help address the research aims stated in the regional research frameworks (see Section 2.1.2-7).

4.2.16 In particular regarding Section 2.1.24-25, there is greater potential for these remains when combined with the more extensive research into later Saxon and medieval salt-making currently being investigated as part of the wider Lynnsport development project and in conjunction with the adjacent Lynnsport school development (Greenpark Avenue; Clarke 2018a). Especially when combined with a suite of radiocarbon dates from the salterns, the results of both the proposed residential and

school developments provide a unique opportunity to study a substantial proportion of the salt-making sites on the North Marsh. These are documented to have been part of the ecclesiastical lordship of Gaywood, held as part of an Episcopal See from at least the Late Saxon period (successively the East Anglian Bishops of North Elmham, Thetford and Norwich; Little Domesday Book of *c*.1086, NRO reference E 31/1/2/1051).

4.3 Interpretation

Later Saxon to early medieval salt-making remains

4.3.1 The evaluation revealed evidence for salt-making on the site in the form of three mounds of deposits comprising Salterns 10-12, that lie within the development area. Each mound was similarly composed of waste filtration silts from 'sleeching' and burnt hearth waste deposits resulting from brine-boiling as part of the salt-making process. Although no brine-boiling hearth sites were identified, the evaluation recovered the remains of broken-up hearths, fuel ash slag and charcoal within the burnt soil layers which suggest these features were present in the near vicinity of the trenches. The clay-lined features encountered in Trench 7 (Salterns 10) probably represent *in-situ* filtration units and/or water tanks. These deposits are considered to be typical of the known later Saxon/early medieval salt-making remains previously excavated in the area (Clarke 2016, Clarke 2017a-b, Clarke 2018a-b; Cope-Faulkner 2014).

Drainage ditches

4.3.2 The drainage ditch traversing the western part of the site represents the alignment of a former land division between two parcels of land (Fig. 3). Documentary sources demonstrate the historical North Marsh of Gaywood was an extensive tract of pasture from at least the latter part of the 15th century (Gaywood Dragge survey of 1487, NRO BL/MA 2/2). This valuable pastureland comprised multiple parcels of land held by the local populace that included land held by burgesses from neighbouring Bishop's (King's) Lynn along with lands held by larger ecclesiastical institutions such as the local church, hospitals and priory at Bishop's Lynn. These lands were enfeoffed by the Bishop of Norwich who still held the lordship of Gaywood during this later period.

4.4 Significance

4.4.1 The evaluation confirmed the presence of the saltern mound indicated by the NHER (NHER 13785) located in the eastern extremity of the site along with two further (previously unidentified) salterns within the development area. The remaining purported saltern (NHER 27895) indicated by the NHER was found not to be present. Although no brine-boiling hearth sites were identified by the evaluation, their presence within all of these mounds was supported by the presence of burnt remains. Furthermore, a probable site of sand washing/sleeching activity was identified within the mound of Saltern 10. These salt-making remains probably date from the later Saxon/early medieval period and when taken as a whole demonstrate the site to encompass a significant area of salt-making. Of further significance to the site is the presence of the former routeway of *Salters Lode*/*Bullcote Waie* traversing the southwestern corner of the site along with the possible former course of the Gaywood River along its northern boundary.

4.4.1 The drainage ditch, representing the extant remains of a historical land division, may be considered to be remains of lesser importance However, the original cut may potentially follow the course of a former creek related to the saltworking.

4.5 Recommendations

4.5.1 Recommendations for any future work based upon this report will be made by the County Archaeology Office.

APPENDIX A CONTEXT INVENTORY

Context	Cut	Trench	Category	Feature Type	Function	Colour	Fine component	Coarse component	Compaction	Breadth	Depth	Shape in plan	Profile	Period
350	0		layer	natural	tidal flat deposits	yellowish brown	sandy silt		soft					Pre-Saxon
351	0		layer	natural	subsoil	light brown	sandy silt		soft					Post-med./ Mod.
352	0		layer	natural	topsoil	dark grey	sandy silt		soft					Post-med./ Mod.
353	353	1, 2, 3, 6	cut	modern truncation										Post-med./ Mod.
354	353	1, 2, 3, 6	layer	made ground	dark brownish grey	sandy silt	CBM, plastic, glass and metal inclusions	soft						Post-med./ Mod.
355	0	7	layer	saltern mound 10 deposits	filtration waste	light yellowish brown	sandy silt		soft					Late Saxon /Early med.
356	0	8	layer	saltern mound 11 deposits	filtration waste	light yellowish brown	sandy silt		soft					Late Saxon /Early med.
357	0	10	layer	saltern mound 12 deposits	filtration waste	light yellowish brown	sandy silt		soft					Late Saxon /Early med.
358	358	9	layer	modern truncation										Post-med./ Mod.

Context	Cut	Trench	Category	Feature Type	Function	Colour	Fine component	Coarse component	Compaction	Breadth	Depth	Shape in plan	Profile	Period
359	358	9	cut	made ground		dark brownish grey	sandy silt	CBM, plastic, glass and metal inclusions	soft					Post-med./ Mod.
360	0	4	layer	salt-making waste	hearth waste deposit	mid brown	sandy silt		soft					Late Saxon /Early med.
361	0	7	layer	saltern mound 10 deposit	hearth waste deposit	mid grey	sandy silt	charcoal inclusions	soft					Late Saxon /Early med.
362	0	7	layer	saltern mound 10 deposit	filtration waste	light yellowish brown	sandy silt		soft					Late Saxon /Early med.
363	0	7	layer	saltern mound 10 deposit	hearth waste deposit	dark brownish grey	sandy silt	fired clay inclusions	soft					Late Saxon /Early med.
364	0	7	layer	saltern mound 10 deposit	filtration waste	light yellowish brown	sandy silt		soft					Late Saxon /Early med.
365	365	7	cut	filtration unit	concentrated brine production					1.05	0.15	sub-circular	flat based U-shaped	Late Saxon /Early med.
366	365	7	fill	filtration unit	clay lining	bluish grey	clay		firm					Late Saxon /Early med.
367	365	7	fill	filtration unit	disuse	mid yellowish brown	sandy silt	charcoal and fired clay inclusions	soft					Late Saxon /Early med.

Context	Cut	Trench	Category	Feature Type	Function	Colour	Fine component	Coarse component	Compaction	Breadth	Depth	Shape in plan	Profile	Period
368	368	7	cut	filtration unit	concentrated brine production					0.8		sub-circular	-	Late Saxon /Early med.
369	368	7	fill	filtration unit	clay lining	bluish grey	clay		firm					Late Saxon /Early med.
370	368	7	fill	filtration unit	disuse	mid reddish brown	sandy silt	charcoal and fired clay inclusions	soft					Late Saxon /Early med.
371	371	7	cut	ditch	boundary					0.77	0.08	linear	U-shaped	Post-med./ Mod.
372	371	7	fill	ditch	silting	mid yellowish brown	sandy silt		soft					Post-med./ Mod.
373	0	7	layer	made ground		dark brownish grey	sandy silt	CBM, plastic, glass and metal inclusions	soft					Post-med./ Mod.
374	374	7	cut	pit	unknown					0.6	0.18	sub-square	U-shaped	Late Saxon /Early med.
375	374	7	fill	pit	backfill	light brownish grey	silty clay		firm					Late Saxon /Early med.
376	0	8	layer	saltern mound 11 deposits	hearth waste deposit	dark brownish grey	sandy silt	charcoal and burnt sand inclusions	soft					Late Saxon /Early med.

Context	Cut	Trench	Category	Feature Type	Function	Colour	Fine component	Coarse component	Compaction	Breadth	Depth	Shape in plan	Profile	Period
377	0	8	layer	saltern mound 11 deposits	filtration waste	mid yellowish brown	sandy silt		soft					Late Saxon /Early med.
378	0	8	layer	saltern mound 11 deposits	hearth waste deposit	dark reddish brown	sandy silt	fired clay inclusions	soft					Late Saxon /Early med.
379	379	8	cut	pit	unknown					0.8	0.3	sub-circular	square cut	Late Saxon /Early med.
380	379	8	fill	pit	backfill	light yellow	sandy silt		soft					Late Saxon /Early med.
381	379	8	fill	pit	backfill	mid grey	sandy silt	charcoal inclusions	soft					Late Saxon /Early med.
382	379	8	fill	pit	backfill	light greyish yellow	sandy silt		soft					Late Saxon /Early med.
383	379	8	fill	pit	backfill	mid grey	sandy silt	charcoal inclusions	soft					Late Saxon /Early med.
384	379	8	fill	pit	backfill	light brownish yellow	sandy silt		soft					Late Saxon /Early med.
385	379	8	fill	pit	backfill	mid grey	sandy silt	charcoal inclusions	soft					Late Saxon /Early med.

Context	Cut	Trench	Category	Feature Type	Function	Colour	Fine component	Coarse component	Compaction	Breadth	Depth	Shape in plan	Profile	Period
386	0	8	layer	saltern mound 11 deposits	hearth waste deposit	dark reddish brown	sandy silt	fired clay inclusions	soft					Late Saxon /Early med.
387	0	10	layer	saltern mound 12 deposit	hearth waste deposit	dark reddish brown	sandy silt	charcoal and fired clay inclusions	soft					Late Saxon /Early med.
388	0	10	layer	saltern mound 12 deposit	hearth waste deposit	dark reddish brown	sandy silt	charcoal and fired clay inclusions	soft					Late Saxon /Early med.
390	391	10	cut	creek/channel	watercourse						0.94	linear	U-shaped	Late Saxon /Early med.
391	391	11	fill	creek/channel	silting	light greyish/ yellowish brown	silty clay		firm					Late Saxon /Early med.
392	391	11	fill	creek/channel	silting	light yellowish brown	clayey silt		soft					Late Saxon /Early med.
393	391	11	fill	creek/channel	silting	mid yellowish brown	clayey silt		soft					Late Saxon /Early med.
394	394	11	cut	ditch	drainage						0.2	linear	U-shaped	Post-med./ Mod.
395	394	11	fill	ditch	silting	mid greyish brown	clayey silt		soft					Post-med./ Mod.

Context	Cut	Trench	Category	Feature Type	Function	Colour	Fine component	Coarse component	Compaction	Breadth	Depth	Shape in plan	Profile	Period
396	394	11	fill	ditch	silting	dark brownish grey	clayey silt		soft					Post-med./ Mod.
397	0	10	layer	saltern mound 12 deposit	filtration waste	light brownish yellow	sandy silt		soft					Late Saxon /Early med.
398	0	10	layer	saltern mound 12 deposit	filtration waste	light brownish yellow	sandy silt		soft					Late Saxon /Early med.
399	0	10	layer	made ground		light brown	silty clay	CBM, plastic, glass and metal inclusions	soft					Post-med./ Mod.
400	0	10	layer	buried soil	old topsoil	mid brownish grey	clayey silt		soft					Post-med./ Mod.
401		TP1	layer	made ground		light brown	silty clay	CBM, plastic, glass and metal inclusions	soft					Post-med./ Mod.
402		TP2	layer	made ground		light brown	silty clay	CBM, plastic, glass and metal inclusions	soft					Post-med./ Mod.

Table 2: Context inventory

APPENDIX B FINDS REPORTS

B.1 Slag and fuel by-products

By Carole Fletcher

Introduction and methodology

B.1.1 Samples were taken from contexts described as 'hearth waste deposit' in saltern mounds across three trenches. These produced small quantities of fuel ash slag, some of which shows distinctive brine-related greenish discolouration. The material was weighed and rapidly recorded, with basic description and weight recorded in the text.

Assemblage

B.1.2 A total of 15 fragments, weighing 0.035kg, was recovered from layers associated with saltern mounds in Trenches 4, 7 and 8. The assemblage consists of irregular fragments of low density, slightly glassy, fuel ash slag, externally mainly grey with occasional reddish patches, internally dark grey to black, with numerous small, and occasional larger, vesicles. A single fragment from hearth waste layer 361 within Saltern 10 (Trench 7) is greenish grey, suggesting contact with saltwater.

Discussion

B.1.3 The fuel ash slag is not closely datable, and undiagnostic, with the exception of material from layer 361 where the colouration indicates it relates to saltworking.

Retention, dispersal or display

B.1.4 The fuel ash slag assemblage is fragmentary and relatively small. Should further work be undertaken, additional material may be recovered. If no further work is undertaken, this statement acts as a full record and the fuel ash slag may be deselected prior to archive deposition.

B.2 Pottery

By Carole Fletcher

Introduction

B.2.1 Archaeological works produced a small post-Roman pottery assemblage of four sherds, weighing 0.059kg, recovered from features in Trenches 10 and 11 (Table 3). The condition of the overall assemblage is moderately abraded.

Methodology

B.2.2 The Prehistoric Ceramics Research Group (PCRG), Study Group for Roman Pottery (SGRP), The Medieval Pottery Research Group (MPRG), 2016 A Standard for Pottery Studies in Archaeology and the MPRG A guide to the classification of medieval ceramic forms (MPRG 1998) act as standards.

B.2.3 Recording was carried out using OA East's in-house system based on that previously used at the Museum of London. The Museum of London fabric series (MoLA 2014) acts as a basis for post-1700 fabrics. Where samples were taken, from which pottery was recovered, the sherds were small and abraded, and were not examined. All sherds have been counted, classified, and weighed on a context-by-context basis. The minimum number of vessels (MNV) was not recorded due to the low number of sherds recovered, and fabric identification is tentative for some sherds. The assemblage is recorded in the catalogue at the end of this report. The pottery and archive are curated by Oxford Archaeology East until formal deposition or dispersal.

Assemblage

B.2.4 The post-Roman assemblage represents low levels of rubbish deposition, or later disturbance across the area, with 17th-19th century pottery recovered from ditch **394** in Trench 11. The single sherd from Trench 10, tentatively identified as post-conquest Thetford ware, is moderately abraded, however, it was recovered from topsoil, and may have travelled some distance from its original point of deposition. The small sherd of unglazed coarseware from Saltern 12 is too small to be reliable dating evidence.

Discussion

B.2.5 The assemblage is plain and fragmentary, indicating only a generalised background noise of early medieval and later activity in a limited number of trenches. The post-Roman pottery is likely to be domestic in origin, although recovered from a non-domestic setting. The paucity of sherds suggests the material was incorporated into the features through reworking, rather than deliberate deposition.

Retention, dispersal and display

B.2.6 Should further work be undertaken, early medieval and later pottery may be recovered although only at low levels, and this pottery report should be incorporated into any later catalogue. If no further work on the site is undertaken, this statement acts as a full record and the pottery may be deselected and dispersed prior to archival deposition.

Pottery catalogue

Trench	Context	Cut	Fabric and form	No. of Sherds	Weight (kg)	Pottery Date
10	352		Thetford-type ware (post-Conquest). Undiagnostic body sherd	1	0.012	1050-1200
	387		Unglazed coarseware. Undiagnostic body sherd	1	0.003	1050-1400
11	396	**394**	Pearlware with internal Willow Pattern transfer-printed decoration. Rim sherd partial profile of a dish/plate. Rim simple, rounded. Diameter 220mm, EVE 11%	1	0.026	1770-1840
			Staffordshire slipware. Rim sherd from a dish or bowl, internally slipped and glazed. Rim simple, rounded, piecrust. Diameter 300mm, EVE 6%	1	0.018	1600-1800
Totals:				**4**	**0.059**	

Table 3: Pottery catalogue

B.3 Fired or burnt clay

By Carole Fletcher

Introduction and methodology

B.3.1 An assemblage of 21 fragments of fired/burnt clay, weighing 0.254kg, was recovered from Saltern 12 in Trench 10. Additionally, samples taken from Salterns 10-12, and from filtration unit **365** (within Saltern 10), produced a further 0.412kg of fired/burnt clay. The bulk of the fired or burnt clay comprises fragments with one or more structural indicators, such as surfaces and/or withy impressions, suggesting that although affected by salt, they are not necessarily briquetage but relate to hearths or associated structures (Table 4).

B.3.2 The fired/burnt clay assemblage was quantified by context, counted, weighed, and form recorded, where this was identifiable. The fabric is briefly described. The assemblage is recorded in the text. The fired/burnt clay and archive are curated by Oxford Archaeology East until formal deposition or dispersal.

Assemblage

B.3.3 The bulk of the fired/burnt clay, recovered from filtration waste layer 357 within Saltern 12 (including material recovered from sample <264>), is different from the remainder of the fired/burnt clay assemblage. All the fragments from 357, except one, are made of a fine silty clay with moderate small rounded quartz grains and rare mica. Some elongated voids within the fabric suggest the original inclusion of vegetable matter as temper. Colour ranges from near-white, through buff, dull orange, and grey to black, with off-white appearing to represent the highest-fired material. Withy impressions within the fragments vary from 4mm in diameter up to 18mm.

B.3.4 The sole exception, from layer 357, is a formless fragment of fine silty clay (0.009g) with occasional mica and very small voids. This reddish buff fragment also exhibits grass or other vegetation impressions. The remainder of the fired/burnt clay recovered from the evaluation more closely matches the fabric of this fragment and does not appear to have been affected by salt.

Discussion

B.3.5 The material recovered from filtration waste layer 357 within Saltern 12 appears to be structural fragments relating to salt production. The fired/burnt clay assemblage, although not closely datable, indicates levels of industrial activity, possibly on a seasonal basis, and represents part of the multi-period saltworking occurring at Lynnsport.

Retention, dispersal and display

B.3.6 The assemblage is fragmentary, and not particularly large in the context of salterns and saltern mounds. Those trenches that produced substantial amounts of fired/burnt clay are likely to be worthy of further examination, particularly Saltern 12. Should further work be undertaken, the material should be incorporated into any later

catalogue and examined by a specialist as part of that work. If no further work is undertaken, the larger structural fragments from context 357 should be retained, the remaining material may be deselected and dispersed prior to archival deposition.

Fired or burnt clay catalogue

Salt-ern	Cxt.	Cut	Sample	Fired or Burnt Clay Form	Fired/Burnt Clay Description	No. of frags	Weight (kg)	Date
10	361		<251>	Formless fragments	Abraded irregular fragments of silty clay with occasional very fine quartz and rare mica. Three fragments show vegetation impressions. Dull pale orange to buff	6	0.051	
	363		<255>	Formless fragments	Abraded irregular fragments of silty clay with occasional very fine quartz and rare mica. Two fragments show vegetation impressions. Two other fragments have a partial curved surface. Dull pale orange to buff. The two curved pieces may be parts of a fired clay object, but this is uncertain	5	0.029	
N/A	367	**365**	<254>	Formless fragment	Abraded irregular fragment of silty clay with occasional very fine quartz and rare mica. Dull pale buff. Possible portion of surface	1	0.006	
11	378		<259>	Formless fragments	Abraded irregular fragments of silty clay with occasional very fine quartz and rare mica. One fragment shows a possible surface. Dull pale orange to buff	3	0.018	
12	357			Formless fragments	Moderately abraded irregular fragments of fine silty clay, with moderate small rounded quartz grains and rare mica. Some elongated voids within the fabric suggest the original inclusion of vegetable matter as temper. Eight fragments show parts of a surface, including one with a perpendicular withy impression. Colour ranges from near-white, through buff, dull orange, and grey to black. Relatively hard fired in places	20	0.245	
				Formless fragment	Abraded irregular fragment of silty clay with occasional very fine quartz and rare mica. Dull pale orange	1	0.009	
			<264>	Formless fragments	Moderately abraded irregular fragments of silty clay, with occasional very fine quartz	6	0.285	

Salt-ern	Cxt.	Cut	Sample	Fired or Burnt Clay Form	Fired/Burnt Clay Description	No. of frags	Weight (kg)	Date
					and rare mica. All fragments exhibit parts of a surface, three have withy impressions. A single piece has thin impressions perpendicular to the surface. Colour ranges from near-white, through buff, dull orange, and grey to black. Relatively hard fired in places			
	387		<265>	Formless fragments	Abraded irregular fragments of silty clay with occasional very fine quartz and rare mica. Dull pale orange to buff	2	0.023	
Total						**44**	**0.666**	

Table 4: Fired or burnt clay catalogue

APPENDIX C ENVIRONMENTAL REPORTS

C.1 Faunal remains

By Zoë Uí Choileáin

Introduction and methodology

C.1.1 A total of five fragments (9g) of mammal bone was recovered from contexts 357, 377 and 386 (Table 5). The material was identified using Schmid (1972) and the OA East reference collection.

Trench	Cut	Context	Feature Type	Element	Species	Weight (g)
357	-	357	Saltern 12 (filtration waste)	tibiofibula	Frog	1
377	-	377	Saltern 11 (filtration waste)	-	Large mammal	1
386	-	386	Saltern 11 (hearth waste)	-	Large mammal	7

Table 5: Animal bone catalogue

Assemblage and discussion

C.1.2 The surface condition of the bone is good although highly fragmented. Context 386 contained one fragment of burnt bone and two possible fragments of debitage from bone working.

Recommendations and further work

C.1.3 This is a small assemblage which can provide little information about the nature of the site. No further work is recommended.

Retention, dispersal or display

C.1.4 Excepting the possible worked bone item from context 386, the faunal remains may be deselected prior to archival deposition.

C.2 Marine mollusca

By Carole Fletcher

Introduction, methodology and assemblage

C.2.1 Two bivalve shells were recovered during the evaluation: from pit **379** within Saltern 11; and hearth waste layer 387 within Saltern 12. The shell is well preserved and does not appear to have been deliberately broken or crushed. The shell was weighed and recorded by species, a fragment of an edible mussel *Mytilus edulis* (0.002kg) from pit **379**, sample 263 and a cockle *Cerastoderma edule* (0.003kg) from layer 387, sample 265. Both bivalves are from intertidal zones.

Discussion, retention, dispersal and display

C.2.2 The shells may represent general discarded food waste, however the site's proximity to both the River Great Ouse and The Wash would suggest the number of shells should

be greater, if used as a food source. The presence of the shells may be due to other reasons.

C.2.3 The assemblage indicates that, should further work take place, shell would likely be found, although only at low levels. If no further work is undertaken this statement acts as a full record and the shell may be dispersed or deselected prior to archive deposition.

C.3 Environmental samples

By Rachel Fosberry

Introduction

C.3.1 Eighteen bulk samples were taken from features associated with salterns within the evaluated area at the site in order to assess the quality of preservation of plant remains and their potential to provide useful data as part of further archaeological investigations.

Methodology

C.3.2 The total volume (up to 18L) of each of the samples was processed by tank flotation using modified Siraff-type equipment for the recovery of preserved plant remains, dating evidence and any other artefactual evidence that might be present. The floating component (flot) of the samples was collected in a 0.3mm nylon mesh and the residue was washed through 10mm, 5mm, 2mm and a 0.5mm sieve. The larger residue fractions were sorted by eye and any artefacts were picked out and integrated with the hand-excavated material. The <2mm residue fractions were scanned under the microscope to check for ostracods and forminifera that may not have floated.

C.3.3 The dried flots were scanned using a binocular microscope at magnifications up to x 60 and an abbreviated list of the recorded remains are presented in Table 6. Identification of plant remains is with reference to the Digital Seed Atlas of the Netherlands (Cappers et al. 2006) and the authors' own reference collection. Nomenclature is according to Stace (1997). Plant remains have been identified to species where possible. The identification of cereals has been based on the characteristic morphology of the grains and chaff as described by Jacomet (2006).

Quantification

C.3.4 For the purpose of this initial assessment, items such as seeds and cereal grains have been scanned and recorded qualitatively according to the following categories:

= 1-5, ## = 6-25, ### = 26-100, #### = 100+ specimens

C.3.5 Items that cannot be easily quantified such as charcoal and molluscs have been scored for abundance

+ = rare, ++ = moderate, +++ = abundant

Results

C.3.6 Preservation of plant remains is poor to moderate; many of the flots contain rootlets and other plant material that are untransformed in that they are not preserved by charring and it is unclear if they are contemporary waterlogged remains or modern intrusions. Seeds of elderberry (*Sambucus nigra*), bramble (*Rubus* sp.), nettles (*Urtica dioica*), dead-nettles (*Lamium* sp.), sedges (*Carex* sp.), docks (*Rumex* sp.) and goosefoots (*Chenopodium* sp.) are present within many of the assemblages.

C.3.7 Charred plant remains are quite frequent, mainly in the form of charred stems and charcoal but also as occasional charred seeds of plants such as sedges and mustards (*Brassica* sp.) and common dogwood (*Cornus sanguinea*).

C.3.8 Fungal sclerotia were also noted. The burrowing snail (*Ceciliodes acicula*) was also frequently noted in the samples and the brackish water snail, *Hydrobia*, is occasionally present.

C.3.9 Ostracods, foraminifera and cladoceran ephippia (egg-cases of water-fleas) are present in some of the samples.

C.3.10 The results are discussed by trench:

Trench 4

C.3.11 A sample from a very thin layer of red soil (360) contains occasional ostracods, sparse charcoal, occasional shells of *Hydrobia* sp. and untransformed nettle seeds in addition to a single charred rye (*Secale cereale*) grain.

Trench 7: Saltern 10

C.3.12 Samples were taken from deposits associated with Saltern 10; that from filtration waste 362 contains occasional foraminifera, molluscs and untransformed seeds of bramble and elderberry. Hearth waste deposit 361 produced charcoal, including charred stems that may be suitable for species identification and radiocarbon dating. Hearth waste 363 was less productive in terms of charred remains but contains greater density and diversity of mollusc shells. Both samples contain fuel ash slag.

C.3.13 Two samples were taken from pit **365**; clay lining 265 produced duckweed seeds whereas backfill 366 contains charred seeds (including sedges) and stems and occasional fuel ash slag. The clay lining (375) of pit **374** was unproductive.

Trench 8: Saltern 11

C.3.14 The filtration waste deposits (377, 356) of Saltern 11 produced occasional foraminifera in addition to intrusive snails and sparse charcoal. Hearth waste deposit 376 sample contains foraminifera and charred brassica seeds whereas hearth waste deposit 386 contains charred stems and reeds with charred seeds of sedges and nettles.

C.3.15 Two of the six fills of pit **379** were sampled; fill 384 contained foraminifera and may represent filtration silts whereas sample of fill 385 contains charcoal and charred seeds of common dogwood and may represent the disposal of hearth waste within this feature.

Trench 10: Saltern 12

C.3.16 The filtration waste (357) of Saltern 12 is unusual in that it contains charcoal, charred stems and fungal sclerotia which is an assemblage more likely to represent hearth waste. Hearth waste 387 from this saltern is rich in charcoal content.

Trench 11

C.3.17 The sample from silt layer 392 which overlay ditch **390** contains untransformed dead-nettle and goosefoot seeds along with numerous foraminifera of which at least three species were noted. Ostracods are also present. Fill 391 of ditch **390** also contains at least three species of foraminifera but is devoid of other remains. It is possible that the foraminifera have percolated through the deposits as they are <1mm in size.

Sample No.	Context No.	Trench no.	Volume processed (L)	Flot Volume (ml)	Cereals	Charred seeds	Untransformed seeds	Estimated charcoal volume (ml)	Molluscs	Ostracods	Foraminifera	Duckweed	Hydrobia	Animal bone	Fired clay/briquetage	Fuel Ash Slag
250	360	4	14	5	#	0	#	<1	+/+	+	0	0	+	0	+++	#
251	361	7	12	35	0	0	#	10	+/+	+	0	0	0	#	++++	#
252	362	7	16	2	0	0	#	0	+/+	0	+	0	0	0	0	0
253	366	7	16	1	0	0	#	0	0	0	0	0	0	0	0	0
254	367	7	18	10	0	#	0	<1	++/+	0	0	0	0	0	+++	#
255	363	7	18	30	0	0	#	<1	++/+	0	0	0	0	0	+++	#
256	375	7	6	1	0	0	#	0	0	0	0	0	0	0	0	0
257	376	8	8	15	0	##	0	2	+/+	0	+	0	0	0	++	#
258	377	8	8	3	0	0	0	1	+/+	0	+	0	0	#	0	0
259	378	8	9	30	0	#	0	1	0	0	0	0	0	0	++	#
260	356	8	8	5	0	#	0	<1	+/+	0	0	0	+	0	++	0
261	386	8	9	50	0	##	0	50	0	0	0	0	0	#	++	#
262	384	8	8	1	0	0	0	0	+/+	0	+	0	0	0	0	0
263	385	10	8	20	0	#	0	2	+/+	0	0	0	+	0	+++	#
264	357	10	14	20	0	0	##	3	+/+	0	0	0	0	0	+++	0
265	387	10	17	50	0	0	#	30	+/+	0	0	0	0	0	++	0
266	392	10	16	30	0	0	##	0	+/+	++	++	0	0	0	0	0
267	390	12	6	30	0	0	0	0	0	0	+	0	0	0	0	0

Table 6: Environmental samples

Discussion

C.3.18 The environmental samples taken during the evaluation of this site indicate that charcoal has been preserved which has the potential for species identification to indicate fuel type and also for radiocarbon dating (if required). The presence of fuel ash slag could indicate a different fuel choice such as seaweed.

C.3.19 Charred seeds have been recovered indicating that there is potential for further recovery from future excavations. Untransformed seeds are frequent but their contemporaneity is uncertain.

C.3.20 Foraminifera and ostracods are present and have the potential to provide information on salinity and environmental conditions. Molluscs have low potential in that the burrowing snail is frequent and other land and water snails are scarce.

C.3.21 If further excavation is planned for this area, it is recommended that environmental sampling is carried out in accordance with Historic England guidelines (2011).

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APPENDIX E OASIS REPORT FORM

Project Details

OASIS Number	Oxfordar3-238601
Project Name	Lynnsport 1: Land South of Aconite Road, King's Lynn, Norfolk

Start of Fieldwork	08/05/18	End of Fieldwork	14/05/18
Previous Work	No	Future Work	Yes

Project Reference Codes

Site Code	XNFARL18	Planning App. No.	16/02227/FM
HER Number	ENF139745	Related Numbers	

Prompt	Direction from Local Planning Authority – PPS 5
Development Type	Residential
Place in Planning Process	After full determination (eg. As a condition)

Techniques used (tick all that apply)

☐ Aerial Photography – interpretation	☐ Grab-sampling	☐ Remote Operated Vehicle Survey
☐ Aerial Photography - new	☐ Gravity-core	☐ Sample Trenches
☐ Annotated Sketch	☐ Laser Scanning	☐ Survey/Recording of Fabric/Structure
☐ Augering	☐ Measured Survey	☒ Targeted Trenches
☐ Dendrochonological Survey	☒ Metal Detectors	☐ Test Pits
☐ Documentary Search	☐ Phosphate Survey	☐ Topographic Survey
☒ Environmental Sampling	☐ Photogrammetric Survey	☐ Vibro-core
☐ Fieldwalking	☐ Photographic Survey	☐ Visual Inspection (Initial Site Visit)
☐ Geophysical Survey	☐ Rectified Photography	

Monument	Period
saltern	Early Medieval (410 to 1066)
Drainage ditch	Post Medieval (1540 to 1901)

Object	Period
Fired clay, fuel ash slag and pottery	Medieval (1066 to 1540)
Pottery, CBM and animal bone	Post Medieval (1540 to 1901)

Project Location

County	Norfolk
District	King's Lynn and West Norfolk
Parish	King's Lynn
HER office	Norfolk
Size of Study Area	3.61 ha
National Grid Ref	TF 63371 21278

Address (including Postcode)

Land South of Aconite Road, King's Lynn, Norfolk, PE30 3PJ

Project Originators

Organisation	OA East
Project Brief Originator	James Albone (NCC/HES)
Project Design Originator	Dr Matthew Brudenell (OA East)

Project Manager	Dr Matthew Brudenell (OA East)
Project Supervisor	Graeme Clarke (OA East)

Project Archives

	Location	ID
Physical Archive (Finds)	Norwich Castle Museum	ENF139745
Digital Archive	OA East	XNFARL18
Paper Archive	Norwich Castle Museum	ENF139745

Physical Contents	Present?	Digital files associated with Finds	Paperwork associated with Finds
Animal Bones	☐	☐	☐
Ceramics	☒	☒	☒
Environmental	☒	☒	☒
Glass	☐	☐	☐
Human Remains	☐	☐	☐
Industrial	☒	☒	☒
Leather	☐	☐	☐
Metal	☐	☐	☐
Stratigraphic		☐	☒
Survey		☒	☒
Textiles	☐	☐	☐
Wood	☐	☐	☐
Worked Bone	☐	☐	☐
Worked Stone/Lithic	☐	☐	☐
None	☐	☐	☐
Other	☐	☐	☐

Digital Media		Paper Media	
Database	☒	Aerial Photos	☐
GIS	☒	Context Sheets	☒
Geophysics	☐	Correspondence	☐
Images (Digital photos)	☒	Diary	☐
Illustrations (Figures/Plates)	☒	Drawing	☐
Moving Image	☐	Manuscript	☐
Spreadsheets	☐	Map	☐
Survey	☒	Matrices	☒
Text	☒	Microfiche	☐
Virtual Reality	☐	Miscellaneous	☒
		Research/Notes	☒
		Photos (negatives/prints/slides)	☒
		Plans	☒
		Report	☒
		Sections	☒
		Survey	☒

Further Comments

APPENDIX F WRITTEN SCHEME OF INVESTIGATION

Oxford Archaeology East
15 Trafalgar Way, Bar Hill
Cambridgeshire CB23 8SQ
tel 01223 850 500
fax 01223 850 599
email oaeast@oxfordarch.co.uk
web www.oxfordarchaeology.com

Written Scheme of Investigation
Archaeological Evaluation

Site name	**Land South of Anconite Road, King's Lynn (Lynnsport 1)**
Site code	**XNFARL16**
Location	**TF 63371 21278**
Project number	18968
Project type	Evaluation
Event number	ENF139745
Oasis number	Oxfordar3-238601
Planning Application No.	Pre application
Client	Lovell
Date	01 February 2016
Author	Dr Matthew Brudenell

TABLE OF CONTENTS

1. General background

This Written Scheme of Investigation (WSI) conforms to the principles identified in English Heritage's guidance documents 'Management of Research Projects in the Historic Environment', specifically the MoRPHE Project Manager's Guide (2006) and PPN3 (Project Planning Note 3): Archaeological Excavation.

All work will be conducted to professional standards, and will be executed in line with appropriate section of Gurney, D. 2003. 'Standard for Field Archaeology in the East of England', as adopted by the Association of Local Government Archaeological Officers for the East of England Region and published as 'East Anglian Archaeology Occasional Paper 14'.

1.1. Circumstances of the project

Oxford Archaeology East (OA East) have been commissioned by Lovell to undertake a programme of archaeological evaluation on land south of Aconite Road, King's Lynn, known as Lynnsport 1.

The requirements for the evaluation have been discussed with the Planning Archaeologist James Albone of Norfolk County Council Historic Environment Service, who has informed OA East that King's Lynn and West Norfolk Borough Council will be advised that any planning permission granted should be subject to pre-commencement archaeological conditions to investigate, record and advance understanding of heritage assets before they are damaged or destroyed.

The development will comprise the construction of residential dwellings, access roads and landscaping.

1.2. Location, geology and topography of the site

The site is located within the urban reach of King's Lynn, *c*. 2km east of the River Great Ouse. The site covers 3.61ha and is bounded by the Bawsey Drain to the south, a footpath to the west (the former line of the King's Lynn to Hunstanton Branch line, closed 1969), and residential development along Anconite Road to the north and east.

The southern central part of the site is covered by an all weather sports pitch (c. 680m^2), whist the western and eastern area of the site have tree plantations. Trees are also present in groups north of the sports pitch, and a line of trees flanks the northern perimeter of the site (the total tree cover being. c. 12670m^2). The rest of the site is covered by grass.

The underlying geology of the site comprises Jurassic Kimmeridge Clay Formation mudstone overlain by layers of clay and silt, which were deposited by tidal action during the Quaternary period. British Geological Survey borehole data from site (TF 63270 21250) revealed a typical Flandrian sequence of deposits, with an amorphous peat horizon (2.00m-3.20m below the ground surface) overlain by saltmarsh deposits of brown fine-grained silts and sands of the Terrington Beds.

The site is situated on a flat area of ground at approximately 3m OD.

2. Archaeological background

Although the surrounding landscape provides evidence of Prehistoric and Roman activity in the vicinity of the site (with stray finds of Roman coins, pottery, and a Neolithic polished axe recorded (NHER 5491, 11990 and 22955)), much of this area was unsuitable for occupation during later Prehistory and the Romano-British period, with any earlier traces of activity sealed beneath thick marine and freshwater Flandrian deposits. Whilst not discounting the importance of these deposits, and the potential buried Prehistoric land surfaces/shore-lines they protect, the immediate archaeological significance of the area falls largely within Medieval and Post-Medieval periods when the area was a saltmarsh environment.

Of particular significance to this area are Medieval and early Post-Medieval saltern mounds, some of which still survive as earthworks, or are visible as pale oval or floriform soilmarks. The mounds, which can be up to 200m across, were formed by the piling up of waste sand from salt filtration in the 'sand washing' process of salt extraction. An extensive swathe of saltern mounds are recorded at North Lynn. These not only reflect the importance of the Medieval salt industry at Lynn, but the location and progressive land reclamation along the Medieval coast line, with the easterly inland examples postulated as being the earliest in the sequence (westerly migration occurring as sites were gradually abandoned in favour of locations further out in the channel as the estuary of the Great Ouse silted and the coastline changed).

Within a 500m radius of the site there are at least 15 saltern mounds or sites where salt making activities have been identified (e.g. NHER 27928, 27899, 27864, 27909-12, 38265). The mounds are recorded to the north, east and west. More significantly, two saltern mounds have been mapped on the site itself. The largest lies in the north (NHER 27895) and is recorded from 1947 RAF vertical aerial photographs. The low mound is described as sub-rounded in plan with a maximum diameter of 80m. Immediately north is a course of a former salt marsh channel (possibly an earlier course of the Gaywood River, see NHER 28800), the line of which is preserved in the shape of the site's meandering northern perimeter boundary. Along the north-eastern edge of the site, this channel skirts the second smaller saltern mound, described as being 40m in diameter (NHER 13785). The channel itself is/was banked, though this may have been destroyed (NHER 13785).

The salt making industry declined during the post-medieval period, although several of the saltern mounds were put to other uses during this time, some being incorporated into the King's Lynn siege defences during the Civil War. It has been suggested that the bank associated with the salt marsh channel could represent an unfinished siegework (part of a bastion) dating to 1643 when the River Gaywood was fortified. However, this is unlikely as the feature is 1.1km from the Lynn town wall, which is beyond the effective range of mid 17th century cannon (NHER 13785

The subsequent drainage of the Fens during the 17th century exposed a large area of land in the environs of the site and made it available for cultivation. Remnant ridge and furrow or 'lazybedding' agricultural features are recorded to the south-east of of the site in the (NHER 2789-1), with further examples further south (NHER 27865). Earthworks of possible medieval banks, ditches and drains in the area also attest to the process of land reclamation which made the area habitable (e.g. NHER13785 and 27891).

The south-eastern part of the site was crossed by the route of the Midland and Great Northern Joint Railway, opened in 1864 and dismantled in 1886 (NHER 13581). This joined the King's Lynn to Hunstanton Branch line at the Gaywood Junction, to the south-west of the site, crossing the Bawsey Drain near the south-east corner of the current all weather sports pitch (the concrete support of the crossing still being present in the drain). The 1884 OS map of the area shows the route of the railway and the banked salt marsh channel at the north of the site. It also shows a road/track crossing the south-west corner of the site, and a second drain running approximately north-south toward the western end of the site (now under tree cover).

The OS series maps from 1927- 1951 show the site largely covered in trees, with the line of the dismantled railway marked. On the 1951 map, overhead power lines are shown along the line of the former railway. By 1974 the track that was once marked in the south-west corner of the site is now labelled a drain, and this is no longer present on the 1990 map. Lynnsport was opened in 1982, and the current site layout with the all weather sports pitch was established in the 1990s.

2.1. Aims of the evaluation

The evaluation will seek to establish the character, date, state of preservation, and extent of any archaeological remains within the development area. The scheme of works is designed to do the following:

- Provide sufficient coverage and exposure to enable excavation to establish the approximate form, date and purpose of any archaeological deposits, together with extent, localised depth and quality of preservation. In particular, the evaluation will target the two previously recorded saltern mound at the site. It will also examine the deeper, Flandrian sequence of deposits at the site.
- Provide sufficient coverage and exposure to evaluate the likely impact of past land uses, and the possible presence of masking deposits.
- Provide sufficient coverage and exposure to provide information to construct an appropriate archaeological conservation/mitigation strategy, dealing with preservation, the recording of archaeological deposits, working practices, timetables and order of cost.
- Set results in the local, regional, and national archaeological context.

2.2. Research frameworks

This investigation takes place place within, and will contribute to the goals of Regional Research Frameworks relevant to this area:

- *Research and Archaeology: A Framework for the Eastern counties: 1. Resource Assessment* (Glazebrook 1997, East Anglian Archaeology Occasional Papers 3);
- *Research and Archaeology: A Framework for the Eastern counties: 2. Research Agenda and Strategy* (Brown & Glazebrook 2000, East Anglian Archaeology Occasional Papers 8)
- *Research and Archaeology Revisited: A Revised Framework for the East of England* (Medlycott 2011, East Anglian Archaeology Occasional Papers 24).

3. Methods

The archaeological evaluation will be conducted in accordance with current best archaeological practice and the appropriate national and regional standards and guidelines.

All work will be conducted in accordance with the Institute for Archaeologists':

- Code of Conduct
- Standard and Guidance for Archaeological Watching Briefs
- Standard and Guidance for Archaeological Field Evaluations
- Standard and Guidance for Archaeological Excavation.

Additional guidelines, specific to the region, which we also adhere to are:

- *Standards for Field Archaeology in the East of England* (East Anglian Archaeology Occasional Paper 14)

Fieldwork will also be undertaken in accordance with the requirements of the OA Field Manual (ed. D Wilkinson 1992), and the revised OA fieldwork manual (publication forthcoming). Further guidance is provided to all excavators in the form of the OA *Fieldwork Crib Sheets – a companion guide to the Fieldwork Manual.* These have been issued ahead of formal publication of the revised Fieldwork Manual.

3.1. Background research

Data from the Norfolk Historic Environment Record (HER) has been obtained for this project (a 500m search radius) and read in preparation of this document. The relevant results are briefly summarised in Section 2 above. The results will be fully incorporated into the final evaluation report and supplemented by further documentary research where appropriate.

3.2. Trial Trenching

A total of 510m of linear trenching (seven 50m long by 2m wide trenches and four 40m long by 2m wide trenches) will be excavated across the area proposed for development (a *c.* 3% of sample). These will be opened in the positions indicated on the plan attached to this WSI, and agreed during prior consultation with James Albone of Norfolk County Council Historic Environment Service. The trenches have been positioned to address the aims in Section 2.1, and avoid existing trees and the easement around Bawsey Drain to the south of the site.

The trenches will set out by a Lecia survey-grade GPS fitted with "smartnet" technology with an accuracy of 5mm horizontal and 10mm vertical. Before trenching the footprint of each trench will be scanned by a qualified and experienced operator using a CAT and Genny that has a valid calibration certificate. During machine stripping (and in consultation with Norfolk County Council Historic Environment Service), the location of trenches may be altered if there are site obstructions, services, or modern disturbance. If so, the location of affected trenches will be re-surveyed.

The trenches will be excavated by a mechanical excavator to the depth of the first geological horizon, or to the upper interface of archaeological features or deposits, whichever is encountered first. On the basis of the existing borehole data it is anticipated that archaeological features and deposits that are a) potentially surviving; b) potentially under threat from development and c) cable of being

investigated by trial trenched evaluation, will be stratified immediately below the topsoil and any made ground deposits. On areas of the site where the known salterns are located, it may be necessary to use double width trenches to access the primary deposits of the mounds.

A toothless ditching bucket (2m wide) will be used to excavate all trenches.

Topsoil, subsoil, and archaeological deposits will be kept separate during excavation, to allow for sequential backfilling of excavations. Trenches will not be backfilled without the approval of the Norfolk County Council Historic Environment Service.

All machine excavation will take place under constant supervision of a suitably qualified and experienced archaeologist. The top of the first archaeological deposit will be cleared by machine, but will then be cleaned off by hand. Exposed surfaces will be cleaned by trowel and hoe as necessary, in order to clarify located features and deposits. Any archaeological deposits present will then be excavated by context to the level of the geological horizon where safe to do so. Trench spoil will be scanned visually and with a metal detector to aid recovery of artefacts.

3.3. Excavation of archaeological features and deposits

Excavation of all archaeological deposits will be done by hand unless otherwise agreed by the Norfolk County Council Historic Environment Service. Significant archaeological features (e.g. solid or bonded structural remains, building slots or post-holes) will be preserved intact, even if fills are sampled.

Exposed surfaces will be cleaned by trowel and hoe as necessary in order to clarify features and deposits. Unless otherwise agreed by the Norfolk County Council Historic Environment Service, all features will be investigated and recorded to provide an accurate evaluation of archaeological potential, whilst at the same time minimising disturbance to archaeological structures, features and deposits.

There will be sufficient excavation to give clear evidence for the period, depth, and nature of any archaeological deposit. Investigation slots through all linear features will be a least 1m in width. Discrete features will be half-sectioned or excavated in quadrants where they are large or found to be deep. In necessary, an auger will be used to gain information from deep deposits below 1m in depth.

The depth, nature and potential artefact content of colluvial or other masking deposits will also investigated and recorded across the site.

Any natural subsoil surface revealed will be hand cleaned and examined for archaeological deposits and artefacts.

3.4. Recording of archaeological features and deposits

Records will comprise survey, drawn, written and photographic data. A register of all trenches, features, photographs, survey levels, small finds, and human remains will be kept.

Each context will be individually documented on context sheets, and hand drawn in section and plan. Written descriptions will be recorded on pro-forma sheets comprising factual data and interpretative elements.

Where stratified deposits are encountered, a Harris Matrix will be compiled during the course of the excavation.

Trench plans will normally be drawn at 1:50, but on deeply-stratified sites a scale of 1:20 will be used. Detailed plans of individual features or groups will be at an appropriate scale (1:10 or 1:20). Levels will be taken at tops and bottoms of trenches using the GPS and on archaeological deposits and significant artefacts, and will be displayed on all drawn plans and sections.

All site drawings will include the following information: site name, site code, scale, plan or section number, orientation, date and the name or initials of the archaeologist who prepared the drawing.

The photographic record will comprise high resolution digital photographs and 35mm film black and white photographs.

Photographs will include both general site shots and photographs of specific features. Every feature will be photographed at least once. Photographs will include a scale, north arrow, site code, and feature number (where relevant), unless they are to be used in publications. The photograph register will record these details, and photograph numbers will be listed on corresponding context sheets.

3.5. Finds recovery

At the start of work, a finds supervisor will be appointed to oversee the collection, processing, cataloguing, and specialist advice on all artefacts collected.

Finds will be exposed, lifted, cleaned, conserve, marked, bagged, and boxed in line with the standards in:

- United Kingdom Institute for Conservators (2012) *Conservation Guidelines No. 2*
- Watkinson & Neal (1988) *First Aid for Finds*
- Chartered Institute for Archaeologists (2014) *Standard and Guidance for the Collection, Documentation, Conservation and Research of* Archaeological Materials
- English Heritage (1995) *A Strategy for the Care and Investigation of Finds.*

Artefacts will be collected by hand and metal detector. Excavation areas and spoil will be scanned visually and with a metal detector to aid recovery of artefacts. All finds will be bagged and labelled according to the individual deposit from which they were recovered, ready for later cleaning and analysis. 'Special/small finds' may be located more accurately by GPS if appropriate.

All artefacts recovered from excavated features will be retained for post-excavation processing and assessment, except:

- those which are obviously modern in date
- where very large volumes are recovered (typically ceramic building material)
- where directed to discard on site by the Norfolk County Council Historic Environment Service

Where artefacts are discarded on site, a sufficient number will be retained to characterise the date and function of the feature they were excavated from. A record will be kept of the quantity and nature of discarded artefacts.

3.6. Environmental sampling

Paleoenvironmental remains will be sampled and processed using the appropriate guidelines set out in:

- English Heritage (2011, 2nd edition) *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation*.
- Association for Environmental Archaeology (1995) *Environmental archaeology and archaeological evaluations. Recommendations concerning the environmental archaeology component of archaeological evaluations in England*. Working Papers of the Association for Environmental Archaeology 2. York: Association for Environmental Archaeology.
- Dobney, K., Hall, A., Kenward, H. & Milles, A. (1992) *A working classification of sample types for environmental archaeology*. Circaea 9.1: 24-26
- Murphy, P.L. & Wiltshire, P.E.J. (1994) *A guide to sampling archaeological deposits for environmental analysis*

The deeper Flandrian sequence of deposits at the site will be assessed on site by a suitably qualified Geoarchaeologist (Dr Steve Boreham, University of Cambridge), and investigated by core extraction. The core will be taken by auger, and a pollen assessment undertaken on the soil profile. The location of the core will be informed by the results of geotect ground invetigations at the site (forthcoming), and will be discussed in advance with the Norfolk County Council Historic Environment Service.

The core will be retrieved from a combination of a manual hand auger and/or mechanical power auger as appropriate, depending on ground conditions. The equipment will comprise a standard hand operated soil auger. A selection of different auger heads will be employed in order to deal with the variety of sediment types that may be encountered (i.e. dutch or gouge auger). The sediment recovered at will be laid out according to depth. Care will be taken to minimise contamination of samples through soil sloughing into the hole upon inserting the auger or from sidewall contamination when removing an auger with open sides.

The mechanical power auger maybe employed depending on ground conditions The power auger may be operated as a windowless sampler or with the flexible liner system to retrieve undisturbed samples. The sampler system comprises as series of standard window sample barrels that will extract 0.5m - 1m cores of sediment. On extraction from the hole, the sediment profile is visible down the open side of the sample barrel from where it can be photographed and logged. Small bulk samples will be cut from the barrel from each observable context and retained as appropriate.

In the trenching, bulk samples (up to 40 litres or 100% of context) will be taken from a range of site features and deposits to target the recovery of plant remains (charcoal and macrobotantiocals) fish, bird, small mammal and amphibian bone and small artefacts. Typically, 10 litres of each bulk sample will be processed using tank flotation, with the remaining sub-sample processed where appropriate. Waterlogged samples will be wet sieved and stored in cool or wet conditions as appropriate.

Where practical, waterlogged wood specimens will be recorded in detail on site, *in situ*. When removed, they will be cleaned and photographed, and stored in wet cool conditions for assessment by a suitably qualified specialist (see Appendix 1)

Where encountered and deemed necessary at this stage, monolith tins will be taken through palaeosols to target the recovery of pollen, molluscs, foraminifera, parasites and insects. The soil will also be inspected on site, or samples taken and

assessed off site, for its suitability for micromorphological study or other analytical techniques. This will be conducted by a suitably qualified specialist (see Appendix 1). Bulk samples will also be taken through palaeosols.

Where necessary aat this stage, range finder scientific dates will be obtained for critical contacts, e.g. the basal contact of peats over former dryland surfaces.

The project team will consult Historic England's Scientific Advisor on environmental sampling and dating where necessary.

3.7. Investigation of human remains

If human remains are encountered, the client, the local Coroner and the Norfolk County Council Historic Environment Service will be immediately informed.

Excavation may be required where human remains are under imminent threat, or if information on date and preservation is required. Human remains will be excavated in accordance with all appropriate Environmental Health regulations, and will only occur after a Ministry of Justice exhumation licence has been obtained.

3.8. Metal detecting and the Treasure Act

Metal detector searches will take place at all stages of the excavation by an experienced metal detector user. Both excavated areas and spoil heaps will be checked.

Metal detectors will not be set to discriminate against iron.

If finds are made that might constitute ‘Treasure’ under the definition of the Treasure Act (1996), they will, if possible, be excavated and removed to a safe place. Should it not be possible to remove the finds on the day they are found, suitable security will be arranged.

Such finds will be reported to the Norfolk Coroner within 14 days, in accordance with the Act. The Norfolk Finds Liaison Officer from the Portable Antiquities Scheme will also be informed.

3.9. Post-excavation processing

Processing will take place in tandem with excavation, and advice will be sought from relevant specialists on key artefact types. The Project Manager and fieldwork project officer will be given feedback to enable them to develop excavation strategies during fieldwork.

Any finds requiring specialist treatment and conservation will be sent for appropriate treatment.

Finds will be marked with context numbers, site code or accession number.

3.10. Changes to the method statement

If changes need to be made to the methods outlined above – either before or during works on site – the Norfolk County Council Historic Environment Service will be informed and asked to consider changes before they are made. Changes will be agreed in writing before work on site commences, or else at the earliest available opportunity.

4. Reporting and Archiving

4.1. Evaluation Report

The evaluation report will provide an objective account of the archaeological investigation and its findings. It will contain a comprehensive, illustrated assessment of the local and regional context in which the archaeological evidence rests, and highlight any relevant research issues within regional and national research frameworks.

The report will include:

- a title page detailing site address, site code and accession number, NGR, author/originating body, client's name and address
- full list of contents
- a non-technical summary of the findings
- a description of the geology and topography of the area
- a description of the methodologies used
- a description of the findings
- site and trench location plans, and plans of each area excavated showing the archaeological features found
- sections of excavated features
- interpretation of the archaeological features found
- specialist reports on artefacts and environmental finds
- relevant photographs of features
- a predictive model of surviving archaeological remains, where affected by development proposals, and assessment of their importance
- Appendices including the aerial photograph assessment and geophysical survey
- the OASIS reference and summary form.

4.2. Draft and final reports

A draft digital copy of the report will be supplied to the Norfolk County Council Historic Environment Service Planning Archaeologists for comment. Following approval of the draft report, a copy will be sent to the client for submission to the Local Planning Authority, and a copy will supplied to the Norfolk County Council Historic Environment Service for deposition with the Norfolk HER.

A copy of the approved report will be uploaded to the OASIS database.

4.3. Archiving

The site archive will conform to the requirements of MoRPHE and the deposition of archaeological archives with the Norfolk Museums and Archaeology Service (2010).

OA East will seek to transfer title of ownership of the complete project archive to Norfolk Museum and Archaeology Service or another registered local depository at the appropriate time. Until then, all artefactual and paper archive material relating to the project will be held in storage by OA East

All archives will comply in format with PPN3 recommendations. The project archive will follow the guidelines contained in Guidelines for the Preparation of Excavation Archives for Long Term Storage (United Kingdom Institute for Conservation, 1990),

Standards in the Museum care of Archaeological Collections (Museums and Galleries Commission 1992), Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation (Brown 2007), and Requirements for Deoposition of Fieldwork and Excavation Archives With Norfolk Museums and Archaeology Service (Version 3.2. 2010).

The archive will be quantified, ordered, and indexed. It will include:

- artefacts
- ecofacts
- project documentation – including plans, section drawings, context sheets and registers, specialist report (including sub-contracted specialist reports)
- photographs (digital photographs will be stored on CD-ROM, and colour printouts made of key features)
- a printed copy of the Written Brief
- a printed copy of the WSI
- a printed copy of the final report
- a printed copy of the OASIS form.

5. Timetable

Trial trenching will take approximately five days (excluding backfilling). This does not allow for delays caused by bad weather.

Post-excavation processing and assessment tasks will commence shortly after excavation commences, to inform the excavation strategy, and minimise time required to prepare the final report after excavation is completed.

Post-excavation tasks and report writing for trenching is anticipated to take 4 weeks following the end of fieldwork, unless there are exceptional discoveries requiring more lengthy analysis. The pollen assessment may take up to 10 weeks to completed, and may be issued as a separate report.

6. Staffing and support

6.1. Fieldwork

The fieldwork team will be made up of the following staff:
1 x Project Manager (supervisory only, not based on site)
1 x Project Officer/Supervisor (full-time)
3x Site Assistant (as required)
1 x Finds Assistant (part-time, as required)
1 x Environmental Assistant (part-time, as required)

The Project Manager will be Matt Brudenell

All Site Assistants will be drawn from a pool of qualified and experienced staff. Oxford Archaeology East will not employ volunteer, amateur, or student staff, whether paid or unpaid, except as an addition to the team stated above.

6.2. Post-excavation processing

Pottery will be assessed by Sarah Percival (prehistoric), Alice Lyons (Roman) and

Dr Paul Spoerry (Saxon and medieval).

Environmental analysis will be carried out by Steve Boreham (Cambridege University) and OA East staff, in consultation with the OA Environmental Department in Oxford. The results will be reported to the Historic England Scientific Advisor. Environmental analysis will be undertaken by Rachel Fosberry (charred plant macrofossils, plant macrofossils), Liz Stafford (land molluscs), and Denise Druce and Mairead Rutherford (pollen analysis).

Faunal remains will be examined by Lena Strid (Oxford Archaeology South) or Ian Smith (Oxford Archaeology North).

Conservation will be undertaken by Colchester Museums.

In the event that OA's in-house specialists are unable to undertake the work within the time constraints of the project, or if other remains are found, specialists from the list at Appendix 1 will be approached to carry out analysis.

7. Other matters

7.1. Insurance

OA East is covered by Public and Employer's Liability Insurance. The underwriting company is Allianz Cornhill Insurance plc, policy number SZ/14939479/06. Details of the policy can be seen at the OA East office.

7.2. Services, Public Rights of Way, Tree Preservation Orders etc.

The client will inform the project manager of any live or disused cables, gas pipes, water pipes or other services that may be affected by the proposed excavations before the commencement of fieldwork. Hidden cables/services should be clearly identified and marked where necessary.

The client will likewise inform the project manager of any public rights of way or permissive paths on or near the land which might affect or be affected by the work.

The client will also inform the project manager of any trees subject to Tree Preservation Orders within the subject site or on its boundaries

7.3. Site security

Unless previously agreed with the Project Manager in writing, this specification and any associated statement of costs is based on the assumption that the site will be sufficiently secure for archaeological work to commence. All security requirements, including fencing, padlocks for gates etc. are the responsibility of the client.

7.4. Access

The client will secure access to the site for archaeological personnel and plant, and obtain the necessary permissions from owners and tenants to place a portable toilet on or near to the site if required. Any costs incurred to secure access, or incurred as a result of withholding of access will not be OA East's responsibility. The costs of any delays as a result of withheld access will be passed on to the client in addition to the project costs already specified.

7.5. Site preparation

The client is responsible for clearing the site and preparing it so as to allow archaeological work to take place without further preparatory works, and any cost statement accompanying or associated with this specification is offered on this basis.

Any other preparatory work, including tree felling and removal, scrub or undergrowth clearance, demolition of buildings or sheds, or removal of excessive overburden, refuse or dumped material, will be charged to the client, in addition to any costs for archaeological evaluation already agreed.

7.6. Site offices and welfare

All site facilities – including welfare facilities, tool stores, mess huts, and site offices – will be positioned to minimise disruption to other site users, and to minimise impact on the environment (including buried archaeology).

7.7. Backfilling/Reinstatement

Backfilling but not reinstatement of trenches is included in the cost unless otherwise agreed with the client.

7.8. Monitoring

The relevant planning authority will be informed appropriately of dates and arrangements to allow for adequate monitoring of the works. Monitoring will be conducted by representatives from the Norfolk County Council Historic Environment Service and meetings may be attended by the OA East project manager and client to discuss findings and progress.

7.9. Health and Safety, Risk Assessments

A risk assessment covering all activities to be carried out during the lifetime of the project will be prepared before work commences. This will draw on OA East's activity-specific risk assessment literature and conforms with CDM requirements.

All aspects of the project, both in the field and in the office will be conducted according to OA East's Health and Safety Policy, Oxford Archaeology Ltd's Health and Safety Policy, and Health and Safety in Field Archaeology (J.L. Allen and A. St John-Holt, 1997). A copy of OA East's Health and Safety Policy can be supplied on request.

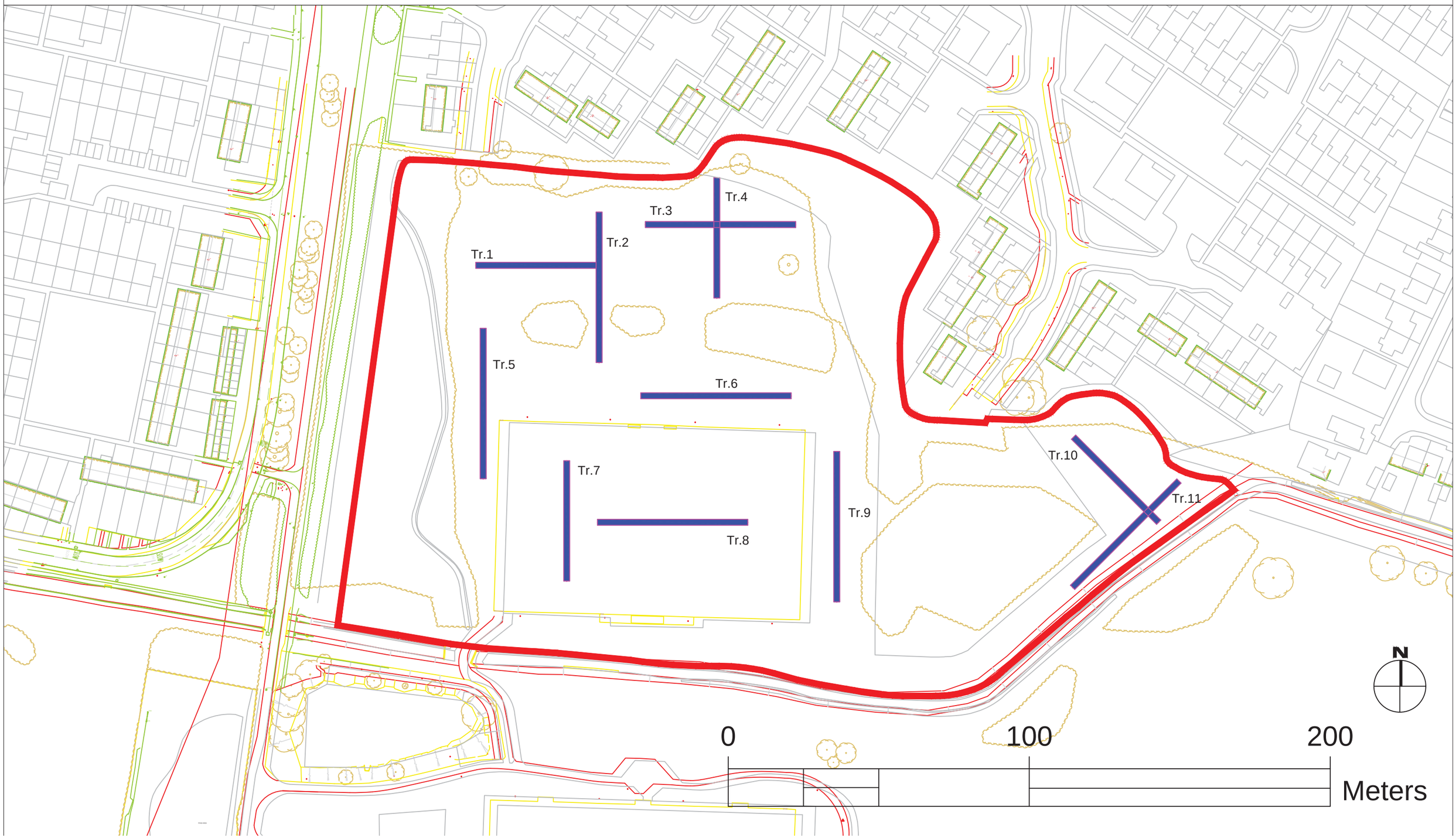
APPENDIX 1: CONSULTANT SPECIALISTS

NAME	SPECIALISM	ORGANISATION
Allen, Leigh	Worked bone, CBM, medieval metalwork	Oxford Archaeology
Allen, Martin	Medieval coins	Fitzwilliam Museum
Anderson, Sue	HSR, pottery and CBM	Suffolk County Council
Bayliss, Alex	C14	English Heritage
Biddulph, Edward	Roman pottery	Oxford Archaeology
Bishop, Barry	Lithics	Freelance
Blinkhorn, Paul	Iron Age, Anglo-Saxon and medieval pottery	Freelance
Boardman, Sheila	Plant macrofossils, charcoal	Oxford Archaeology
Bonsall, Sandra	Plant macrofossils; pollen preparations	Oxford Archaeology
Booth, Paul	Roman pottery and coins	Oxford Archaeology
Boreham, Steve	Pollen and soils/ geology	Cambridge University
Brown, Lisa	Prehistoric pottery	Oxford Archaeology
Cane, Jon	illustration & reconstruction artist	Freelance
Champness, Carl	Snails, geoarchaeology	Oxford Archaeology
Cotter, John	Medieval/post-Medieval finds, pottery, CBM	Oxford Archaeology
Crummy, Nina	Small Find Assemblages	Freelance
Cowgill, Jane	Slag/metalworking residues	Freelance
Darrah, Richard	Wood technology	Freelance
Dickson, Anthony	Worked Flint	Oxford Archaeology
Donelly, Mike	Flint	Oxford Archaeology
Doonan, Roger	Slags, metallurgy	
Druce, Denise	Pollen, charred plants, charcoal/wood identification, sediment coring and interpretation	Oxford Archaeology
Drury, Paul	CBM (specialised)	Freelance
Evans, Jerry	Roman pottery	Freelance
Faine, Chris	Animal bone	Oxford Archaeology
Fletcher, Carole	Medieval pot, glass, small finds	Oxford Archaeology
Fosberry, Rachel	Charred plant remains	Oxford Archaeology
Fryer, Val	Molluscs/environmental	Freelance
Gale, Rowena	Charcoal ID	Freelance
Geake, Helen	Small finds	Freelance
Gleed-Owen, Chris	Herpetologist	
Goffin, Richenda	Post-Roman pottery, building materials, painted wall plaster	Suffolk CC
Hamilton-Dyer, Sheila	Fish and small animal bones	
Howard-Davis, Chris	Small finds, Mesolithic flint, RB coarse pottery, leather, wooden objects and wood technology;	Oxford Archaeology
Hunter, Kath	Archaeobotany (charred, waterlogged and mineralised plant remains)	Oxford Archaeology
Jones, Jenny	Conservation	ASUD, Durham

NAME	SPECIALISM	ORGANISATION
		University
King, David	Window glass & lead	
Locker, Alison	Fishbone	
Loe, Louise	Osteologist	Oxford Archaeology
Lyons, Alice	Late Iron Age/Roman pottery	Oxford Archaeology
Macaulay, Stephen	Roman pottery	Oxford Archaeology
Masters, Pete	geophysics	Cranfield University
Middleton, Paul	Phosphates/garden history	Peterborough Regional College
Mould, Quita	Ironwork, leather	
Nicholson, Rebecca	Fish and small mammal and bird bones, shell	Oxford Archaeology
Palmer, Rog	Aerial photographs	Air Photo Services
Percival, Sarah	Prehistoric pottery, quern stones	Freelance
Poole, Cynthia	Multi-period finds, CBM, fired clay	Oxford Archaeology
Popescu, Adrian	Roman coins	Fitzwilliam Museum
Rackham, James	Faunal and plant remains, can arrange pollen analysis	
Riddler, Ian	Anglo-Saxon bone objects & related artefact types	Freelance
Robinson, Mark	Insects	
Rowland, Steve	Faunal and human bone	Oxford Archaeology
Rutherford, Mairead	Pollen, non-pollen palynomorphs, dinoflagellate cysts, diatoms	Oxford Archaeology
Samuels, Mark	Architectural stonework	Freelance
Scaife, Rob	Pollen	
Scott, Ian	Roman, Medieval, post-medieval finds, metalwork, glass	Oxford Archaeology
Sealey, Paul	Iron Age pottery	Freelance
Shafrey, Ruth	Worked stone, cbm	Oxford Archaeology
Smith, Ian	Animal Bone	Oxford Archaeology
Spoerry, Paul	Medieval pottery	Oxford Archaeology
Stafford, Liz	Snails	Oxford Archaeology
Strid, Lena	Animal bone	Oxford Archaeology
Tyers, Ian	Dendrochronology	
Ui Choileain, Zoe	Human bone	Oxford Archaeology
Vickers, Kim	Insects	Sheffield University
Wadeson, Stephen	Samian, Roman glass	Oxford Archaeology
Walker, Helen	Medieval Pottery in the Essex area	
Way, Twigs	Medieval landscape and garden history	Freelance
Webb, Helen	Osteologist	Oxford Archaeology
Willis, Steve	Iron Age pottery	
Young, Jane	Medieval Pottery in the Lincolnshire area	
Zant, John	Coins	Oxford Archaeology

Radiocarbon dating is normally undertaken for Oxford Archaeology East by SUERC and by the Oxford University Accelerator Laboratory.
Geophysical prospection is normally undertaken by Cranfield University, Geoquest, and Geophysical Surveys, Bradford.

Trench Plan Lynnsport 1



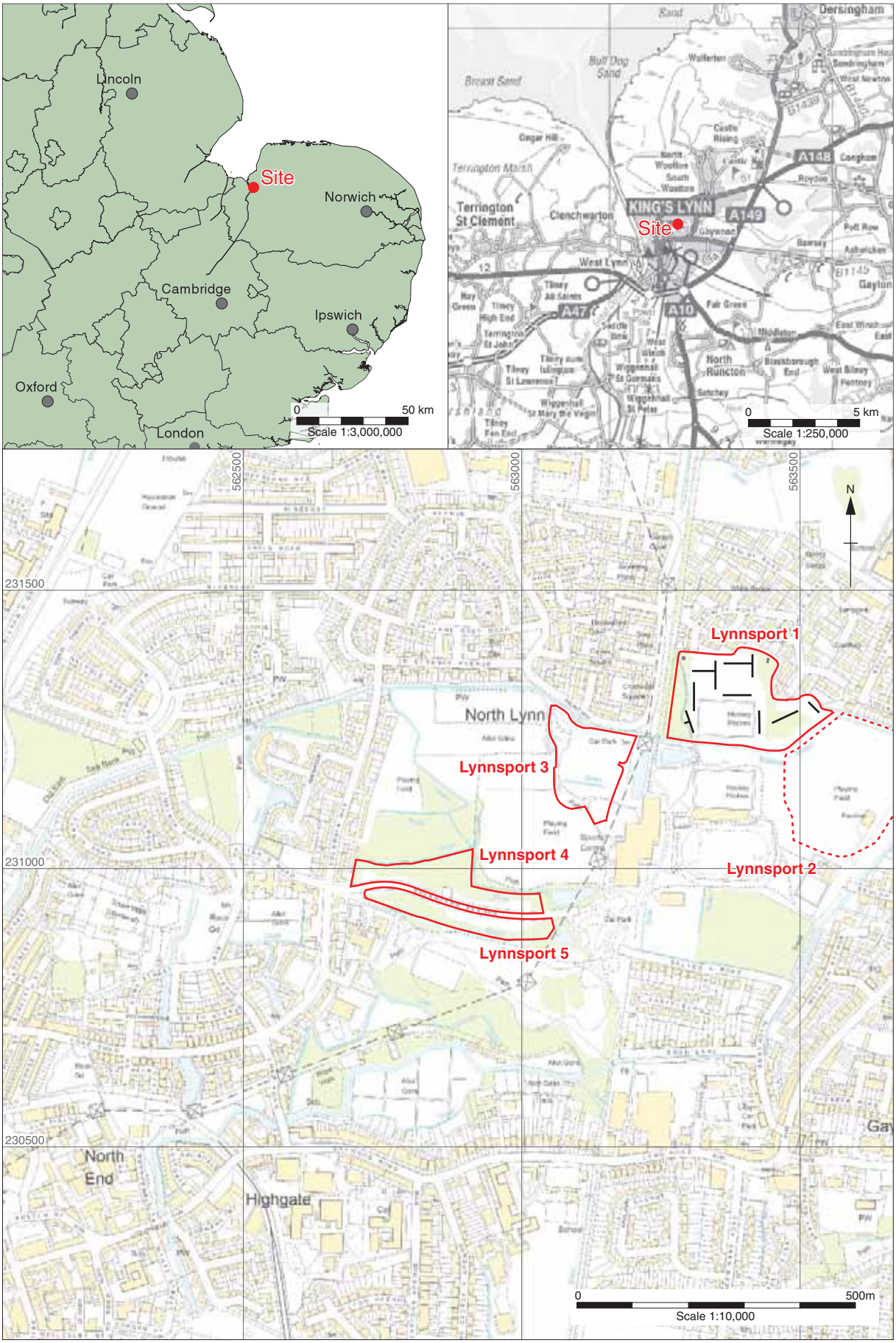


Figure 1: Site location showing archaeological trenches (black) and test pits (dark grey) in development area (red)

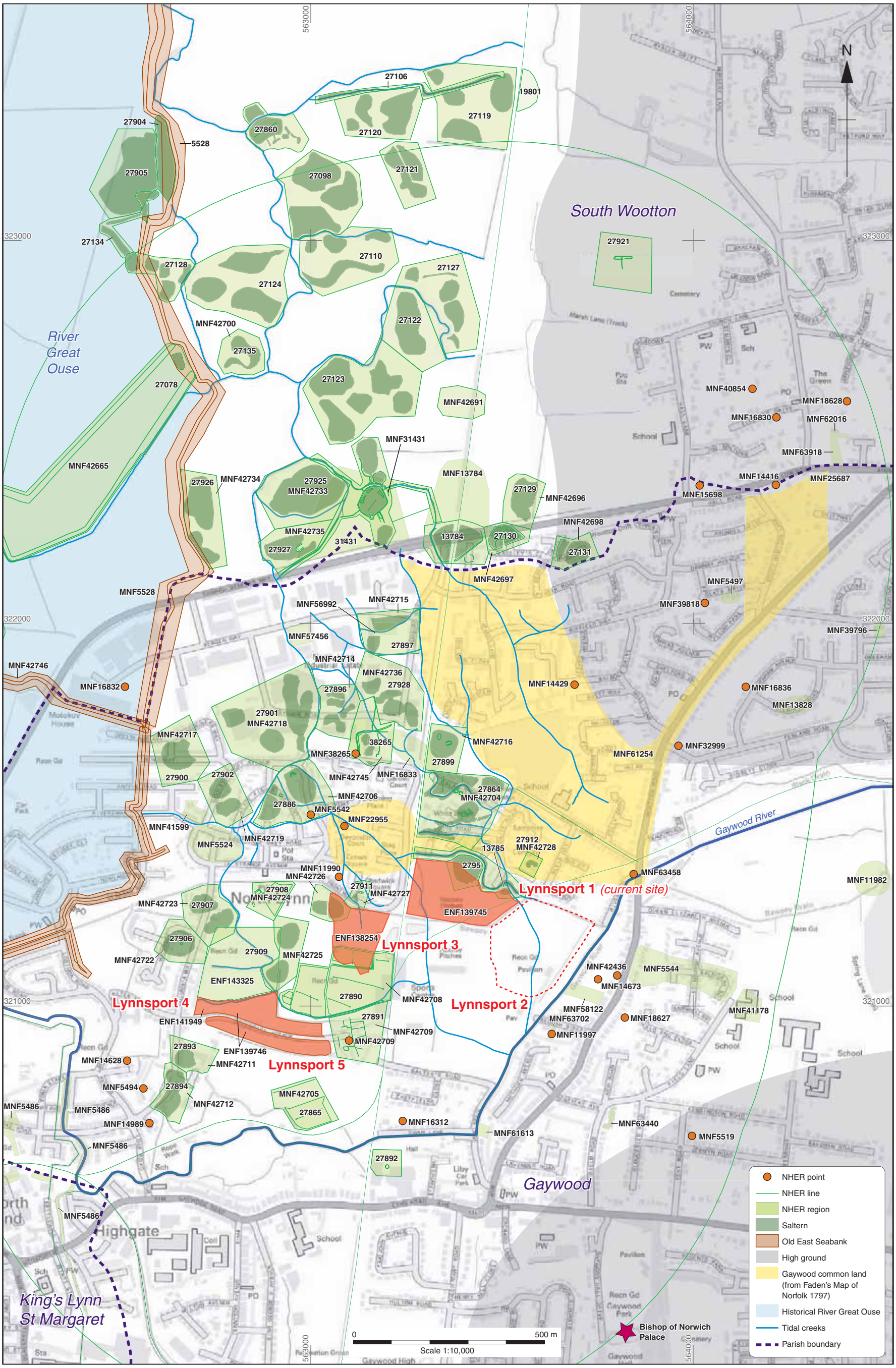


Figure 2: Map showing location of NHER records with NMP data (Copyright Historic England National Mapping Programme, licensed to Norfolk County Council). Sea banks & pre-existing tidal creeks mapped from historic photograph (NHER reference: TF62_TF6321_A_RAF_16Apr1946.tif). Site development areas shown in red.

Figure 3: Inclosure around map of 1810 (extract) (NRO ref.: BL14-41). Location of site marked (red)

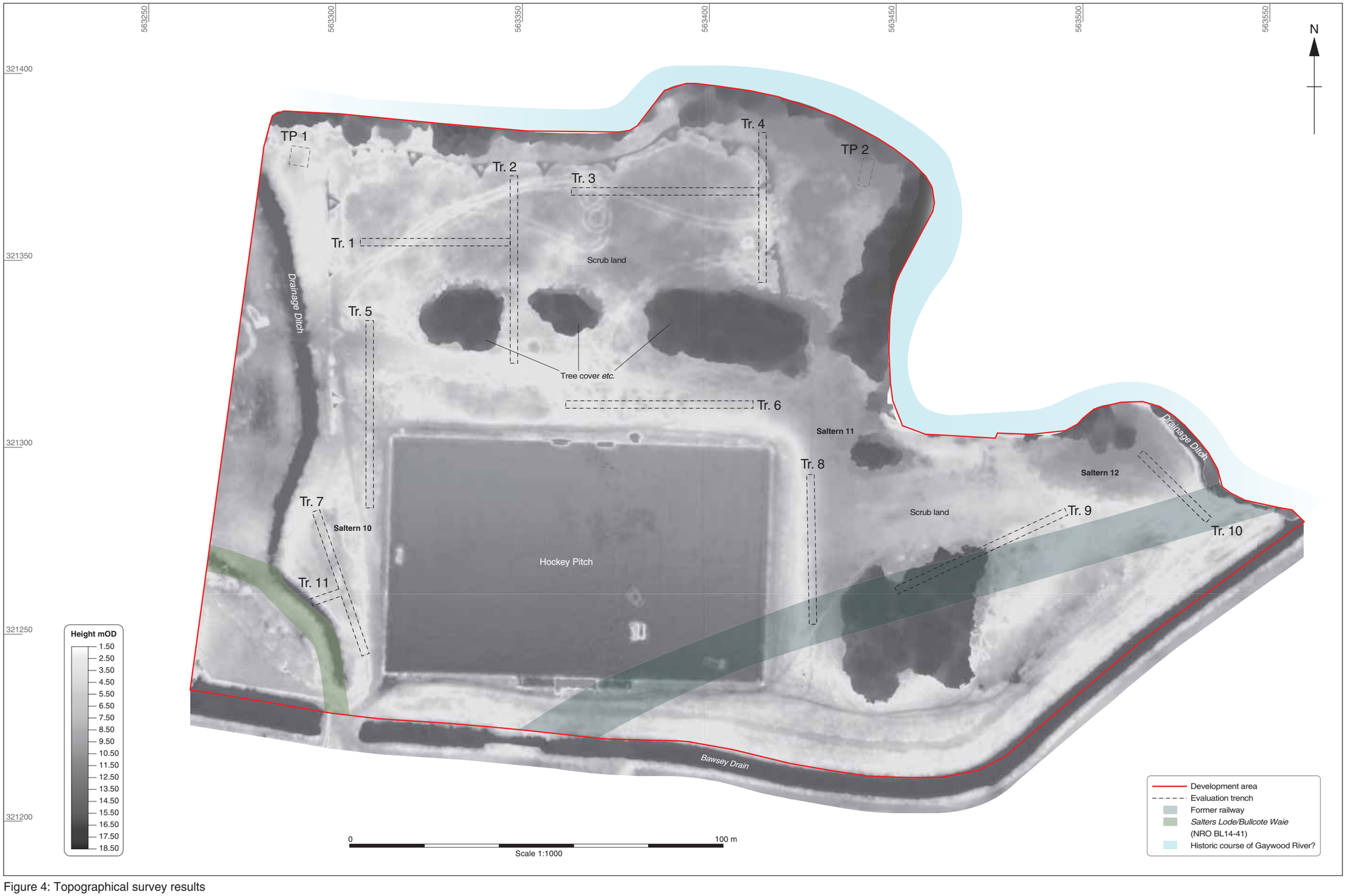


Figure 4: Topographical survey results

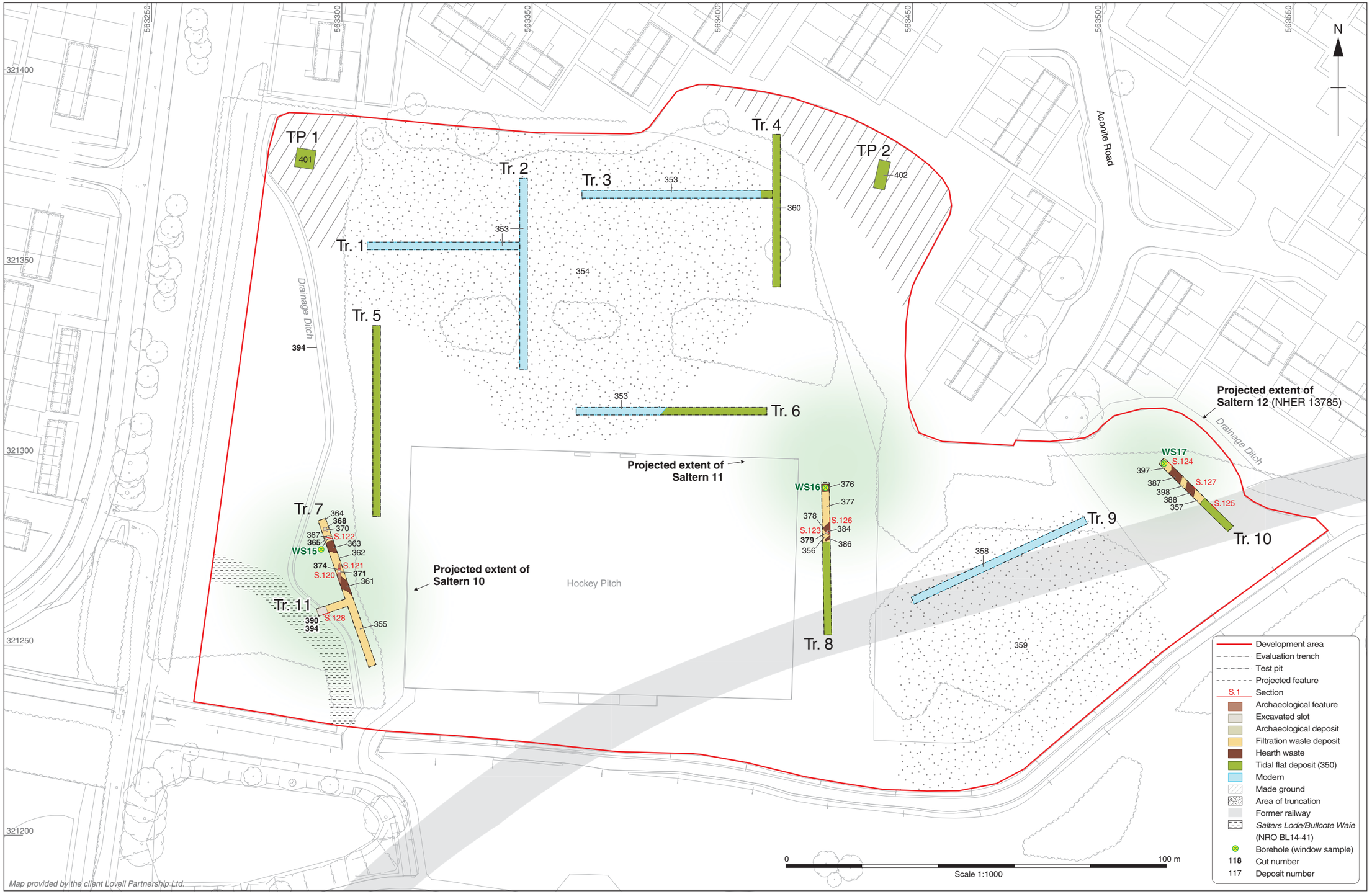


Figure 5: Results of evaluation, showing borehole (WS) locations

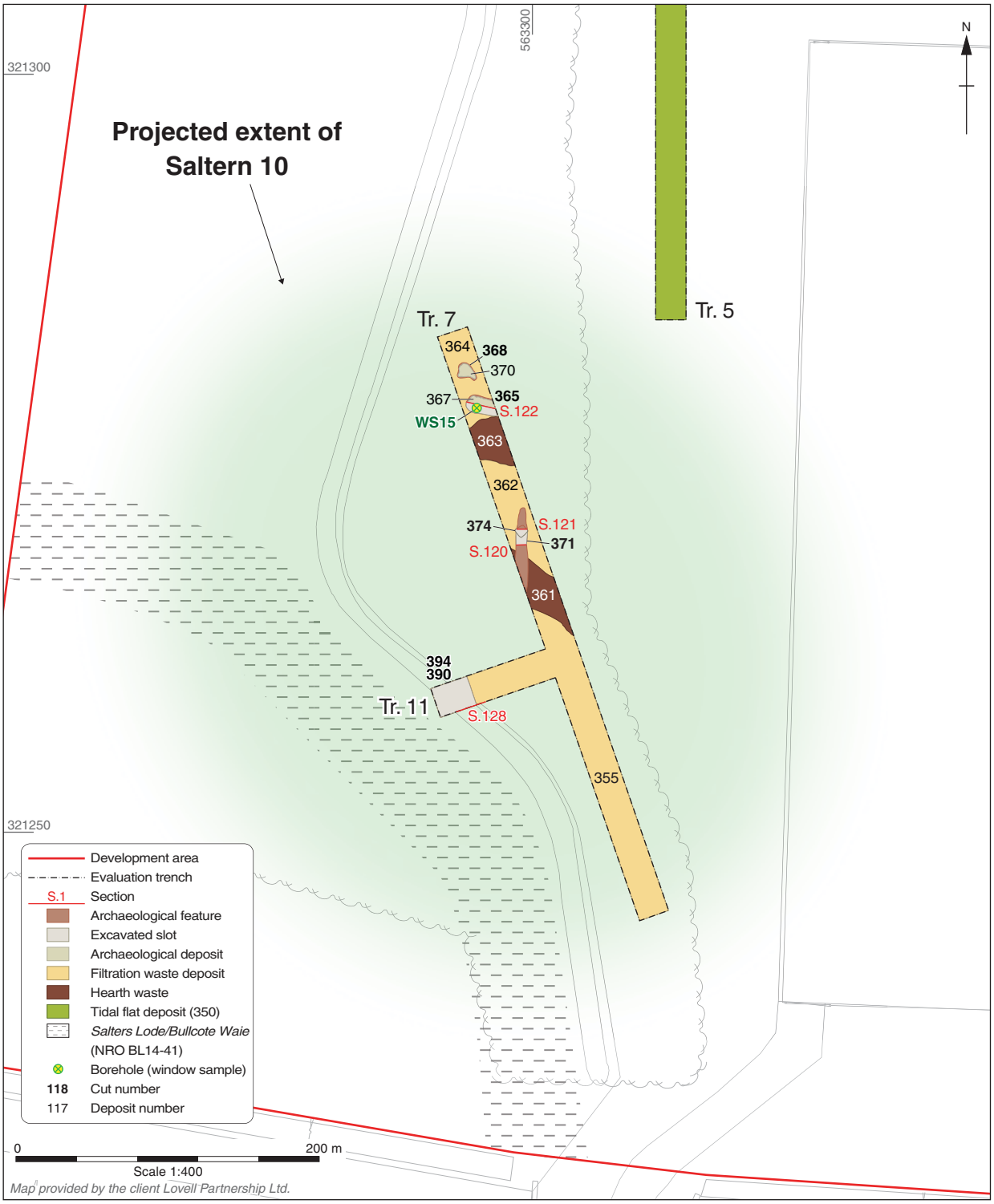


Figure 6: Plan of Saltern 10 remains in Trenches 7 and 11

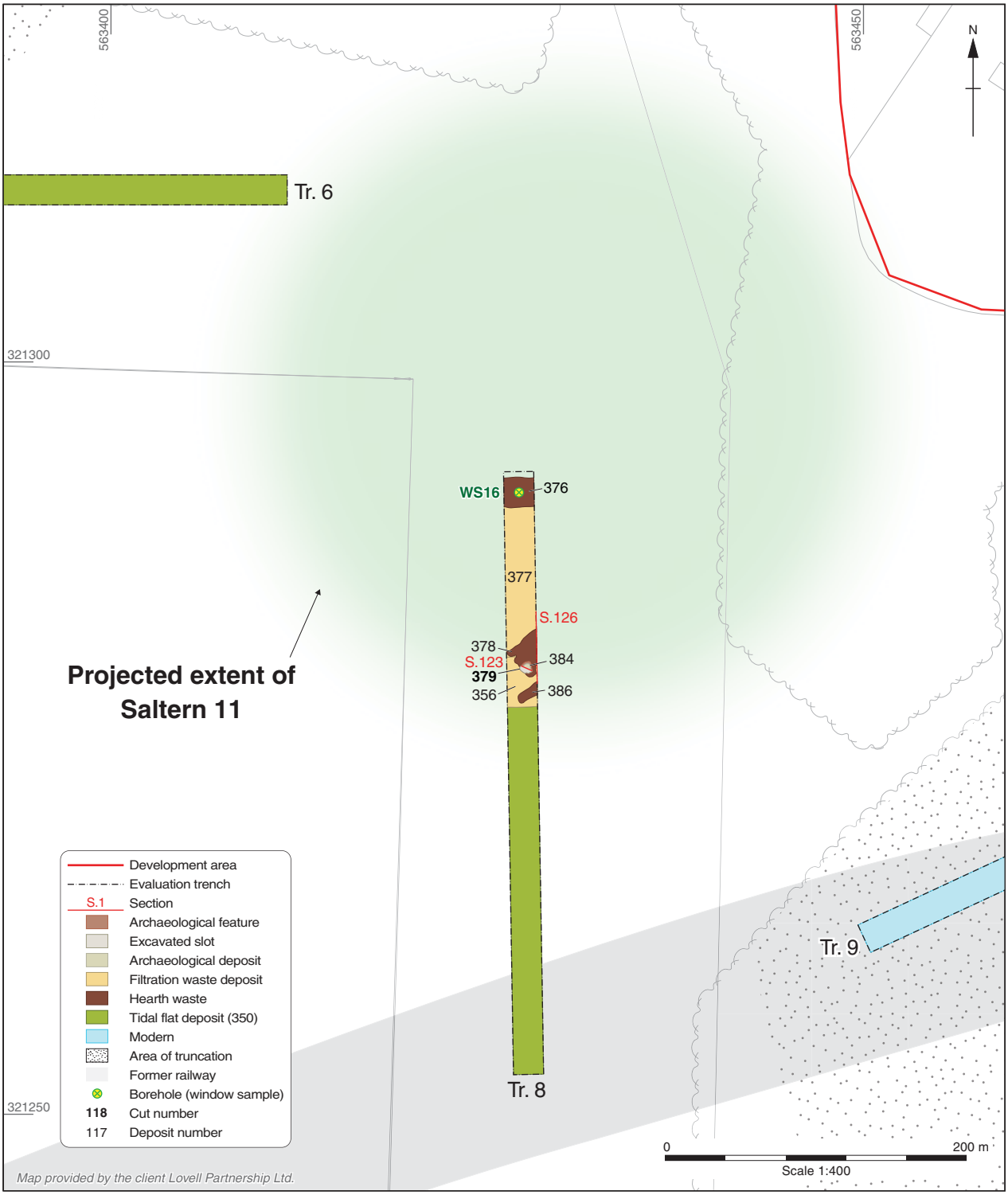


Figure 7: Plan of Saltern 11 remains in Trench 8

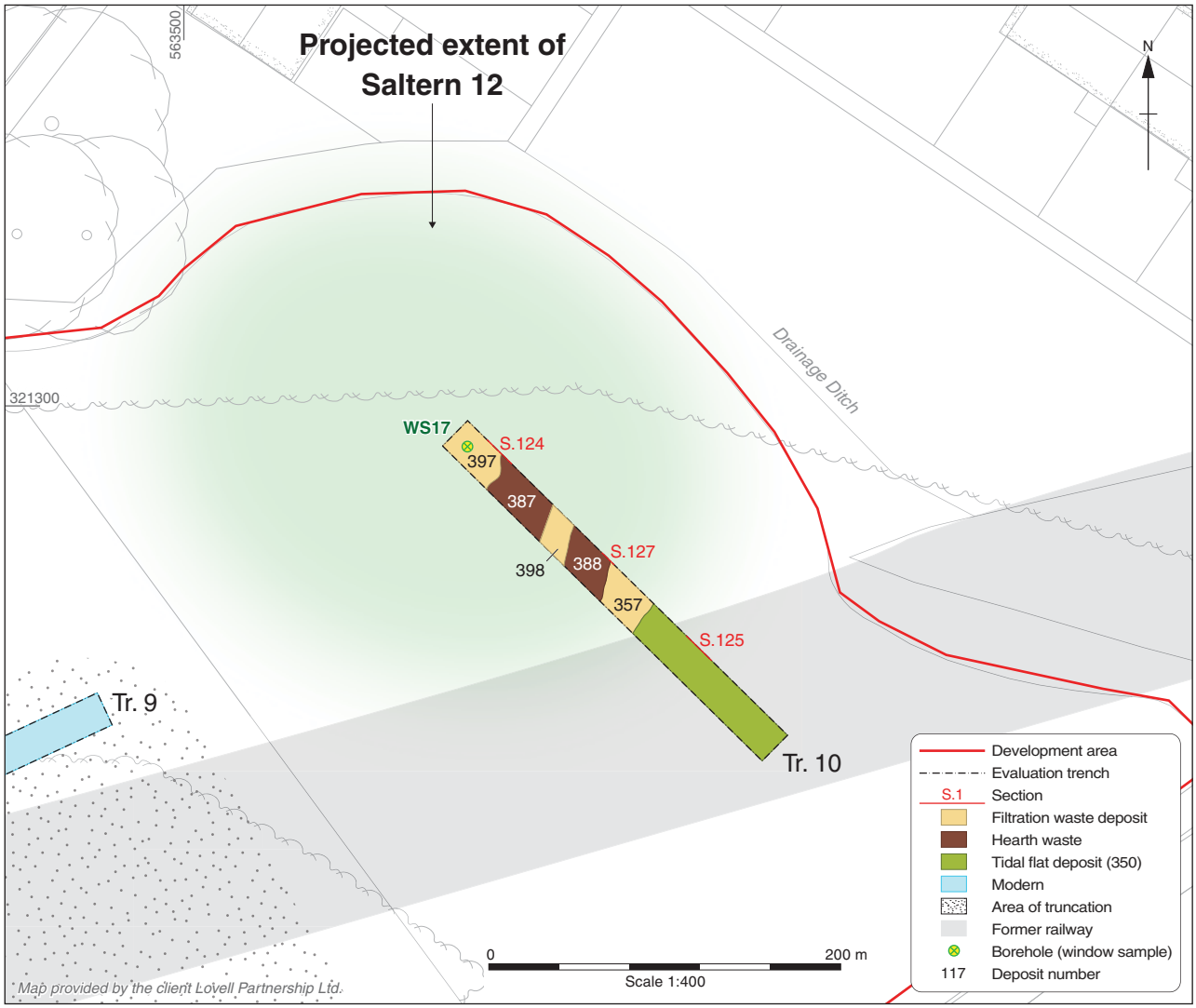


Figure 8: Plan of Saltern 12 remains in Trench 10

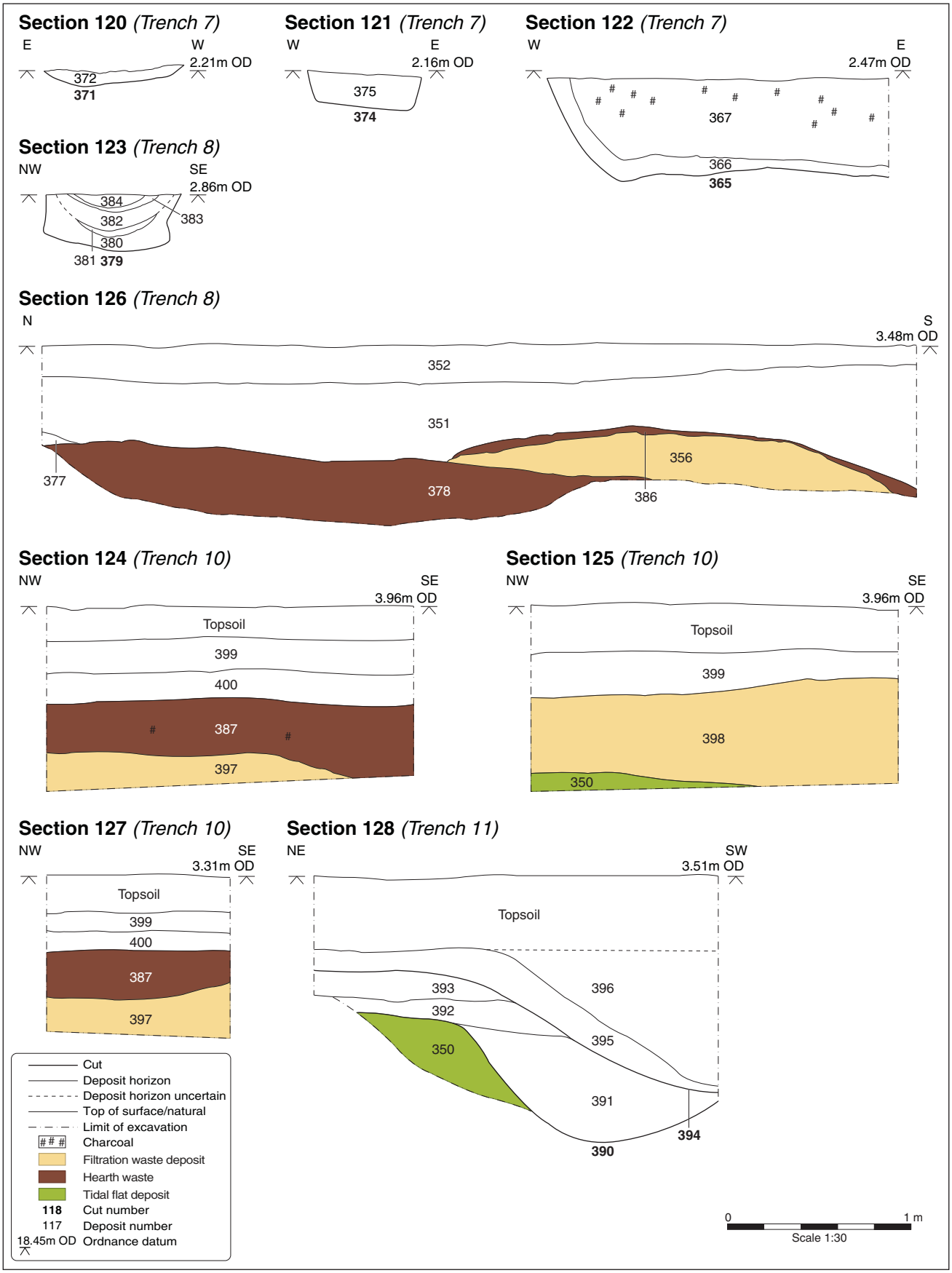


Figure 9: Selected sections

Plate 1: Historic aerial photograph with the site outlined in red (NHER reference: TF62_TF6321_A_RAF_16Apr1946.tif)

Plate 2: Pit **365** in Trench 7, looking north

Plate 3: Pit **374** in Trench 7, looking north

Plate 4: Pit **379** in Trench 8, looking north

Plate 5: Saltern 11, hearth waste deposit 378 in Trench 8, looking east

Plate 6: Saltern 12, hearth waste deposit 388 in Trench 10, looking northwest

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