



Lynnsport 4 & 5: Land adjacent to Greenpark Avenue, King's Lynn, Norfolk Archaeological Evaluation Interim Report

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Lynnsport 4 & 5: Land adjacent to Greenpark Avenue, King's Lynn, Norfolk

Archaeological Evaluation Interim Report

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Summary

Oxford Archaeology (OA) carried out a strip and map excavation between 27th February and 3rd March 2017 at Lynnsport 4 & 5: Land adjacent to Greenpark Avenue, King's Lynn, Norfolk. This work was commissioned by Lovell Partnerships Ltd. The site comprised 2.79 hectares of undeveloped land, within the urban reach of King's Lynn, proposed for residential development. The site is bisected by Greenpark Avenue which divides Lynnsport 4 (1.6 hectares) to the north and Lynnsport 5 (1.19 hectares) to the south.

The current site constitutes the first area of a wider scope of works (Lynnsport 1-5) scheduled to be evaluated by Oxford Archaeology. These works lie in a significant area of industrial archaeological remains relating to salt-making, prevalent during the medieval and early post-medieval periods.

The evaluation revealed evidence for salt-making on the site in the form of three mounds of deposits and their associated features comprising Salterns 1-3. Two of these salterns (Salterns 1 and 2) were located within Lynnsport 4, to the north of Greenpark Avenue. The remains of a further saltern (Saltern 3) was located to the south of Greenpark Avenue within Lynnsport 5. The majority of Saltern 3 appeared to extend north beneath the current Greenpark Avenue. As well as revealing waste deposits from the salt-making process constituting the saltern mounds, the evaluation also revealed in-situ remains of a probable brine-boiling hearth and a clay-lined water tank. A large pit cut into Saltern 2 containing the broken-up remains of a probable hearth along with tips of burnt and ash presumably hearth waste deposits. These remains were considered to be typical of the known medieval salt-making remains previously excavated in the area.

The evaluation also revealed part of two curvilinear ditches (Hayricks 1 and 2), probably representing drip gullies of post-medieval hayricks, also known as 'Riley circles'. The post-medieval dated for these features was reinforced with the recovery of a post-medieval ceramic tobacco pipe-stem from the fill of one of these features.

In addition to these remains, tree-pits were also identified of more recent date and associated with the orchard that once extended across the site.

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The project was managed for Oxford Archaeology by Matthew Brudenell. The fieldwork was directed by Graeme Clarke, who was supported by Christof Heisterman, Kathryn Blackbourn, Malgorzata Kwiatkowska and Lindsey Kemp. Survey and digitizing were carried out by David Brown and Charlotte Walton. Thanks are also extended 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 Lovel Partnerships Ltd to undertake a trial trench evaluation at the site of Lynnsport 4 and 5: Land adjacent to Greenpark Avenue, King's Lynn, Norfolk (TF 62897 20966; Fig. 1).
- 1.1.2 The work was undertaken as a condition of Planning Permission (planning ref. 16/01327/FM)/to inform the Planning Authority in advance of a submission of a Planning Application. 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. 1.5km east of the River Great Ouse (Fig. 1). The site covers 2.79ha on a flat area of ground at approximately 2.8-3.3m OD. The site is bounded by a drain to the south (the south edge of the former Salter's Road), woodland and recreation fields to the north, residential development along Columbia Way to the west, and ponds to the east. The site is bisected by Greenpark Avenue, which divides Lynnsport 4 (1.60ha; Plate 1) to the north, from Lynnsport 5 (1.19ha; Plate 2) to the south. Large areas of the site are currently covered by trees.
- 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 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.

1.3 Archaeological and historical background

- 1.3.1 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. 400m to the north (NHER 11990), and a Late Neolithic/Early Bronze Age arrow head. c. 250m to the south-west (NHER 5494)), 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 (the arrow head 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 Medieval and Post-Medieval periods when the area was a saltmarsh environment.
- 1.3.2 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).

- 1.3.3 The site lies toward the southern distribution of saltern mounds in North Lynn, although 11 have been recorded with a 500m radius of the site (e.g. NHER 27893-4, 27906-7, 27909-10). These are located immediately north, north-west, and south-west of the site. 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.
- 1.3.4 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/ 'lazybedding' agricultural features and ditches have been identified immediately to the north and east of the site (NHER 2790-91), with further examples c. 50m to the south (NHER 27865). These were recorded by aerial photography in 1947 and 1961. The examples to the east (NHER 27891) included ditches aligned approximately north-south and east-west, a rectangular enclosure with an apparent entrance on its southern side, and a D-shaped enclosure. This system may extend into the site.
- 1.3.5 The OS series maps from 1884 show the site north of Salter's Road. The plot was covered by a tree plantation/orchard, and was bisected two north-east to south-west aligned field boundaries and a track. Up to seven buildings were depicted on the site between 1884-1958, most of which are likely to be sheds or barns. Some of these are visible on aerial photographs taken in 1946, which shows north-east to south-west aligned horticultural strips across the eastern part of the site and area of pasture and trees to the west.
- 1.3.6 Columbia Way appears on the OS maps from 1974, and Greenpark Avenue – which bisected the site east-west – is shown on the 2002 OS map.

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 2016) 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.

2.2 Methodology

2.2.1 In accordance with the WSI (Brudenell 2016) a total of 420m of linear trenching were excavated (Trenches 12-20), representing a 3% sample of the 2.79ha proposed development area. Six trenches (Trenches 12, 14-16, 17 & 20) were proposed to be 50m long by 2m wide and three trenches (Trenches 13, 18 & 19) were to be 40m long by 2m wide.

2.2.2 Subsequently, during the excavation Trench 12 was extended eastwards to a total length of 55m to investigate the natural deposits immediately to the east of Saltern 1. Similarly, Trench 19 was extended westwards to a total length of 55m to determine the eastern extent of the salt-making deposits of Saltern 2.

2.2.3 Machine excavation was carried out under constant archaeological supervision with 360° mechanical excavators using 2m-wide toothless ditching buckets.

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 colour and monochrome photographs were taken of all relevant features and deposits.

2.2.7 A total of 11 bulk samples were taken from the excavated features. These each totalled 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. Further context descriptions with dimensions are given in Appendix A; Table 1.
- 3.1.2 Figure 2 shows the location of the site in relation to the Norfolk Heritage Environment Records (NHER) for the area. Figure 3 provides an overall plan of the results of the evaluation and Figures 4-7 provide a more detailed plan of the features encountered in each trench. Selected sections of features are given in Figure 8.

3.2 Borehole investigations – deposit model

Introduction

- 3.2.1 As part of the archaeological evaluation of the site, a borehole was drilled using mechanical hand-auguring technique to sample a layer of buried peat for pollen analysis. The peat was known to lie at depth beneath the site between layers of tidal flat deposits. The underlying geology, including the layer of buried peat, was mapped in February 2016 during ground investigation works by Richard Jackson Ltd as part of the development of the site (WS1-9; Fig. 3; Sheridan & Warner 2016). The Oxford Archaeology borehole (WS10; Fig. 3) was placed on the natural tidal flat deposits at the western end of Trench 18.
- 3.2.2 In addition, a single borehole was also drilled by Oxford Archaeology (WS11 & WS12; Fig. 3) using manual hand-auguring technique into Salterns 1 and 2 to determine the extent of the salt-making deposits comprising these mounds.
- 3.2.3 This section details the interpretation of the sedimentary sequence revealed by the boreholes.

Results

WS10

- 3.2.4 The results of borehole WS10 confirmed the underlying stratigraphic sequence of deposits beneath the site revealed during the previous ground investigation work (WS1-9; Sheridan & Warner 2016). Borehole WS10 was drilled into the natural deposits within the western end of Trench 18, at a height of 2.34m OD:

- 0-1.92m below ground level (bgl): firm yellowish brown clayey silt (Group 4)
- 1.92-3.01m bgl: soft dark olive brown organic clayey silt (Group 6)
- 3.01-3.15m bgl: dense grey sand with a grey clay lense (Group 7)

WS11 & 12

- 3.2.5 The deposits comprising Salterns 1 and 2 were also mapped with boreholes WS11 and WS12 respectively, in order to understand the formation processes of these mounds.

3.2.6 Borehole WS11 was drilled into the Saltern 1 deposits within Trench 12, at a height of 3.04m OD:

- 0-0.4m bgl: loose orange brown silty fine sand (Group 9)
- 0.4-1.1m bgl: soft pale brown fine sandy silt (Group 9)
- 1.1-1.5m bgl: soft pale bluish grey fine sandy silt (Group 5)
- 1.5m+ bgl: soft dark blue fine sandy silty clay (Group 5)

3.2.7 Borehole WS12 was drilled into the Saltern 2 deposits within Trench 18, at a height of 3.14m OD:

- 0-1.5m bgl: soft pale brown fine sandy silt (Group 9)
- 1.5-1.8m bgl: soft dark grey fine sandy SILT (Group 9)
- 1.1-1.5m bgl: soft pale bluish grey fine sandy silt (Group 5)
- 1.8m+ bgl: soft dark blue fine sandy SILT (Group 5)

Deposit model for the site

3.2.8 The deposits revealed in the beneath the site during these borehole investigations may be grouped into nine units, described stratigraphically below:

- **Group 8:** Firm grey silty clay with a little gravel content.
This group represents the Kimmeridge Clay bedrock geology.
- **Group 7:** Dense brown sand and gravel.
This group probably represents fluvial deposits.
- **Group 6:** Soft dark brown and reddish brown organic sandy silt.
This group represents buried peat.
- **Group 5:** Firm bluish grey silty clay with a little fine sand content.
This group represents natural tidal flat deposits underlying the saltern mound deposits (Group 9).
- **Group 9:** Loose pale brown and dark grey silts and sands.
This group represents medieval/early post-medieval saltern mound deposits.
- **Group 4:** Firm light brown silty clay with a little fine sand content.
This group represents post-medieval marsh deposits found to overlie the leading edges of the saltern mound deposits (Group 9).
- **Group 3:** Soft orange brown sandy silt.
Subsoil.
- **Group 2:** Soft dark grey sandy silt with roots.
Topsoil.

- **Group 1:** Firm dark brown, slightly gravelly Clay with roots and inclusions of brick, coal and concrete.

This group represents disturbed Made Ground located intermittently across the site.

3.2.9 Ground conditions throughout the evaluation were generally good, and the trenches remained dry throughout. Archaeological features, where present, were easy to identify against the underlying natural geology.

3.3 General distribution of archaeological deposits

3.3.1 Figure 3 provides an overall plan of the results of the evaluation. The evaluation revealed the substantial remains of two saltern mounds (Salterns 1 and 2) within Trenches 12 and 18 respectively of Lynnsport 4 to the north of Greenpark Avenue. Both these mounds comprised mainly of deposits derived from silt filtration and brine boiling processes indicative of the salt-making industry of the area during the medieval period. The remains of a probable brine boiling hearth and clay-lined water tank were also revealed in Saltern 1. A pit was also revealed cut into Saltern 2 that contained a burnt deposit with much fired clay that may also represent a dump of hearth waste. The less substantial remains of a third saltern mound (Saltern 3) in Trench 17 of Lynnsport 5 appeared to extend mainly beneath the current Greenpark Avenue carriageway. No datable artefacts were recovered from any of the saltern mound deposits.

3.3.2 Part of two ring gullies, probably representing drip gullies of post-medieval hayricks (Hayricks 1 and 2) were revealed in Trench 15. The post-medieval dated for these features was confirmed with a ceramic tobacco pipe-stem recovered from the fill of one of these features.

3.3.3 In addition to these remains, tree-pits were also identified in Trenches 15 and 16 of more recent date and probably associated with orchard shown on historical maps that once extended across the site.

3.4 Lynnsport 4 (Trenches 12, 13, 15, 16, 18 & 19)

3.4.1 A total of six trenches were excavated to the north of Greenpark Avenue (Fig. 3; Table 1). Trench 13 was found to be devoid of archaeological features. All the trenches were found to be located over the recent natural marsh deposits of Group 4 (see Section 3.2.8).

Trench number	Length (m)	Average topsoil depth (m)	Average subsoil depth (m)	Archaeological summary	Finds
12	55	0.2	0.4	Medieval Saltern 1 (deposits 40, 41 & 42). Brine-boiling hearth 34 and clay-lined water tank 37	34 (35) fired clay
13	40	0.2	0.4	No archaeology	None

Trench number	Length (m)	Average topsoil depth (m)	Average subsoil depth (m)	Archaeological summary	Finds
15	50	0.2	0.4	2 x post-medieval hayricks 1 (ring gullies 24=26) and 2 (ring gullies 28=30) & 1 modern orchard tree-pit 32	28 (29) & 32 (33) ceramic tobacco pipe stem
16	50	0.2	0.4	7 x modern orchard tree-pits 10, 12, 14, 16, 18, 20, 22	18 (19) and 22 (23) ceramic tobacco pipe stem
18	50	0.25	0.3	Medieval Saltern 2 (deposits 44, 45 & 46) and Pit 47	47 (48) fired clay
19	55	0.3	-	Medieval Saltern 2 (deposit 44)	None

Table 1: Lynnsport 4 summary trench descriptions

Trench 12

- 3.4.2 Immediately below the subsoil of Trench 12, on the western edge of the site, lay the remains of hearth **34** (Fig. 4). The hearth lay towards the western end of the trench at its point greatest elevation of approximately 3.04m OD; the crest of a mound of salt-making deposits (Saltern 1). It comprised a sub-rectangular feature, 1.54m long, 0.96m wide by 0.19m deep (Section 14). The fired clay hearth base (35) survived *in situ* (Plates 3 & 4). A circular area of more hardened green clay (39) was observed on the inner wall. The hearth base was overlain by waste backfill deposit 36 consisted of soft dark brownish grey sandy silt with inclusions of fired clay and charcoal.
- 3.4.3 A short distance to the west of the hearth lay the heavily truncated remains of probable clay-lined water tank **37** (Fig. 4; Plate 5). Only the rectangular clay-lined base of the feature survived (38), up to 0.05m thick (Section 13). The feature measured 1.4m long and 0.48m wide with a flat base to the cut revealed beneath the firm bluish grey clay.
- 3.4.4 These features were cut into the mound deposits of Saltern 1 (41) that consisted of soft yellowish brown fine sandy silt. As demonstrated by the excavation of the nearby saltern at Marsh Lane (Clarke 2016) these silts are demonstrated to be the build-up of waste silt deposits from silt filtration units associated with the medieval salt-making process. Towards the eastern edge of the mound lay evidence for further structure of deposits within Saltern 1. Deposit 41 was overlain by a layer of soft dark grey fine sandy silt (40) up to 0.15m thick. This upper layer, towards the leading edge of the saltern mound, was also similar to the upper burnt deposits representing brine boiling hearth waste uncovered in the nearby Marsh Lane saltern (Clarke 2016). Further yellowish brown waste filtration silts (42) were observed on the very edge of the exposed mound, where they were in turn overlain by the more recent marsh deposits of Group 4 (see Section 3.2.8).

Trench 15

- 3.4.5 In the central part of Lynnsport 4, Trench 15 contained features of post-medieval and modern date (Fig. 5). Two post-medieval hayricks (Hayricks 1 and 2) comprised curvilinear ditches projected to encircle c.10m diameter areas (Plate 6). Two sections of each of the ditch cuts (**24=26** & **28=30** respectively) were excavated that measured 0.25m wide and between 0.15m-0.2m deep, with U-shaped profiles (Sections 8 and 10). The fills (25=27 & 29=31 respectively) consisted of firm dark greyish brown sandy silt. Fill 29 contained post-medieval ceramic tobacco pipe-stem fragments (2g).
- 3.4.6 In addition, a single orchard tree-pit of modern date was revealed within the circuit of Hayrick 1. Tree-pit **32** measured 0.5m in diameter and 0.1m deep with a single fill (33) that consisted of firm greyish brown sandy silt. This fill yielded post-medieval ceramic tobacco pipe-stem fragments (3g).

Trench 16

- 3.4.7 This Trench, to the east of Trench 15, revealed a row of seven orchard tree-pits on a north-south alignment. The tree-pits (**10, 12, 14, 16, 18, 20** and **22**) measured 0.5m in diameter and 0.2m deep, with U-shaped profiles (Sections 1 and 4). The fills (11, 13, 15, 17, 19, 21 and 23 respectively) consisted of firm dark greyish brown sandy silt. The fill of tree-pits **18** and **22** contained fragments (2g and 5g respectively) of post-medieval ceramic tobacco pipe-stem.

Trench 18

- 3.4.8 This trench, in the eastern part of Lynnsport 4, were the remains of a large pit (**47**); Fig. 6). The pit lay towards the eastern end of the trench at its point greatest elevation of approximately 3.04m OD; the crest of a mound of salt-making deposits (Saltern 2; Plate 7). The pit measured up to 3.9m in diameter and found to be greater than the 1m depth the excavation allowed (Section 15; Plates 8 and 9). The single backfill (48) consisted of a mix of soft dark grey, red and yellow brown fine sandy silt. This burnt, ash like fill yielded 291g of fired clay.
- 3.4.9 Similar to the features of Saltern 1 (see Section 3.4.4), the pit was cut into the mound deposits of Saltern 2 (44) that consisted of soft yellowish brown fine sandy silt. As described for the deposits comprising Saltern 1, these deposits originated from the filtration of salt encrusted silts as part of the salt-making process. Towards the western edge of the mound lay evidence for further structure of deposits within the saltern. Deposit 44 was overlain by a layer of soft dark grey fine sandy silt (45) up to 0.15m thick. This upper layer, towards the leading edge of the saltern mound, similar to the upper burnt deposits present in Saltern 1 to the west, probably represents brine boiling hearth waste. Further yellowish brown waste filtration silts (46) were observed on the very edge of the exposed mound, where they were in turn overlain by the more recent marsh deposits of Group 4 (see Section 3.2.8).

Trench 19

- 3.4.10 This trench, the easternmost trench of Lynnsport 4, was extended westwards to delineate the eastern extent of the deposits of Saltern 2 revealed in Trench 18.

3.5 Lynnsport 5 (Trenches 14, 17 & 20)

- 3.5.1 A total of three trenches were excavated to the south of Greenpark Avenue (Fig. 3; Table 2). Trenches 14 and 20 were found to be devoid of archaeological features. All the trenches were found to be located over the recent natural marsh deposits of Group 4 (see Section 3.2.8).

Trench number	Length (m)	Average topsoil depth (m)	Average subsoil depth (m)	Archaeological summary	Finds
14	40	0.3	0.2	No archaeology	None
17	50	0.3	-	Medieval Saltern 3 (deposit 43)	None
20	50	0.3	-	2 x modern ditches (not excavated)	Modern brick, tile, glass and metal (not retained)

Table 1: Lynnsport 5 summary trench descriptions

Trench 17

- 3.5.2 In the central part of Lynnsport 5, Trench 17 revealed a low mound of firm yellow brown fine sandy silt (43) at its western end (Saltern 3; Fig. 7; Plate 10). These deposits, similarly to the deposits of Salterns 1 and 2 described above, are likely derived from silt filtration as part of the salt-making process during the medieval period.

3.6 Finds summary

Fired clay

- 3.6.1 Two features from the evaluation produced quantities of fired clay. The remains of a probable *in-situ* hearth base (35) from an enclosed brine boiling hearth **34** was revealed associated with Saltern 1 in Trench 12. A quantity of fired clay, possibly representing a broken-up enclosed brine boiling hearth was also recovered from the ashly fill of pit **47** in Trench 18 associated with Saltern 2.

Salt-making slag

- 3.6.2 Fragments of greenish vesicular slag, of the same type recovered from the nearby saltern excavated at Marsh Lane (Clarke 2016), were collected from probable hearth waste tip 40 of Saltern 1 exposed within Trench 12. The slag probably formed during the high heat process involved in salt-making in brine boiling hearths.

Ceramic tobacco pipe stem

- 3.6.3 Ceramic tobacco pipe stem fragments were recovered from the fill (29) of post-medieval Hayrick 2 in Trench 15 and from the fills of three of the excavated modern orchard tree-pits (**18**, **22** & **32**) revealed in Trenches 15 and 16.

4 DISCUSSION

4.1 Medieval salt-making remains

- 4.1.1 The evaluation revealed evidence for salt-making on the site in the form of three mounds of deposits and their associated features comprising Salterns 1-3. Two of these salterns (Salterns 1 and 2) were located within Lynnsport 4, to the north of Greenpark Avenue. The remains of a further saltern (Saltern 3) was located to the south of Greenpark Avenue within Lynnsport 5. The majority of Saltern 3 appeared to extend north beneath the current Greenpark Avenue. As well as revealing waste deposits from the salt-making process constituting the saltern mounds, the evaluation also revealed in-situ remains of a probable brine-boiling hearth and a clay-lined water tank. A large pit cut into Saltern 2 containing the broken-up remains of a probable hearth along with tips of burnt and ash presumably hearth waste deposits. These remains were considered to be typical of the known medieval salt-making remains previously excavated in the area, such as the excavations at Marsh Lane (Clarke 2016).

4.2 Post-medieval and modern remains

- 4.2.1 The evaluation also revealed part of two curvilinear ditches (Hayricks 1 and 2), probably representing drip gullies of post-medieval hayricks, also known as 'Riley circles'. The post-medieval dated for these features was reinforced with the recovery of a post-medieval ceramic tobacco pipe-stem from the fill of one of these features.
- 4.2.2 In addition to these remains, tree-pits were also identified of more recent date and associated with the orchard that once extended across the site.

APPENDIX A CONTEXT INVENTORY

Context	Cut	Trench	Category	Feature Type	Function	Breadth	Depth	Colour	Fine component	Coarse component	Compaction	Shape in Plan	Profile	Phase
1			layer	made ground	modern									0
2			layer	natural	topsoil			dark grey	sandy silt		soft			0
3			layer	natural	subsoil			orange brown	sandy silt		soft			0
4			layer	natural	marsh deposit			light brown	sandy silty clay		firm			0
5			layer	natural	tidal deposit			bluish grey	sandy silty clay		firm			0
6			layer	natural	peat			dark brown and reddish brown	organic sandy silt		soft			0
7			layer	natural	tidal deposit			brown	sand and gravel		dense			0
8			layer	natural	bedrock geology			grey	slightly gravelly silty clay		firm			0
9			layer	saltern mound	filtration waste			yellow brown	fine sandy silt		soft			medieval
10	10	16	cut	pit	orchard tree pit	0.5	0.2					circular	U-shaped	modern
11	10	16	fill	pit	orchard tree pit		0.2	dark greyish brown	sandy silt		firm			modern
12	12	16	cut	pit	orchard tree pit	0.5	0.2					circular	U-shaped	modern
13	12	16	fill	pit	orchard tree pit		0.2	dark greyish brown	sandy silt		firm			modern
14	14	16	cut	pit	orchard tree pit	0.5	0.2					circular	U-shaped	modern
15	14	16	fill	pit	orchard tree pit		0.2	dark greyish brown	sandy silt		firm			modern
16	16	16	cut	pit	orchard tree pit	0.5	0.2					circular	U-shaped	modern
17	16	16	fill	pit	orchard tree pit		0.2	dark greyish brown	sandy silt		firm			modern
18	18	16	cut	pit	orchard tree pit	0.5	0.2					circular	U-shaped	modern
19	18	16	fill	pit	orchard tree pit		0.2	dark greyish brown	sandy silt		firm			modern
20	20	16	cut	pit	orchard tree pit	0.5	0.2					circular	U-shaped	modern
21	20	16	fill	pit	orchard tree pit		0.2	dark greyish brown	sandy silt		firm			modern
22	22	16	cut	pit	orchard tree pit	0.5	0.2					circular	U-shaped	modern
23	22	16	fill	pit	orchard tree pit		0.2	dark greyish brown	sandy silt		firm			modern

Context	Cut	Trench	Category	Feature Type	Function	Breadth	Depth	Colour	Fine component	Coarse component	Compaction	Shape in Plan	Profile	Phase
24	24	15	cut	ditch	hayrick gully	0.25	0.2					curvilinear	U-shaped	post-medieval
25	24	15	fill	ditch	hayrick gully		0.2	dark greyish brown	sandy silt		firm			post-medieval
26	26	15	cut	ditch	hayrick gully	0.25	0.2					curvilinear	U-shaped	post-medieval
27	26	15	fill	ditch	hayrick gully		0.2	dark greyish brown	sandy silt		firm			post-medieval
28	28	15	cut	ditch	hayrick gully	0.25	0.15					curvilinear	U-shaped	post-medieval
29	28	15	fill	ditch	hayrick gully		0.15	dark greyish brown	sandy silt		firm			post-medieval
30	30	15	cut	ditch	hayrick gully	0.25	0.15					curvilinear	U-shaped	post-medieval
31	30	15	fill	ditch	hayrick gully		0.15	dark greyish brown	sandy silt		firm			post-medieval
32	32	15	cut	pit	orchard tree pit	0.5	0.1					circular	U-shaped	modern
33	32	15	fill	pit	orchard tree pit		0.1	dark greyish brown	sandy silt		firm			modern
34	34	12	cut	closed hearth	brine boiling	0.96	0.19					rectangular	square cut	medieval
35	34	12	fill	closed hearth	hearth lining		0.19	red	clay		firm			medieval
36	34	12	fill	closed hearth	disuse		0.11	dark brownish grey	sandy silt		soft			medieval
37	37	12	cut	water tank	water storage	0.48	0.05					rectangular	square cut	medieval
38	37	12	fill	water tank	lining		0.05	bluish grey	clay		firm			medieval
39	34	12	fill	closed hearth	vitrified hearth lining		0.02	green	vitrified clay		hard			medieval
40		12	layer	saltern mound	hearth waste		0.15	dark grey	fine sandy silt		soft			medieval
41		12	layer	saltern mound	filtration unit waste		1.1	yellow brown	fine sandy silt		soft			medieval

Context	Cut	Trench	Category	Feature Type	Function	Breadth	Depth	Colour	Fine component	Coarse component	Compaction	Shape in Plan	Profile	Phase
42		12	layer	saltern mound	filtration unit waste		0.2	yellow brown	fine sandy silt		soft			medieval
43		17	layer	saltern mound	filtration unit waste		1	yellow brown	fine sandy silt		soft			medieval
44		18	layer	saltern mound	filtration unit waste		1.5	yellow brown	fine sandy silt		soft			medieval
45		18	layer	saltern mound	hearth waste		0.15	dark grey	fine sandy silt		soft			medieval
46		18	layer	saltern mound	filtration unit waste		0.2	yellow brown	fine sandy silt		soft			medieval
47		18	cut	pit	waste pit	1.2	1					sub-rectangular	unknown	post-medieval
48		18	fill	pit	backfill		1	dark grey, red and yellow brown	fine sandy silt		soft			post-medieval
49														

Table 3: Context inventory

APPENDIX B BIBLIOGRAPHY

- | | | |
|--------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Brudenell, B | 2016 | <i>Written Scheme of Investigation for Archaeological Evaluation at Land adjacent to Greenpark Avenue (Lynnsport 4 & 5).</i> Oxford Archaeology East. Dated 1st February 2016 (unpublished) |
| Clarke, G | 2016 | <i>A Late Saxon to Medieval Saltern at Marsh Lane, King's Lynn, Norfolk. Archaeological Excavation.</i> Oxford Archaeology East report 1820. Dated 30th June 2016 (unpublished) |
| Historic England | 2008 | <i>Management of Research Projects, PPN3: Archaeological Excavation</i> |
| Historic England | 2015 | <i>Management of Research Projects in the Historic Environment, The MoRPHE Project Managers' Guide</i> |
| Norfolk Partnership Laboratory | 2016 | <i>Desk Study and Risk Assessment: Lynnsport 4 & 5, King's Lynn, Norfolk, LOVE0033.</i> Norfolk County Council. Dated June 2016 (unpublished) |
| Sheridan, J and Warner, J | 2016 | <i>Revision A – Ground Investigation Report. Lynnsport 4 & 5, Greenpark Avenue, King's Lynn, Norfolk, PE30 2NE.</i> Project 45751. Richard Jackson Ltd. Dated 17th June 2016 (unpublished) |

APPENDIX C

OASIS REPORT FORM

Project Details

OASIS Number	Oxfordar3-238605		
Project Name	Land adjacent to Greenpark Avenue (Lynnsport 4 and 5), King's Lynn, Norfolk		
Start of Fieldwork	27/02/17	End of Fieldwork	03/03/17
Previous Work	No	Future Work	Yes

Project Reference Codes

Site Code	XNFGAL16	Planning App. No.	Pre application
HER Number	ENF139746	Related Numbers	

Prompt	Direction from Local Planning Authority – PPS 5
Development Type	Residential
Place in Planning Process	Pre-application

Techniques used (tick all that apply)

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

Monument	Period	Object	Period
salterns	Medieval (1066 to 1540)	fired clay	Medieval (1066 to 1540)
hayricks	Post Medieval (1540 to 1901)	ceramic tobacco pipe	Post Medieval (1540 to 1901)
orchard	Modern (1901 to present)		Choose an item.

Insert more lines as appropriate.

Project Location

County	Norfolk	Address (including Postcode) Land adjacent to Greenpark Avenue, King's Lynn, Norfolk, PE20 2NE
District	King's Lynn and West Norfolk	
Parish	North Lynn	
HER office	Norfolk Museum	
Size of Study Area	2.79 ha	
National Grid Ref	TF 62897 20966	

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	ENF139746
Digital Archive	Norwich Castle Museum	ENF139746
Paper Archive	Norwich Castle Museum	ENF139746

Physical Contents	Present?	Digital files associated with Finds	Paperwork associated with Finds
Animal Bones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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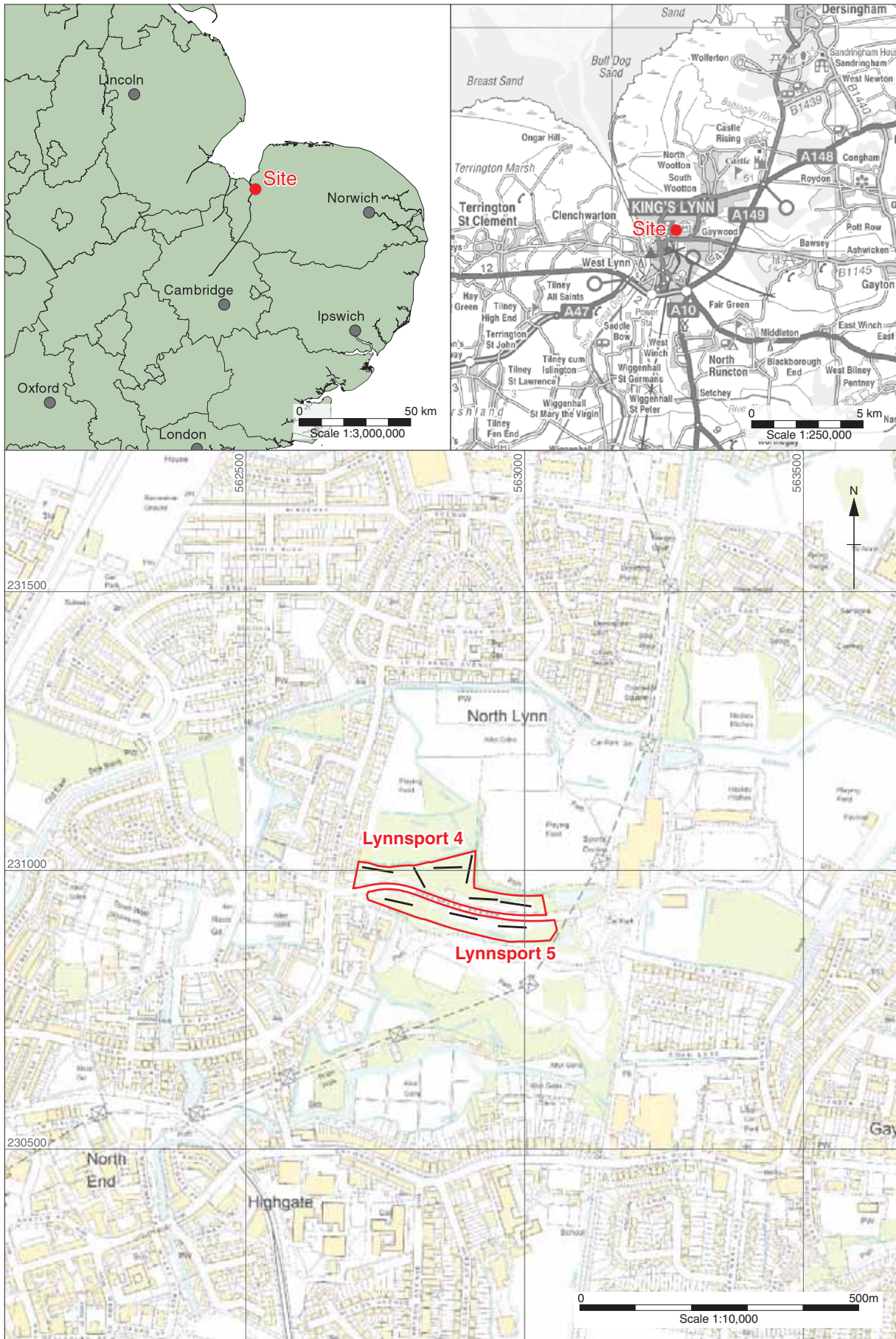
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Further Comments



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Figure 1: Site location showing archaeological trenches (black) in development areas outlined (red)

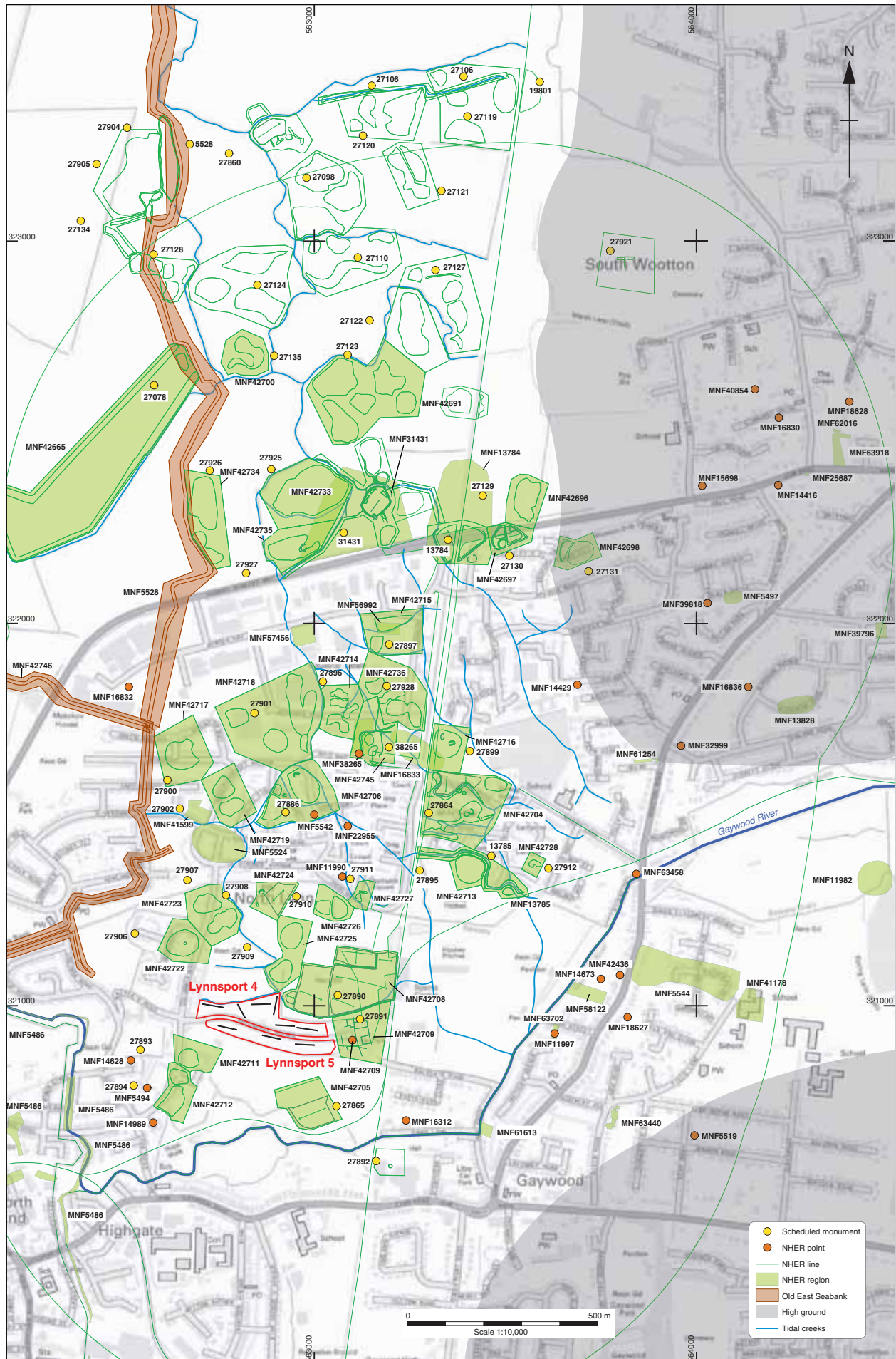


Figure 2: Map showing location of NHER records with NMP data, sea banks & pre-existing tidal creeks mapped from historic photograph (NHER reference: TF62_TF6321_A_RAF_16Apr1946.tif)

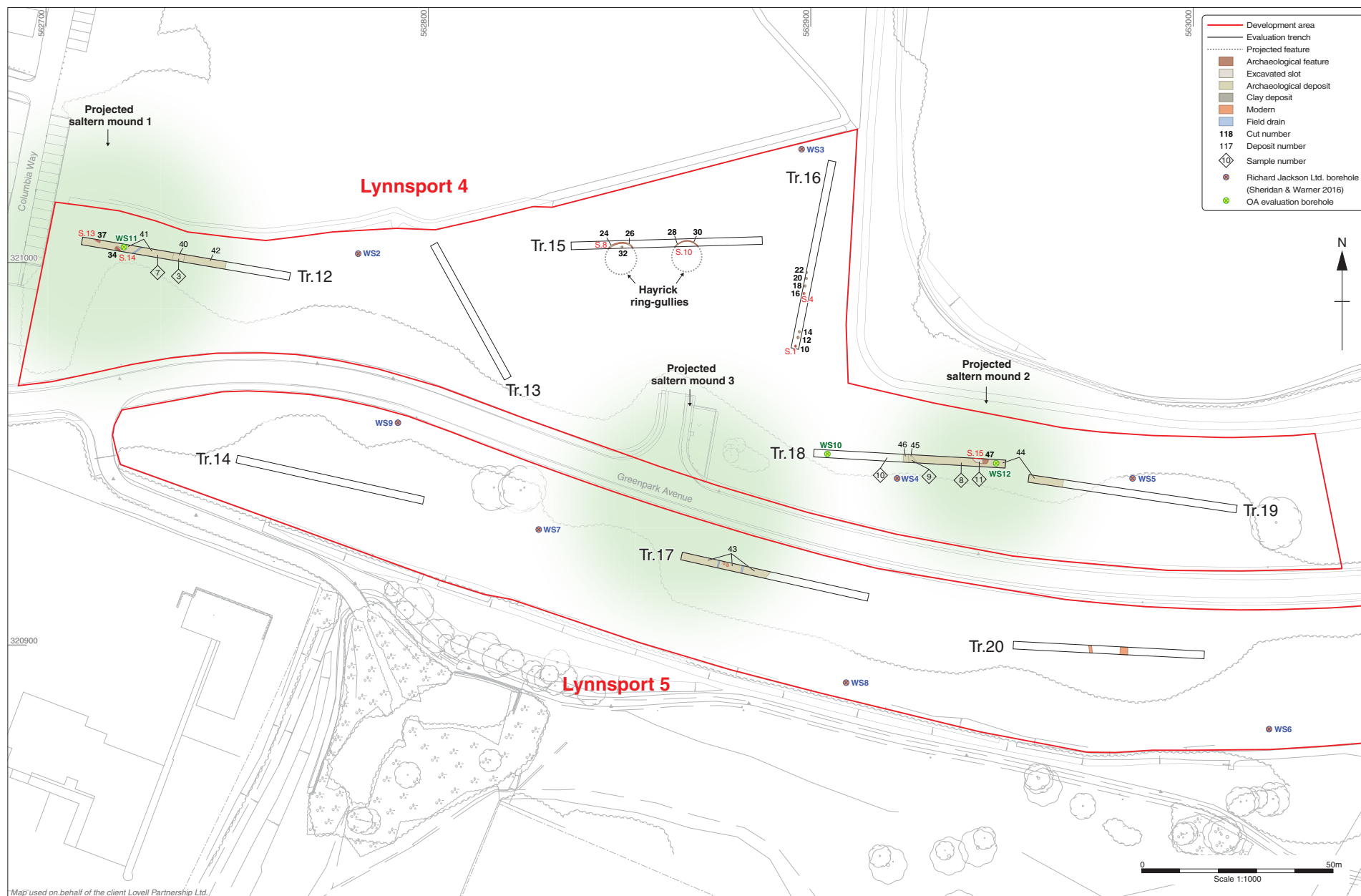


Figure 3: Results of evaluation

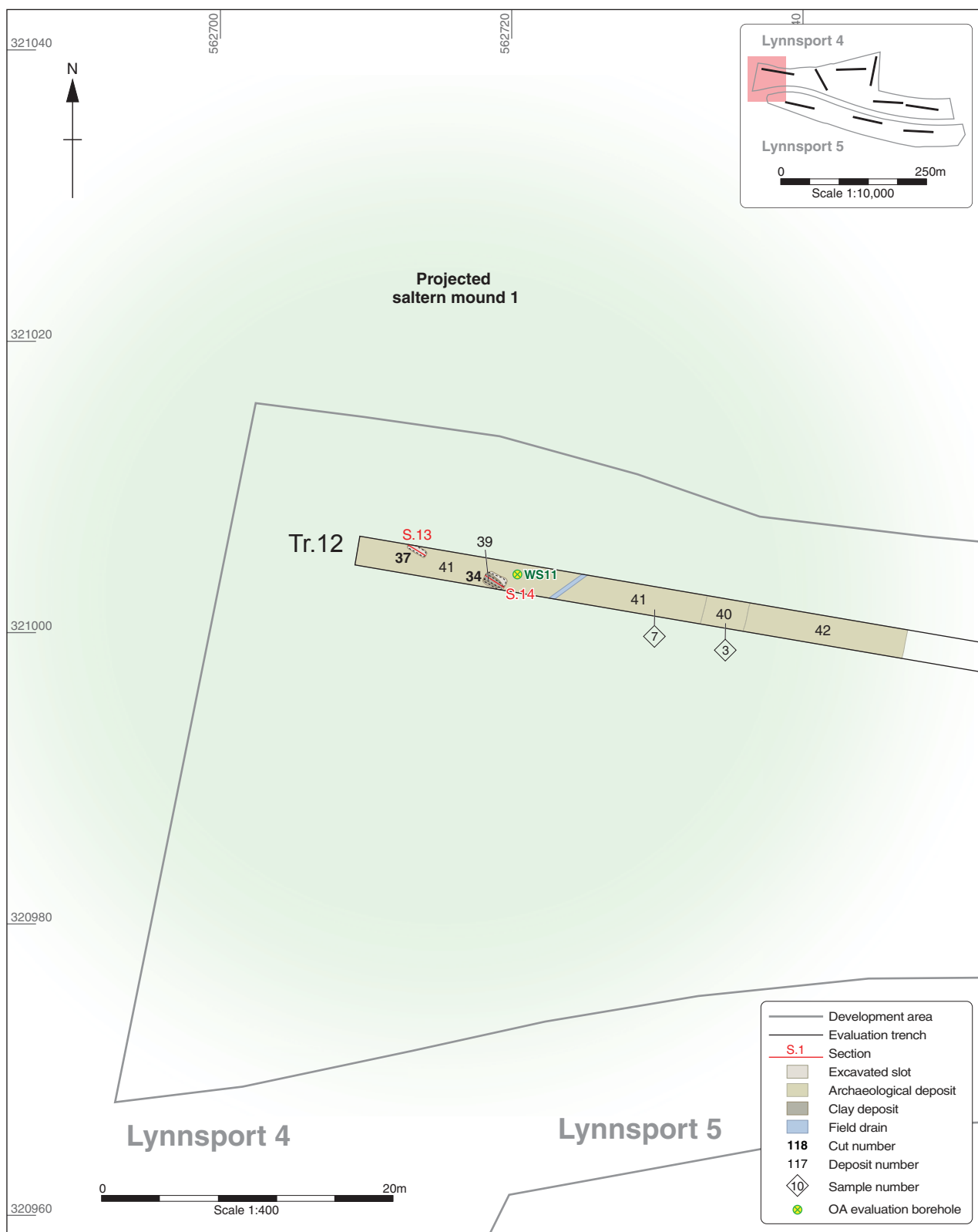


Figure 4: Plan of Saltern 1 remains in Trench 12

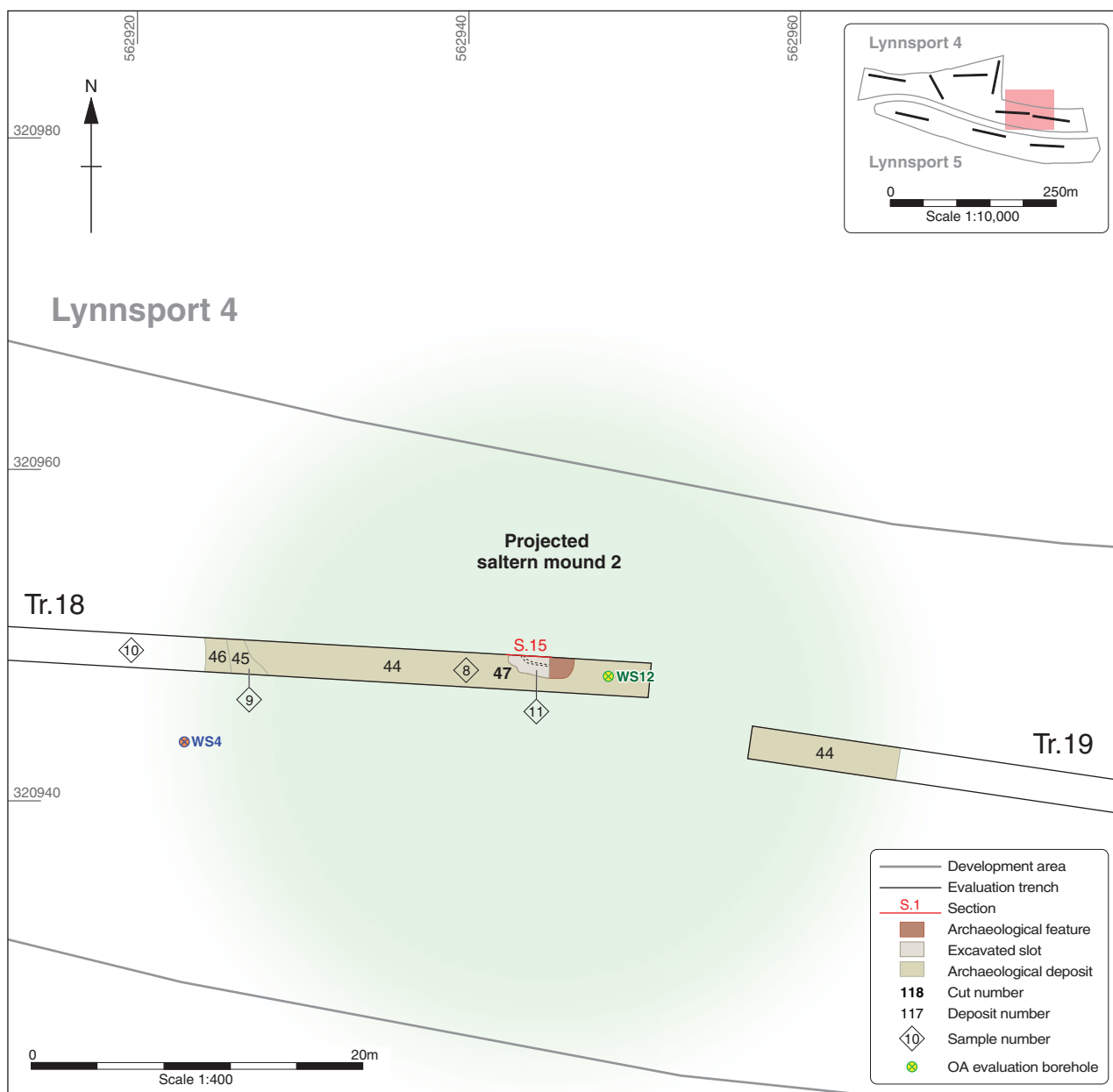


Figure 6: Plan of Saltern 2 remains in Trenches 18 and 19

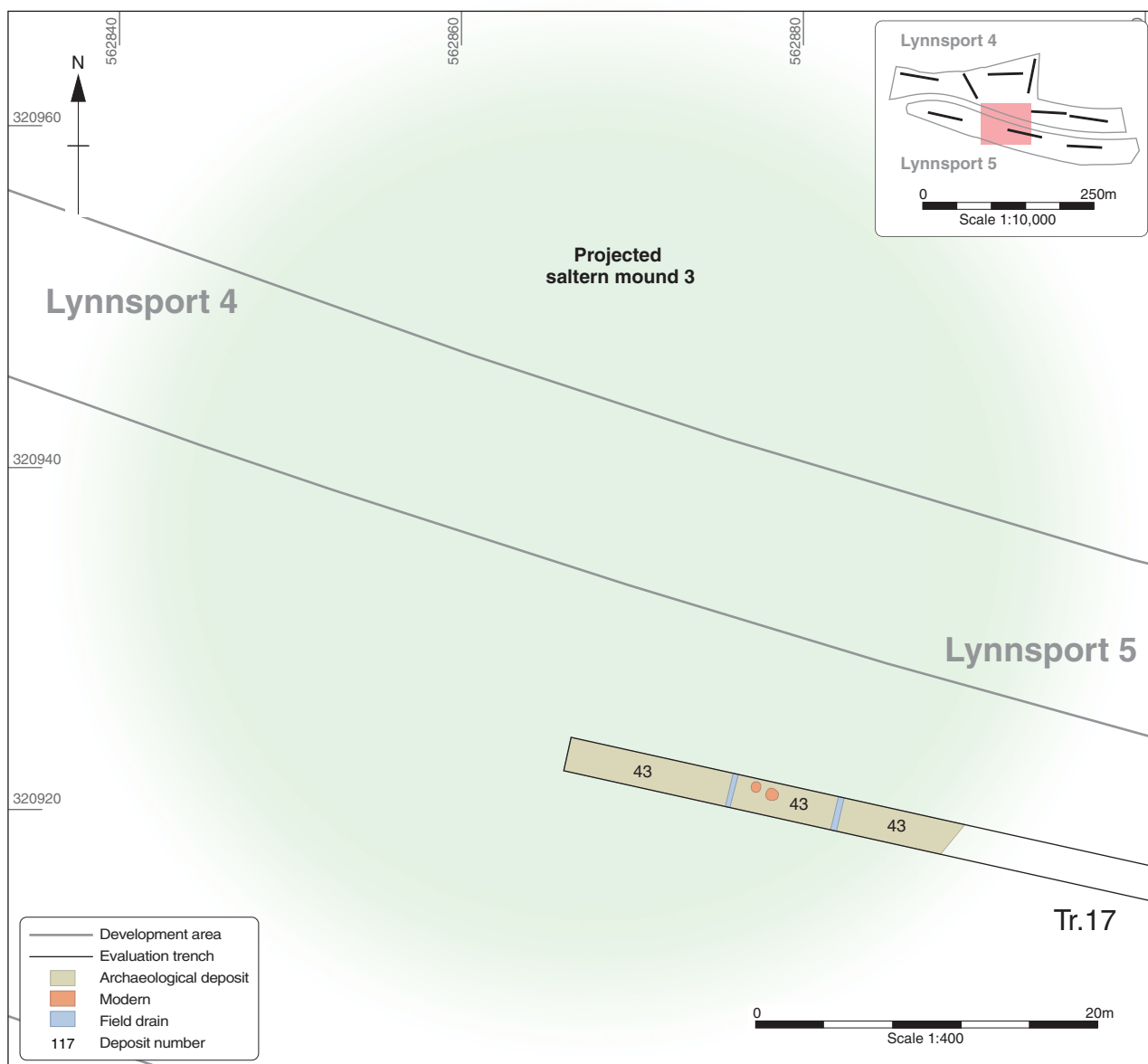


Figure 7: Plan of Saltern 3 remains in Trench 17

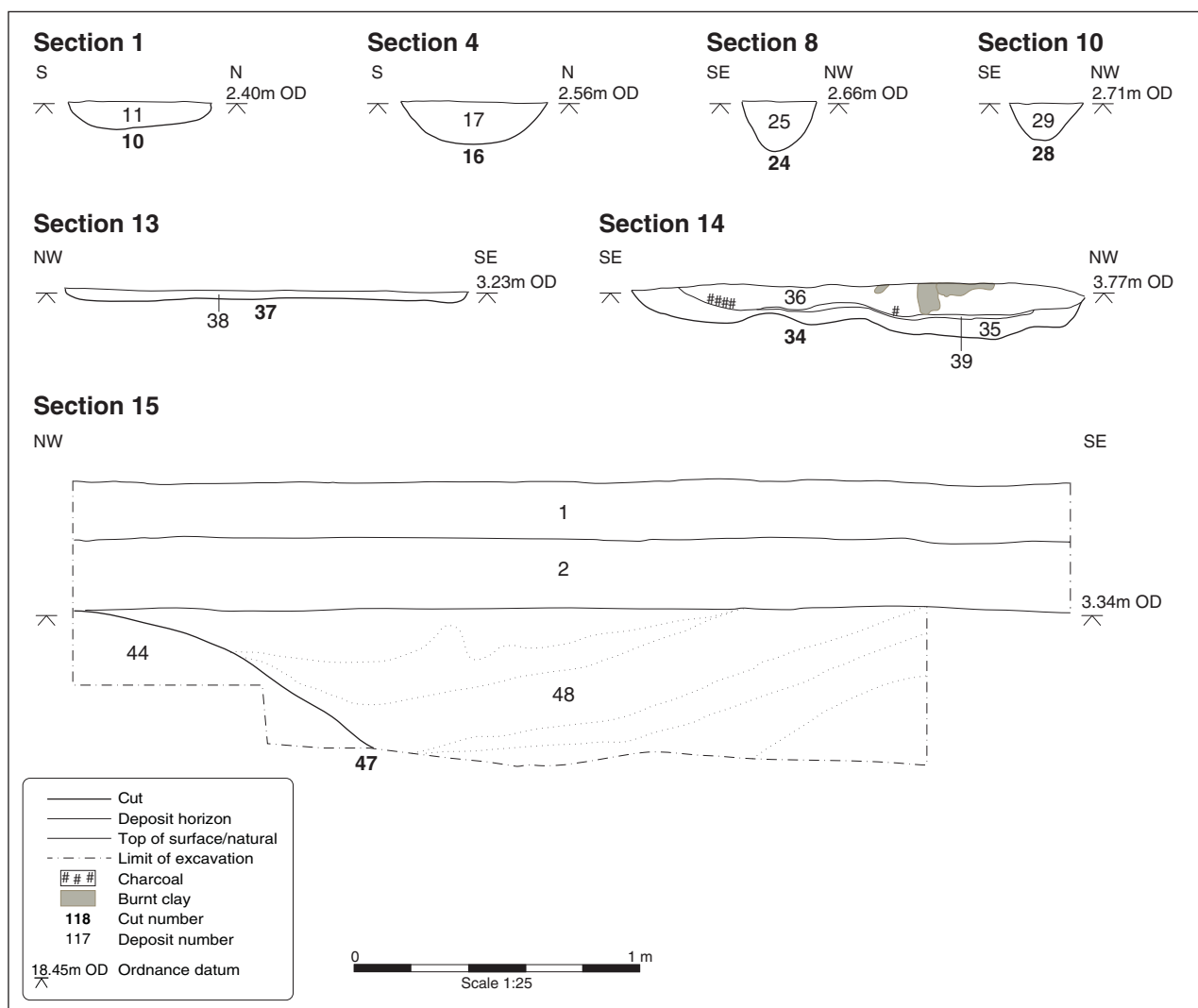


Figure 8: Selected sections



Plate 1: The site north of Greenpark Avenue (Lynnspport 4), looking west



Plate 2: The site south of Greenpark avenue (Lynnspport 5), looking west



Plate 3: Saltern 1 hearth **34**, looking south-west



Plate 4: Excavation of hearth **34**



Plate 5: Saltern 1 clay-lined tank **37**, looking north-east



Plate 6: Hayrick gully 1 in Trench 15, looking south-east



Plate 7: Saltern 2 in Trench 18, looking east



Plate 8: Saltern 2 pit 47, looking north



Plate 9: Excavation of pit 47



Plate 10: Saltern 3 in Trench 17, looking west



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