ARCHAEOLOGICAL EVALUATION REPORT:

AUGER SURVEY ON LAND AT 51 THE WROE, EMNETH, NORFOLK

Planning Reference: 10/01558/O
HES Reference: CNF43120
HER Reference: ENF127269
NGR: TF 4906 0669
AAL Site Code: EMTW 11
OASIS Reference Number: allenarc1-108156

Report prepared for David Broker Design Services
On behalf of Mr and Mrs Goodale

By
Allen Archaeology Limited
Report Number 2012024

March 2012

The Authority on Archaeological Planning Services

REGISTERED ORGANISATION IfA

Contents

Document Control

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Cover image: General view of the site looking north

Executive Summary

- Allen Archaeology Limited was commissioned by David Broker Design Services, on behalf of Mr and Mrs Goodale to undertake an archaeological evaluation by auger survey on land at No. 51 The Wroe, Emneth, Norfolk.

- A transect of four auger holes was excavated on a north-west to south-east alignment across the northern part of the site. Each hole was excavated to a depth of 4m below the existing ground surface.

- Boreholes 1 to 3 suggested that the infilled pond extended much further to the north than mapping suggests. A different sequence recorded in Borehole 4 indicated that this was beyond the pond.

- A fragment of roundwood from the base of the pond was submitted for radiocarbon dating, producing a result of probable 19th or 20th century date.

- The results suggest that the pond occupies the majority of the site and is likely to have truncated any earlier archaeologically or palaeoenvironmentally significant deposits that may have existed on the site.

1.0 Introduction

1.1 Allen Archaeology Limited (hereafter AAL) was commissioned by David Broker Design Services, on behalf of Mr and Mrs Goodale to undertake an archaeological evaluation by auger survey on land at 51 The Wroe in Emneth, Cambridgeshire in advance of a residential development.

1.2 The excavating, recording and reporting conforms to current national guidelines, as set out in the Institute for Archaeologists '*Standard and guidance for archaeological field evaluations*' (IfA 1994, revised 2001 and 2008), the regional guidelines in '*Standards for Field Archaeology in the East of England*' (Gurney 2003), a brief for the works prepared by the Norfolk Historic Environment Service (hereafter NHES) (Hamilton 2011), and a specification by this company (AAL 2011).

1.3 The documentary archive will be submitted to Norfolk Museums, Arts and Records Service within six months of the completion of the project and will be stored under the Museum Accession Number X.A171.2011.

2.0 Site Location and Description

2.1 Emneth is situated approximately 4km south-east of central Wisbech and 18km south-west of central Kings Lynn, in the administrative district of Kings Lynn and West Norfolk Borough Council. The proposed development area comprises a sub-rectangular block of land of c.0.1 hectares, to the south of the village centre and to the south-east of The Wroe. The site centres on NGR TF 4906 0669.

2.2 The local geology comprises superficial Tidal Flats deposits of clay and silt, overlying a bedrock geology of Ampthill Clay Formation mudstone (http://maps.bgs.ac.uk/geologyviewer_google/google viewer.html). A former course of the River Nene also runs through the site.

3.0 Planning Background

3.1 Outline planning permission has been granted for a residential development comprising four bungalows with semi-detached garages (Planning Application Reference 10/01558/O). The application was granted with conditions, including the undertaking of a programme of archaeological evaluation by auger survey in order to determine the palaeoenvironmental potential of the proposed development area.

3.2 The approach adopted is consistent with the recommendations of Planning Policy Statement 5 (Department for Communities and Local Government 2010).

4.0 Archaeological and Historical Background

4.1 There is limited evidence of archaeological activity in the immediate vicinity of the site, although fieldwalking and metal detecting in the wider landscape has identified a number of Roman coins and pottery and large quantities of medieval pottery, coins and other metal objects (Norfolk Historic Environment Record (hereafter NHER) References 22401, 22471, 22563, 24006, 25779 and 31127).

4.2 There is no archaeological evidence for Anglo-Saxon activity in the vicinity of the site, and Emneth does not appear in the Domesday Book of 1086. However, the place name appears to be of Old English origin, although its precise derivation is unclear. It may mean 'Eana's confluence', Eana's meadow' or 'Aemene's landing-place' (http://www. nottingham.ac.uk/~aezins//kepn. php).

4.3 The proposed development area lies within a former course of the River Nene, predating the construction of the Wisbech Canal at the end of the 18th century (Hamilton 2011).

5.0 Methodology

5.1 A methodology for palaeoenvironmental sampling was established in a brief prepared by NHES (Hamilton 2011). In line with these requirements, a transect of four evenly spaced boreholes aligned south-east to north-west across the site was excavated to a depth of four metres below the existing ground surface. The transect was located outside the area of the infilled pond on the site (see Figure 2). The auger survey was carried out by James Rackham of the Environmental Archaeology Consultancy on behalf of AAL on Friday 16th September 2011. The auger holes were located on site by AAL using a Magellan Pro Mark 3 GPS with an on site base station and mobile rover unit. Rinex data provided from Ordnance Survey remote base stations was used for processing the results to provide 3D millimetre precision.

6.0 Results

6.1 The fieldwork and processing of the results was conducted by James Rackham, who has also provided the text for Sections 6 – 8 of the report.

6.2 The cores were split, cleaned and logged (Appendix 1) and then photographed (Appendix 2). A section across the north-east end of the site (Figure 3) was constructed from the data collected from the cores.

6.3 The upper part of the sequence in all four boreholes comprised sandy silt soils with frequent inclusions of brick/tile, coal and mortar, and occasional lumps of brick or clay, and dumps of other recent debris including a layer of shattered glass in BH3 core 1, and a pale grey deposit with polystyrene in BH2 core 1, gravel at the top of BH1 and tarmac lumps at the base of core 1 in BH1, and an ash and clinker layer in BH4 core 1. These dumped and disturbed deposits reached a depth of 1.9m in BH1, 1.68m in BH2, 1.47m in BH3 and only 0.74m in BH4. In boreholes 1 – 3 these deposits are underlain by sandy silts, silty sands and very fine sands,

which are in turn underlain by silty sands and silts with surviving organic material including wood, bark and vegetative matter. This sequence is absent from BH4 (Figure 3).

6.4 The basal sediments in all four boreholes comprise very fine bedded sands with bands or lenses of fine sand with particulate black material, which become very wet with depth.

7.0 Interpretation

7.1 The site lies on a large roddon that drained this part of the fens in prehistory and the sediments infilling this roddon are represented by the fine sands that underlie the whole sequence in each borehole. The dark/black particulate material in these sediments has been checked under the microscope and is composed of fine organic matter and coal and indicates water sorting of these lighter particles into lenses. There are also low densities of the upper saltmarsh foraminifera *Trochammina inflata* in these sediments.

7.2 The organic deposits in Boreholes 1 to 3 clearly indicate a feature that is not represented in BH4. There are two possible options for this feature. The most obvious, and likely, is that the mapped limits of the pond (Figure 2) that previously occupied the site are incorrect and that the pond extended further north-east than plotted. Its absence from BH4 might be consistent with this if the pond never extended beyond the boundary of the new development plot (see Figure 3). It would also imply that the pond approached closer to the road than the mapping suggests. There is an indication that the pond might be marked on the 1888 map and occupy a much larger part of the site than the more recent maps indicate, possibly suggesting the slow infilling and shrinkage of the pond size. In this scenario the organic sediments mark the base of the pond, with subsequent silts and silty sands representing slow infilling with episodes of local dumping in the top metre of fill. The second option is that this feature is the earlier course of the River Nene although perhaps a little north of its presumed course. In the latter circumstances a more extensive organic silt horizon might have been expected unless the channel was actively backfilled when it went out of use. Resolution of these two options can quite easily be established by dating a piece of roundwood from a depth of 67cm in Core 3 of BH1 or wood fragments from a depth of 61cm in Core 3 of BH2. On the assumption that the pond, which appears on the old Ordnance Survey maps, is of relatively recent origin, a young date would indicate the feature represents the pond while a more ancient date might be consistent with the change in course of the River Nene. The fact that the feature is absent from BH4 which on the map evidence might have been expected to lie in or on the edge of the old channel of the Nene suggest that this is either further south-east or not following the parish boundary at this point.

7.3 On the present evidence, particularly the depth through which the modern or recent debris occurs in the deposits this feature appears much more likely to represent a post-medieval pond than an earlier channel feature. It would also suggest that almost the whole of the development plot was formerly occupied by a pond.

8.0 Radiocarbon Dating

8.1 As a result of these conclusions a single piece of roundwood from BH1, Core 3 at 67cm, was submitted to the Radiocarbon Laboratory at SUERC for dating. This sample was taken from a total depth of 2.67m below the modern ground level and represents the basal organic deposit of a feature cutting the earlier marine/saltmarsh sediments. The result (90±35 BP – GU26046 – Appendix 2) indicates a probable 19th or 20th century date for the wood, with a smaller possibility that it could be 18th century.

8.2 This result clearly places these organic deposits in the latter part of the post-medieval period therefore supporting the conclusion that the sediments recorded relate to the historically known pond on the site, which was clearly much larger than the recent Ordnance Survey maps would indicate.

9.0 Conclusion

9.1 The conclusions of the original draft of this report are therefore confirmed and no further work is recommended on the site.

9.2 The results indicate that the pond was of much larger extent than previously thought, and is likely to have removed all archaeological evidence from the site. On this basis, the former course of the River Nene almost certainly lies to the south beyond the limits of the development area.

10.0 Effectiveness of Methodology

10.1 The auger survey methodology was appropriate to the development. It has shown that the majority of the site is occupied by the former pond and therefore the site has a negligible archaeological or palaeoenvironmental potential.

11.0 Acknowledgements

11.1 Allen Archaeology would like to thank David Broker Design Services, and their client Mr and Mrs Goodale for this commission.

12.0 References

AAL, 2011, *Specification for an archaeological evaluation by auger survey: 51 The Wroe, Emneth, Norfolk,* Allen Archaeology Limited unpublished project document

Brown, N. and Glazebrook J., 2000, *Research and Archaeology: A framework for the eastern counties, 2. research agenda and strategy*, East Anglian Archaeology, Occasional Paper no.8

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IfA, 1999 (revised 2001 and 2008), *Standard and guidance for archaeological watching briefs*. Reading, Institute for Archaeologists

Soil Survey of England and Wales, 1:250,000 Soils of England and Wales, Sheet 4, Eastern England, 1980

Appendix 1: Borehole Logs

BH1 – top of core at 2.25m aOD

Core 1: 0 – 100cm

Depth in cm	Description
0-13	empty
13-26	10YR 5/3 – stones and gravel (to 70mm diam) in a brown silt matrix – fill
26-40	10YR 6/4 – light yellowish brown silts with frequent stone (to 30mm) and roots
40-56	10YR 4/3 – brown fine sandy silts with occasional stones, brick fragments and roots, with lumps of paler silt – disturbed fill?
56-74	10YR 4/3 – brown fine sandy silts with occasional stones, roots, flint, and brick fragments – a possible soil
74-96	10YR 5/4 – yellowish brown fine sandy silts with stones (to 70mm), tarmac and brick fragments – fill
96-100	10YR 3/3 – dark brown sandy silts with large tarmac fragments - fill

Core 2: 100 – 200cm

Depth in cm	Description
0-20	Empty
20-62	10YR 4/2 – dark greyish brown fine sandy silts – friable with occasional ironstone, coal, cinder and brick, and post-medieval white glazed ceramics – present soil
62-74	10YR 4/2 – dark greyish brown fine sandy silt with iron, bone, yellow and red brick – dump layer including iron artefacts
74-84	10YR 4/2 – dark greyish brown fine sandy silt with occasional red brick, cinder and coal
84-89	10YR 4/2 – dark greyish brown fine sandy silt with rare coal, cinder and brick fragments
89-100	10YR 4/2 – dark greyish brown silt with some fine sand, compacted – top of undisturbed natural sequence?

Core 3: 200 – 300cm

Depth in cm	Description
0-15	Empty
15-19	10YR 4/2 – dark greyish brown fine silt with some sand and large flint on top (flint fell in?)
19-42	10YR 5/3 – brown very fine sand with some iron mottling and decomposed root traces
42-51	10YR 5/2 – greyish brown silty very fine sand, slightly banded with rare iron mottling
51-67	10YR 5/2 – greyish brown silty very fine sand with occasional organic fragments and roundwood
67-87	10YR 5/2 – greyish brown fine sand, with black particles (degraded organics or coal?), very wet
87-100	10YR 5/1 – grey fine sand, slightly courser than above, with thin sorted lenses/bands of black particles - wet

Core 4: 300 – 400cm

Depth in cm	Description
0-32	Empty
32-100	10YR 5/2 – greyish brown wet fine sands, banded with lenses of fine black particles. Browner (10YR 5/3) band at 87-88. Channel laid? In fairly low energy environment

BH2 – top of core at 2.14m aOD

Core 1: 0 – 100cm

Depth in cm	Description
0-8	Empty
8-22	10YR 5/3 – brown silt with occasional flint, stones and clay lumps
22-28	10YR 5/3 – brown silt with large clay lumps
28-29	Discontinuous iron stained med-coarse sand
29-34	10YR 4/2 – dark greyish brown silt with occasional stones
34-44	5YR 8/1 – very pale grey/white with stones, polystyrene and glass
44-100	10YR 4/3 – brown fine sandy silt with charcoal, brick, glass and coal fragments

Core 2: 100 – 200cm

Depth in cm	Description
0-16	Empty
16-68	10YR 4/3 – brown fine sandy silt, with occasional coal, charcoal, cinder and possible mortar fragments
68-100	10YR 4/2 – dark greyish brown fine sandy silt with mottling, undisturbed natural sediments with rare flint stones (to 15mm)

Core 3: 200 – 300cm

Depth in cm	Description
0-11	Empty
11-20	10YR 4/2 – dark greyish brown sand(medium) silt with mottling
20-43	10YR 5/3 – brown very fine sands, slightly banded with colour changes, mottled above 33cm
43-57	10YR 4/1 – dark grey silty very fine sand with occasional organics
57-65	10YR 4/1 – dark grey and black very sandy (fine) silts with organics, wood and a flint – possible channel floor?
65-71	10YR 4/1 and 3/1 – mainly very drak grey and black silty very fine sands with degraded organics
71-81	10YR 4/1 – dark grey silty very fine sands with localised black staining in twirls
81-82	Black very fine sand
82-100	10YR 4/1 – dark grey silty very fine sand with bands and patches of blacker sediment

Core 4: 300 – 400cm

Depth in cm	Description
0-28	Empty
28-37	10YR 4/2 – dark greyish brown fine wet sand
37-100	10YR 4/1 – dark grey very fine wet sand with bands of black particles (coal or organics), giving banded sediments

BH3 – top of core at 2.19m aOD

Core 1: 0 – 100cm

Depth in cm	Description
0-30	Empty – op 25cm dug out to remove stones at rubble - dump
30-37	10YR 4/2 – dark greyish brown slightly sandy silt – soil
37-44	Large piece of brick
44-77	10YR 4/3 – brown sandy (very fine) silt with fragments of bhrick, charcoal, coal, etc
77-83	10YR 4/2 dark greyish brown sandy silt with tile fragments
83-88	Shattered glass layer
88-100	10YR 4/3 – brown sandy (very fine) silt with flecks of possible mortar

Core 2: 100 – 200cm

Depth in cm	Description
0-10	Empty
10-47	10YR 4/3 – brown sandy I(very fine) silt with brick, mortar, cinder and coal fragments – soil?
47-100	10YR 5/4 – yellowish brown very fine sand with occasional iron mottling – 'natural?'

Core 3: 200 – 300cm

Depth in cm	Description
0-17	Empty
17-26	10YR 5/4 – yellowish brown very fine sand
26-36	Large brick fragment and cockle shells in a dark grey sandy silt with organic fragments
36-44	10YR 3/1 – very dark grey sandy silt with traces of organics with diffuse boundary below
44-54	10YR 5/1 – grey silty fine sand with penetrating roots
54-63	10YR 5/3 – brown very fine sand with mottled top band
63-68	10YR 5/1 – grey slightly sandy silt
68-71	2.5Y 3/1 – very dark grey organic silt with wood fragments
71-82	10YR 5/1 – grey slightly banded slightly silty very fine sand with organics
82-100	10YR 3/1 – very dark grey silty fine wet sand

Core 4: 300 – 400cm

Depth in cm	Description
0-25	Empty
25-79	10YR 4/1 – dark grey silty fine sand with fine black particulate lenses and occasional silt lenses. Sharp boundary below
79-100	10YR 5/2 – greyish brown sandy silt and silt banding with occasional black particulate patches and small sections with three or four laminae

BH4 – top of core at 2.17m aOD

Core 1: 0 – 100cm

Depth in cm	Description
0-28	Empty
28-34	10YR 4/2 – dark greyish brown sandy silt
34-47	Ash and clinker layer
47-50	Brick lump in fine sand
50-74	10YR 6/4 light yellowish brown very fine sand with large stone (50mm) at 61-65cm and sharp boundary below
74-95	10YR 4/4 – dark yellowish brown very sandy (fine) silt
95-100	10YR 6/4 light yellowish brown very fine sand

Core 2: 100 – 200cm

Depth in cm	Description
0-8.5	Empty
8.5-21	10YR 5/4 – yellowish brown very slightly silty very fine sand
21-100	10YR 5/6 – yellowish brown very fine sand with intermittent banding of fine ddarker particulate lenses and rare silt lenses; iron mottled to 70cm and wet below 86cm. Banding stronger between 66 and 88cm

Core 3: 200 – 300cm

Depth in cm	Description
0-17	Empty
17-74	10YR 5/4 – yellowish brown fine wet sand with banded layers of darker particulate material (organics or coal?) and rare silt laminae
74-100	10YR 5/3 – brown fine wet sand with fine dark particulate banding and rare silt laminae

Core 4: 300 – 400cm

Depth in cm	Description
0-24	Empty
24-86	10YR 5/3 – brown fine sand with visible dark particulate banding and rare silt laminae
86-100	10YR 4/1 – dark grey fine wet sand with some black staining

Appendix 2: Core Images

Borehole 1

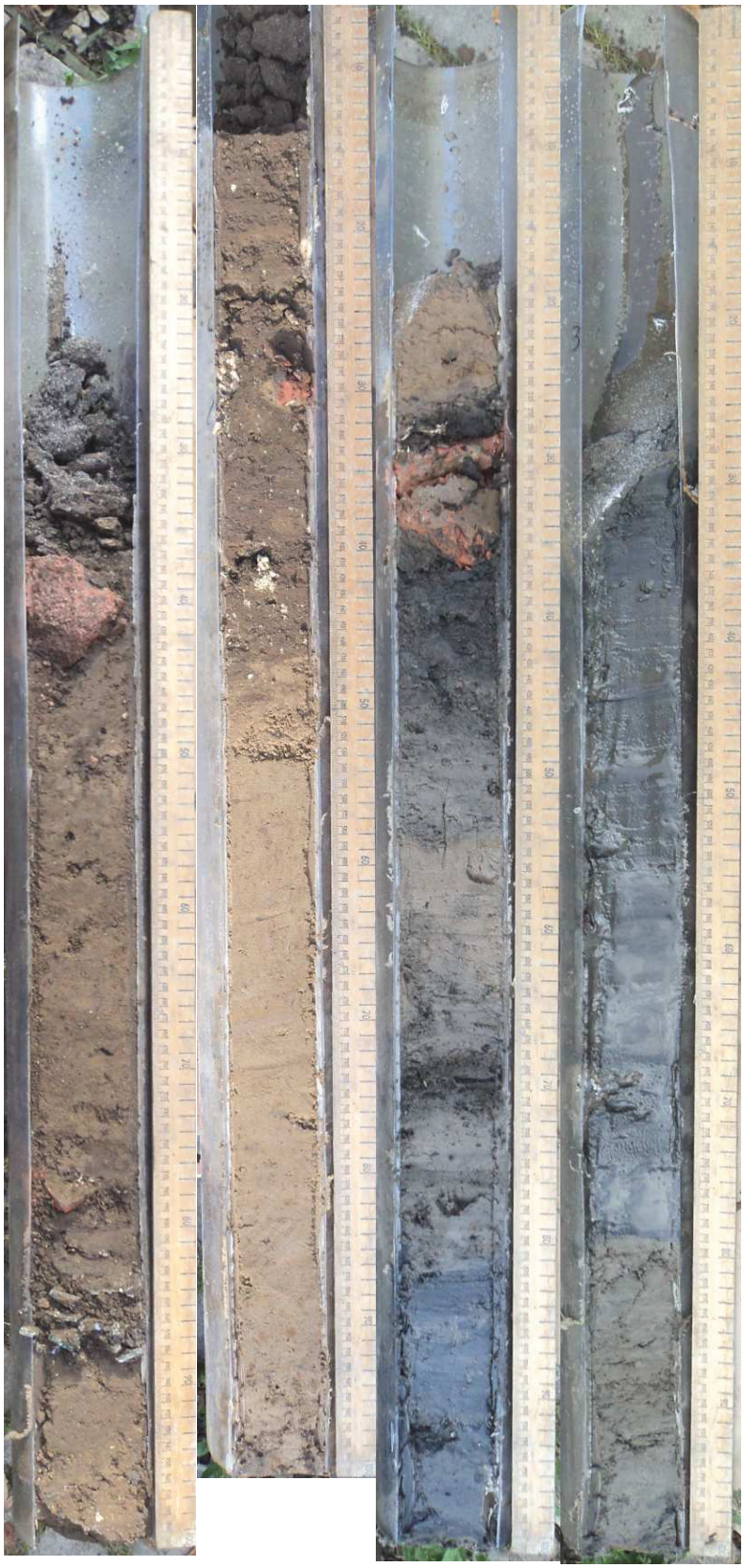
Core 1 Core 2 Core 3 Core 4

Borehole 2

Core 1 Core 2 Core 3 Core 4

Borehole 3

Core 1 Core 2 Core 3 Core 4



Borehole 4

Core 1 Core 2 Core 3 Core 4

Appendix 3: Radiocarbon Dating

Scottish Universities Environmental Research Centre

Director: Professor A B MacKenzie
Director of Research: Professor R M Ellam

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RADIOCARBON DATING CERTIFICATE 09 FEBRUARY 2012

Laboratory Code	SUERC-38012 (GU26046)
Submitter	James Rackham Environmental Archaeology Consultancy 25 Main Street South Rauceby, Sleaford Lincolnshire NG34 8QG
Site Reference	Emneth, Wisbech Cambridgeshire
Sample Reference	EMTW11/BH1/Core3/67cm
Material	Wood : Roundwood
δ^{13}C relative to VPDB	-28.1 ‰
Radiocarbon Age BP	90 ± 35

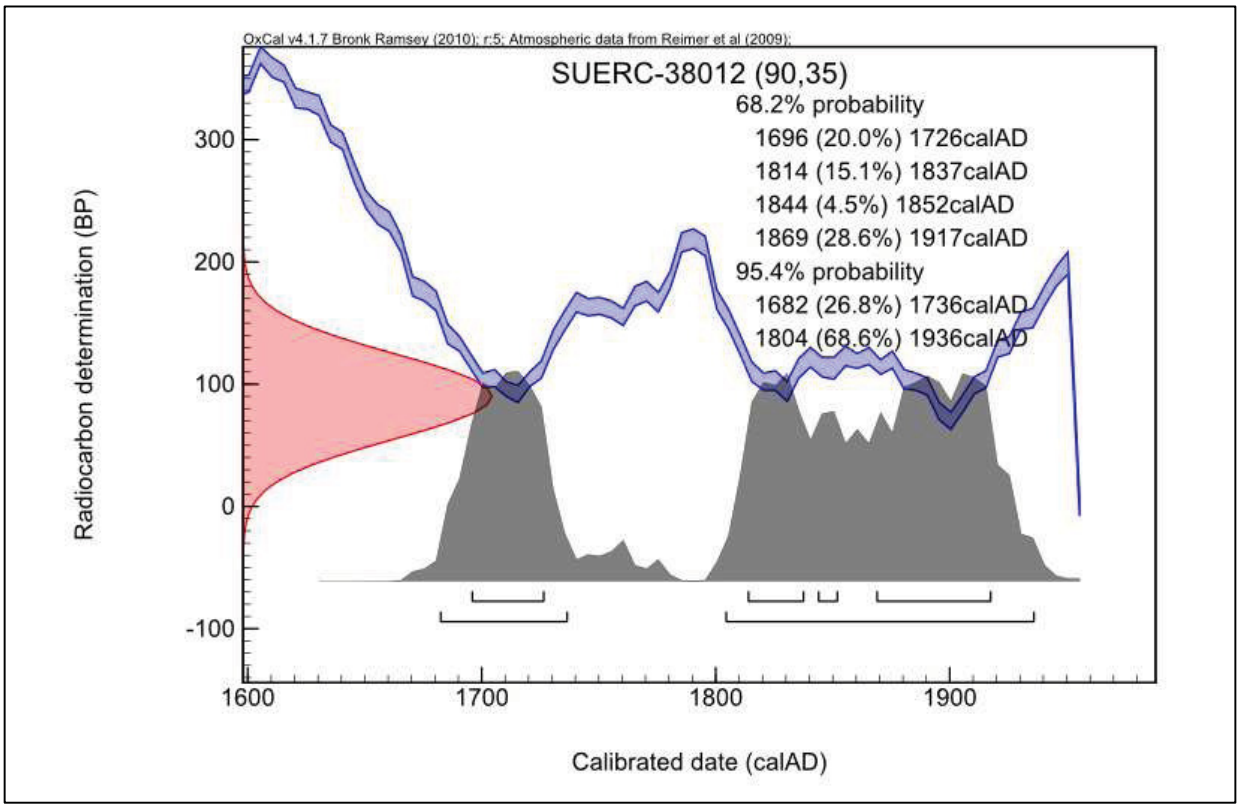
N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standards, background standards and the random machine error.

The calibrated age ranges are determined using the University of Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.1 (Bronk Ramsey 2009). Terrestrial samples are calibrated using the IntCal09 curve while marine samples are calibrated using the Marine09 curve.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :-
Checked and signed off by :- Date :-

Calibration Plot



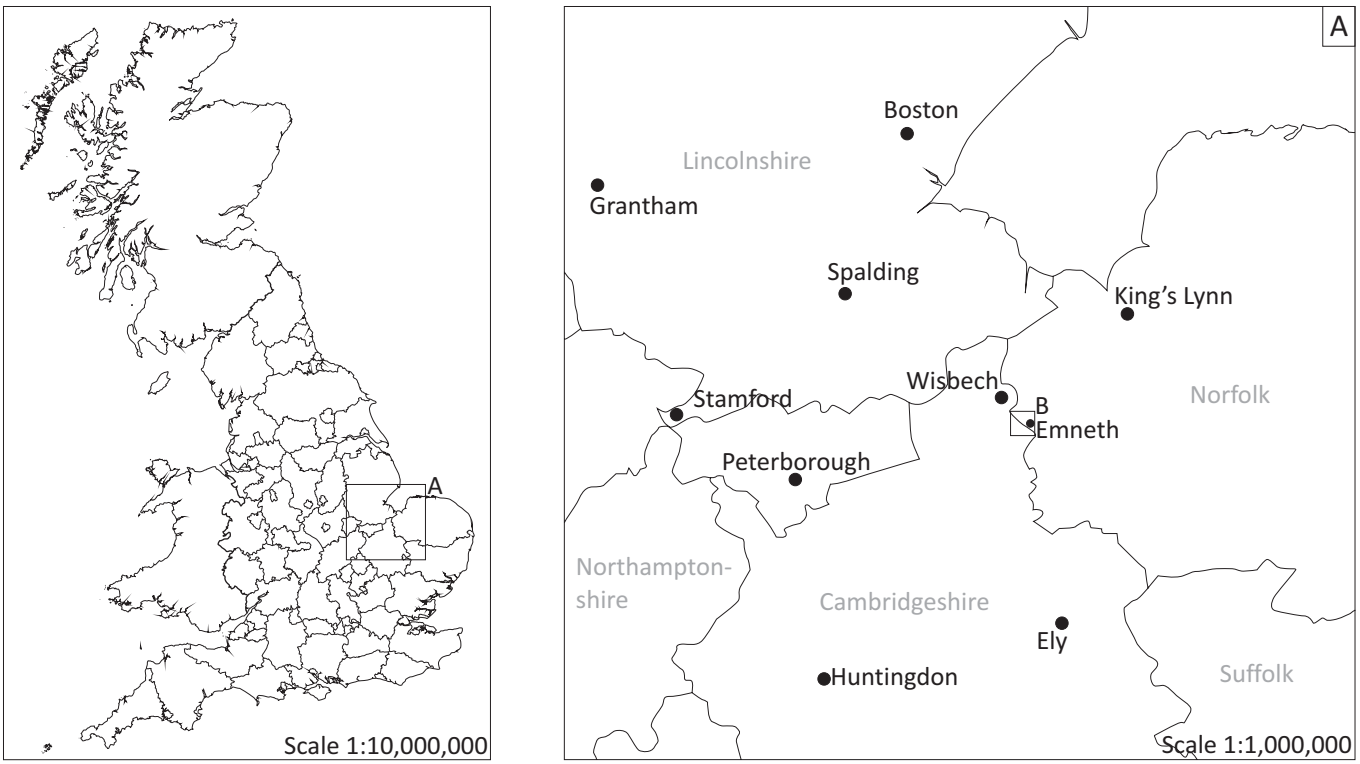


Figure 1: Site location at scale 1:25,000, with site shown in red

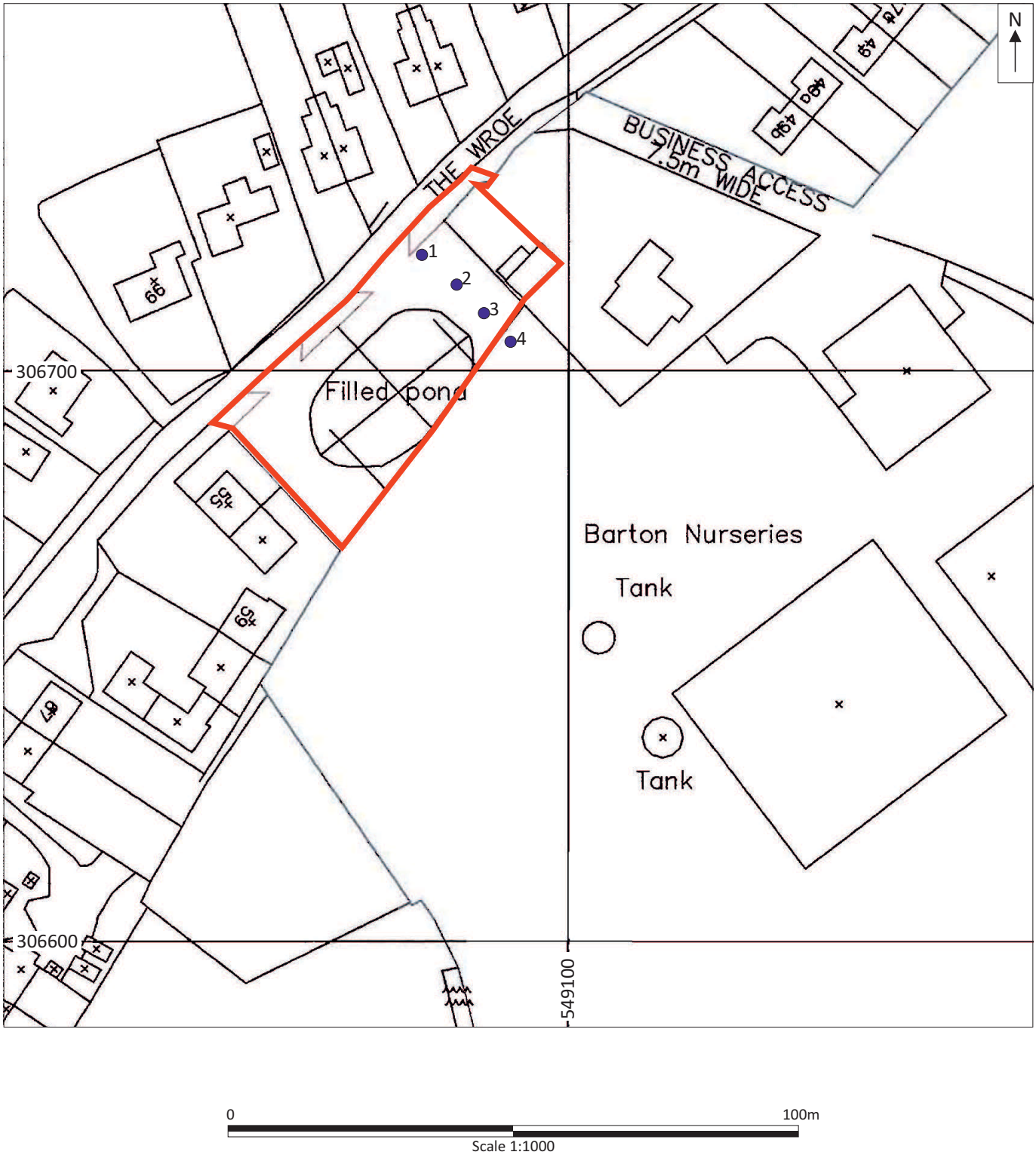


Figure 2: Site location outlined in red at scale 1:1,000 showing location of auger holes in blue

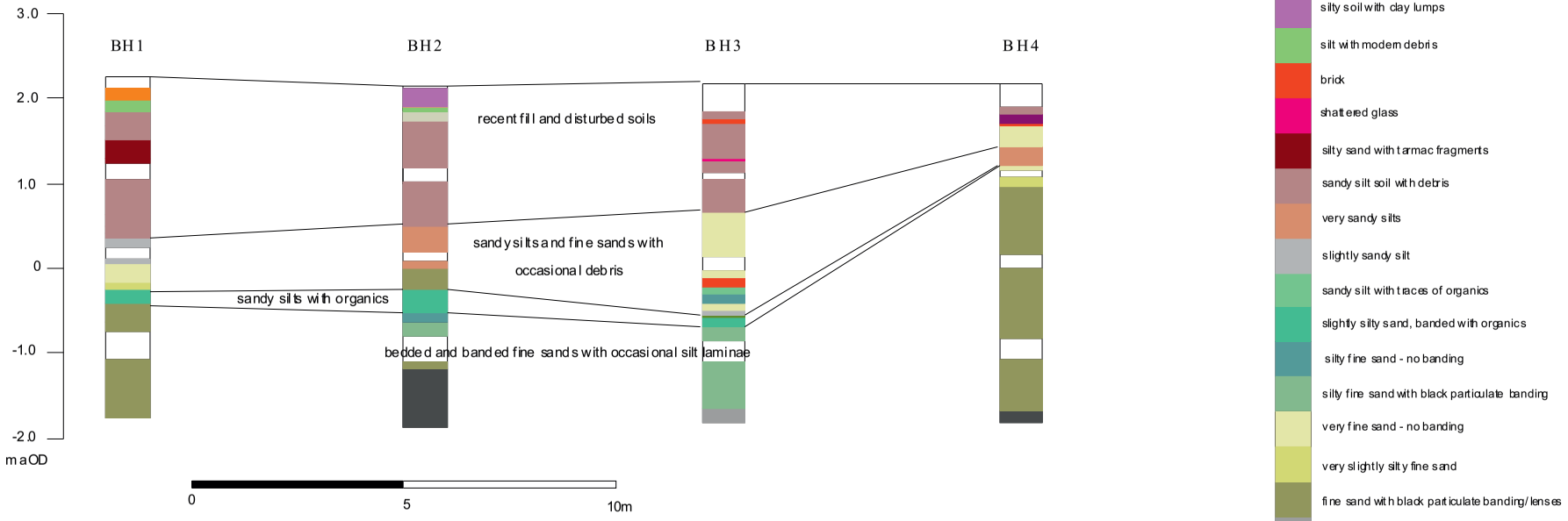


Figure 3: North-west to south-east section across the north-east end of the site reconstructed from the logged borehole data

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