

Archaeological Excavation at Site 1b, Nacton Road, Ipswich, Suffolk, IPS718



Excavation Report



September 2013

**Client: Mitchells & Butlers Leisure
Retail Limited**

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Archaeological Excavation at Site 1b, Nacton Road, Ipswich, Suffolk, IPS718

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Report Number: 1507

Site Name: Archaeological Excavation at Site 1b, Restaurant Land, Nacton Road, Ipswich, Suffolk, IPS 718

Date of Works: May – June 2013

Client Name: Mitchells & Butlers Leisure Retail Limited

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Table of Contents

Summary.....	5
1 Introduction.....	6
1.1 Location and scope of work.....	6
1.2 Geology and topography.....	6
1.3 Previous archaeological investigations.....	6
1.4 Archaeological and historical background.....	7
1.5 Acknowledgements.....	10
2 Aims and Methodology.....	11
2.1 Aims.....	11
2.2 Regional research aims.....	11
2.3 Site specific research objectives.....	11
2.4 Methodology.....	12
3 Results.....	13
3.1 Introduction	13
3.2 Period 1:Late Neolithic to Early Bronze Age c 2500BC-1600BC.....	13
3.3 Period 2: Probable Middle Bronze Age c 1500-1200 BC.....	13
3.4 Period 3: Probable Late Iron Age or Roman, c AD 1 - 410.....	13
3.5 Period 4: Middle Anglo-Saxon, AD 663 - 854.....	14
3.6 Period 5: Post-medieval, 18th -19th-century.....	15
3.7 Period 6: Modern, 20th-century.....	15
3.8 Undated features.....	16
3.9 Natural features.....	17
3.10 Finds summary.....	17
3.11 Environmental summary.....	17
4 Discussion and Conclusions.....	17
4.1 Period 1: Late Neolithic to Early Bronze Age.....	17
4.2 Period 2: Middle Bronze Age.....	18
4.3 Period 3: Late Iron Age and Roman.....	18
4.4 Period 4: Middle Anglo-Saxon.....	19
4.5 Period 5: Post-medieval.....	23
4.6 Period 6: Modern.....	23
4.7 Undated Features.....	24
4.8 Conclusions.....	24
Appendix A. Context Inventory.....	25
Appendix B. Finds Reports.....	28
B.1 Flint	28
B.2 Industrial Waste.....	30
B.3 Pottery.....	31
Appendix C. Environmental Reports	32
C.1 Environmental Samples.....	32
C.2 Charcoal.....	34
Appendix D. Bibliography.....	36
Appendix E. OASIS Report Form.....	39
Appendix F. Radiocarbon Dates.....	41

List of Figures

Figure 1	Site location, showing current and previous excavation areas
Figure 2	Site location with archaeological features, showing previous evaluation trenches, and other excavation areas IPS 404, IPS 715 and IPS 719
Figure 3	Plan of wider area showing current excavations in relation to IPS 405 and IPS 406
Figure 4	Estate Map of the south part of Harper's Farm 1770, with the excavation area overlaid (Suffolk Record Office, Ipswich, Ref. HA 93/12/38).
Figure 5	1st edition OS map, 1881-1882, with the excavation area overlaid
Figure 6	Russian Map, 1984 showing Ipswich Airport buildings and runway, with excavation area overlaid.
Figure 7	Plan and sections of features 248, 259, 259 and 290
Figure 8	Plan and section of features 281 and 279
Figure 9	Plan and section of feature 260
Figure 10	Plan and section of feature 262

List of Plates

Plate 1	Site shot. Site 2 background left and Site 1a background right. View from the north
Plate 2	Charcoal-filled pit 281 cutting ditch 279 , view from the south-west

List of Tables

Table 1	List of contexts
Table 2	Flint quantification data
Table 3	Quantities of industrial waste by context
Table 4	Quantification of hammerscale from sample residues
Table 5	Charred plant remains from environmental samples
Table 6	Samples containing charcoal only

Summary

In May to June 2013 Oxford Archaeology East carried out an excavation at 'Site 1b' Nacton Road, Ipswich, near to Ravenswood Housing Estate. The excavation of the 0.5 ha area was prompted by a planning application for a restaurant development with associated car-parking. The site lay in an area that had previously been occupied by Ipswich Airport and had, during World War II, been used as an RAF airfield.

The area was stripped by mechanical excavator and all exposed archaeological and natural features were recorded. The earliest features were a pit containing burnt flint and another pit containing two flint flakes and a probable hammerstone, both of which are undated but may be of Late Neolithic or Bronze Age date. Another phase of use of the site is represented by a pair of parallel ditches forming a droveway at right angles to Nacton Road. This is thought to date to the Late Iron Age or Roman period and may link up with another droveway and fields excavated to the south-west of the site.

A number of small charcoal-filled pits with evidence of in-situ burning are likely to have had some industrial purpose, for example charcoal burning. One of these pits has been dated to the Middle Anglo-Saxon period and it is likely that the remainder are contemporary or perhaps carry on into the medieval period. Small amounts of hammerscale within their fills suggests that the charcoal may be have been burnt for the purposes of iron smelting or smithing.

Two boundary ditches dating to the late 18th or 19th-century were identified. The first forms part of a tree-lined avenue leading from Nacton Road to Alnesbourn Priory and the second is an enclosure associated with Walk Barn. Both these boundaries correlate with boundaries shown on historic maps.

Linear marks on the eastern half of the site may relate to the WWII airfield, the civilian airport or may be plough marks or scarification marks.

1 INTRODUCTION

1.1 Location and scope of work

- 1.1.1 Oxford Archaeology East conducted an archaeological excavation at Site 1b, Nacton Road in Ipswich, Suffolk in May to June 2013. The excavation site was located on the south-eastern outskirts of Ipswich, just north of the A14, at NGR TM 19722 41600 (centred).
- 1.1.2 The investigation arose in response to a restaurant development with associated car-parking which had been granted full planning permission (IP/12/0054/FUL). The current excavation site is an area to be used for two restaurant units and associated car-parking. It was termed in advance 'Site 1b' in order to differentiate it from adjacent sites and has been assigned the site code IPS 718 (Figure 1 and 2). Site 1b was excavated immediately after Site 2 which is adjacent to the south-east (IPS 719, OA East report 2013b).
- 1.1.3 Site 1b, henceforth 'the Site', is a 0.5ha area of land, located on Nacton Road and accessed via Alnesbourn Road, in the Ravenswood housing estate. The Site was undeveloped land covered in rough grass with isolated concentrations of shrubs.
- 1.1.4 This archaeological excavation was undertaken in accordance with a Brief issued by Suffolk County Council's Archaeological Service Conservation Team (SCCAS/CT, 2013) and a Written Scheme of Investigation prepared by Ramboll UK (Ramboll, 2013b).
- 1.1.5 The Site lay in an area which had previously been occupied by Ipswich Airport until its closure in 1997.
- 1.1.6 The Site archive is currently held by OA East and will be deposited with Ipswich Museum in due course.

1.2 Geology and topography

- 1.2.1 The underlying geology of the Site is the Red Crag formation of coarse-grained, poorly sorted, cross-bedded, abundantly shelly sands, with ferruginous concretions (iron pan). The drift geology of glaciofluvial sand and gravel deposits gives rise to freely draining slightly acidic sandy soils (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>).
- 1.2.2 The northernmost part of the Site was at 37.0m Above Ordnance Datum (AOD) with the ground surface falling away gently from north-west to south-east to reach its lowest level at 36m AOD.
- 1.2.3 The estuary of the River Orwell lies 1.5km to the south-west of the Site.

1.3 Previous archaeological investigations

- 1.3.1 The area underwent a magnetometer scan in 1999. This was followed by a large-scale trench evaluation of the area previously occupied by Ipswich Airport, undertaken in 1999 to 2000 by SCCAS (IPS399; SCCAS 2000/90). The Site lies over the position of former Evaluation Trenches 20, 21 and 60 (Figure 2). Three areas were subsequently chosen for open area excavations in 2000. One of these open area excavations included part of the area of the current Site (IPS 404; SCCAS 2006/229).
- 1.3.2 In 2012 Pre-Construct Archaeology carried out investigations at Gainsborough Sports and Community Centre, Braziers Wood Road on the proposed site of Ipswich Academy,

(IPS 676; Pre-Construct Archaeology 2013). This evaluation and excavation is located 1km to the west of the Site.

- 1.3.3 Between April and June 2013 OA East conducted excavations on two adjacent sites; Site 1a (IPS 715) – the access road for the restaurant development (OA East, 2013a, Report 1464), and Site 2 (IPS 719) – another restaurant development (OA East, 2013b, Report 1500).
- 1.3.4 Results of these investigations are described in Section 1.4 below.

1.4 Archaeological and historical background

- 1.4.1 The archaeological and historical evidence for the study area (an area of 1km from the boundary of Site 1b) was analysed in detail in a desk-based assessment for Site 1a (Ramboll 2012) and Site 2 (Ramboll 2013a). The following is based on the above and also includes results from the excavations carried out in April this year at Site 1a (OA East Report 1464) and last year at Gainsborough Sports and Community Centre (PCA 2013). Numbers in brackets refer to context numbers from the former investigations).
- 1.4.2 No archaeological sites or findspots dated to the Palaeolithic or Mesolithic periods have been identified within the study area.
- 1.4.3 Remains of a small Neolithic or Bronze Age settlement with rectilinear and circular post-built structures were located 700m to the north-west of the Site (IPS386; SCCAS 2006/229). Bronze Age ploughed out burial mounds (barrows) between 300m and 600m to the south of the Site indicate the location of a cemetery serving the adjacent community (IPS027, 031, 039, 416, 417; SCCAS 2006/229 and PCA 2013).
- 1.4.4 The area in between is less well understood but it seems likely that it was used as fields in this period. This is borne out by the discovery of Late Neolithic/Early Bronze Age pits, post-holes and ditches within excavation area IPS 406 providing evidence for animal husbandry and probably periodic occupation (SCCAS 2006/229; Figure 3).
- 1.4.5 Nearer to the Site a pit (119) containing sherds of pottery from four or five late Neolithic or Early Bronze Age 'Beaker' vessels was found within excavation IPS 719 in 2013 (OA East 2013b). In 2000 a pit (0012) with a sherd of Early Bronze Age 'Beaker' pottery was found within IPS 404, just to the north of a ditch (0010). Another pit containing Beaker pottery was found during a watching brief less than 100m to the north of the Site where Ravenswood Avenue meets the roundabout (IPS 293). A pit containing Late Neolithic-Early Bronze Age Grooved Ware pottery was recorded at Gainsborough Sports and Community Centre (PCA 2013). Two further Early Bronze Age pits are recorded on the HER 630m to the east of the Site (HER nos. MSF14871 and MSF19294).
- 1.4.6 At Site 1a (IPS 715) a ditch (29/30) was recorded which was the continuation of a ditch recorded in adjacent excavations (IPS404, 0010 and IPS719, 220). This ditch can be very tentatively dated to the Middle-Bronze Age (1500-1200 BC). The very leached fills of these ditches and the absence of any cultural material would seem to accord better with prehistoric features rather than with any ditch that had been in-filled during the Iron Age or Roman periods. A further three ditches were found at IPS719, one of which was stratigraphically earlier than ditch 220, all were thought to be Bronze-Age in date. At Gainsborough Sports and Community Centre two phases of Middle to Late Bronze Age field systems were recorded as well as two phases of 1st-century AD field systems (PCA 2013).

- 1.4.7 A group of rectilinear cropmarks known from aerial photographs are located 700m to the south-east of the Site (HER no. MSF2282). They are located to the south of Nacton Road, just to the south of the barrow cemetery and are aligned north-south and east-west. They may represent Iron Age, Roman or, feasibly, Bronze Age field systems and enclosures.
- 1.4.8 Metal detecting on the area of this cropmark site uncovered a number of Roman bronze objects including crossbow brooch fragments, a Colchester derivative brooch, a disc brooch and a faceted pin head. This concentration of Roman finds suggests that at least part of the identified cropmarks could reflect a phase of Roman occupation.
- 1.4.9 Evidence of a complex system of field boundary ditches located to the west and south-west of the Site was first recorded during the large-scale evaluation of the former Ipswich Airport (IPS399). Further small-scale excavations as well as investigations of the airport's perimeter revealed field systems and driveways which developed by the end of the late Iron Age and continued in use throughout the Roman period (SCCAS 2006/229). Of particular interest to the Site are a network of boundaries and a meandering driveway within IPS 405 and IPS 406 (Figure 3).
- 1.4.10 The evidence for Anglo-Saxon occupation within the 1km study area includes scattered pits with charcoal rich fills found on adjacent areas, one of which (IPS719; 282) has been radiocarbon dated to the Middle Saxon period. Other evidence is confined to a small number of unstratified scatters of pottery and metal and several field boundary ditches found within the area of the former Ipswich Airport to the south-west of the Site and within Nacton Quarry (SCCAS 2005/138) to the south. Further afield, at Gainsborough Sports and Community Centre a trackway dating to the Middle Saxon period was revealed during an evaluation and excavation (PCA 2013). In Ipswich Airport evaluation trenches dug 1.15km to the south-west of the Site (IPS 390) found a focus of Anglo-Saxon settlement near to the springs in Braziers Wood.
- 1.4.11 Approximately 1.2km to the south-west of the Site lies the site of Alnesbourn Priory, a small Augustinian monastic house probably founded in the 13th-century as a satellite of Woodbridge Priory (Figure 5). It was annexed by the monks of Woodbridge at some point in the 15th-century and was 'ruinous' by 1514 (VCH 2, 111-112). The Site was within the extra-parochial area of Alnesbourn Priory until the mid 19th-century when Alnesbourn Priory became a civil parish (Martin, J 1999, 24, 192). The reason why some areas fell outside the parish system is not clear. It may be that they were unpopulated or unsuitable for agriculture, or that they were associated with a religious house (<https://en.wikipedia.org>).
- 1.4.12 All known medieval remains within the study area concentrate along its edges and comprise unstratified scatters of pottery fragments and metalwork as well as a number of post-holes, pits and enclosure ditches excavated within the boundaries of the former Ipswich Airport (SCCAS 2006/299). The features are likely to be associated with Clapgate Lane, a meandering north-to south route linking medieval Ipswich and its suburbs with Alnesbourn Priory and probably other settlements along the northern bank of the River Orwell (SCCAS 2006/299).
- 1.4.13 There is little cartographic evidence for the post-medieval period within the study area. The earliest estate maps of the Harper's Farm dated to 1770 show the area divided into a number of enclosed fields, laid predominantly for cultivation (Figure 4). These field systems changed little throughout the 19th-century (First Edition OS map 1881 to 1882, Figure 5) until the first decades of the 20th-century (Third Edition OS map 1938).

- 1.4.14 A boundary ditch of probable post-medieval date (1/2) was revealed in the Site 1a (IPS 715) excavations which also lines up with a ditch (0002) found in IPS404. Examination of the 1st edition OS map, by SCCAS at the time of writing report 2006/229 led to the suggestion that this ditch was part of a system of hedged field boundaries associated with the tree-lined entranceway to Alnesbourn Priory Farm and/or a triangular enclosure around Walk Farm.
- 1.4.15 Approximately 1km to the north of the Site lay Warren House, shown on 18th-century and later maps (Figure 5). Its associated remains of a rabbit warren can be seen on 1946 aerial photographs as linear and rectangular earthworks on Warren Heath. The visible earthworks vary in form between embanked linear mounds and possibly ditched rectangular enclosures and rectangular platforms, all on a north-east to south-west alignment.
- 1.4.16 In 1929 147 acres (59 ha) of Ravens Wood was purchased by Ipswich Corporation with the intention of creating a municipal airport for Ipswich, with construction starting in the following year. The advent of World War II saw the airport facilities requisitioned by the government. Ipswich was allocated as a satellite airfield for Wattisham and was placed, like its parent station, in No 2 Group, Bomber Command. The Site is located at the eastern edge of the grass runway.
- 1.4.17 The Luftwaffe bombed Ipswich on 24 March 1941 when three Heinkel HE111s and two Messerschmitt BF110s attacked the airfield with high explosive bombs and machine gun fire (RRA website). On 1 September the airfield suffered a near miss from a V1.
- 1.4.18 Analysis of aerial photographs taken in 1944 and 1946 identified a number of World War II anti-invasion defences visible as structures and earthworks. The defences consisted of stretches of barbed wire which ran around the southern-side of the airfield. Within the barbed wire a number of hexagonal pillboxes were located. Two of the pillboxes were surrounded by a complex system of slit trenches. Numerous other trenches and gun pits were located around the edges of the airfield as were a number of Nissen huts and buildings of unknown function. The photographs show that the post-medieval field boundaries have been painted back on to the airfield as camouflage and at the south-western corner of the airfield four groups of long rectangular structures have also been camouflaged with paint.
- 1.4.19 On 1 August 1945, Ipswich Airport was placed under Care and Maintenance, remaining as such until April 1946 when the RAF left the site and civil flying resumed (RRA website).
- 1.4.20 The archaeological evaluation and excavations at the former Ipswich Airport uncovered two Pickett-Hamilton forts, located to defend two of the grass runways (SCCAS 2006/229). Numerous small charcoal-filled pits were identified across the airfield including in IPS 404, IPS 405 and IPS 406. At the time they were interpreted as 'FIDO' installations. FIDO stands for 'Fog Investigation and Dispersal Operation' (which was sometimes referred to as 'Fog Intense Dispersal Operation' or 'Fog Intense Dispersal Op' and was a system used for dispersing fog from an airfield so that aircraft could land safely (Wikipedia).
- 1.4.21 A Second World War Heavy Anti-aircraft artillery battery and an associated camp can be seen on aerial photographs of the 1940s as four earthwork gun emplacements and a variety of structures, located to the north-east of the airport. Between 26 March 1944 and 6 July 1944 the area of earthwork obstructions was bombed, as can be seen by the earthwork craters visible on photographs taken in July.

- 1.4.22 A possible World War II military camp and possible gun pits are visible as structures and earthworks on aerial photographs in woodland at Robert's Grove, to the south of the airport. The camp is likely to have had some role in the defence of the airfield. After the war civil flying made a tentative start in 1946, but it was not until 1953 that scheduled civil airline services started again. The airfield was de-licensed and ceased to be registered by the Civil Aviation Authority on 31 December 1996. The last aircraft left over a year later in January 1998.
- 1.4.23 Most of the features revealed within IPS 404 and Site 1a (IPS 715) had been heavily truncated. This had probably occurred through ploughing and later on, through levelling of the ground for the airport and its grass runway.

1.5 Acknowledgements

- 1.5.1 OA East would like to thank Mitchells and Butler Leisure Retail Limited who funded this project and Andy Shelley from Ramboll UK for arranging the work. The Brief was prepared by Jess Tipper of Suffolk County Council Archaeological Service Conservation Team.
- 1.5.2 The excavation was carried out by Kate Clover, Mike Green, Lindsey Kemp, Pat Moan and Jemima Woolverton. Site survey was carried out by Pat Moan. The project was managed for OA East by Aileen Connor.

2 AIMS AND METHODOLOGY

2.1 Aims

2.1.1 The original aims of the project were set out in the Brief and Written Scheme of Investigation (SCCAS/CT 2013 and Ramboll 2013b).

2.1.2 The main aims of this excavation were:

- To assess and record the nature, extent, character and significance of any archaeological features and deposits on the Site.
- To preserve any archaeological evidence contained within the excavation area by record and to attempt a reconstruction of the history and use of the site.

2.2 Regional research aims

2.2.1 The aims and objectives of the excavation were developed with reference to Regional Research Agendas (Brown and Glazebrook, 2000 and Medlycott 2011). The WSI (Ramboll 2013b) outlined the relevant regional research aims that the excavation had the opportunity to address:

- What is the relationship of Neolithic and Bronze Age funerary landscapes to settlements?
- To what extent can the Neolithic settlement be regarded as nomadic?
- Strengthening of palaeoenvironmental sampling strategies for deposits of confirmed Neolithic date (e.g. 100% flotation)
- Refining the typological identification of later Bronze Age pottery, linked to close radiocarbon and OSL dating
- Application of Bayesian theory to radiocarbon dates as part of refining the absolute Iron Age chronology for the region
- How did the use of land change in the Iron Age and Roman period?
- To what extent can the size and shape of fields be related to the agricultural regimes identified in the Roman period?
- How does the social change associated with the enclosure of commons and greens impact on the landscape?
- Classification of Second World War anti-invasion defences through comparison between the field and documentary evidence; and involvement of local amateur groups and individuals in work on Second World War defences.

2.3 Site specific research objectives

- To confirm any further presence and extent of archaeological remains that may be associated with those highlighted by the 1999 to 2000 evaluation and excavation (SCCAS reports 2000/90 and 2006/229)
- To confirm the presence/absence of any Neolithic and Bronze Age activity, such activity possibly being related to the known settlement to the north and a barrow cemetery to the south of the Site

- To confirm the presence/absence of a continuation of the Iron Age and Roman field systems identified to the west of the Site
- To confirm the character of changes in land use from the Iron Age to the Roman period that were postulated in SCCAS's report (SCCAS 2006/229)
- To assess and record the nature and extent of post-medieval field boundaries and their relation to the layout recorded by historic maps
- To assess and record the extent of any further WWII airfield defences and FIDO installations within the Site.

2.4 Methodology

- 2.4.1 The methodology used followed that outlined in the Brief (SCCAS/CT 2013) and detailed in the Written Scheme of Investigation (Ramboll 2013b).
- 2.4.2 Prior to excavation the entire area was subject to an ecological destructive survey. This involved the use of a wheeled excavator fitted with a flat bladed ditching bucket under the supervision of an ecologist and monitored by an archaeologist. The machine lifted the turf from all areas of the site, and the resulting spoil was searched for evidence of specific animal species. No evidence for archaeological features or finds was found during the "Destructive Survey".
- 2.4.3 Machine excavation was carried out by a 20 ton 360° type mechanical excavator using a flat bladed ditching bucket under the constant supervision of a suitably qualified and experienced archaeologist. The turf was removed first and then the topsoil and subsoil.
- 2.4.4 Spoil, exposed surfaces and features were scanned with a metal detector. All finds were retained for inspection, other than those which were obviously modern.
- 2.4.5 All archaeological features and deposits were recorded using OA East'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.
- 2.4.6 Environmental samples were taken for finds retrieval and for carbonised plant remains.
- 2.4.7 Weather conditions were favourable.

3 RESULTS

3.1 Introduction

3.1.1 The results are presented below by date order from earliest to latest features. Numbers in bold are context numbers. Natural features and undated features are discussed last. 0.45m depth of material was stripped off down to the natural drift deposits of sands and gravels. This stripped material consisted of 0.1m of turf and between 0.3m and 0.35m thickness of dark grey brown sandy silt topsoil (**100**) overlying 0.1m thickness of mid orangey brown slightly silty sand subsoil (**101**). This overburden was considerably deeper in the north-eastern corner of the site where recent land-raising had been undertaken. All features were cut into natural ground and sealed by subsoil and topsoil unless otherwise stated. The topsoil contained a few piece of slag and clinker (see Appendix B.2) plus some modern pottery and iron objects which were not kept. Some flint was found in the subsoil. All features are shown on Figure 2.

3.2 Period 1: Late Neolithic to Early Bronze Age c 2500BC-1600BC

3.2.1 Nothing definitely dating to this period was found on Site 1b, however at the southern side of adjacent Site 2 was a pit containing sherds from four or five Beaker vessels of Late Neolithic or Early Bronze Age date plus flint flakes, burnt flints and burnt stone (Oxford Archaeology East 2013b).

3.2.2 Pit **254** in the northern part of Site 1b was 0.95m x 0.75m in width and only 0.24m deep. Its upper fill of mid brown sandy silt contained 38 burnt flints, probably deliberately deposited (Appendix B.1). There were no other finds but the presence of burnt flint suggests a Neolithic or Bronze Age date.

3.2.3 One undated pit (**246**) may also date to this period (Section 3.8).

3.3 Period 2: Probable Middle Bronze Age c 1500-1200 BC

3.3.1 Nothing definitely dating to this period was found on Site 1b, however in Site 2 adjacent, four field boundary ditches of probable prehistoric date were recorded. One flint flake and a few burnt flints as well as their very leached fills indicates a likely Middle Bronze Age date, although this is not confirmed (Oxford Archaeology East 2013b). One of the ditches found in Site 2 was a continuation of a ditch which was recorded in Site 1a (IPS 715) and in IPS 404.

3.4 Period 3: Probable Late Iron Age or Roman, c AD 1 - 410

3.4.1 Two parallel and probably contemporary ditches were recorded in the southern part of the Site and IPS 404. These ditches were aligned north-east to south-west and were three metres apart. The southern ditch was **283**. This ditch was between 0.88m and 1.3m wide and between 0.14m and 0.3m deep. It was filled with a light yellowish brown silty sand containing small abraded sherds of prehistoric pottery of possible Iron Age date, as well as a small quantity of burnt flint (Appendix B.1). This ditch continued into Site 2 as context **176** (and its continuation **180, 200**). It was also recorded in IPS 404 and seemed to terminate there (contexts 0030, 0031 and 0016).

3.4.2 The northern ditch was **279** (Figure 8 and Plate 2). It was between 1.3 and 1.4m wide and was 0.6m deep. Its fill was a light yellowish brown silty sand with no finds. This ditch continued into Site 1a/ IPS 715 as context **50** and Site 2/ IPS 719 as context **172** (and its continuation **190, 279**). It was also recorded in IPS 404 as contexts 0014, 0028

and 0029. No finds have been retrieved from this ditch or from any of its extents but the similarity of alignment and backfill would suggest it is contemporary with ditch **176**.

- 3.4.3 In IPS 404 both ditches were seen to cut ditch 0010 which thus clearly pre-dated them. Ditch 0010 was a continuation of ditch **220** which is likely to be a middle Bronze Age field boundary ditch.
- 3.4.4 The northern of the two parallel ditches (**279**) was cut by a charcoal-filled pit (**281**, Plate 2 and section 3.5), with a second pit (**174**), in Site 2, also seen to have cut it. Both pits are thought to be of Anglo-Saxon date.
- 3.4.5 In IPS 404 these parallel ditches were interpreted as probably of post-medieval date due to the presence of a small fragment of tile in the fill of the southern ditch. A discussion of the reasons for attributing them now to the Late Iron Age or Roman period can be found in Section 4.4.

3.5 Period 4: Middle Anglo-Saxon, AD 663 - 854

- 3.5.1 Twelve small shallow pits with charcoal-rich fills and evidence of *in situ* burning were recorded in Site 1b – cut numbers **248**, **250** (Figure 7), **252**, **259** (Figure 7), **265**, **267**, **269**, **271**, **277**, **281** (Figure 8 and Plate 2), **291** and **293**. Twenty seven more of these pits were recorded in Site 2 (IPS 719). This makes a total of thirty-nine from both sites.
- 3.5.2 None of these pits were recorded in Site 1a (IPS 715) although five were noted in IPS 404 and interpreted as modern 'FIDOS' (see Section 4.6). It is thought that due to their shape, size and fills all of these pits had the same function and may well be contemporary.
- 3.5.3 There was a cluster of six of these pits at the north-western end of the Site. The remainder were more loosely grouped or were isolated, and an area in the middle of Site 1b did not contain any at all.
- 3.5.4 The pits were all circular or sub-circular and ranged in diameter from 0.5m (**252**) to 0.8m (**281**). The depths ranged from 0.18m (**281**) to 0.16m (**252**). On average the charcoal-filled pits from Site 1b were smaller than those from Site 2. All the pits had black charcoal-rich fills and in several of them the sand around the edges and base was scorched red indicating *in-situ* burning.
- 3.5.5 Several of the pits contained a single fill of a light grey ashy silty sand mixed with abundant charcoal. In others there were two distinct fills – a very black, almost pure charcoal lower fill and a less charcoal-rich, dark grey sandy silt upper fill.
- 3.5.6 100% of the fills of the majority of the charcoal-filled pits were kept as bulk samples. All bulk samples were processed using a flotation tank. Charcoal from charcoal-filled pits **259** and **281** was identified as a single species - oak (Appendix C.2). The samples were also checked with a magnet for evidence of metal-working. Abundant magnetic residues are present and initially identified as both flake and spheroidal hammerscale, indicative of smithing/smelting activities (Appendix B.2).
- 3.5.7 There was an absence of any securely provenanced pottery, bone or tile from any of the charcoal-filled pits. A small amount of burnt flint was retrieved from the fill of pit **271** but this is probably naturally occurring flint that was heated accidentally rather than deliberately.
- 3.5.8 One of the pits (**281**) cut a probable Late Iron Age or Roman ditch (**279**). All the pits were sealed by subsoil and topsoil.

- 3.5.9 In the absence of any pottery or other finds that could reliably be used for dating, charcoal from the fill of pit **281** was selected to be sent to SUERC for radiocarbon dating (Appendix F). This pit fill contained good sized charcoal pieces, suitable for radiocarbon sampling. This pit also cut ditch **279**, thus it was selected to provide a *terminus ante quem* for the ditch. The date for the charcoal in **281** is AD 665-854 (with a 95.4% probability) or AD 665-783 (with a 91% probability).
- 3.5.10 Thus, it can be stated with confidence that the fill of this pit contained charcoal from trees that were burned in the Middle Anglo-Saxon period. Only two out of 44 of the pits (from Sites 1b and 2) have been dated by this method, the other being pit **111** from Site 2 which also gave a mid Anglo-Saxon date. Some caution should be exercised in concluding that all of the pits are contemporary. The fact that two pits cut into a probable Late Iron Age or Roman ditch indicate that these two at least are later than Late Iron Age or Roman, but the remainder are dated only by association.

3.6 Period 5: Post-medieval, 18th -19th-century

- 3.6.1 Ditch **257** (and its continuation **273** and **260**) extended across the northern side of Site 1b on an ENE to WSW alignment and had previously been recorded in Trial Trench 60. Ditch **257** was 1m wide and 0.3m deep with a mid to dark grey sandy silt fill. One piece of modern iron machinery was retrieved from the fill, using a metal detector. At its north-eastern extent the ditch was wider and deeper and contained plastic in its upper fill. Here the edges of the ditch were less distinct and it was in an area that had been disturbed during the creation of the roundabout.
- 3.6.2 This ditch correlates with the position of the southern of a pair of widely spaced parallel boundary ditches that show on historic maps (Figures 4 and 5). These parallel ditches were recorded in IPS 405 and IPS 406 where they were recorded as 12m apart (Figure 3). They formed a tree-lined avenue laid out in the late 18th or 19th-century leading from Nacton Road towards Alnesbourn Priory.
- 3.6.3 The continuation of a north-east to south-west aligned ditch recorded in Site 1a as contexts **1** and **2** was seen to continue into Site 1b (**262**). It was also recorded in Trial Trench 20 and in IPS 404, as context 002. This ditch was 1.87m wide and 0.5m deep, with a mid to dark brown sandy silt fill. No finds were retrieved from any of its cut sections and, although undated, it is thought to be of late 18th-century or 19th-century date as it coincides with a field boundary shown on maps of this date (Figures 4 and 5) that forms an enclosure associated with Walk Barn.

3.7 Period 6: Modern, 20th-century

- 3.7.1 Along the eastern half of the Site was a series of discontinuous linear cuts running parallel with Nacton Road. These narrow cuts extended for 60m. All the cuts were narrow and shallow, being no more than 0.25m wide and 0.13m deep. They were also observed in Site 2, on the same alignment and there a section was cut through them to investigate them. The topsoil-like fills gave them a modern appearance and the presence of one piece of tile and one piece of modern slag also indicate a modern date. One of linear marks cut a charcoal-filled pit (**293**). One of these marks in Site 1b was seen to hold a narrow metal cable but the others did not and they are perhaps too numerous to all be cable trenches.
- 3.7.2 One interpretation for them is plough marks dating to sometime before the creation of the airport. Another interpretation is wheel ruts dating from a time when Nacton Road was a trackway formed by carts detouring to the side of the main track to avoid muddy

areas. If some or all of these marks are wheel ruts they probably date to sometime in the post-medieval period, however, the dark topsoil fill suggests a more recent date and they may be related to the airport.

- 3.7.3 Much modern disturbance was recorded in the north-eastern corner of Site 1b, near the roundabout. The ground had been raised by more than half a metre here. The ground-raising material was very recent, as indicated by the plastic and tarmac debris in its matrix. A wide and long cut had been made into the natural and modern material had been dumped into this trench. Within this disturbed area two distinct dumps, both clearly sealed by the ground-raising material, were recorded – red burnt material mixed with ash (**286**) and adjacent to it, a black burnt material mixed with ash (**288**). Both contained slag and clinker, pottery included willow pattern and plant pot (both discarded as well as post-medieval stone-ware pottery found in **286**). In addition there were plastic bags and sweet wrappers, including a 1980s Milky Way wrapper. This material may have derived from the nearby former post WWII Ransomes, Sims and Jefferies Works (Appendix B.2), although there was clearly earlier material mixed in with it as well.

3.8 Undated features

- 3.8.1 Three undated pits were recorded within Site 1b. Pit **246** at the extreme north end of the Site was 0.4m in diameter and 0.23m deep. It had straight sides and a flattish base with a single fill of light brownish grey sand. Two flint flakes and a possible hammerstone or grinding stone were retrieved from the fill. This pit did not contain any domestic waste and appears to have been dug for some other reason, perhaps extraction of sand. A pit against the eastern baulk of Site 1b (**250**) had one mid grey brown sandy fill containing a flint flake (Figure 7). It is possibly a tree throw or a pit which had been affected by tree rooting.
- 3.8.2 An irregularly shaped pit (**290**), measuring 1.28m by 1.75m had a very charcoal-rich fill and occasional oyster shell on the surface (Figure 7). Upon excavation the fill was seen to comprise a layer of black charcoal overlying a light grey ash. Three flints in the fill may have been burnt accidentally. The sides and base of the feature were very irregular and it had the appearance of a tree bole. However the natural sand had been reddened by heat indicating *in situ* burning. It would appear that this was a tree bole which had provided a convenient-shaped pit for a bonfire, or alternatively, that the tree stump had been burnt out deliberately. This pit may belong with the group of possibly Anglo-Saxon charcoal-rich pits (section 3.5), however, this pit was larger and more irregular in shape.
- 3.8.3 All of the above undated features appear (by the colour and texture of their fills, the presence in some of them of flint flakes and burnt flint and the absence of any later artefacts), to be of probable early date, although pit **290** could be grouped with the other charcoal-rich features interpreted as Anglo-Saxon in date.
- 3.8.4 Ditch **296** was a short stretch of ditch in the eastern part of Site 1b. It was 1.8m wide and 0.33m deep with a single fill of mid brownish grey sand. There were no finds but the odour of the fill (multi-purpose compost!) suggested a modern date. This ditch was recorded in Trial Trench 20. It is not recorded on any maps. Both ends of the ditch were very disturbed by modern activity.

3.9 Natural features

- 3.9.1 A total of nine features of likely natural origin were recorded within Site 1b. None were assigned context numbers. Several more were recorded in Site 2. The natural features comprised circular pits, elongated pits, amorphous pits and linear features. The pits probably derived from the process of freeze-thaw of the sands and gravels in periglacial conditions, while those pits with irregular edges and profiles are likely to be tree boles. The linear features may have been the result of animal burrowing. Tree rooting and animal burrowing was also evident at the edges of some of the archaeological features.
- 3.9.2 A selection of natural features were half sectioned to eliminate the possibility of them being archaeological features.

3.10 Finds summary

- 3.10.1 48 flints were retrieved from Site1b, 38 of which were burnt. The small sample size and mix of characteristics would imply this assemblage is a mix of Neolithic residual material and later Bronze Age working. No further work is recommended (Appendix B.1).
- 3.10.2 A small amount of modern industrial residue and waste was recovered totalling 1.22kg (Appendix B.2). The materials comprised clinker and slag, all derived from a modern blast-furnace. No further work is recommended and the material is recommended for discard.
- 3.10.3 Initial identification suggests that both flake and spheroidal hammerscale is present in many samples. This is indicative of smithing/smelting activities (Appendix B.2). It is recommended that the identification is verified and the remaining samples scanned for further evidence of hammerscale. A summary should be included in any publication.
- 3.10.4 One sherd of 18th -19th-century English Stoneware was retrieved from layer **286**.

3.11 Environmental summary

- 3.11.1 A total of seven bulk samples were taken during excavations at Site1b, all of which were processed to determine whether plant remains were present, their mode of preservation and whether they were of interpretable value. Samples taken from the charcoal-rich pits (one of which has been radiocarbon dated to the Middle Anglo-Saxon period) produced large flot volumes of charcoal (Appendix C.1).
- 3.11.2 Charcoal from two samples was submitted for assessment and identification of wood species, all were found to be oak (Appendix C2). Further work on species identification is recommended for samples from the remaining (four) charcoal-rich features, and a short report should be included in any publication.

4 DISCUSSION AND CONCLUSIONS

4.1 Period 1: Late Neolithic to Early Bronze Age

- 4.1.1 The presence of four undated pits, two of which are likely to be Late Neolithic or early Bronze Age (**246** and **254**), ties in with other isolated pits that have been found in the vicinity. These isolated pits include pit **119** in Site 2, which contained sherds from four or five Beaker vessels of Late Neolithic or Early Bronze Age date, and a pit containing one piece of Bronze Age pottery, from IPS 404.

4.1.2 Other Late Neolithic or Early Bronze Age pits have previously been identified in the vicinity, for example a pit from watching brief IPS 293. Further afield, two Bronze Age pits were found 650m to the east of the site and three or four Late Neolithic/Early Bronze Age pits were identified in IPS 406. Two Late Neolithic/Early Bronze Age ditches forming a funnel enclosure thought to be for droving sheep or cattle were also found in IPS 406. To the north-west of the site is evidence of a Neolithic or Bronze Age settlement (IPS 386). To the south-east is a Bronze Age barrow cemetery. The area in between these sites- which includes the location of the current site – appears to have been unoccupied, suggesting that it was probably utilised for animal pasture. The isolated pits may be contemporary with each other and perhaps can be better understood as a group. One tentative interpretation is that they functioned as territorial markers – a means of the farmers of this area to stake their claim to the land.

4.2 Period 2: Middle Bronze Age

4.2.1 Nothing of this date was found during the excavations, however at Site 2 there was a series of four boundary ditches forming part of a field system of probable middle Bronze Age date (Oxford Archaeology East 2013b).

4.3 Period 3: Late Iron Age and Roman

4.3.1 The two parallel ditches (**279** and **283**) are interpreted as a droveway of probable Late Iron Age or Roman date. The ditches are 3m apart and are at right angles to Nacton Road. At the time that these parallel ditches were excavated in IPS 404 they were thought to correlate to two parallel ditches forming a tree-lined avenue showing on the 18th-century estate map and later OS maps (Figures 4 and 5). Stratigraphic relationships with other features on Site 1b, cartographic evidence, as well as the character of fills of these ditches all serve to suggest a different interpretation of date. These ditches do not in fact correlate with any mapped features and are therefore almost certainly earlier than the later 18th-century. The tree-lined avenue as mapped is further to the north, and excavations on Site 1b and IPS 405 and 406 have located a pair of much more likely candidates with a distance of 12m between ditches (section 4.5.1).

4.3.2 The northern-most ditch was cut by two charcoal-filled pits. One of these pits (**281**) has been securely phased by radiocarbon dating to AD 665-854 (with a 95.4% probability) or AD 665-783 (with a 91% probability), suggesting that the ditch must have been infilled at an earlier date. The presence of probable Iron Age pottery and burnt flint in the fill of this ditch, the lack of any other finds and the relatively pale, leached fills point to an early date. These ditches also cut and therefore post-date a probable Middle Bronze Age ditch, hence a date in the Late Iron Age or Roman period seems the most viable.

4.3.3 The presence of a Late Iron Age droveway continuing in use into the Roman period would accord with what has been found in the vicinity, for example the field boundary ditches and droveways in IPS 405 and 406 to the south-west of the Site (Figure 3), Roman finds found by metal detecting to the south of the Site, as well as two phases of 1st-century AD field systems found at Gainsborough Sports and Community Centre to the north-west of the Site.

4.3.4 The probable droveway is at a right angle to Nacton Road which may have been a deliberate configuration, indicating that Nacton Road and the droveway respected each other, although it is not clear which is the earlier feature. The author can find no evidence for a Late Iron Age or Roman routeway on the course of Nacton Road. The

closest known Roman road is a possible road leading from the Roman small town/fort of Felixstowe towards Stratton Hall. The projected route of the road heads north-west, probably towards the Roman small town/fort at Coddenham (*Combretovivm*) (Moore et al, 1988, 28-31).

4.4 Period 4: Middle Anglo-Saxon

- 4.4.1 Forty-four small shallow pits with charcoal-rich fills and evidence for *in situ* burning were recorded on Site 1b and Site 2, two of which have been dated through C14 dating to the Middle Anglo-Saxon period. There follows a discussion of these features in relation to other similar features in the vicinity.

Description of other similar pits in the vicinity

- 4.4.2 Pits of a similar character have been recorded from evaluations and excavations in close proximity to the Site, notably within the evaluation and excavations of Ipswich Airport in 1999-2000. Seven or eight were found in Site IPS 386 – the most northern part of the airport investigations. They are described in the report as c 0.6m in diameter and up to 0.2m deep and filled with charcoal and burnt material. One of the pits was sampled during the evaluation and it was clear from this that *in-situ* burning had taken place and that the contents had been subjected to very high temperatures. This was taken as an indication that it was not an archaeological feature. All the charcoal pits in this excavation area were interpreted as 'FIDOs' – pits dug to light fires along the airfield runway to disperse fog and allow planes to land. They were therefore not targeted in the ensuing airport excavations and were only recorded in plan (SCCAS 2006/229, 13).
- 4.4.3 Three such pits were found in IPS 405, twelve in IPS 406 and five in IPS 404. Several of those in IPS 406 formed a cluster but most were spread out and did not form rows, as one might expect if they were lining the runway. Some pits (in IPS 405 and 406) are actually within the former airfield runway (SCCAS 2006/229, 65, 66, 70, 86).
- 4.4.4 The evaluation and excavation by PCA at the Gainsborough Sports and Community Centre, Braziers Wood Road exposed 24 of these pits which they refer to as 'burnt pits' (PCA 2013, 39-40). These comprised small sub-circular features measuring between 0.3 and 1.1m in diameter, and typically less than 0.2m in deep. Two examples contained datable finds and four of the pits had a stratigraphic relationship with other features: one pit was cut by a Middle Saxon trackway ditch and another pit cut the fill of a Saxon trackway ditch. One pit appeared to be partially truncated by a Bronze Age ditch but this relationship is unclear and the same ditch appears to be cut by another burnt pit elsewhere. One of the pits cut the subsoil rather than being sealed by it. The authors of the post-excitation assessment consider that, although limited, the artefactual and stratigraphic data indicate that this type of feature was constructed throughout the site's history from at least the later Bronze Age until at least the Middle Anglo-Saxon period, and probably far later. They suggest that they are small and very short-lived hearths, made in an *ad hoc* manner for a range of activities including for cooking, for warmth and for the disposal of refuse. They argue against the idea that the pits result from charcoal production as the pits seem too small for this purpose.
- 4.4.5 Another such pit was excavated and recorded in an archaeological evaluation at Purdis Heath, Purdis Farm, just over 1.5km to the north-east of the Site. There were no finds from the fill and it was interpreted as probably modern and of military function, due to the airfield and other features from the Second World War in the area (Newman, 2011).

Discussion of surrounding settlements

- 4.4.6 The following section attempts to place these charcoal-filled pits in the context of Anglo-Saxon settlement in the vicinity. In the mid 7th to mid 8th-century Suffolk was part of the kingdom of East Anglia and by AD 750 the East Angles had been subsumed into the kingdom of Mercia (Wade, 1997, 47). Ipswich, which is just over 3.5km to the north-west of the Site, was developing as a major industrial centre and port which traded with the Rhineland (Wade, 1999, 46).
- 4.4.7 Features of Middle Anglo-Saxon date characterised by the presence of Ipswich Ware pottery have been found within sites IPS 390 and IPS 406 of the Ipswich Airport investigations which are located approximately 1.15km and 600m to the south-west of the Site respectively. It appears that there was a Middle Anglo-Saxon settlement focussed on IPS 390 which is near springs in Braziers Wood just over 1km to the west of the Site. It is also not far from the River Orwell which had great importance to the thriving port of Ipswich to the north-west. The linear features found within IPS 405 probably represent field or other boundary divisions (SCCAS 2006/229, 83-84).
- 4.4.8 The Ipswich Airport investigations also located medieval settlement around the probable former route of Clapgate Lane - a meandering north-to south route linking medieval Ipswich and its suburbs with Alnesbourn Priory and probably other settlements along the northern bank of the River Orwell (IPS 391 and IPS 390). To the east of the former route of Clapgate Lane, at IPS 406, a small nexus of field ditches was identified, tentatively dated to the medieval period and thought to be small paddocks and stock enclosures probably associated with grazing animals. The authors of the report suggest that this medieval activity had its origins in the Anglo-Saxon period (SCCAS 2006/299, 84) although they do not offer an opinion as to whether Clapgate Lane was in use in this period.
- 4.4.9 An examination of the entry for Alnesbourn in the Domesday Survey of 1086 gives some information about the landscape at the time, albeit the Late Anglo-Saxon landscape. In 1086 it is listed as having only four households plus a church (of St Andrew), 1 lord's plough team, 6 acres of meadow and 60 sheep. The Lord in 1066 was the church of Alnesbourn St Andrew. It is recorded as 'Aluesbrunna', the second part of the name coming from the Old English or Old Norse *Brunna* meaning stream or brook. This settlement no longer exists and it is presumed (by the author of this report) to lie under the site of the 13th-century Alnesbourn Priory which is 1.2km to the south-west of the Site.
- 4.4.10 Archaeological evaluation and excavation on Warren Heath in Purdis Farm parish in 2002 and 2004 by SCCAS uncovered a cemetery and associated settlement of 8th-12th-century date. This is located in the area that is now between Bucklesham Road and Felixstowe Road, located 1.2km north-east of the Site (SCCAS 2009).
- 4.4.11 Evaluations and excavations by PCA at the Gainsborough Sports and Community Centre, Braziers Wood Road uncovered a north-east to south-west aligned ditch containing Middle Saxon Ipswich ware pottery. This ditch is interpreted as one side of a Middle Saxon trackway (PCA 2013, 38).
- 4.4.12 A picture thus emerges of two centres of Anglo-Saxon occupation – the first, to the south-west of the Site, around Clapgate Lane and Braziers Wood and the second, to the north-east of the Site, around Warren Heath. There was a trackway leading from Brazier's Wood towards Nacton Road.

Discussion of the landscape and environment

- 4.4.13 In between the two areas of Anglo-Saxon occupation described above there were, until very recently, areas of heathland - Warren Heath, Priory Heath and Nacton Heath. Sheep and grazing for sheep seem to feature in the archaeological and documentary record. Numerous charcoal-filled pits have been found in the heathland between Nacton Road and Brazier's Wood.
- 4.4.14 The source of the oak charcoal is open to question. There are surviving pockets of woodland to the south-west of the Site e.g. Brazier's Wood and Bridge Wood, Bridge Wood is thought to have been managed from at least 1600 and both may possibly be survivals from a much earlier period, ancient Oaks are still to be found at both locations. 'Ravenswood' seems to survive only as a placename but may refer to a previous area of woodland on the Site. Tree boles and tree throws were present across the Site indicating the presence of trees in a former phase of the Site's history. However, there was no definite dating evidence from these pit-like features or anything to confirm the date of the demise of these trees and they could well date as far back as the Neolithic. Woodland would not have been the only source of wood as it could also have been sourced from hedges (Rackham, 1999, 64-65).

Discussion of possible function

- 4.4.15 The function of these pits is not immediately apparent. The reddened sands at the base and sides of the majority of the pits indicates that they held a fire. The interpretation that these are domestic hearths for cooking seems unlikely as there was no animal bone within the fills nor were any carbonised food remains recovered from the environmental samples. The lack of any contemporary occupation features on the Site – postholes, rubbish pits, floors etc or any finds such as pottery also argues against a domestic function. The Site thus appears to have been a marginal, unsettled area, perhaps only used for grazing, the fires set to keep the shepherd warm and the animals safe.
- 4.4.16 Another interpretation is that the pits were burnt out tree boles, the trees having been chopped down and their roots then burnt out, perhaps to bring the land into cultivation. Although this would suggest a greater pressure on land here during the Anglo-Saxon period than is currently apparent.
- 4.4.17 More likely is that the pits are the remains of an industrial process. They may have been hearths for boiling water, with the boiling water being used for some sort of process that leaves no trace in the archaeological record such as removing lanolin from sheep's fleeces or making withies for fencing. However both processes would require large amounts of water, the nearest sources of which are nearly 1km to the south-west and south, at Brazier's Wood and Roberts Grove.
- 4.4.18 An alternative interpretation is charcoal burning pits perhaps for iron production. Charcoal has been an important component of various industrial processes from prehistoric times up until the present day. It is thought that the earliest method for producing charcoal probably involved the 'pit kiln' process, in which wood was slowly burned in a shallow pit covered with soil (Harris 1999). Charcoal burning takes place at the site of the raw material and is usually sited well away from habitation.
- 4.4.19 Comparisons can be made with similar pits found during excavations at Laurel Farm, Mousehold Heath, Norfolk. At this site 21 pits were recorded measuring 1.7m to 3.6m in diameter with evidence for *in situ* burning and containing large quantities of charcoal. Charcoal from the pits was dated by C14 dating to between AD 660 and 1210. They

were identified as pits or 'kilns' to make charcoal to be used in the process of iron production. The charcoal from the charcoal roasting pits was dominated by oak. Five of the pits produced tap slag, furnace slags or microslags derived from iron smelting nearby. Their fills showed signs of being 'dug over' after the removal of the charcoal.

- 4.4.20 The pits at Laurel Farm were interspersed between three clusters of quarry pits (which had been dug to extract ironstone from the natural gravels) and 18 ore roasting pits. The ore roasting pits were filled with burnt ironstone and charcoal (mainly from oak). The iron ore was roasted to remove impurities prior to smelting (Bishop and Proctor, 2011, 4, 81-95, 130). Other similarities between Laurel Farm and the Site are that they are both at or on the edges of a heath and neither site contains any evidence of occupation. At both sites some of the charcoal-fill pits contained residual struck flints. Both sites are situated close to major Anglo-Saxon centres (Ipswich and Norwich).
- 4.4.21 There are, however, major differences between the two sites. Laurel Farm is situated next to a water course whereas the Site at Nacton Road is nearly 1km away from the nearest spring or stream. No quarry pits were found on the Site and the charcoal-filled pits here are much smaller than those at Laurel Farm, neither do they contain any slag. No slag has been found on the Site, apart from modern furnace slag, although there are certainly magnetic residues from the pits that could be hammerscale. No burnt ironstone was found on the Site and there was nothing that could be identified as an iron ore roasting pits. It is also difficult to locate any raw materials that might produce iron ore.
- 4.4.22 Similar pits have also been recorded during an evaluation at land off Spixworth Road, Old Catton, Norfolk (NAU Archaeology 2006). Here they have been interpreted as charcoal burning pits of probable Anglo-Saxon to medieval date, although there was an absence of datable material. No evidence of iron ore roasting or iron smelting was found.
- 4.4.23 The residues from the floated soil samples were found to contain flaked and spheroidal hammerscale which is indicative of smithing/smelting activities. Flake hammerscale is small (typically 1-3mm) "fish-scale" like fragments of the oxide/silicate skin dislodged by mechanical or thermal shock when iron is forged. Spheroidal hammerscale (aka slag spheres) results from the solidification of small droplets of liquid slag expelled from within the iron during hot working. This happens particularly when two components are fire welded together, but also during the primary smithing of the bloom into a bar or billet (The Historical Metallurgy Society, Data Sheet 10, 1995).
- 4.4.24 Paul Blinkhorn (1999) discusses the association between iron working sites and the emergence of monastic sites in the Middle Saxon period. He cites a number of examples of Anglo-Saxon iron production and working associated with monastic holdings. Evidence for iron working was found at the Middle Saxon settlement at Maxey in Cambridgeshire which was held by the monastery of Medhamstede prior to the Norman conquest (Addyman 1964, 69) and iron mined in the Weald was worked at St Augustine's in Canterbury. Blinkhorn also notes the proximity of the specialist iron-smelting site at Ramsbury in Wiltshire to one of the seats of the West Saxon bishopric in the early 10th century (Haslam 1980). Of particular note here is the evidence for importing raw ore into the site at Ramsbury to be processed; the nearest ore outcrops are 5km to the south of the settlement, and a fragment of ironstone occurred on the site which originated 30km to the west (Fells 1980). Blinkhorn (1999) suggests that this indicates the processing of the ore was controlled. He notes that the evidence suggests that the site was supplying iron to the emporium of Hamwic.

- 4.4.25 There remains the possibility therefore that charcoal could have been burnt in the pits on the site for the purpose of iron smelting or smithing but that this was carried out a distance away from the charcoal production site. If they were indeed being used for localised iron production then the question remains as to what was being made or repaired.
- 4.4.26 The presence of hammerscale may be merely accidental, however, in which case the pits may have been used to burn charcoal for some other industrial process.

4.5 Period 5: Post-medieval

- 4.5.1 The southern ditch (**257**) of a widely spaced pair of ditches was recorded extending across the northern side of Site 1b. These parallel ditches were recorded in IPS 405 and IPS 406 and correlate with a late 18th or 19th-century tree-lined avenue showing on historic maps as running between Nacton Road and Alnesbourn Priory.
- 4.5.2 To the south of **257**, the continuation of a north-east to south-west aligned field boundary ditch recorded in Site 1a was seen to continue into Site 1b (**262**). It is thought to be of late 18th-century or 19th-century date as it lines up with a field boundary showing on maps of this date. This boundary forms an enclosure associated with Walk Barn.

4.6 Period 6: Modern

- 4.6.1 Two dumps of modern industrial waste comprising cinder and slag, all derived from a modern blast-furnace, were recorded within a wider area of disturbance and dumping near the roundabout in Site 1b. Ransomes - a major British agricultural machinery maker – was located very close by from the mid 20th-century and would seem a likely source of this dumping.
- 4.6.2 Linear marks on the eastern half of the Site were thought to be wheel ruts associated with Nacton Road but appear to be modern in date. They are thought to either relate to the airport or to be plough marks or scarification marks. Some of them were created by a dragging process as evidenced by modern slag found in their fills which had been dragged from the dump of industrial waste (see above).
- 4.6.3 The site was located on what was the eastern part of the runway for Ipswich Airport. The airport was used as an RAF airfield in World War II. Nothing relating to the airfield was recorded (apart from possibly the linear score- marks described above).
- 4.6.4 Similar charcoal-filled pits have been interpreted previously as 'FIDOs'. The charcoal in their fills does look fairly fresh and local sources informed us that fires were lit along this airfield runway to help land planes in the fog. However, the evidence against such an interpretation is overwhelming; a Middle Anglo-Saxon radiocarbon date has been confirmed for the charcoal from two of the pits, the pits were sealed under subsoil and topsoil, there was no 20th-century material in any of their fills and, additionally, hardly any of the 44 pits were aligned in rows.
- 4.6.5 The ground level on the eastern side of Site 1b had been raised by more than half a metre in recent times, probably in advance of construction of the roundabout. Modern material had been dumped on top of the industrial waste and the areas of disturbance.

4.7 Undated Features

- 4.7.1 Several undated pits were recorded within Site 1b, a few of which contained burnt flint and unburnt flint flakes in their fills. One of these pits may have been a tree bole or tree throw that had subsequently been used to light a fire in (290). Several other small pits were recorded which may be extraction pits or could have been dug for some other purpose. Pit **254** contained 38 burnt flints in its upper fill which are likely to have been deliberately deposited. There were no other finds from this pit but the presence of burnt flint suggests a Neolithic or Bronze Age date.

4.8 Conclusions

- 4.8.1 The excavation has not met any of the regional research aims set out in Section 2.2, however it has gone some way to answering some other Regional Research Aims. These include the study of the charcoal-filled pits and the recovery of metal working debris in their fills which may contribute towards identifying the extent and importance of the iron working industry in post-Roman times (Medlycott, 2011, 55).
- 4.8.2 The excavation has also answered some of the site specific objectives such as confirming the presence and extent of archaeological remains that may be associated with those highlighted by the 1999 to 2000 evaluation and excavation. The excavations have also confirmed the presence of a continuation of the Iron Age and Roman field systems identified to the west of the Site, through the discovery of a likely driveway thought to date from this period. The nature and extent of post-medieval field boundaries and their relation to the layout recorded by historic maps has also been assessed and recorded.
- 4.8.3 No World War II airfield defences were recorded, however the excavations have confirmed that the charcoal-filled pits are not 'FIDO' installations.
- 4.8.4 Additionally, the bulk soil samples from the Site have provided evidence of the potential for identifiable charcoal and metalworking residues.

APPENDIX A. CONTEXT INVENTORY

Context	Same as	Feature Type	Category	Fill Of	Function	Breadth	Depth	Colour	Fine component	Coarse component	Truncated by	Other Comments	Shape in Plan	Profile
246		pit	cut	0	extraction	0.4	0.23						circular	square
247		pit	fill	246		0.4	0.23	light brownish grey	fine sand	<1% rounded stones (<0.02m)				
248		pit	cut	0	fire/burning	0.3	0.08						circular	shallow bowl
249		pit	fill	248				dark grey + pink heat modulation	fine sand					
250		pit	cut	0	extraction	0.9	0.26						amorphous	stepped
251		pit	fill	250				mid grey brown	fine sand	2% angular stones (<0.1m)				
252		pit	cut	0	fire/burning	0.52	0.16					very animal disturbed	amorphous	
253		pit	fill	252		0.52	0.16	dark grey black	sandy silt	occasional small flints, occ/moderate charcoal flecks				
254		pit	cut	0		0.75	0.24						sub-circular	
255		pit	fill	254		0.75	0.11	mid yellow	sand	occ small flints		Re-deposited natural		
256		ditch	fill	257		1.05	0.3	mid yellowy grey	silty sand	stones (small/medium gravel)				
257	260, 273	ditch	cut	0	Avenue.	1.05	0.3						linear	U-shaped
258		pit	fill	259	burning?	0.7	0.14	dark grey black	silty sand	charcoal				
259		pit	cut	0	burning	0.7	0.14						sub-circular	U-shaped
260	257, 273	ditch	cut	0		0.93	0.29						linear	bowl

Context	Same as	Feature Type	Category	Fill Of	Function	Breadth	Depth	Colour	Fine component	Coarse component	Truncated by	Other Comments	Shape in Plan	Profile
261		ditch	fill	260	enclosure	0.93	0.29	dark brown grey	sandy silt	moderate medium flints				
262	1, 2	ditch	cut	0	enclosure	1.87	0.51						linear	bowl
263		ditch	fill	262		1.87	0.51	dark brown grey	sandy silt	occ small flints		v. root disturbed		
264		pit	fill	265	fire/burning?	0.64	0.1	black & light grey	silty sand	small stones, charcoal				
265		pit	cut	0	burning?	0.64	0.1						circular	U-shaped
266		pit	fill	267	burning?	0.72	0.16	black/light grey	silty sand	small gravel, charcoal				
267		pit	cut	0	burning?	0.72	0.16						sub-circular	U-shaped
268		pit	fill	269	burning? Fire pit?	0.65	0.15	black/light grey	silty sand	small gravel, charcoal				
269		pit	cut	0	burning/Fire pit?	0.65	0.15						sub-circular	U-shape
270		pit	fill	271		0.71	0.15	black/light grey	silty sand	small gravel, charcoal	machine to West			
271		pit	cut	0	burning?	0.71	0.15						sub-circular	U-shaped
272		pit	fill	254		0.75	0.15	dark brown	sandy silt	mod/frequent small flints				
273	257, 260	ditch	cut	0	boundary	1.3	0.45						linear	U-shaped
274		ditch	fill	273				mid brown	fine sand	2% rounded stones (<0.05m)				
275		ditch	fill	273				mid grey, mid-yellow banding	fine sand	occasional rounded stones (<0.02m)				
276		natural	fill	290	tree throw/bonfire	1.75	0.24	black/light grey/light grey-yellow	silty sand	charcoal, ash, medium stones	root action			
277		pit	cut	0	burning	0.5	0.12						sub-circular	bowl shaped
278		pit	fill	277				light greyish brown with black flecks	slightly silty sand	occasional rounded/sub-angular small stones	modern ditch			
279	190, 279, 172	ditch	cut	0	droveway?	1.67	0.64						linear	bowl shaped

Context	Same as	Feature Type	Category	Fill Of	Function	Breadth	Depth	Colour	Fine component	Coarse component	Truncated by	Other Comments	Shape in Plan	Profile
280		ditch	fill	279		1.67	0.64	light yellowish brown	silty sand	occ small flints	Pit [281]			
281		pit	cut	0		0.8	0.18						circular	bowl shaped
282		pit	fill	281		0.8	0.18	dark grey black	sandy silt	frequent charcoal flecks, occ small flints		C14 date from charcoal = AD665-854		
283	176, 180, 200	ditch	cut	0	droveway?	0.88	0.14						linear	bowl shaped
284		ditch	fill	283		0.88	0.14	light yellow brown	silty sand	occ small flints				
286		spread	layer	0	made-up ground			brick red	burnt ash residue	30% slag, flue lining		see also (288)		
288		spread	layer	0	made up ground			black	burnt industrial material, ash	10% slag				
289		pit	fill	277	burning			black	charcoal	none				
290		natural	cut	0	tree throw/bonfire	1.75	0.24					probable tree throw, later used for a bonfire pit	amorphous	irregular
291		pit	cut	0	burning	0.45	0.07						sub-circular	
292		pit	fill	0		0.45	0.07	grey, 20% black	cinders, charcoal, pockets of yellow sand	gravel, angular small stones	modern ploughing			
293		pit	cut	0	burning	0.45	0.05						sub-circular	
294		pit	fill	293				black/grey	ash/charcoal	v. occasional rounded stones	modern plough mark?			
296		ditch	cut	0	boundary	1.8	0.33						linear	U-shaped
297		ditch	fill	296				mid brownish grey	fine sand	occasional rounded stone (<0.04m)	modern disturbance			

Table 1. List of contexts

APPENDIX B. FINDS REPORTS

B.1 Flint

By Anthony Haskins

Introduction

An assemblage of 48 flints was submitted for assessment from Site 1b at Nacton Road, Ipswich. This report aims to describe the preliminary quantification and assess the technological characteristics and chronological indicators. Based on these findings no further work is recommended for the assemblage.

Methodology

For the purposes of this report individual artefacts were scanned and then assigned to a category within a simple lithic classification system. The flints are quantified by number rather than by weight (Table 2). Unmodified flakes were assigned to an arbitrary size scale in order to identify the range of debitage present within the assemblage. Edge retouched and utilised pieces were also characterised. Beyond this no detailed metrical or technological recording was undertaken during the preliminary analysis. The results of this report are therefore based on a rapid assessment of the assemblage and could change if further work is undertaken.

Flint Quantification

Context Number	Cut Number	Classification	core technology				Flakes (>50mm)	flakes (>25mm <50mm)			flakes (>10mm <25mm)			blades (all sizes)		chunks/angular shatter (<50mm)	Burnt flint (all types)	natural flint and stone	Grinder or hammerstone	burnt stone	Totals
			amorphous	core fragment	core trimming	blade core		secondary	secondary	tertiary	broken	secondary	tertiary	broken	secondary						
272	254															38					38
247	246																		1		1
276	290															3					3
247	246																	2			2
270	271															1					1
251	250									1			1				1				3
										1			1			42	3	1			48

Table 2: Flint Quantification Data

Assessment

Raw Material

A mix of raw materials are present within the assemblage including dark blackish-blue opaque flint with a chalky cortex and some mid grey inclusions, mid brownish-grey opaque poor quality chert with a thin white cortex, a good quality mid grey brown translucent flint with occasional grey inclusions and a mottled grey semi translucent flint, with no surviving cortex. The latter two materials are better quality than the rest and the thick nature of the cortex from the mid greyish-brown translucent material would suggest it was recovered from elsewhere and brought to the site.

The remaining material has a thin rounded cortex, where surviving, with incipient cones and thermal fractures throughout the material, indicating it was collected from a secondary source and likely to have been found in the gravels on or near the site.

Burnt material

The material recovered within pit fill (272) is a heavily burnt concentration and, although it was recovered from a secondary depositional context, it is likely it has been deliberately burnt.

Debitage

The mix of irregular flake shapes, sizes and forms although headed towards a predominantly short and squat character, would indicate that the majority of assemblage is of later prehistoric date, likely to be Mid to Late Bronze Age.

The good quality greyish-brown translucent flint from context 251 is more likely to come from mined material and seem more characteristic of a residual Neolithic assemblage.

Statement of Potential and Recommendations for Further Work

The small sample size and mix of characteristics would imply this assemblage is a mix of Neolithic residual material and later Bronze Age working. No further work is required.

B.2 Industrial Waste

By Peter Boardman

Introduction

A small amount of industrial residue and waste was recovered during the excavations at Nacton Road, Ipswich, totalling 1.22kg (Table 3). The materials comprised clinker and slag, all derived from a modern blast-furnace. The presence of a large modern disturbance, **286/288**, and the site's comparatively close proximity to Ransomes - a major British agricultural machinery maker - would explain the widespread occurrence of industrial wastes, a small quantity of which was also found at Site 2.

In addition a selection of the residues of environmental samples were scanned for hammerscale and hammerslag using a magnet. Seven of the samples (all from charcoal-rich pits) were found to contain moderate to significant quantities of magnetic residues. These have been initially identified as flake and spheroidal hammerscale, and hammerslag (Table 4) suggesting that smelting and/or smithing activity was taking place on the Site.

Context no.	Material	Description	Weight	Context Type
100	Clinker	Compact burnt ash and slag mix. Brownish purple in colour	0.11	Top-soil
286	Clinker	Compact burnt ash and slag mix. Brownish purple in colour	0.19	Layer- modern
288	Clinker	Compact burnt ash and slag mix. Brownish purple in colour	0.19	Layer- modern
100	Slag	Brownish purple in colour, compact small air pockets and glassy texture.	0.11	Top-soil
286	Slag	Brownish purple in colour, compact small air pockets and glassy texture.	0.11	Layer- modern
286	Slag	Brownish purple in colour, compact small air pockets and glassy texture.	0.03	Layer- modern
286	Slag	Brownish purple in colour, compact small air pockets and glassy texture.	0.48	Layer- modern

Table 3: Quantification of industrial waste by context

Sample no	Context no	Cut no	flakes	spheroids	Hammerslag
31	264	265	+	c. 15	+++
32	266	267		5?	++
33	272	254		2?	
34	289	277	+	c. 10	++
35	276	290	++	c. 20?	+++

Table 4: Quantification of Hammerscale from Sample Residues

Discussion and Recommendations

The slag and clinker is modern, probably deposited after the establishment of Ransome's Iron Works nearby in the mid 20th-century. The modern nature of this material recovered can be said to have no importance to the archaeological presence on the sites at Nacton Road and no further study in this area is required. The presence of hammerscale is more interesting, although it may also derive from the modern Ransome's foundry. However, it seems unlikely that it would have found its way into features that were well sealed by subsoil and topsoil so its presence may, therefore, indicate metalworking in the Anglo-Saxon period.

It is recommended that the identification of the hammerscale is checked and if verified the remaining sample residues are scanned to check for further evidence of hammerscale to ascertain the distribution of the metalworking residues and attempt to ascertain levels of intrusiveness and whether there is a correlation with the charcoal-rich pits.

B.3 Pottery

By Carole Fletcher

Only one context contained pottery that was retained, this was sherd from a post-medieval stoneware jar found in Context 286, a layer of made-ground, thought to be of relatively recent date due to the presence of sweet wrappers, plastic bags and other modern rubbish.

APPENDIX C. ENVIRONMENTAL REPORTS

C.1 Environmental Samples

By Rachel Fosberry

Introduction

A total of seven bulk samples were taken during excavations at Site1b, Nacton Road, Ipswich (IPS 718), all from pits that had charcoal-rich fills. All samples were processed to determine whether plant remains are present, their mode of preservation and whether they are of interpretable value. One of these pits (**281**) has been radiocarbon dated to the Saxon period. Initial charcoal analysis (Druce, Appendix C2) indicates the predominance of oak charcoal.

Methodology

One bucket of soil (up to ten litres) of each of the selected samples was processed by tank flotation. 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. Both flot and residues were allowed to air dry. A magnet was dragged through each residue fraction prior to sorting for artefacts. Any artefacts present were noted and reintegrated with the hand-excavated finds. The flot was examined under a binocular microscope and the presence of any plant remains or other artefacts are noted on Table 5. Nomenclature is according to Stace (1997).

Quantification

For the purpose of this initial assessment items that cannot be easily quantified such as charcoal have been scored for abundance

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

Sample No.	Context No.	Cut No.	Feature Type	Volume processed (L)	Flot Volume (ml)	Weed Seeds	Charcoal <2mm	Charcoal > 2mm	Flot comments
33	272	254	pit	10	10	0	+	++	Charred <i>Plantago lanceolata</i> , <i>Vicia</i> sp. Charred fly puparia.

Table 5: Charred plant remains from environmental samples

Sample No.	Context No.	Cut No.	Volume processed (L)	Flot Volume (ml)	Charcoal <2mm	Charcoal > 2mm
30	258	259	10	500	+++	+++
31	264	265	10	1250	+++	+++
32	266	267	3	1200	+++	+++
34	289	277	9	1000	+++	+++
35	276	290	10	480	+++	+++
36	282	281	7	500	+++	+++

Table 6: Samples containing charcoal only

Sample 33, fill 272 of pit **254** contains single charred seeds of ribwort plantain (*Plantago lanceolata*) and vetch (*Vicia* sp.) in addition to a single charred fly puparia. A further six samples contain charcoal only.

The remaining samples taken from the charcoal-rich pits produced large float volumes (up to 2400ml) of charcoal. Occasional charred tree buds are present and several of the samples contain charred spheroids thought to be fungal sclerotia.

Discussion

As expected, the charcoal-rich pits contain large volumes of wood charcoal. The lack of other plant remains suggests that the features do not represent pits or post-holes in which domestic refuse could have accumulated.

Statement of potential

Most of the charcoal-rich pits have produced large pieces of well-preserved charcoal that should be suitable for species identification.

C.2 Charcoal

By Denise Druce

Introduction and Methodology

Palaeoenvironmental samples from two of the charcoal rich pits (**259**, and **281**) were processed in order to determine their charcoal content. The charcoal from pit **281** has been radiocarbon dated to the mid Anglo-Saxon period (Appendix F). The exact nature of the pits is unclear, however they are thought to represent the remains of possible charcoal-making pits, or, given that a number contained hammerscale, may be associated with Anglo-Saxon metal-working activity.

Methodology

The samples were processed at the Cambridge offices using a modified Siraf flotation machine, the flots being collected onto a 250µm mesh, air-dried, and sieved through a >2mm size mesh. A representative amount (c 20) of the retaining fragments were then scanned using a Leica MZ6 binocular microscope at up to x40 magnification to provide a general picture of wood species present. Identification was made by use of standard reference books (Schweingruber 1978, Hather 2000) and comparison with reference slides held at OA North.

Results

The flots from both the samples were extremely rich in charcoal (both flots being between 500ml in volume), and included abundant fragments larger than 2 mm in size. The charcoal was very well preserved and preliminary analysis suggests the fills consist of a single taxon, oak. The recording of tyloses in much of the early wood suggests the presence of mature oak wood, perhaps trunk wood. No obvious round wood was apparent, however this would be checked during any further analysis.

Discussion

The dominance of oak in the pits may indicate its deliberate selection, however, further analysis is required in order to determine whether oak is present in all or only a selection of the pits. If the pits were associated with metalworking activities, then oak would certainly have provided the sustained high temperatures required for smelting or smithing. It is also likely that oak charcoal, which produces less smoke and provides very high temperatures, as opposed to oak wood was used, however there is no reliable method for determining this from archaeological material (Smith 2002, D. Challinor pers comm). Modern forms of charcoal production tended to use roundwood rather than trunkwood (Edlin 1949). Therefore it would be useful to determine whether any roundwood is present. It is possible that the site was used for both charcoal production and metalworking, which, on an industrial scale, would have made sense. Subsequently, it would be very informative to establish whether there are any differences in the charcoal assemblages between pits.

Recommendations

Currently, very little is known about Anglo-Saxon wood use and charcoal production in Britain. Therefore, further charcoal analysis on the fills of the Nacton pits would be very worthwhile. In order to determine any differences in the charcoal content between pits, a very quick assessment to determine the general content of all those with common

charcoal is proposed. This will be followed by the further analysis of a selection of roughly half, in order to determine the nature and maturity of the wood.

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APPENDIX E. OASIS REPORT FORM

Project Details

OASIS Number	oxfordar3-156548		
Project Name	Excavation of Site 1b Restaurant Land, Nacton Road, Ipswich		
Project Dates (fieldwork) Start	09-05-2013	Finish	07-06-2013
Previous Work (by OA East)	Yes	Future Work	No

Project Reference Codes

Site Code	IPS718	Planning App. No.	IP/12/0054/FUL
HER No.	IPS718	Related HER/OASIS No.	IPS404, IPS719, IPS715

Type of Project/Techniques Used

Prompt: Direction from Local Planning Authority - PPS 5

Please select all techniques used:

<input type="checkbox"/> Field Observation (periodic visits)	<input type="checkbox"/> Part Excavation	<input type="checkbox"/> Salvage Record
<input type="checkbox"/> Full Excavation (100%)	<input type="checkbox"/> Part Survey	<input type="checkbox"/> Systematic Field Walking
<input type="checkbox"/> Full Survey	<input type="checkbox"/> Recorded Observation	<input type="checkbox"/> Systematic Metal Detector Survey
<input type="checkbox"/> Geophysical Survey	<input type="checkbox"/> Remote Operated Vehicle Survey	<input type="checkbox"/> Test Pit Survey
<input checked="" type="checkbox"/> Open-Area Excavation	<input type="checkbox"/> Salvage Excavation	<input checked="" type="checkbox"/> Watching Brief

Monument Types/Significant Finds & Their Periods

List feature types using the [NMR Monument Type Thesaurus](#) and significant finds using the [MDA Object type Thesaurus](#) together with their respective periods. If no features/finds were found, please state "none".

Monument	Period	Object	Period
ditches	Iron Age -800 to 43		Select period...
pit	Bronze Age -2.5k to -700	flint	Bronze Age -2.5k to -700
pits	Early Medieval 410 to 1066	slag and clinker	Modern 1901 to Present

Project Location

County	Suffolk	Site Address (including postcode if possible)	Site 1b Restaurant Land, Nacton Road, Ipswich
District	Ipswich		
Parish	Ipswich		
HER	Suffolk		
Study Area	0.5 ha	National Grid Reference	TM 19722 41600

Project Originators

Organisation	OA EAST
Project Brief Originator	Suffolk CC Archaeology Service
Project Design Originator	Ramboll UK and OAEast
Project Manager	Aileen Connor
Supervisor	Kate Clover

Project Archives

Physical Archive	Digital Archive	Paper Archive
Ipswich Museum	Ipswich Museum	Ipswich Museum
IPSMG: R.2013.23	IPSMG: R.2013.23	IPSMG:R.2013.23

Archive Contents/Media

	Physical Contents	Digital Contents	Paper Contents
Animal Bones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceramics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Glass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Human Bones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stratigraphic		<input type="checkbox"/>	<input type="checkbox"/>
Survey		<input type="checkbox"/>	<input type="checkbox"/>
Textiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worked Bone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worked Stone/Lithic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Digital Media	Paper Media
<input checked="" type="checkbox"/> Database	<input type="checkbox"/> Aerial Photos
<input checked="" type="checkbox"/> GIS	<input checked="" type="checkbox"/> Context Sheet
<input type="checkbox"/> Geophysics	<input checked="" type="checkbox"/> Correspondence
<input checked="" type="checkbox"/> Images	<input type="checkbox"/> Diary
<input checked="" type="checkbox"/> Illustrations	<input checked="" type="checkbox"/> Drawing
<input type="checkbox"/> Moving Image	<input type="checkbox"/> Manuscript
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	<input checked="" type="checkbox"/> Research/Notes
	<input type="checkbox"/> Photos
	<input checked="" type="checkbox"/> Plans
	<input checked="" type="checkbox"/> Report
	<input checked="" type="checkbox"/> Sections
	<input type="checkbox"/> Survey

Notes:

APPENDIX F. RADIOCARBON DATES



Scottish Universities Environmental Research Centre

Director: Professor R M Ellam

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RADIOCARBON DATING CERTIFICATE

01 July 2013

Laboratory Code SUERC-47013 (GU31019)

Submitter Rachel Fosberry
Oxford Archaeology East
15 Trafalgar Way
Bar Hill
Cams. CB23 8SQ

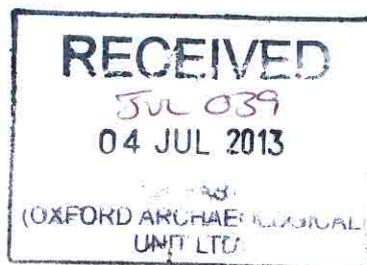
Site Reference IPS 719

Context Reference 282

Sample Reference 36

Material Charcoal

$\delta^{13}\text{C}$ relative to VPDB -25.8 ‰



Radiocarbon Age BP 1269 ± 29

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 standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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 :- *N. Ellam*

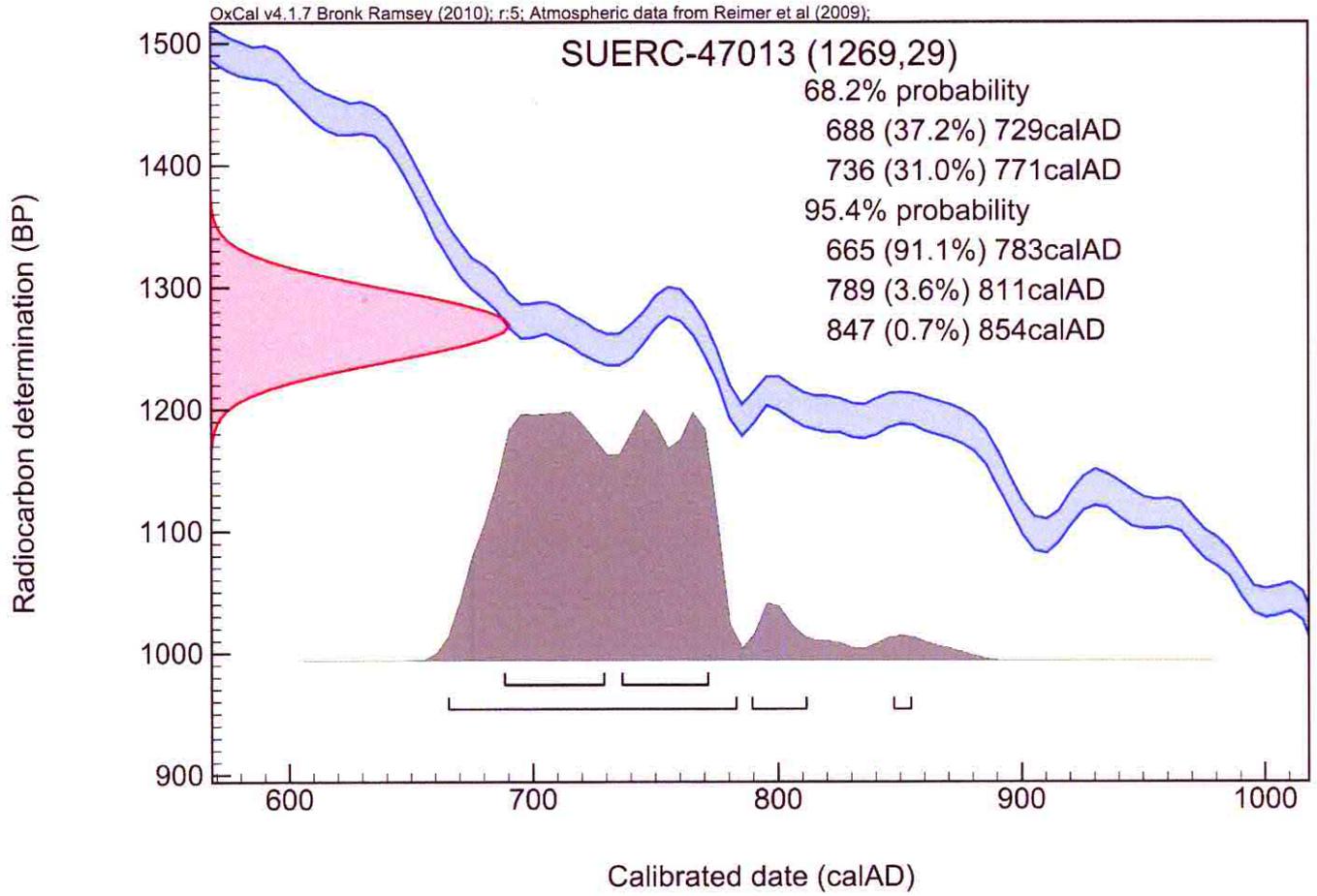
Date :- *2-7-13*

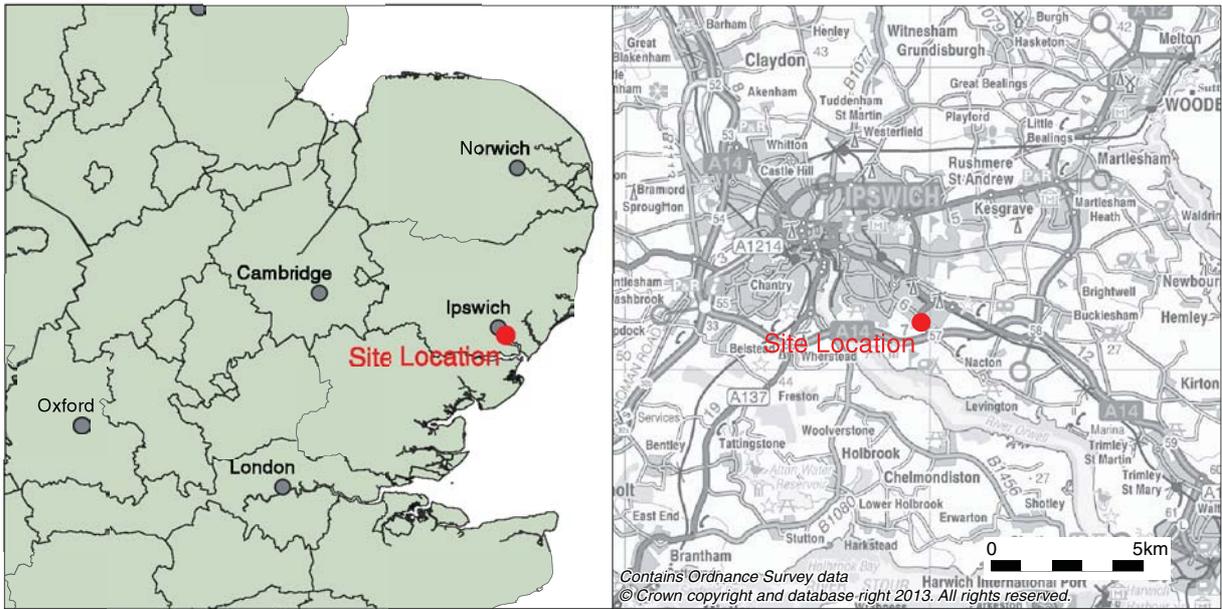
Checked and signed off by :- *E. Muir*

Date :- *2/7/13*



Calibration Plot





Ordnance Survey. © Crown Copyright 2013. All rights reserved. Licence number 0100031673

Figure 1: Site location, showing current and previous excavation areas

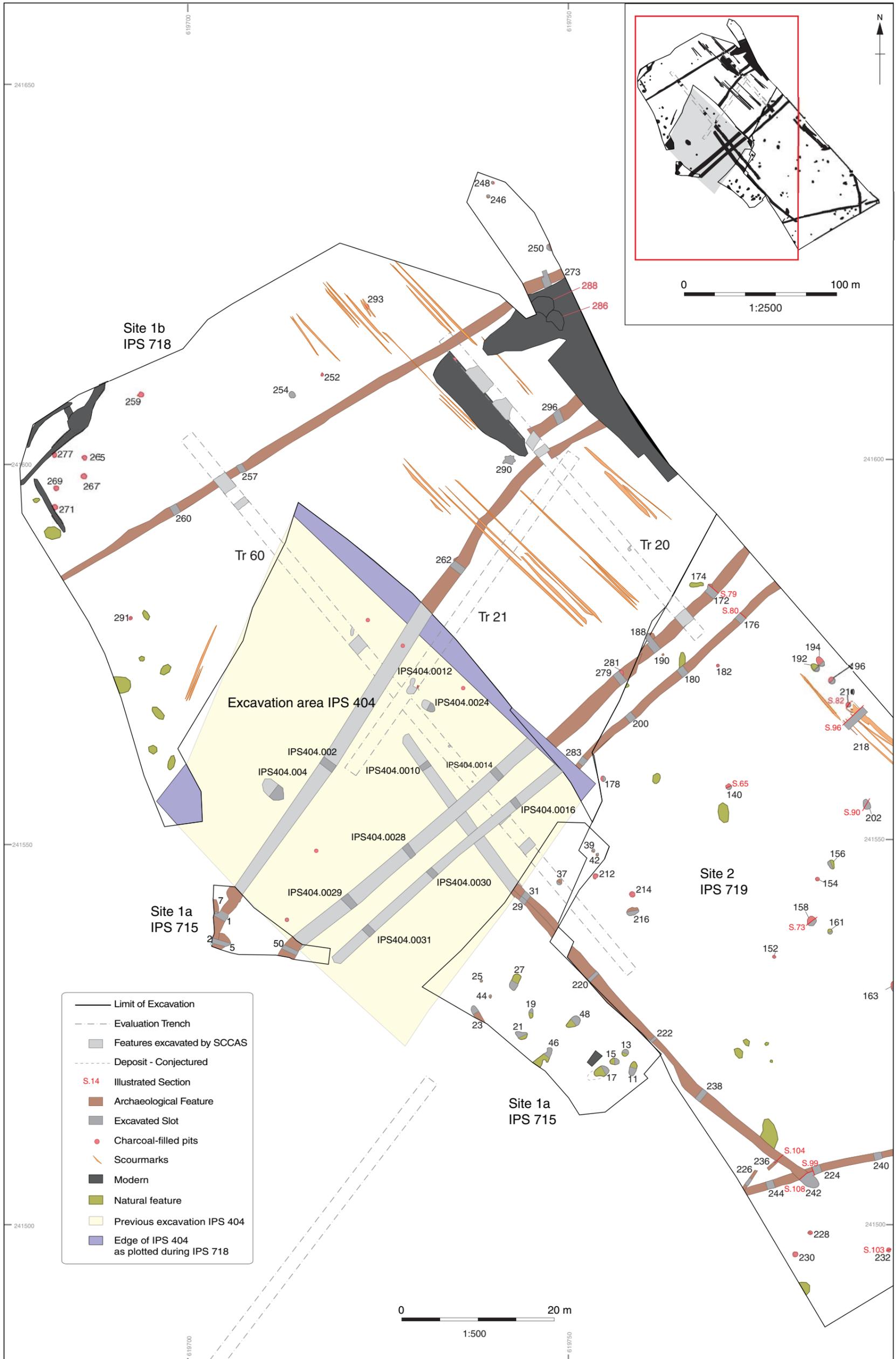


Figure 2: Site location with archaeological features, showing previous evaluation trenches, and other excavations IPS 404, IPS 715 and IPS 719

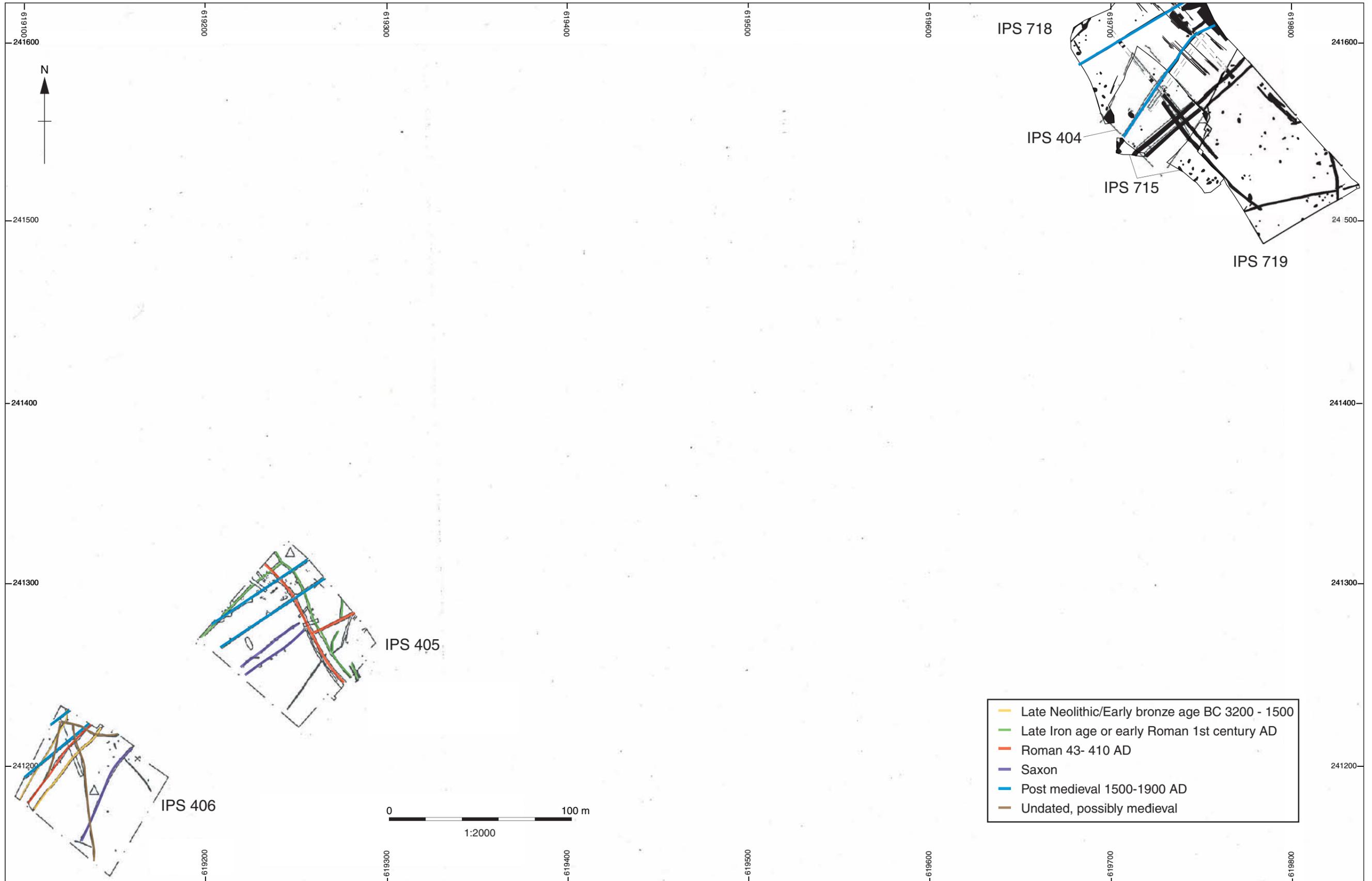


Figure 3: Plan of wider area showing current excavations in relation to IPS 405 and IPS 406

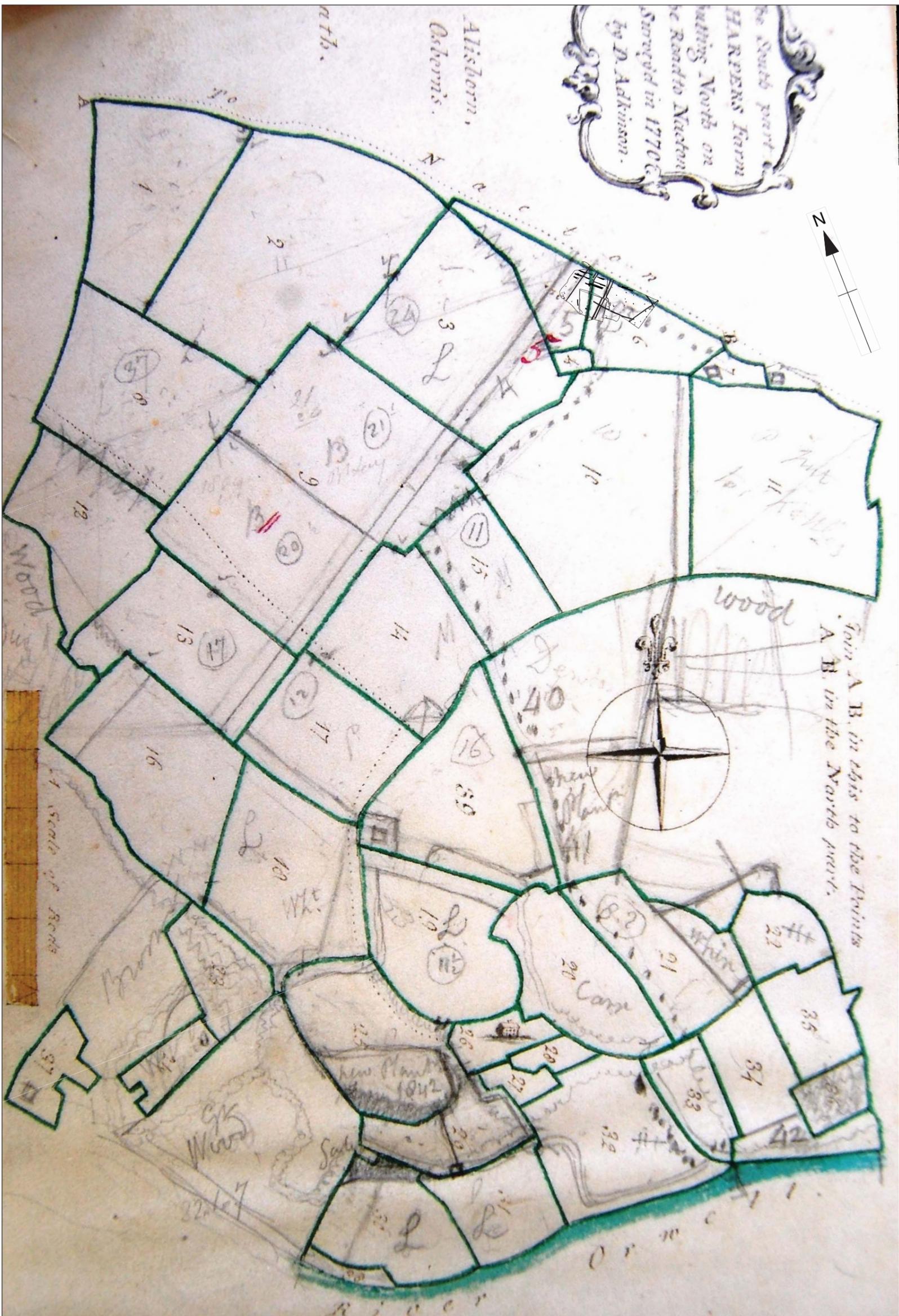


Figure 4: Estate Map of the south part of Harper's Farm 1770, with the excavation area overlaid (Suffolk Record Office, Ipswich, Ref.HA 93/12/38)



Figure 5: 1st edition OS map, 1881-1882, with the excavation area overlaid



Figure 6: Russian Map, 1984 showing Ipswich Airport buildings and runway, with excavation area overlaid. Not to scale

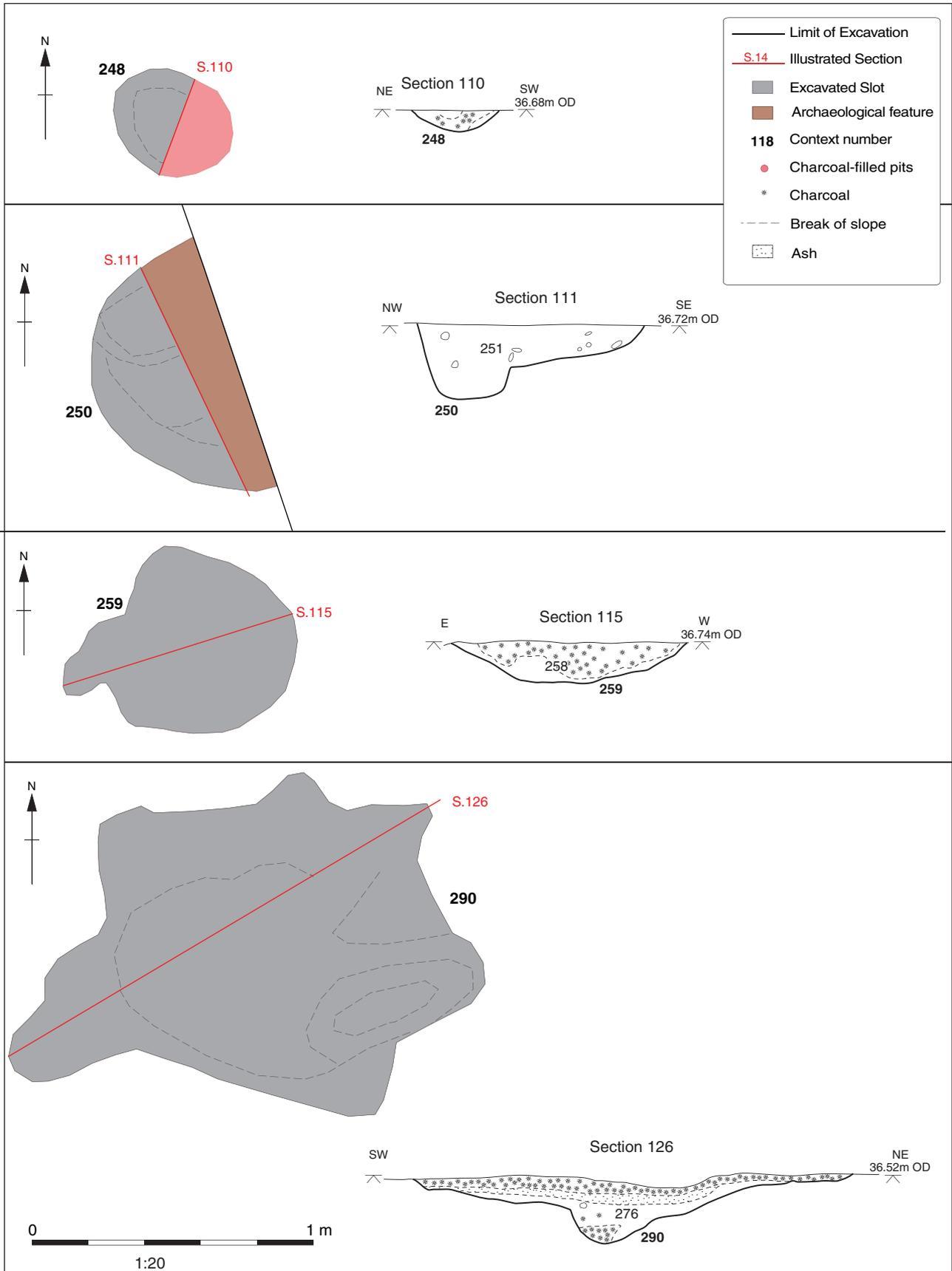


Figure 7: Plans and sections of features 248, 250, 259 and 290

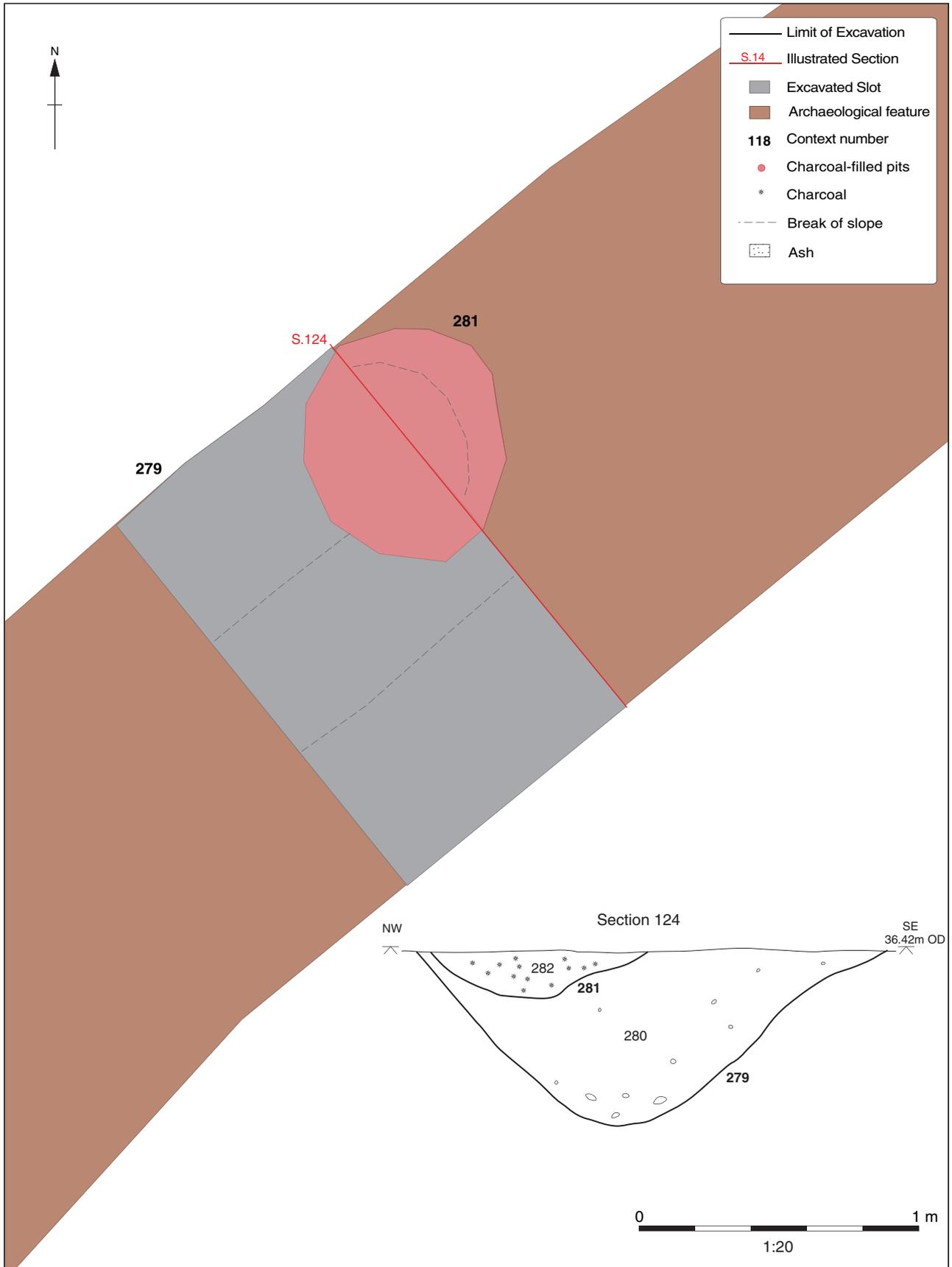


Figure 8: Plan and section of features 281 and 279

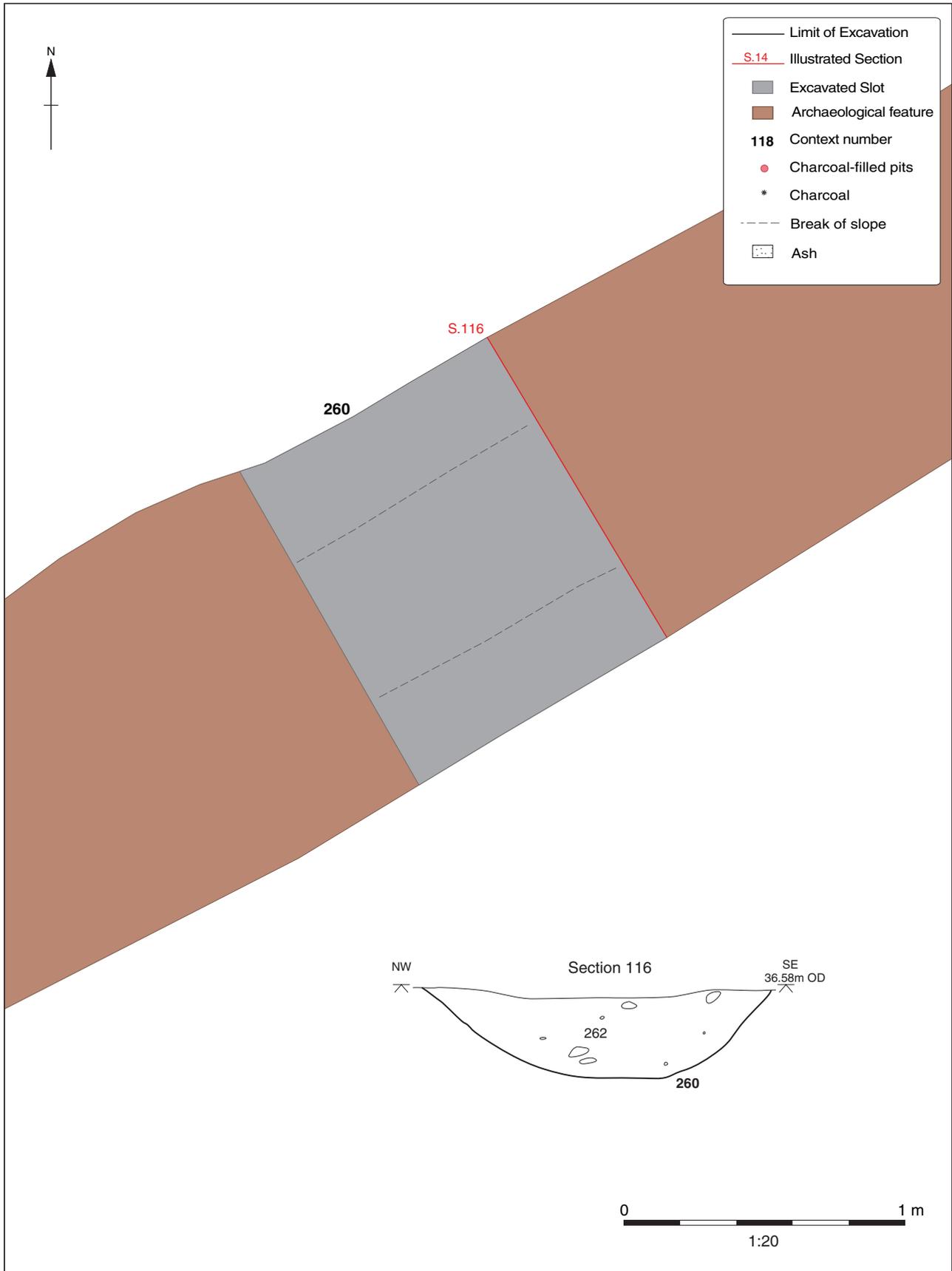


Figure 9: Plan and section of feature 260

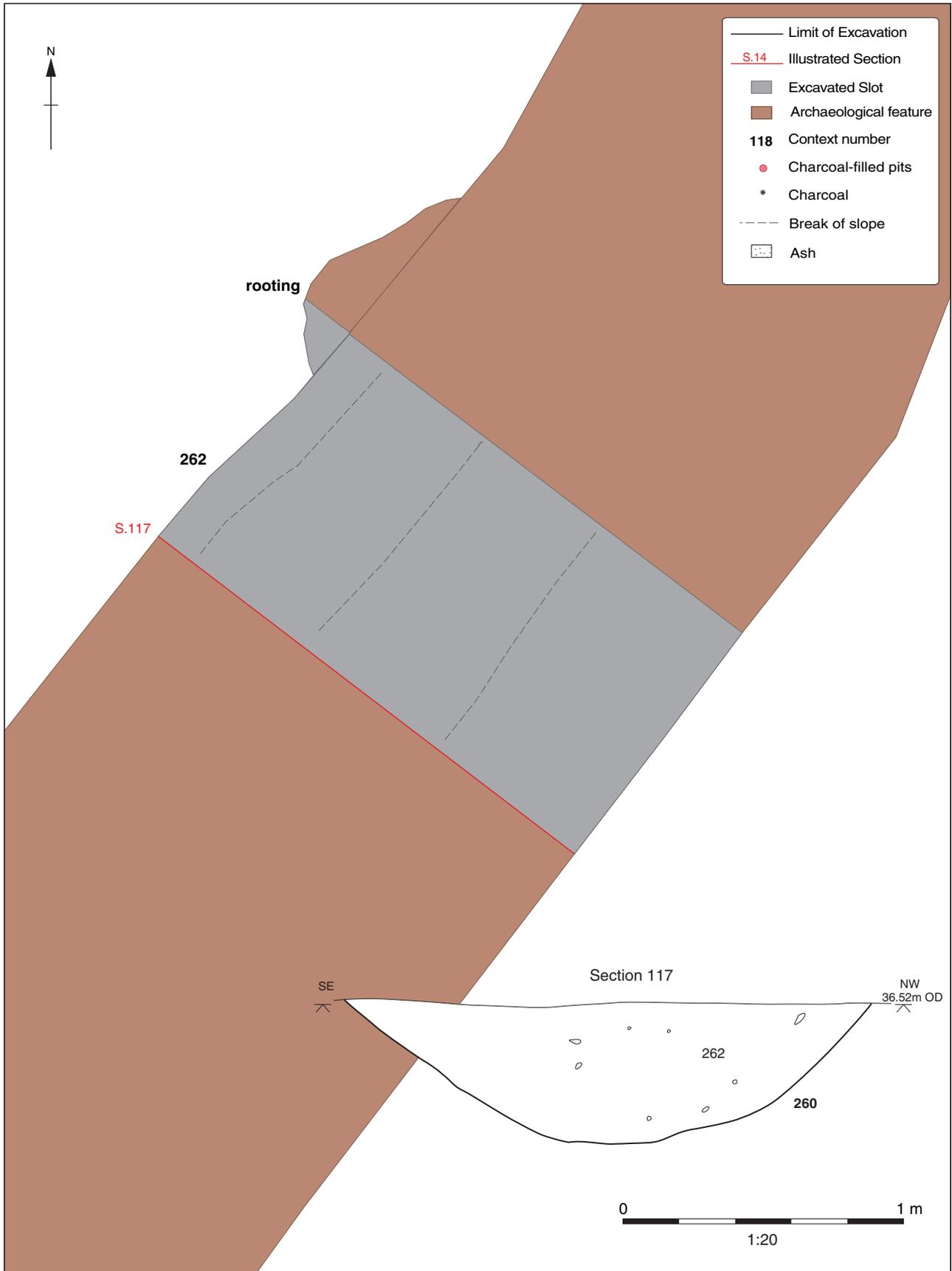


Figure 10: Plan and section of feature 262



Plate 1: Site shot. Site 2 background left and Site 1a background right. View from the north



Plate 2: Charcoal-filled pit **281** cutting ditch **279**, view from the south-west



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