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**ARCHAEOLOGICAL SOLUTIONS LTD**

**PHASE 1: LAND AT WHEATCROFT FARM, BRADWELL,  
NORFOLK**

**AN ARCHAEOLOGICAL EXCAVATION: RESEARCH  
ARCHIVE REPORT**

**NHER: ENF130238**

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NGR: TG 5073 0302	Report No: 5033
District: Great Yarmouth	Site Code: ENF130238
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**OASIS SUMMARY SHEET**

<b>Project details</b>			
Project name	<i>Phase 1: Land at Wheatcroft Farm, Bradwell, Norfolk</i>		
<i>In August 2014 Archaeological Solutions Ltd (AS) carried out an archaeological excavation at Wheatcroft Farm, Bradwell, Great Yarmouth, Norfolk. The project was undertaken in advance of the residential development of the site and was preceded by a geophysical survey, a desk-based assessment, field walking and an archaeological trial trench evaluation. Based on known sites/ find spots in the area and the results of earlier work the site was considered to have good archaeological potential, particularly for remains of prehistoric and Saxo-Norman/ medieval date.</i>			
<i>In the event, the excavation encountered an agricultural landscape dating between the Saxo-Norman and post-medieval periods. The earlier part of this range included a small, semi-subterranean structure and associated drying kiln. A second kiln was present within the High medieval to post-medieval landscape, in addition to the site of a post mill. The economy throughout the medieval to post-medieval period was based on a mixed farming regime, dominated by crop husbandry. At some time during or after the High medieval period, the site's layout developed from a complex system of ditched enclosures to a more open land-use.</i>			
<i>The Saxo-Norman to post-medieval evidence was indirectly predated by scattered prehistoric finds of struck flint – spanning the Mesolithic to Bronze Age – predominantly made up of residual material from later features/ contexts. A single Neolithic feature was encountered.</i>			
Project dates (fieldwork)	August 2014		
Previous work (Y/N/?)	Y	Future work	TBC
P. number	4837	Site code	ENF130238
Type of project	Archaeological Excavation		
Site status	None		
Current land use	Agricultural Fields		
Planned development	Residential		
Main features (+dates)	Early Neolithic:	Pit	
	Saxo-Norman to High medieval:	Post-built structure; kiln; ditches/ gullies	
	High medieval to post-medieval:	Windmill; kiln; ditches/ gullies	
Significant finds (+dates)	Early Neolithic:	Struck flint	
	Prehistoric:	Pottery; struck flint	
	Saxo-Norman to High medieval:	Pottery; whetstone	
	High medieval to post-medieval:	Pottery; whetstone	
<b>Project location</b>			
County/ District/ Parish	Norfolk	Great Yarmouth	Bradwell
HER/ SMR for area	Norfolk Historic Environment Record		
Post code (if known)	-		
Area of site	c. 75ha		
NGR	TG 5073 0302		
Height AOD (min/max)	c. 10-12m		
<b>Project creators</b>			
Brief issued by	Norfolk County Council Historic Environment Service		
Project supervisor/s (PO)	Laszlo Lichtenstein (fieldwork); Antony R.R. Mustchin (post-excavation)		
Funded by	Persimmons Homes (Anglia) Ltd		
Full title	Phase 1: Land at Wheatcroft Farm, Bradwell, Norfolk. An Archaeological Excavation: Research Archive Report		
Authors	Bull, K. and Mustchin, A.R.R.		
Report no.	5033		
Date (of report)	25/01/2016 (Revised 08/02/2016)		

## PHASE 1: LAND AT WHEATCROFT FARM, BRADWELL, NORFOLK

### AN ARCHAEOLOGICAL EXCAVATION: RESEARCH ARCHIVE REPORT

## 1 INTRODUCTION

1.1 This report comprises the research archive for the first phase of excavation on land at Wheatcroft Farm, Bradwell, Norfolk (centred on NGR TG 5073 0302; Figs. 1-2) carried out in August 2014. The excavation was preceded by a geophysical survey, a desk-based assessment, field walking and an archaeological trial trench evaluation. This report follows the Archaeological Assessment and Updated Project Design (Bull and Mustchin 2015).

## 2 SITE NARRATIVE

### Overview

2.1 In August 2014 Archaeological Solutions Ltd (AS) carried out an archaeological excavation on land at Wheatcroft Farm, Bradwell, Norfolk (centred on NGR TG 5073 0302; Figs. 1-2). The excavation was commissioned by Persimmons Homes (Anglia) Ltd and was undertaken in compliance with a planning condition attached to planning approval for the proposed residential development of the site. The project was required by Great Yarmouth District Council (Planning Ref. 06/13/0652/O), based on advice from Norfolk County Council Historic Environment Service (NCC HES). The archaeological excavation of the site was preceded by a geophysical survey by Stratascan Ltd (Smalley 2013), a desk-based assessment, field walking and an archaeological trial trench evaluation, conducted by AS (Egan 2012; Fairclough 2014; Thompson 2013).

2.2 The project was carried out in accordance with a brief issued by NCC HES (dated 01/04/2014), and a specification compiled by AS (dated 24/04/2014) and approved by NCC HES. It conformed to the Institute for Archaeologists' (2013) *Standard and Guidance for Archaeological Excavation* and relevant sections of Gurney's (2003) *Standards for Field Archaeology in the East of England*.

2.3 The principal aim of the excavation was to preserve the archaeological evidence contained within the site by record and to attempt a reconstruction of the history and use of the site. Specific research priorities, as presented in Section 5.2 of the specification were to:

- place the Anglo-Saxon and medieval activity [identified by the trial trench evaluation] in context with the known activity of these dates in the surrounding area;
- characterise the activity present within the site;

- identify topographical/ geological/ geographical influences on the layout and development of the activity present within the current site and in the surrounding area; and
- attempt environmental reconstruction

2.4 Following the initial assessment of the excavated evidence, including interim specialist statements, these research priorities remained broadly valid. Phase-specific avenues of investigation were also proposed (see Bull and Mustchin 2015, section 14).

## **Background**

### *Site Description*

2.5 The village and civil parish of Bradwell is located immediately west of Great Yarmouth on the east coast of Norfolk, approximately 2.75km inland. Norwich lies some 27km to the west-north-west. The development site comprises an irregular plot of agricultural land (totalling c. 75ha) on the south-western edge of the village, bordered to the north-west by the modern A143 (Figs. 1-2; Plate 1). The excavation site is delineated to the north by modern housing and the route of Clay Lane, while additional farmland exists to the east and south. The c. north to south route of Browston Lane runs through the westernmost part of the site.

### *Topography, Geology and Soils*

2.6 The site occupies the gently undulating Norfolk coastal plain c. 5km east of the confluence of the Rivers Yare and Waveney. The site sits at approximately 10-12m AOD, above the solid geology of the Norwich Crag Formation, predominantly composed of fine-grained marine sands with some gravels and clays (British Geological Survey 1978). The site's soils are those of the Wick 3 Association, comprising 'deep well drained coarse loamy often stoneless. Some similar sandy soils. Complex pattern locally. Risk of water erosion' (Soil Survey of England and Wales 1983, 9). These soils are suitable for cereal cultivation (*ibid.*).

2.7 The excavation encountered a ubiquitous topsoil (L2001) of friable, mid to dark brown sandy silt with occasional small to medium flint nodules and pebbles (0.25 to 0.45m thick). L2000 overlay a subsoil of friable, mid grey brown silty sand with occasional small to medium flint nodules and rounded pebbles (0.15 to 0.25m thick). The underlying natural geology (L2003) was present across the site and comprised loose, mid orange yellow sand with occasional small to medium sub-rounded to sub-angular stone and flint.

### *Archaeological and Historical Background*

#### Prehistoric

2.8 Considerable evidence of prehistoric activity is known from the Bradwell area. Among the earliest finds is a collection of Mesolithic struck flints recovered by fieldwalking some 250m east of the current site (Norfolk Historic Environment

Record (NHER) 59571). Local Neolithic activity is represented by additional fieldwalking finds (NHER 59571) while material from further afield includes a quartzite macehead from Belton (NHER 01478), c. 3km to the west and flint axe heads from Great Yarmouth and Gorleston-on-Sea, to the east (NHERs 10552 and 20357). Numerous Bronze Age features have been encountered in the vicinity, including cropmarks (possibly of this date) within a 1km radius of the site (NHERs 12777, 12779 and 43551). A possible Iron Age square barrow (NHER 45051) is located some 430m to the south of the site.

### Romano-British

2.9 Romano-British evidence is relatively scarce from the area, although includes cropmarks of possible Roman date within the site and its immediate surroundings (NHERs 43467 and 43476). Local finds of this date include copper alloy coins of Constantine I or II and Vespasian (NHERs 10559 and 10560) and a 4<sup>th</sup> century Roman coin (NHER 12433), all from Gorleston-on-Sea.

### Anglo-Saxon and medieval

2.10 Metal detecting has recovered a number of Anglo-Saxon finds, including a brooch, a book mount and a silver ingot (NHERs 18004, 21796 and 39556), all within a 250m of the development site. Various pieces of medieval metalwork, including coins (e.g. NHERs 18991, 18992 and 18993), a buckle (NHER 21795), a brooch (NHER 30084) and a lead seal matrix (NHER 19242) have also been found in the area. Neighbouring Gorleston-on-Sea and Browston are also recorded in the Domesday Book ([www.opendomesday.org](http://www.opendomesday.org)). The deserted medieval village of Browston is thought to be located in the vicinity of Browston Hall (NHER 11433), some 1.2km to the south of the site.

### Post-medieval and modern

2.11 Post-medieval evidence in the vicinity of the site includes Browston Hall (NHER 24633), some 1.2km to the south, Hobland House (NHER 42863) and Hobland Hall Park (NHER 56288) approximately 1km to the south-east. In addition, a number of local cropmarks are thought to relate to post-medieval field systems and trackways. A large corpus of records relates to the World War II landscape and includes the site of a high frequency direction finding station (NHER 42232), immediately east of the site and a gun emplacement (NHER 42230) c. 1km to the north-east.

### *Project Background*

2.12 The archaeological excavation was preceded by a desk-based assessment (Thompson 2013), fieldwalking (Egan 2012), geophysical survey (Smalley 2013), and a trial trench evaluation (Fairclough 2014). The results of the earlier fieldwork are summarised below:

## Fieldwalking

*'...fieldwalking recovered a total of 113 pieces (2085g) of struck flint. The assemblage includes part of a flaked axe, scrapers, blades and debitage of mixed prehistoric date and technology, ranging from the Mesolithic to the later Neolithic/early Bronze Age. The flint cores and tools from all prehistoric periods are broadly distributed in the southern, western and north-western sectors of the site. The bulk of the assemblage comprises debitage or waste flakes with limited diagnostic potential but their distribution again reflects the worked flint being located in the western, southern and northern sectors of the site.'*

*A single sherd (20g) of late Bronze Age to early Iron Age pottery was recovered from Find Spot...145 on the far western side of the site. Sixteen abraded medieval...sherds were found on the western and eastern sides of the site and may be attributed to manuring'. (Egan 2012, 5)*

## Geophysical survey

*'The geophysical survey...identified a number of features indicating the presence of prehistoric activity within the survey area. Rectilinear enclosures in the north western region of the site suggest the presence of Iron Age or prehistoric settlement or farmstead activity and two circular features may be related to prehistoric monuments'. (Smalley 2013, 4; Figs. 3-4)*

## Trial trench evaluation

*'The trial trenching correlated with the results of the geophysical survey with the majority of features located in the northern sector of the site.'*

*The range of features included pits, gullies and ditches with the latter being the most common.*

*...struck flint of Neolithic date was found in several features in Trenches 9, 15 and 16. These trenches are adjacent, and the lithic technology is consistent suggesting homogeneity.*

*...pottery dating to the late Saxon and medieval period was consistently found'. (Fairclough 2014, 4; Figs. 3-4)*

## **Results**

### *Phasing*

2.13 Based upon analysis of the site's pottery and struck flint assemblages and associated stratigraphic evidence, an assessment and refinement of the dating of on-site activity was conducted as part of the project's post-excavation analysis. Four separate chronological phases of archaeological activity were identified (Table 1; Figs. 6-10). The majority of the activity represents Saxo-Norman to medieval utilisation of the site. Evidence of Neolithic and early modern activity was also recorded, but was comparatively minimal.



Phase	Period	Date
1	Early Neolithic	4300 to 3300 BC
2	Saxo-Norman to High Medieval	10 <sup>th</sup> to 13 <sup>th</sup> / 14 <sup>th</sup> century AD
3	High Medieval to Post-medieval	15 <sup>th</sup> to 17 <sup>th</sup> century AD
4	Early Modern/ Modern	18 <sup>th</sup> century+ AD

Table 1: Chronological Phasing

### Correlation with the Geophysical Survey Results

2.14 Correlation between the excavated evidence and the findings of the geophysical survey was mixed (Figs. 3-5). For example, a linear anomaly (28) in the vicinity of Trial Trench 2 partly aligned with features forming the north-western circuit of the Phase 3 windmill. Similarly, an L-shaped positive anomaly in the central northern area of the site (traversing Trial Trench 7) appeared to correlate well with excavated Ditch F2125. Further correlation between positive anomalies and excavated ditches/ gullies was also evident, but was not wholly consistent. No technical reason could be ascertained for this inconsistency, suggesting that human error played some part.

### Phase 1: Early Neolithic (4300 to 3300 BC)

2.15 The earliest feature containing securely stratified material was Pit F2119 (Grid Squares K5-K6; Table 2; Figs. 7, 15 and 18). The single fill of this feature (L2120) contained a worked flint sickle of earlier Neolithic character (SF3; Fig. 47.7). Additional struck flint spanning the Mesolithic to early Bronze Age was present as residual material within later contexts (see *The Struck Flint*). This extremely limited evidence accords with known finds of this date from the local area and may attest to little more than transient (possibly seasonal) activity. Occasional charcoal flecks within the fill of F2119 (L2120) might hint at some form of 'domestic' activity in the vicinity, although no charcoal greater than 2mm in size was present in an environmental bulk sample of this context (Summers *pers. comm.*). Further organic material – possibly relating to the structured deposition of the sickle – may have perished in the burial environment (see below).

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Grid Square(s)	Comments/ relationships	Finds
2119	2120	Sub-circular/ gently sloping sides, concave base (2.40 x 1.98 x 0.42m)	Friable, mid grey brown silty sand with occasional small sub-rounded stone and charcoal flecks. Environmental sample 2.90 taken	U10-U11	Pit; cut L2003; sealed by 2001	SF3 struck flint (23g)

Table 2: Pit F2119

2.16 The majority of early Neolithic sites in Norfolk occupy light, fertile soils, and excavated settlements and monuments are recorded on the low-lying coastal area to the north-west of Bradwell (Ashwin 1996, 46-7, fig. 3). The general settlement pattern at this time has been postulated as comprising transient occupation of 'specialised or seasonally-occupied [sites] in a diverse settlement and economic regime' (*ibid.* 47). The coastal location of Bradwell on fertile soils, close to the coast and river valleys suggests that it would have presented an attractive resource base for early occupation.

## *Phase 2: Saxo-Norman to High Medieval (10<sup>th</sup> to 13<sup>th</sup>/ 14<sup>th</sup> century AD)*

### Summary

2.17 The Saxo-Norman to High medieval period was the principal phase of past activity at the site. Phase 2 was characterised by a complex system of ditched agricultural enclosures. Most of the associated ditches/ gullies were aligned north to south or east to west (Fig. 8). A number of discrete enclosures are visible in plan. Features within the Phase 2 enclosures included pits – particularly along the northern site boundary – and an agricultural kiln with an associated structure. Three buried soil horizons were also assigned to this phase.

2.18 The Phase 2 pottery assemblage incorporates Thetford ware and Thetford type ware, broadly dated between the mid 9<sup>th</sup> and 12<sup>th</sup> centuries AD (see *The Pottery*) with production at Norwich having been dated between the late 10<sup>th</sup> and early 12<sup>th</sup> centuries (Jennings 1983, 93; Jennings 1981, 22). Grimston and Hollesley type coarse wares and unprovenanced coarse wares are also present. These sherds include a thumb decorated rim and neck from a deep bowl (with no close parallels) and date between the late 10<sup>th</sup> and 14<sup>th</sup> centuries AD. Medieval glazed wares from the site are dominated by Grimston wares with a glazed Hollesley-type jug neck and a white ware sherd with a yellow glaze also present. The latter is probably from an imported Rouen jug of mid 13<sup>th</sup> to 14<sup>th</sup> century date (Jennings 1981, 35). Overall, the glazed wares span the 12<sup>th</sup> to 14<sup>th</sup> centuries AD.

### The Phase 2 Ditches/ Gullies

2.19 The Phase 2 ditches/ gullies were distributed across the site but were particularly prevalent in the north and east. The ditches/ gullies mostly followed a north to south or east to west alignment, together forming a complex series of rectilinear enclosures. The identifiable Phase 2 enclosures were all in the eastern part of the excavation. From west to east, at least four enclosures were present between Grid Lines G and J, while three or more were present between Grid Lines K and P (Figs. 5 and 8). Although no stratigraphic relationships existed between features forming these two groups, it is suggested that at least two (possibly three) stages of enclosure occurred during Phase 2. The stratigraphic sequence of enclosures to the east was less clearly defined, owing to a much higher incidence of intercutting/ recutting (Fig. 8).

### Enclosure 1

2.20 The stratigraphically earliest Phase 2 enclosure in the western group was demarcated by curvilinear Ditch F2175 (=2192; Grid squares I3-I6 and J3-J; Table 3). The south-western part of this ditch cut Ditch F2446 (Grid Squares I4-J3) – possibly an earlier demarcation of the same boundary. Ditch F2175 (=2192) was later re-cut by Ditch F2139 (=2186; Table 3). Enclosure 1 was elongated in plan, tapering towards its southern end (Figs. 8 and 13-14); its earlier layout widened to the north, possibly extending beyond the northern limit of the excavation, while re-cut Ditch F2139 formed a narrow access point (c. 7m wide) in Grid Square J5 (Fig. 13). The internal area of Enclosure 1 measured c. 720m<sup>2</sup> within the confines of the excavation. An east to west aligned ditch (F2188; Grid Squares I5-J5) may have

served to subdivide the interior of Enclosure 1, although may have been related to stratigraphically earlier Ditch F2457, some 21m to the south.

## Enclosure 2

2.21 Enclosure 2 was located against the northern edge of the excavation, immediately north-west of Enclosure 1 (Fig. 8). Part of this sub-square enclosure extended beyond the excavated area to the north. The exposed part measured c.1000m<sup>2</sup> internally. Unlike Enclosure 1, this enclosure had not undergone any large-scale recutting. The longest surviving boundary feature (Ditch F2135=2400) was rectilinear in plan with rounded corners, and its eastern end partially cut the fill of Ditch F2139 (=2186; Table 3); the latter was a stratigraphically late Enclosure 1 boundary (see above). In plan, the course of Ditches F2135 (=2400) and F2139 (=2186) mirrored one another in Grid Squares J5-J6 (Fig. 13). As these features only intercut slightly, it is possible that they were contemporary, forming a double-ditched/ coaxial boundary at the eastern end of Enclosure 2. The western extent of F2135 (=2400) displayed a similar, possible relationship with Ditch F2171 (=2398) in Grid Squares G6 and G5-I5 (Fig. 13). However, it is equally possible that these ?paired features represented a succession of boundary features in both cases.

2.22 The easternmost part of the Enclosure 2 boundary (Ditch F2139=2186; Grid Square J6) may have formed a recut of earlier Ditches F2153 and F2155 (Fig. 13). However, these features were only partially exposed and their southern termini veered sharply away from the alignment of the enclosure boundary, raising the distinct possibility that they were unrelated to it. The south-western corner of enclosure 2 was cut by linear Ditch F2402 (Grid Squares G5-H5). This feature mirrored the c. east to west alignment of the enclosure's southern edge and was recorded as being continued to the west by Ditch F2039 (Grid Squares B5-E5; Fig. 11). However, an extensive area of unexcavated ground, c. 40m wide, separated these ditches.

## Enclosure 3

2.23 Enclosure 3 was represented by a single, rectilinear ditch (F2167; Grid Squares H5-H6 and I5-I6; Table 3; Figs. 8 and 13) which cut the fills of Enclosure 2 Ditches F2135 (=2400) and F2171 (=2398). The southern continuation of F2167 on its eastern site (Grid Square I5) petered out, while its south-western extent (Grid Square H5) ran southwards, beyond the edge of the excavation; it is possible that Enclosure 3 was originally larger. The exposed part of the enclosure measured approximately 180m<sup>2</sup> internally. This enclosure appeared stratigraphically late within Phase 2 and may have been contemporary with the latter use of Enclosure 1 (as defined by Ditch F2139 (=2186)).

## Enclosure 4

2.24 Enclosure 4 was encountered immediately west of Enclosure 1 and extended beyond the excavation to the west (Grid Squares I3-I4; Figs. 8 and 14). The constituent boundary features (Ditches F2444 and F2466; Table 3) were comparatively narrow and shallow, and enclosed an area of c. 100m<sup>2</sup> within the excavated area (Table 3; Fig. 14). The exposed termini of these ditches (Grid

Square I4) were set some 1.5m apart, possibly defining a narrow entrance at the enclosure's north-eastern edge.

#### Enclosure 5

2.25 Enclosure 5 was one of three (possibly four) identifiable enclosures present between Grid Lines K and P (Figs. 8 and 15-16). This enclosure was elongated – aligned north to south – and measured at least 1430m<sup>2</sup> internally (Grid squares K6-L2 and L5-M1). Its western edge was defined by rectilinear Ditch F2129, while its eastern edge was formed by Ditches F2290 (=2440=2442) and F2412 (Figs. 15-16). Ditch F2290 (=2440=2442) followed a curvilinear course, predominantly north-west to south-east and truncated the northern end of F2412 in Grid Square M3 (Fig. 16). No east to west aligned ditches could be confidently associated with Enclosure 5, although Ditches F2159 and F2190 truncated the fills of F2129 and F2290 (=2440=2442) in Grid Squares K5 and L5, respectively (Fig. 15).

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationships	Findings
2006	2007	Linear/ moderately sloping sides, flattish base (6.00+ x 0.80 x 0.40m)	Friable, mid orange brown, silty sand with occasional gravel. Environmental sample 2.7 taken	Ditch; cut by F2029; sealed by L1001	Struck flint (5g)
2021	2022	Linear/ moderately sloping to steep sides, concave base (42.00+ 1.84 x 0.62m)	Friable, mid orange brown/ dark grey brown silty sand with occasional gravel. Environmental samples 2.14, 2.15, 2.18 2.31 and 2.38 taken	Gully; cut L2060 and L2068; sealed by L2001	Pottery (7g)
2039	2040	Linear/ gently sloping sides, flattish base (1.38 x 0.87 x 50.50+ m)	Friable, mottled mid red brown silty sand with occasional small to medium sub-rounded flint. Environmental sample 2.39 taken	Ditch; cut L1045; sealed by L2001	Shell (18g)
2043	2044	Linear/ moderately sloping sides, flattish base, (25.00 x 0.80 x 0.45m )	Friable, light to mid yellow brown, silty sand with occasional gravel	Gully; cut L2046; sealed by L2001	-
2045	2046	Linear/ moderately sloping sides, flattish base, (20.00 x 1.90 x 0.27m)	Friable, mid yellow brown silty sand with occasional gravel. Environmental samples 2.42 and 2.45 taken	Gully; cut L2046; sealed by L2001	Pottery (3g); struck flint (12g)
2047	2048	Linear/ moderately sloping sides, flattish base (2.00 x 1.90 x 59.40+ m)	Friable, light red/ brown yellow silty sand with occasional small sub-angular stone. Environmental sample 2.44 taken	Ditch; cut L1045; sealed by L2001	Animal bone (25g)
2083	2084	Curvilinear/ steep sides, flattish base (4.00+ x 0.80+ x 0.77m)	Compact, dark brown grey silty sand with occasional gravel	Ditch; cut L2018; cut by F2059	-
2088	2089	Curvilinear/ moderately sloping to steep sides, concave base (14.0+ x 2.21+ x 1.13m)	Friable, mid grey brown silty sand with occasional clay mottles, medium rounded stone and chalk lumps. Environmental samples 2.75 and 2.79 taken	Ditch; cut L2018 and L2102; cut by F2010, F2090=F2029 and F2098	Pottery (230g)
2104	2105	Linear/ steep to moderately sloping sides, concave base (16.00+ x 0.60 x 0.30m)	Friable, mid to dark brown grey sandy silt with occasional gravel	Gully; cut L2018; cut by F2098	-
2110	2111	Linear/ moderately sloping sides, concave base (11.00 x 0.40 x 0.14m)	Compact, dark grey brown silty sand with occasional gravel	Gully; cut L2018; cut by F2004 and F2112; sealed by L2017	-
2129	2130	Linear/ moderately	Friable, mid grey brown silty	Ditch; cut L2003; cut by	Struck flint

		sloping sides, concave base (70.00+ x 1.22 x 0.46m)	sand with occasional gravel	F2129, F2159 and F2198	(3g)
2135 =2400	2136 =2401	Curvilinear/ moderately sloping sides, concave base (80.00+ x 1.40 x 0.32m)	Friable, mid grey brown/ dark grey brown silty sand with occasional gravel	Ditch; cut L2138 and L2140; cut by F2039=2402, F2163, F2167 and F2173	Pottery (24g)
2137	2138	Linear, moderately sloping sides, concave base (16.00 x 0.54 x 0.24m)	Friable, mid grey brown silty sand with occasional gravel	Ditch; cut L2038=2287; cut by F2135=2400	-
2139 =2186	2149 (primary)	Curvilinear/ moderately sloping to steep sides, flattish base (125.00+ x 1.30 x 0.80m)	Friable, dark grey brown silty sand with occasional gravel	Ditch; cut L2176=2193 and L2187; cut by F2135=2400, F2137 and F2153	-
	2140=2187 (uppermost)		Friable, mid grey brown silty sand with occasional gravel		Pottery (13g); animal bone (29g); clay pipe (3g)
2141	2142	Rectilinear/ moderately sloping sides, concave base (7.00+ x 0.75 x 0.35m)	Loose, light brown yellow sand with occasional gravel	Ditch; cut L2003; sealed by L2001	-
2153	2154	Linear/ moderately sloping sides, flattish base (9.00+ x 0.68 x 0.40m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2140=2187 and L2156; sealed by L2001	-
2155	2156	Linear/ moderately sloping sides, irregular base (9.00+ x 1.02 x 0.37m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2003; cut by F2155	-
2159	2160	Curvilinear/ gently sloping sides, concave base (35.00+ x 1.77 x 0.46m)	Friable, dark red brown silty sand with occasional gravel, chalk flecks and charcoal flecks	Ditch; cut L2130 and L2158; sealed by L2001	Pottery (44g)
2167	2168	Curvilinear/ moderately sloping to steep sides, concave base (40.00+ x 1.10 x 0.40m)	Friable, mid to dark grey brown silty sand with occasional gravel	Ditch; cut L2136=2401, F2166 and L2172=2389; cut by F2169	Pottery (2g)
2169	2170	Linear, moderately sloping sides, concave base (15.00+ 1.04 x 0.14m)	Friable, light grey brown silty sand with occasional gravel	Gully; cut L2166 and L2168; sealed by L2001	-
2171 =2398	2172 =2399	Curvilinear/ moderately sloping sides, concave base (45.00+ x 0.40 x 0.80m)	Friable, mid grey brown silty sand with occasional gravel	Gully; cut L2003; cut by F2039=2402 and F2167; sealed by L2001	-
2175 =2192	2176 =2193	Curvilinear/ moderately sloping to steep sides, concave base (115.00+ x 1.10 x 0.70m)	Friable, mid grey brown silty sand with occasional gravel and ash. Environmental sample 2.137 taken	Ditch; cut L2447; cut by F2135=2400, F2139=2186	Animal bone (94g)
2188	2189	Linear/ moderately sloping sides, concave (15.00 x 0.80 x 0.24m)	Compact, dark grey brown silty sand with occasional gravel	Ditch; cut L2003; sealed by L2001	Animal bone (10g); struck flint (15g)
2190	2191	Linear/ moderately sloping sides, flattish base (35.00 x 1.05 x 0.33m)	Friable, mid red brown silty sand with frequent gravel	Ditch; cut L2395=2460 and L2291=2441=2443; cut by F2159.	-
2196	2197	Linear/ gently sloping sides, concave base (0.90 x 0.30 x 3.40+ m)	Friable, dark yellow brown silty sand with occasional small sub-angular to sub-rounded stone	Ditch; cut L2003; sealed by L2001	-
2277	2278	Linear/ moderately sloping sides, concave base	Friable, mid grey brown silty sand with occasional gravel and occasional charcoal	Ditch; cut L2222 and L2235=2329; cut by F2355	Pottery (15g); animal

		(13.50+ x 0.40 x 0.15m)	flecks. Environmental sample 2.116 taken		bone (64g)
2279	2280	Linear/ moderately sloping sides, concave base (2.40 x 0.56 x 0.21m)	Friable, mid grey brown silty sand with occasional gravel	Gully; cut L2003; sealed by L2001	-
2281 =2328	2282 =2329	Curvilinear/ moderately sloping sides, (28.00+ x 0.42 x 0.41m)	Friable, mid grey brown, silty sand with moderate gravel	Ditch; cut L2222; cut by F2277 and F2330	Pottery (6g)
2290 =2440 =2442	2291 =2441 =2443	Linear/ moderately sloping to steep sides, concave base (64.00+ x 1.00 x 0.43m)	Compact, mid grey brown silty sand with occasional gravel	Gully; cut L2413; cut by F2127, F2190 and F2410=2368	-
2292	2293	Linear/ moderately sloping sides, concave base (6.00+ x 0.47 x 0.20m)	Friable, mid yellow brown sandy silt, occasional gravel. Environmental sample 2.107 taken	Ditch; cut L2003; cut by F2294, F2296 and F2298	-
2294	2295	Linear/ moderately sloping sides, concave base (14.6 x 0.60 x 0.25m)	Friable, mid to dark yellow brown silty sand with occasional gravel. Environmental sample 2.108 taken	Ditch; cut L2293; cut by F2296 and F2298	Pottery (6g); struck flint (4g)
2296	2297	Linear/ moderately sloping sides, flattish base (45.00+ x 1.00 x 0.19m)	Friable, mid yellow/ grey brown silty sand with occasional gravel and charcoal flecks. Environmental sample 2.106 taken	Ditch; cut L2293 and L2295; cut by F2359, F2370 and F2392	Pottery (8g)
2298	2299	Linear/ moderately sloping sides, concave base (30.00+ x 1.20 x 0.27m)	Friable, mid yellow/ grey brown silty sand with occasional gravel. Environmental sample 2.104 taken	Ditch; cut L2293 and L2295; cut by F2359, F2370 and F2392	Animal bone (174g); struck flint (21g)
2316	2469	Linear/ moderately sloping sides, flattish base (18.00+ x 1.00 x 0.21m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2003; cut by F2125	-
2317	2318	Linear/ moderately sloping sides, concave base (6.00+ x 0.75 x 0.26m)	Friable, mid red brown silty sand with occasional gravel and charcoal flecks	Ditch; cut L2003; sealed by L2001	Struck flint (56g)
2324	2325	Curvilinear/ moderately sloping sides, concave base (105.00+ x 1.60 x 0.40m)	Compact, dark grey brown sandy silt with occasional gravel and charcoal flecks	Ditch; cut L2003; sealed by L2001	Pottery (75g); struck flint (49g)
2347	2348	Linear/ steep sides, flattish base (6.40 x 0.45 x 0.30m)	Loose, mid red brown silty sand with moderate gravel	Ditch; cut L2003; sealed by L2001	Pottery (44g)
2351	2352	Linear/ steep sides, concave base (5.00+ x 0.67 x 0.43m)	Friable, mid grey brown silty sand with occasional gravel	Ditch; cut L2350; cut by F2277	Pottery (41g)
2355	2356	Linear/ moderately sloping sides, concave base (3.8 x 0.64 x 0.14m)	Friable, mid red brown silty sand with occasional gravel and charcoal flecks	Ditch; cut L2362 and L2278; sealed by L2001	-
2366	2367	Linear/ moderately sloping sides, concave base (42.00 x 1.45 x 0.33m)	Friable, mid grey brown silty sand with occasional gravel	Ditch; cut L2003; cut by F2370 and F2324=2368=2410	-
2368 =2410	2369 =2411	Curvilinear/ moderately sloping sides, concave base (105.00+ x 1.00 x 0.35m)	Compact, dark grey brown silty sand with occasional gravel	Ditch; cut L2367, L2413 and L2417=2437; cut by F2370	Animal bone (2g); struck flint (47g)
2370 =2357	2371 =2358	Curvilinear/ moderately sloping sides, irregular base (67.00+ x 0.90 x 0.47m)	Friable, dark grey brown/ mid yellow brown silty sand	Ditch; cut L2297, L2299, L2367, L2369=2411, L2417=2437 and L2425=2439; sealed by L2001	Pottery (11g); animal bone (31g)
2374	2375	Linear/ moderately sloping sides,	Friable, mid grey brown silty sand with moderate gravel	Ditch; cut L2003; sealed by L2001	Pottery (51g);

		concave base (9.40+ x 0.80 x 0.20m)			animal bone (251g)
2392	2393	Linear/ steep sides, flattish base (13.20 x 0.55 x 0.40m)	Friable, mid grey brown silty sand occasional gravel and charcoal flecks	Ditch; cut L2297 and F2299; sealed by L2001	Pottery (13g); struck flint (10g)
2394 =2459	2395 =2460	Linear/ moderately sloping sides, concave base (13.20 x 1.10 x 0.50m)	Friable, mid orange brown silty sand with occasional gravel and chalk flecks	Gully; cut L2003; cut by F2190	-
2396	2397	Linear/ moderately sloping sides, flattish base (15.00 x 1.10 x 0.13m)	Friable, mid grey brown silty sand with occasional gravel	Gully; cut L2003; sealed by L2001	-
2402	2403	Linear/ moderately sloping sides, flat base (12.00+ x 0.70 x 0.21m))	Friable, mid red brown silt sand with occasional small sub-angular to sub-rounded stone	Ditch/ cut 2136=2401; sealed by L2001	-
2412	2413	Linear/ moderately sloping sides, concave base (45.00+ x 0.55 x 0.19m)	Friable, dark grey brown silty sand with occasional gravel	Gully; cut L2003; cut by F2240=2442 and F2368=2410	Animal bone (111g); struck flint (158g)
2414	2415	Linear/ moderately sloping sides, concave base (7.00+ x 0.25 x 0.13m)	Friable, light grey brown silty sand with occasional gravel	Gully; cut L2003; sealed by L2001	-
2416 =2436	2417 =2437	Linear/ gently sloping sides, flattish base (43.00+ x 0.71 x 0.31m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2003; cut by F2357=3270, F2418 and F2424=2438	-
2418	2418	Linear/ gently sloping sides, irregular base (1.20 x 0.48 x 0.13m)	Friable, mid grey brown silty sand with occasional gravel	Gully; cut L2417=2437; sealed by L2001	-
2424 =2438	2425 =2439	Curvilinear/ moderately sloping sides, flattish to concave base (38.00+ x 1.00 x 0.35m)	Compact, mid to dark grey brown sandy silt with occasional gravel and burnt clay	Ditch; cut L2417=2437 and L2427; cut by F2370	Animal bone (7g)
2426	2427	Linear/ steep sides, flattish base (19.00m x 0.40 x 0.19m)	Friable, mid grey brown silty sand with occasional gravel	Ditch; cut L2003; cut by F2424=2438 and F2428	Pottery (25g)
2444	2445	Curvilinear/ gently sloping sides, concave base (15.00+ x 0.60 x 0.17m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2003; sealed by L2001	-
2446	2447	Curvilinear/ gently sloping sides, concave base (15.00+ x 1.10 x 0.32m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2003; cut by F2175=2192	Pottery (6g); struck flint (96g); lava stone (194g)
2449	2450	Linear/ moderately sloping sides, concave base (14.00+ x 1.00 x 0.43m)	Friable, mid brown/ black silty sand with occasional gravel	Ditch; cut L2454; cut by F2451	-
2453 =2455	2454 =2456	Sub-circular/ moderately sloping sides, concave base (26.00+ x 1.40+ x 0.44m)	Compact, mid brown/ black silty sand and mid yellow brown, silty sand with moderate gravel	Ditch; cut L2003; cut by F2449	-
2466	2467	Linear, gently sloping sides, flattish base (5.50 x 0.30 x 0.17m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2003; sealed by L2001	-

Table 3: The Phase 2 Ditches and Gullies

## Enclosure 6

2.26 The principal Enclosure 6 boundary (Ditch F2368 (=2410); Table 3) was stratigraphically later than the eastern edge of Enclosure 5 and followed a rectilinear course, terminating beyond the eastern edge of the excavation (Grid Squares M4-L4, L4-L2 and L2-O3; Figs. 8 and 15-17). This ditch defined the southern and western enclosure boundary, along with part of its northern edge. The remainder of the northern boundary may have comprised Ditches F2294 (Grid Squares M4-N4) and F2324 (Grid Squares O4-P4; Table 3; Figs. 15 and 17), although the latter was not precisely aligned. The resultant rectangular enclosure measured c. 2110m<sup>2</sup> internally (within the excavation) but appeared to extend further eastwards.

2.27 A number of closely spaced linear/ irregular ditches (F2426, F2416=2436, F2424=2438, F2366, F2298 and F2296 (numbered west to east); Table 3) were encountered running north to south across the central area of Enclosure 6; three ran beyond the confines of the enclosure, being intercut with boundary Ditches F2368 (=2410) and F2294 (Figs. 15-16). It is uncertain if or how any of these features functioned in relation to the enclosure, although their positions and generally consistent alignments suggests that they represented the purposeful maintenance of a single boundary or series of boundaries over time

## Enclosure 7

2.28 A small, sub-square arrangement of six ditches (F2277, F2281=2328, F2317, F2347, F2351 and F2374; Table 3) defined a small enclosure or pen in the north-eastern corner of the site (Grid Squares N4-N5 and O4-O5; Figs. 8, 15 and 17). Most of these were linear in plan, aligned north to south, while Ditch F2281 (=2328) was roughly L-shaped, running north to south before turning sharply to the east. Three of the ditches were intercutting. Ditch F2316 (Table 3), located c. 7m to the west of Enclosure 7 also followed a north to south alignment and may have formed an outlier of the main group. Overall, the Enclosure 7 boundaries enclosed an area of c. 240m<sup>2</sup> within the excavation, with a possible 'staggered' entrance to the west (Fig. 15).

## Possible pen

2.29 A possible Phase 2 pen was encountered at the northern edge of the excavation within the confines of Enclosure 2 (Grid Square I6; Figs. 8 and 13). The pen was delineated by rectilinear Ditch F2141 and appeared to extend beyond the excavation to the north. The exposed part measured 4m<sup>2</sup> internally. Although the layout of F2141 might also suggest that it acted as a construction cut, its loose, sandy fill was devoid of finds or any obvious packing material. This feature was assigned to Phase 2 based on its layout and close spatial association with dated features.

## Phase 2 ditches in the western part of the site

2.30 Phase 2 Ditches F2039, F2043 and F2047 ran c. east to west across the north-western part of the site (Grid Squares B4-C4 and B5-E5; Table 3; Figs. 8 and 11). These features were set c. 6-7m apart and were similar in plan, although varied



in profile (Fig. 18), depth and in the nature of their fills. However, the regularity of their layout strongly suggests that they were contemporary and related to one another. Ditch F2039 was originally recorded as being a western extension of Ditch F2402 (see above), while F2047 was thought to equate to F2196 in the eastern part of the site (Grid Square I5). However, the substantial, unexcavated area between these paired features – over 70m in the case of F2047 and F2196 – means that they cannot be confidently associated.

2.31 It is possible that Ditches F2039, F2043 and F2047 represented the ploughed-out remains of ridge and furrow cultivation. This system of strip cultivation within open fields was prevalent during the middle ages and involved the casting up of soil by heavy plough action to form free-draining seed beds separated by furrows which doubled up as drainage channels (Hall 1998; Rowley 1982, 47). Typically, medieval ridges were around 8-10m wide (Hall 1998; Whitefield 2009, 105) – just above the width of the Bradwell examples – although can be considerably wider (McOmish 2011, 5). Post-medieval examples tend to be narrower, with approximately 5m between furrows (Whitefield 2009, 106). F2039, F2043 and F2047 all truncated the fill of Phase 2 Ditch F2045 (Grid Squares C5-C6; Table 3; Fig. 11). The north to south orientation of the latter was at odds to the later ?ridge and furrow system, possibly suggesting a change in land use in this part of the site at some time during the Saxo-Norman to High medieval period.

2.32 A pair of parallel, north to south aligned Phase 2 gullies (F2021 and F2110) were present at the western edge of the excavation (Table 3; Figs. 8 and 12). These were the earliest linear features in this part of the site and may have represented the remnants of an enclosure or field boundary running between Grid Squares A2 and A4.

#### Finds from the Phase 2 ditches/ gullies

2.33 Overall, finds from the Phase 2 ditches/ gullies are few, mostly comprising modest quantities of pottery and animal bone. This lack of finds would suggest that the features were not regularly receiving dumps of domestic waste. This is not wholly unexpected, however, as the site is not located particularly close to any substantial core of medieval settlement. The deserted medieval village of Browston is thought to lay over 1km to the south, while the historic core of Gorleston-on-Sea is over 2km away to the north-east.

#### The Phase 2 pits/ postholes

2.34 A large number of pits and postholes were assigned to Phase 2 (Table 4; Fig. 8). The majority of these were located in the northern part of the site, while a few were also identified close to the south-western corner of the excavation. Although most of the pits and postholes were devoid of finds, they were tentatively assigned to Phase 2 based on their probable relationships with dated features, including the enclosure ditches/ gullies. Some were also dated based on their stratigraphic relationships with dated features/ contexts, e.g. Pits F2179 and F2181 (Fig. 29).

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationships	Finds
2013	2014	Sub-oval/ moderately sloping sides, concave base (3.20 x 0.84 x 0.38m)	Friable, mid orange brown silty sand with occasional gravel. Environmental sample 2.9 taken	Pit; cut L2018; sealed by L2001	-
2023	2024	Sub-oval/ moderately sloping to steep sides, flattish base (4.40 x 1.53 x 0.29m)	Friable, light grey brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2025	2026	Sub-rectangular/ moderately sloping sides, flattish base (0.33 x 0.38 x 0.07m)	Compact, mid grey brown silty clay with frequent chalk and occasional gravel. Environmental sample 2.16 taken	Pit; cut L2016=2064; sealed by L2001	-
2052	2053	Oval/ steep sides, flattish base (2.10 x 1.10 x 0.26m)	Friable, light yellow brown sandy silt with occasional gravel	Pit; cut L2003; sealed by L2001	-
2054	2056 (primary)	Sub-rectangular/ moderately sloping sides, irregular base (1.39 x 1.40 x 0.53m)	Friable, dark grey brown silty sand with occasional gravel and charcoal flecks. Environmental sample 2.47 taken	Pit; cut L2003; sealed by L2001	-
	2055 (uppermost)		Friable, mid grey brown silty sand with occasional gravel, burnt clay and charcoal flecks. Environmental sample 2.46 taken		-
2057	2058	Oval/ steep sides, irregular base (1.70 x 0.80 x 0.40m )	Friable, dark red brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2062	2063	Sub-oval/ steep sides, concave base (1.94 x 1.50 x 0.60m)	Friable, dark brown yellow silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2065	2066	Oval/ moderately sloping to steep sides, concave base (1.39 x 1.38 x 0.40m)	Friable, dark brown grey silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2069	2070	Sub-circular/ moderately sloping sides, concave base (1.10 x 1.00 x 0.30m)	Compact, mid yellow brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2071	2072 (primary)	Sub-circular/ moderately sloping sides, concave base (2.05 x 1.06 x 0.38m)	Compact, mid yellow brown silty sand with occasional gravel. Environmental sample 2.63 taken	Pit; cut L2003; sealed by L2001	-
	2073 (uppermost)		Friable, dark brown/ black silty sand with frequent charcoal flecks. Environmental sample 2.64 taken		-
2075	2079 (primary)	Circular/ moderately sloping sides, concave base (0.20+ x 0.53 x 0.15m )	Compact, dark red brown silty sand with moderate gravel. Environmental sample 2.67 taken	Posthole; cut L2018; cut by F2010	-
	2076 (uppermost)		Compact, dark brown/ black silty sand with occasional gravel		-
2085	2086	Rectangular/ moderately sloping to vertical sides, flattish base (1.50+ x 0.68 x 0.95m)	Compact, dark grey brown silty sand with occasional gravel and clay mottles. Environmental sample 2.72 taken	Pit; cut L2003; cut by F2010	-
2102	2103	Sub-circular/ steep sides, concave base (1.00+ x 0.60+ x 0.52m)	Compact, mid brown grey clay with occasional charcoal flecks	Pit; cut L2018; cut by F2088	-
2106	2107	Sub-circular/ moderately sloping sides, flattish base (0.50 x 0.24 x 0.29m)	Friable, dark grey/ black silty sand with moderate charcoal flecks and occasional gravel	Pit; cut L2018; sealed by L2017	-
2108	2109	Sub-circular/ steep sides, concave base (0.23 x 0.27 x 0.59m)	Friable, dark grey/ black silty sand with moderate charcoal flecks and occasional gravel. Environmental sample 2.88 taken	Posthole; cut L2018; sealed by L2017	-
2112	2118 (primary)	Sub-oval/ steep sides, concave base ( 1.40 x 0.88 x 0.65m)	Compact, dark grey brown silty sand	Pit; cut L2111: sealed by L2017	-
	2117		Compact mid brown/ black		-

	2116		silty sand		
	2113 (uppermost)		Compact, dark grey brown silty sand		-
			Compact, mid grey brown silty sand. Environmental sample 2.84 taken		-
2114	2115	Sub-rectangular/ gently sloping sides, flattish base (0.40 x 0.26 x 0.02m)	Friable, light grey brown silty sand with occasional charcoal flecks	Pit; cut L2018; sealed by L2017	-
2221	2122	Sub-circular/ gently sloping sides, concave base (1.30 x 1.35 x 0.18m)	Friable, dark grey brown silty sand with occasional gravel and charcoal flecks. Environmental sample 2.91 taken	Pit; cut L2003; sealed by L2001	-
2133	2134	Sub-circular/ gently sloping sides, concave base (4.00 x 3.00 x 0.27m)	Loose, mid yellow brown sand with occasional gravel	Pit; cut L2003; cut by F2027	Pottery (166g)
2150	2152 (primary)	Sub-circular/ steep sides, concave base (0.50+ x 0.39 x 0.29m)	Friable, mid grey brown silty sand with occasional gravel	Posthole; cut L2003; cut by F2139=2186	-
	2151 (uppermost)		Friable, light grey brown silty sand with occasional gravel		-
2157	2158	Sub-rectangular/ gently sloping sides, irregular base (1.20 x 0.72+ x 0.21m)	Friable, light grey brown silty sand with occasional gravel	Pit; cut L2003; cut by F2059	Pottery (138g)
2165	2166	Oval/ moderately sloping to steep sides, concave (1.70+ x 0.65 x 0.31m)	Friable, mid yellow brown sandy silt with occasional gravel	Pit; cut L2003; cut by F2167 and F2169	-
2173	2174	Sub-oval, gently sloping sides, flattish base (1.80 x 0.28+ x 0.15m)	Friable, mid red brown silty sand with occasional gravel	Pit; cut L2003; cut by F2135=2400	-
2179	2180	Circular/ moderately sloping sides, flattish base (4.10 x 4.10 x 0.33m)	Compact, mid grey brown silty clay with occasional gravel	Pit; cut L2182; sealed by L2001	Pottery (11g); animal bone (53g)
2181	2183 (primary)	Circular/ moderately sloping sides, concave base (1.20 x 1.30 x 0.55m)	Compact, dark brown/ black sand with occasional gravel	Pit; cut L2003; cut by F2181	-
	2182 (uppermost)		Compact, mid brown/ black sand with occasional gravel		-
2198	2199	Sub-circular/ moderately sloping sides, concave base (1.35 x 1.55 x 0.50m)	Compact, dark grey brown silty sand with frequent gravel	Pit; cut L2030; sealed by L2001	-
2200	2202 (primary)	Sub-circular/ steep sides, concave base (1.70 x 1.70 x 0.71m)	Compact, dark red brown silty sand with occasional gravel and clay mottles	Pit; cut L2003; sealed by L2001	Pottery (10g); animal bone (3g)
	2201 (uppermost)		Friable, mid grey brown silty sand with occasional gravel		Pottery (35g)
2237	2238	Sub-circular, moderately sloping sides and a concave base (0.90 x 0.60 x 0.78m)	Friable, mid grey brown silty sand with frequent small sub-angular gravel and flint. Environmental sample 2.98 taken	Posthole; cut 2003; cut by F2283	Pottery (9g)
2283	2284	Irregular/ moderately sloping to steep sides, concave base (0.50 x 1.26 x 0.51m)	Compact, dark grey brown silty sand with frequent gravel and occasional clay mottles	Pit; cut L2238; sealed by L2001	Animal bone (93g)
2300	2301	Oval/ steep sides, concave base (0.70 x 0.50 x 0.34m)	Compact, mid blue grey clay with moderate chalk	Posthole; cut L2003; sealed by L2001	Shell (11g)
2306	2307	Sub-circular/ moderately sloping sides, concave base (1.80 x 0.60 x 0.30m)	Compact, dark yellow brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2308	2309	Sub-circular/ moderately sloping sides, concave base (3.10+ x 3.30 x 0.69m)	Compact, dark grey brown silty sand with occasional chalk and gravel	Pit; cut L2003; sealed by L2001	Whetstone (500g)
2310	2311	Oval/ moderately sloping sides, concave base (0.60 x 0.80 x 0.17m)	Compact, mid red brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2312	2313	Sub-oval/ steep to moderately sloping sides, concave base (1.70 x 0.30 x 0.35m)	Compact, mid grey brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001.	-
2314	2315	Sub-circular/ moderately sloping sides, irregular base (1.69 x 1.30 x 0.42m)	Compact, dark grey brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2326	2327	Sub-circular/ steep sides,	Friable, mid grey brown silty	Pit; cut L2003;	Pottery (62g)

		concave base (1.30 x 1.26 x 0.52m)	sand with occasional gravel and charcoal flecks	sealed by L2001	
2332	2333	Sub-circular/ moderately sloping sides, irregular base (1.60 x 1.40 x 0.45m)	Compact, dark yellow brown silty sand with occasional gravel, chalk and charcoal flecks	Pit; cut L2003; sealed by L2001	Pottery (101g); animal bone (3g); struck flint (32g)
2349	2350	Sub-circular/ steep sides, concave base (1.20 x 0.66 x 0.41m)	Friable, mid grey brown silty sand with occasional gravel and charcoal flecks	Pit; cut L2003; cut by F2351	-
2353	2354	Sub-circular/ gently sloping to steep sides, irregular base (0.30+ x 2.40 x 0.32m)	Compact, dark grey brown sandy clay with moderate chalk and gravel	Pit; cut L2003; sealed by L2001	Pottery (38g); animal bone (16g)
2404	2404	Oval/ moderately sloping sides, concave base (2.50 x 1.70 x 0.70m)	Friable, mid yellow brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2406	2407	Sub-circular/ steep sides, concave base (0.47 x 0.50 x 0.24m)	Friable, dark grey brown silty sand with moderate charcoal flecks and occasional gravel	Pit; cut L2003; cut by F2408	-
2408	2409	Sub-circular/ steep sides, concave base (2.30 x 0.86 x 0.36m)	Friable, mid yellow brown silty sand with occasional gravel	Pit; cut L2407; sealed by L2001	-

Table 6: Phase 2 pits/ postholes

2.35 The only finds of note from the Phase 2 pits and postholes comprise modest quantities of pottery and animal bone. Pit F2308 (L2309) also yielded a whetstone of Norwegian origin (see *The Small Finds*). This pit was partially obscured by the northern excavation edge (Grid Square M5; Fig. 15) and occupied a probable medieval enclosure. Environmental remains were richest from Posthole F2237 and appear to represent a fully cleaned oat crop (see *The Environmental Samples*).

### Kiln 1

2.36 Of particular interest within the Phase 2 landscape was the remains of an agricultural kiln (Kiln 1), located close to the eastern edge of the excavation (Grid Squares M2-M3 and N2-N3; Table 7; Plates 2-3; Figs. 8, 16/ 16a and 26). The kiln comprised a shallow, circular cut (L2319) housing a built-up clay wall (M2475 (=2320)); F2319 cut the fill of unphased Pit F2388 (L2389). The kiln wall was between c. 0.15m and 0.67m thick. The central firing chamber measured some 1.85m in diameter and contained two consecutive fills (L2320 and L2321), both of which were oxidised in appearance. Although recorded as a fill, L2320 actually comprised the innermost, heated surface of the Kiln wall. Uppermost Fill L2321 contained occasional lumps of charcoal, possibly associated with the last firing of the kiln. A collapsed flue (M2476) linked the firing chamber to a small, sub-oval stoke hole to the west (F2363) (Fig. 16). The single, charcoal-rich fill of F2363 (L2364=2365) was devoid of finds.

2.37 Environmental samples from Kiln 1 and associated features (see below) suggest the drying of cereals for storage or export, with a predominance of oat and barley, with rye also commonly encountered (see *The Environmental Samples*). Wheat was also recorded but appears to have comprised a 'marginal' component of the assemblage (*ibid.*). Possible gorse charcoal might suggest a significant contribution to the kiln's fuel.

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationships	Finds
2319	2475	Circular/ vertical sides, flat base (2.40 x 2.05 x 0.13m)	Kiln wall: compact, mid grey clay with frequent chalk flecks and lumps	Construction cut; cut 2389; sealed by L2001	-
	2320 (primary)		Compact, mid to light orange red chalky clay with frequent grey chalky clay mottles and moderate small to medium sub-rounded to sub-angular flint. Environmental sample 2.109 taken		Lava stone (134g)
	2321 (uppermost)		Compact, dark red/ black fired clay with occasional small angular chalk, gravel and charcoal lumps. Environmental sample 2.110 taken		Animal bone (24g); struck flint (6g)
2363	2364=2365	Sub-oval/ moderately sloping sides, concave base (1.63 x 0.70 x 0.25m)	Friable, mottled mid to dark yellow brown/ grey sandy silt with frequent charcoal flecks and occasional small sub-angular stone. Environmental sample 2.117 taken	Stoke hole; cut 2389; sealed by L2001	-
2476	2320 (primary)	(0.15 x 0.10 x ?m)	As above	Flue (collapsed)	-
	2321 (uppermost)		As above		-

Table 7: Kiln 1

### Associated structural remains

2.38 Kiln 1 was set within the southern end of a semi-subterranean structure (Structure 1; Grid Squares M2-M3 and N2-N3; Table 8; Plates 2-3; Figs. 8, 16/ 16a and 26). Structure 1 survived as a sub-rectangular cut (F2359) and five/ six associated postholes (F2378, F2380, F2382, F2384, F2390 and F2461). F2359 cut the fill of unphased Pit F2388 (L2389) and was contemporary with the construction cut for Kiln 1 (F2319). Five of the postholes – thought to have housed upright timbers – were cut through the base of F2359. Their fills were sealed by the fills of F2359, however, indicating that any below-ground structural timbers had either decayed or had been removed prior to the backfilling of the latter. Posthole F2461 was located beyond the confines of F2359, immediately south of Kiln 1 and may not have formed part of Structure 1. F2359 contained three consecutive fills (L2360, L2386 and L2387; Fig. 26). Primary Fill L2387 contained frequent charcoal flecks and may have derived from use of Kiln 1 or its demolition and subsequent levelling. A large fragment of redeposited kiln structure (M2465; Figs. 16 and 26) – equivalent to Kiln Wall M2475 – was present within Fill L2387 (Plate 4).

2.39 It is possible that Structure 1 comprised a simple shelter or enclosed space associated with the use of Kiln 1. The interior of the kiln may have been directly accessible from within the structure at a level above the preserved archaeological horizon. The stratigraphic relationship between F2359 and the kiln's construction cut (F2319) was difficult to determine, although it is very likely that they were contemporary.

2.40 In northern areas of Britain, where poor climate necessitated the drying of grain for milling, medieval and later corndriers are common, with many forming part of more complex superstructures (Shaw 2003, 448-9). Scottish examples are the most notable with some Shetland, Orkney and Caithness kilns being attached to and entered from threshing barns, which may also have provided storage for raw materials and fuel (Shaw 2003, 449). In Shetland, kilns could comprise smaller structures within barns, while in other areas kilns were free-standing cylindrical

structures, 'with or without appendages' (*ibid.*). Such 'appendages' often comprised thatched stone structures although simple, temporary cloth coverings are also attested (*ibid.*). Further south, an example of a stone built corn drying kiln has also been excavated at Kilnsey Green, North Yorkshire (Johnson *et al.* 2009).

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationships	Findings
2359	2387 (primary)	Sub-rectangular/ steep sides, flattish base (3.80 x 3.20 x 0.48m)	Friable, dark grey/ black sandy silt with frequent charcoal flecks and occasional gravel. Environmental samples 2.124 and 2.125 taken	Structure; cut L2389; sealed by L2001	Animal bone (194g)
	2386		Friable, dark grey brown sandy silt with occasional gravel. Environmental sample 2.121 taken		Pottery (71g); animal bone (36g)
	2360 (uppermost)		Friable, mid grey brown sandy silt with occasional gravel. Environmental samples 2.119, 2.120, 2.121, 2.122 and 2.123 taken		Pottery (29g); animal bone (316g); struck flint (25g); glass (3g)
2378	2379	Circular/ moderately sloping sides, concave base (0.26 x 0.25 x 0.07m)	Friable, dark grey brown silty sand with occasional gravel. Environmental sample 2.126 taken	Posthole; cut L2003; sealed by L2386	Animal bone (238g)
2380	2381	Circular/ steep sides, concave base (0.20 x 0.18 x 0.22m)	Friable, dark grey brown silty sand with occasional gravel	Posthole; cut L2003; sealed by L2386	-
2382	2383	Circular/ steep sides, concave base (0.18 x 0.17 x 0.45m)	Friable, dark grey brown, silty sand with occasional gravel	Posthole; cut L2003; sealed by L2387	-
2384	2385	Circular/ steep sides, concave base (0.12 x 0.10 x 0.29m)	Friable, dark grey brown silty sand with occasional gravel	Posthole; cut L2003; sealed by L2386	-
2390	2391	Circular/ steep sides, concave, base (0.27 x 0.25 x 0.40m)	Friable, dark grey brown, silty sand with occasional gravel	Posthole; cut L2003; sealed by L2387	-
2461	2462	Circular/ steep sides, concave base (0.35 x 0.4 x 0.21m)	Friable, mid yellow brown, silty sand with occasional gravel	Posthole; cut L2003; sealed by L2001	-

Table 8: Structure 1

2.41 Norfolk examples of medieval agricultural kilns/ ovens include an excavated example at Old Hall Farm, on the route of the Bacton to King's Lynn gas pipeline (Clay with Wilson 2012, 154-6, figs. 79-80), some 49 km to the north-west of Bradwell. The kiln at this site – dated between the 11<sup>th</sup> and 14<sup>th</sup> centuries – underwent three phases of construction/ use, and was primarily thought to be associated with the drying of cereal grains (*ibid.*); the earlier fills yielded a substantial charred cereal assemblage while ash-rich fills were ubiquitous. Fragments of burnt clay associated with the earlier use of this structure suggested the remnants of a collapsed lining or 'roof', while the final phase of construction included an *in situ* clay lining and substantial floor of clay and flint nodules (*ibid.* 155). This final phase also included a secondary floor of fired clay, similar to the floor of Kiln 1 at Bradwell (*ibid.*). The final use of the New Hall Farm kiln was thought to be contemporary to an encircling enclosure ditch (*ibid.*). Also identified at this site was a possible sunken floored building of unknown date (*ibid.* 170). The building was not thought to be Anglo-Saxon (as its form implied), owing to the total lack of supporting, datable evidence (*ibid.*) and there remains a strong possibility that it was also of medieval date. A medieval corn drying kiln of 12<sup>th</sup> to 14<sup>th</sup> century date was also excavated within the grounds of St Edmund's Hospital and Nursing Home, Bury St Edmunds (Suffolk Historic Environment Record BSE 127). Structures of this type were a common feature of the medieval British landscape, having formed an important

element of the agricultural economy from the Romano-British period (e.g. Upex 2008, 164).

### The Phase 2 buried soils

2.42 Three buried soil horizons (L2016=2064, L2017 and L2018; Table 9; Fig. 30) were present in the south-western corner of the site. Two of these contexts were spread across a relatively wide area and all three predated ditches encircling the Phase 3 windmill (see below; Figs. 9 and 12); L2017 was confined to the immediate area of the windmill. These deposits were not recorded in plan. The preservation of early soils in this area may, in part, be due to the later construction of the windmill mound. The mound would probably have served as a physical obstacle to cultivation well in to the post-medieval period and possibly beyond. The stratigraphically earliest soil (L2018) contained three early medieval pottery sherds (10g), including a sagging base from a cooking pot or jar (see *The Pottery*). The overlying soils yielded nine sherds (28g) of Thetford ware including a 16cm cooking pot rim, and 20 sandy coarse ware sherds (122g) broadly dated between the 11<sup>th</sup> and 14<sup>th</sup> centuries AD (*ibid.*). Other finds from the buried soils include trace animal bone and residual struck flint (Table 9).

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationships	Finds
-	2016=2064	Irregular (? x ? x 0.35m)	Friable, mid to dark grey brown sandy silt with occasional gravel	Buried soil; sealed L2018. Sealed by L2017	Pottery (405g); animal bone (2g); coal (7g); struck flint (129g); Fe fragments (28g)
-	2017	Irregular (? x ? x 0.35m)	Friable, mid grey brown sandy silt with occasional gravel	Buried soil; sealed L2016=2064; sealed by L2015; cut by F2010	Pottery (405g); animal bone (46g); struck flint (52g)
-	2018	Irregular (? x ? x 0.15m)	Friable, light yellow grey sandy silt with occasional gravel	Buried soil; sealed L2003; sealed by L2016=2064	Pottery (10g); struck flint (4g)

Table 9: Phase 2 buried soils

2.43 The south-western part of the Phase 2 site was distinctive for its open/ more unenclosed character, greatly contrasting to the complex enclosure system to the east (Fig. 8). There were also far fewer Phase 2 pits/ postholes in the south-west of the site, perhaps indicating a lower intensity or frequency of human activity. This contrast in the archaeological record may well be linked to past differences land use; possibly a split between infield and outfield areas (i.e. Beresford and Hurst 1989, 138; Oosthuizen 2006, 108; Rippon 2002). The presence of possible ridge and furrow cultivation to the north of the buried soils (see above) might suggest that the western part of the Phase 2 site was cultivated; the local soils are well suited to cereal agriculture (Soil Survey of England and Wales 1983, 9).

### *Phase 3: High Medieval to Post-Medieval (15<sup>th</sup> to 17<sup>th</sup> Century AD)*

#### Summary

2.44 Phase 3 was dominated by the remains of a windmill located in the far south-western area of the site (Grid Squares A1-A2 and B1-B2; Figs. 9 and 12). A small number of linear enclosure/ boundary ditches were also present; mostly confined to the north-eastern site area. To the south of these, were the remains of a second agricultural kiln (Kiln 2). Three Phase 3 pits (excluding 'internal' features associated

with the windmill mound) were identified in the south-western area of the site. With the exception of the windmill and Kiln 2, Phase 3 witnessed a significant reduction in the intensity of activity within the site – compared to preceding Phase 2 – and an opening up of the immediate landscape.

2.45 The Phase 3 pottery assemblage comprised late medieval and transitional wares and post-medieval wares, together spanning the 15<sup>th</sup> to 17<sup>th</sup> centuries AD (see *The Pottery*). The late medieval wares include examples probably deriving from the Waveney Valley (c. 15<sup>th</sup> to 16<sup>th</sup> century in date) and 17 sherds of imported German stoneware (*ibid.*). The post-medieval wares comprise red earthenware, two sherds of green glazed Border ware (c. mid 16<sup>th</sup> to 17<sup>th</sup> century) and one or two sherds of Frechen stoneware (*ibid.*).

### The Phase 3 ditches

2.46 Five Phase 3 ditches were identified (F2029=2090, F2125, F2127, F2330 and F2336; Table 10), mostly confined to the north-eastern area of the site where they defined at least one rectilinear enclosure (Enclosure 8; Figs. 9 and 15). The exception was Ditch F2029 (=2090; Table 10) which ran parallel to the line of modern Browston Lane, to the west of the Phase 3 windmill (Grid Squares A2-A3; Figs. 9 and 12). F2029 (=2090) was wider and deeper than the other Phase 3 ditches (Figs. 31-32) and may have originally bounded Browston Lane, immediately to the west. The modern lane is raised slightly above the level of the surrounding land.

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationships	Findings
2029=2090	2091 (primary)	Linear/ moderately sloping to steep sides, concave base (42.00+ x 1.50 x 0.66m)	Compact, dark grey brown sandy clay with occasional gravel	Ditch; cut L2007, L2089 and L2095; cut by F2008 and F2094	-
	2092		Compact, mid grey brown, silty clay with occasional gravel		-
	2030=2093 (uppermost)		Friable, light brown yellow silty sand with occasional gravel. Environmental sample 2.74 taken		Struck flint (100g); Fe fragments (9g)
2125	2126	Curvilinear/ moderately sloping to steep sides, concave base (45.00 x 1.10 x 0.50m)	Friable, mid to dark grey brown silty sand with occasional gravel	Ditch; cut L2291=2243=2441, L2297 and L2317; cut by F2127	Pottery (127g); animal bone (16g)
2127	2128	Linear/ moderately sloping sides, flattish base (40.00 x 1.00 x 0.47m)	Friable, mid red brown silty sand with occasional gravel	Ditch; cut L2003, L2130, L2126, L2291=2243=2441; sealed by L2001	Clay pipe (3g)
2330	2331	Linear/ moderately sloping sides, concave base (16.00+ x 0.87 x 0.30m)	Friable, mid grey brown silty sand with frequent gravel and charcoal flecks	Ditch; cut L2282=3329 and L2337; sealed by L2001	-
2336	2337	Curvilinear/ moderately sloping sides, concave (4.80 x 0.30 x 0.20m)	Friable, light grey brown silty sand with frequent gravel	Ditch; cut L2003; cut by F2330	Pottery (6g); clay pipe (2g)

Table 10: Phase 3 ditches

2.47 Enclosure 8 was defined by L-shaped Ditch F2125 (Grid Squares L5-L6 and L5-N5; Fig. 15); its eastern edge may have been formed by north to south aligned Ditch F2330 (Grid Squares N4-N5). The westernmost section of F2125 was truncated by Phase 3 Ditch F2127 (Grid Squares K5-L5), which may have defined



part of another enclosure to the west (Figs. 9 and 32). Internally, Enclosure 8 measured c. 370m<sup>2</sup> within the excavation.

2.48 Finds from the Phase 3 ditches are unremarkable, comprising just modest quantities of pottery, animal bone and a trace amount of ferrous metal. Clay pipe fragments and residual struck flint were also recovered. The comparative dearth of material from these features suggests that they were not regularly receiving deliberate dumps of domestic or other material. An environmental sample of Fill L2030 (=2093) of Ditch F2029 (=2090) yielded only a single rye grain (see *The Environmental Samples*).

## Kiln 2

2.49 A second agricultural kiln (Kiln 2; Table 11) was located close to the eastern edge of the excavation (Grid Square O3; Plate 5; Figs. 9 and 33). Kiln 2 was less completely preserved than its Phase 2 predecessor, with very little of its original superstructure surviving intact. Construction Cut F2372 contained a primary, silty sand 'foundation' deposit (L2373) into which the kiln's clay lining (M2470) had been set. M2470 survived as a layer of compact clay with a slightly oxidised appearance that would have formed the base of the central firing chamber. This material appeared to rise towards its outer edge suggesting that it had originally also formed the kiln's walls; no evidence of a flue was present. Silty sand L2471 was the only surviving fill of the firing chamber. This fill did not appear oxidised and contained only sparse charcoal flecks. However, the kiln's stoke hole (F2376), located immediately to the north-east, had a charcoal-rich fill containing charred cereal grains dominated by oat and rye (see *The Environmental Samples*).

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationships	Finds
2372	2373 (primary)	(2.70 x 2.25 x 0.3m)	Friable, light grey/ white silty sand with occasional gravel and charcoal flecks. Environmental sample 2.127 taken	Construction cut; cut L2003; sealed by L2001	Pottery (11g); animal bone (10g)
	2470		Compact, mid orange brown clay with frequent gravel and chalk		-
	2471 (uppermost)		Friable, light brown grey, silty sand with occasional gravel and charcoal flecks. Environmental samples 2.128 and 2.131 taken		-
2376	2377	Sub-circular/ moderately sloping sides, concave base (1.73 x 0.81 x 0.20m)	Friable, dark grey/ black silty sand with frequent charcoal and occasional gravel. Environmental samples 2.129 and 2.130 taken	Stoke hole; cut L2470; sealed by L2471	Pottery (7g); Fe fragments (5g)

Table 11: Kiln 2

## The Phase 3 pits

2.50 Excluding pits associated with the windmill (see below), only three pits were assigned to this Phase (Table 12; Figs 9 and 34). These were all located in the south-western corner of the site and pre-dated the digging of the windmill's ditches. Finds from these pits include four iron nails from Pit F2008 (L2009) and five sherds (267g) of pottery from F2094 (L2096). The overall lack of finds from these features indicates that they were not regularly receiving domestic material.

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ Relationship (s)	Finds
2008	2009	Oval/ moderately sloping to steep sides, concave base (2.75 x 1.00+ x 0.65m)	Friable, mid grey brown silty sand with occasional gravel. Environmental sample 2.8 taken	Pit; cut L2012; cut by L2029	Fe nails (26g); struck flint (20g)
2037	2038	Sub-circular/ steep sides, flattish base (1.20 x 1.20 x 0.66m)	Friable, mid grey brown sandy silt with occasional gravel. Environmental sample 2.28 taken	Pit; cut L2018; cut; sealed by L2017	-
2094	2095 (primary)	Sub-circular/ steep sides, concave base (3.20+ x 2.25 x 0.90m)	Friable, mid to dark brown grey sandy silt with occasional gravel	Pit; cut L2093; cut by F2098	-
	2096		Compact, mid blue grey silty clay with occasional gravel. Environmental sample 2.78 taken		Pottery (267g)
	2097 (uppermost)		Friable, mid to dark brown grey sandy silt with occasional gravel. Environmental sample 2.77 taken		-

Table 12: Phase 3 Pits

### The Windmill

2.51 Features demarcating the location of a medieval/ post-medieval windmill were clearly visible on the geophysical survey plot (Smalley 2013; Figs. 3-4) and were initially thought to represent a probable Bronze Age ring-ditch. However, the associated pottery group is predominantly late medieval to post-medieval in date (15<sup>th</sup> century and later) and lacks a prehistoric component. The surviving archaeological remains comprised an encircling ring-ditch (F2010) which had been later re-cut by three segmented, curvilinear ditches (F2050, F2059 and F2472; Table 13; Plates 6-7; Figs. 9, 12 and 34-40). The primary ditch (F2010) was cut through Phase 2 Buried Soil L2017, which in turn sealed similar soil horizons of Saxo-Norman to High medieval date (L2016=2064 and L2018; see above). Notable finds from the ring-ditches include an imported whetstone of Norwegian origin from the uppermost fill of Ditch F2059 (L2060; see *The Small Finds*). A thin layer of redeposited chalky clay (L2015), mainly confined to the area within the ring ditches, overlay Buried Soil L2017 and may have represented the ploughed-out remnants of an artificial mound upon which the windmill was built. In places, L2015 was truncated by primary Ring-Ditch F2010, which suggests that the mound predated this feature. Regional windmill mounds/ hills of medieval or later date include two possible examples at Walpole and Beeston Regis (NHERs 2219 and 6394) and the site of a post mill in the Breckland parish of Thompson (NHER 8952). The Thompson mill mound is thought to still be visible in the landscape, while the associated mill was destroyed by a storm in 1895.

2.52 Two Phase 3 pits (F2027 and F2041) were enclosed by the ring-ditches (Table 31; Figs. 12 and 40). The more notable feature, Pit F2027, was sub-rectangular in plan with a square cut profile and yielded a modest collection of finds including two sherds of medieval pottery. Its central position and profile suggest that it may have formed part of a footing for a post mill. Characteristic cross-shaped footings, often visible as cropmarks, are a feature of such structures (e.g. NHERs 9028 and 31444). However, the footing at Bradwell (if genuine) was less well preserved than some other examples. Pit F2041 lacked finds and was assigned to Phase 3 on stratigraphic grounds alone. A third pit (F2081; Figs. 12 and 38) was intercut with the windmill's ditches but lacked finds.

Feature	Fills(s)/ contexts(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationship(s)	Find
2010	2011 (primary)	Curvilinear/ moderately sloping to steep sides, flattish base (72.00m x 3.00 x 1.10m)	Friable, mid to dark orange brown silty sand with occasional small to medium sub-rounded to sub-angular flint/ stone and charcoal flecks. Environmental sample 2.11 taken	Ditch; cut L2022, L2038, L2086 and L2111; cut by F2050; 2059; F2098 and F2472	Pottery (2g)
	2061 (primary)		Friable, dark orange brown, silty sand with occasional small to medium rounded flint		-
	2087 (primary)		Friable, dark grey brown, silty sand with occasional small to medium sub-rounded to sub-angular flint/ stone		-
	2012		Friable, light brown yellow, silty sand with moderate small to medium sub-rounded to sub-angular stone and chalk flecks. Environmental samples 2.12, 2.21, 2.22, 2.30, 2.32, 2.34, 2.36, 2.40, 2.49, 2.52, 2.53, 2.56, 2.59, 2.68 and 2.69 taken		Pottery (378g); animal bone (160g); struck flint (2g); clay pipe (2g); Fe fragments (70g); lava stone (441g); rubber (1g)
	2032		Friable, dark yellow brown silty sand with moderate small to medium sub-angular stone. Environmental samples 2.29 and 2.73 taken		Pottery (23g)
	2074		Friable, mid red brown, silty sand with very compacted frequent gravel		-
	2031 (uppermost)		Friable, light brown yellow, silty sand with frequent chalk flecks and moderate small sub-angular stone. Environmental samples 2.23, 2.55 and 2.61 taken		-
-	2015	Irregular (? x ? x 0.10m)	Compact, mid to dark blue grey chalky clay with occasional small to medium sub-rounded to sub-angular stone	?Mill mound; sealed L2017; cut by F2010	-
2027	2028	Sub-rectangular/ steep sides, flattish base (2.26+ x 1.02 x 0.15m)	Friable, mottled light grey brown/ orange silty sand with occasional small sub-rounded to sub-angular gravel and flint, chalk flecks and charcoal flecks. Environmental sample 2.19 taken	Pit; cut L2016=2064; sealed by L2001	SF1 Fe fragment (40g); pottery (49); animal bone (4g); Fe fragment (4g)
2041	2042	sub-oval/ gently sloping to steep sides, flattish base (0.90 x 1.00 x 0.10m)	Compact, mid blue grey clay with occasional small sub-rounded to sub-angular stone and chalk flecks. Environmental sample 2.31 taken	Pit; cut L2016=2064; sealed by L2001	-
2050	2051	Curvilinear/ moderately sloping to steep sides, concave base (70.72 x 1.95 x 0.60m)	Friable, mid grey brown silty sand with occasional sub-angular gravel. Environmental samples 2.35, 2.37 and 2.41	Ditch; cut L2038 and L2012; sealed by L2001	Pottery (94g); struck flint (17g); Fe frags (47g); fired clay (220g)
2059	2080 (primary)	Curvilinear/ steep sides, concave base (20.82 x 2.90 x 0.83m)	Friable, dark brown/ black silty sand with frequent charcoal flecks and lumps, and small rounded stone; environmental sample 2.66 taken	Ditch; cut L2031; cut by F2077	Pottery (530g); animal bone (108g); Fe fragments (37g); lava stone (244g); shell (336g)
	2060 (uppermost)		Friable, mid to dark grey brown silty sand with moderate small to medium sub-rounded to sub-angular stone and occasional chalk flecks. Environmental samples 2.57, 2.58, 2.62, 2.65 and 2.70 taken		SF2 whetstone (66g); pottery (705g); animal bone (720g); struck flint (23g); Fe fragments (98g); lava stone (1039g); shell (4g)

2081	2082	Sub-circular/ steep sides, irregular base (1.00+ x 0.80+ x 0.57m)	Compact, light brown yellow sandy silt with moderate gravel	Pit; cut F2010; cut by F2059	-
2472	2473	Curvilinear; steep sides, concave base (8.40 x 1.60 x 0.56m)	Friable, dark grey brown silty sand with occasional small to medium sub-rounded to sub-angular stone. Environmental samples 2.33, 2.50, 2.51 and 2.54 taken	Ditch; cut L2012; sealed by L2001	Pottery (52g); Fe fragment (18g)

Table 13: The Windmill

#### Phase 4: Early Modern/ Modern (18<sup>th</sup> Century+ AD)

2.53 Only six features were dated to the early modern/ modern era (Table 14; Figs. 10 and 41-43). Four of these (Gullies F2004 and F2067, ?Pit F2077, and Pit F2098) were located in the western area of the site, close to the line of Browston Lane, while the remaining features (Pits F2131 and F2345) were more dispersed. This dearth of archaeologically visible activity is in keeping with the primarily agricultural use of the modern landscape, with large open fields having apparently been established by the later medieval period (see above).

2.54 One find of particular note from the Phase 4 features is a small annular blue-green glass bead from primary Fill L2099 of Ditch F2098. Although possibly residual from either Phase 2 or 3, such beads are not a common medieval dress accessory (see *The Small Finds*) and it is possibly Romano-British in date (*ibid.*). However, features and finds of this date are locally scarce and a similar, medieval bead is known from London (*ibid.*).

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationship(s)	Find(s)
2004	2005	Curvilinear/ moderately sloping sides, concave base (35.00+ x 1.00 x 0.45m)	Friable, mid to dark orange brown/ grey brown silty sand with occasional gravel. Environmental samples 2.1 and 2.6 taken	Gully; cut L2009, L2022, L2060, L2068 and L2111; sealed by L1001	Clay pipe (5g)
2067	2068	Linear/ moderately sloping sides, concave base (9.00+ x 1.45 x 0.45m)	Friable, mid grey brown silty sand with occasional small to medium sub-rounded gravel	Gully; cut L2018; cut by F2004	Pottery (4g)
2077	2078	Sub-oval; gently sloping sides, flat base (1.40 x 1.99 x 0.21m)	Friable, mid grey brown sand with occasional small sub-rounded rounded stone	?Pit; cut L2060; sealed by L2001 (not recorded in plan)	Animal bone (40g)
2098	2099 (primary)	Irregular/ steep sides, flattish base (7.20 x 3.50 x 0.74m)	Friable, mid brown yellow silty sand with occasional gravel. Environmental samples 2.76 and 2.80 taken	Pit; cut L2012 and L2097; sealed by L2001	Glass bead (<1g)
	2100		Friable, mid grey brown silty sand with occasional gravel		-
	2101 (uppermost)		Friable, light orange yellow silty sand with occasional gravel. Environmental sample 2.81 taken		Fe fragment (10g)
2131	2132	Sub-circular/ gently sloping sides, flattish base (2.10 x 2.17 x 0.24m)	Friable, mid grey brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	Pottery (61g); animal bone (2g); clay pipe (12g); Fe fragment (2g)
2345	2346	Rectangular/ steep sides, flattish base (5.60 x 3.80 x 0.25m)	Compact, mid grey brown silty sand with occasional large sub-rounded flint and gravel	Pit; cut L2433; sealed by L2001	Pottery (36g); struck flint (24g)

Table 14: Phase 4 features

## Unphased Features

2.55 Sixty-one features remain unphased (Table 15; Figs. 43-45). The vast majority comprised discrete pits and postholes and were devoid of finds. A number of features located in the north-eastern corner of the site (Figs. 15 and 17) contained identical fills and may have been related to one another. No obvious structural outline was observed, however, and the features did not appear to relate to the surrounding Phase 2/ 3 boundaries; they did not respect the boundaries of Phase 2 Enclosure 7. Six features yielded small quantities of struck flint, including a backed knife (79g) from Pit F2428 (L2429), although no close dating of this material was possible. Trace amounts of animal bone were present in two features.

Feature	Fill(s)/ context(s)	Plan/ profile (dimensions)	Fill description	Comments/ relationship(s)	Finds
2019	2020	Sub-rectangular/ moderately sloping to steep sides, flattish base (0.92 x 0.78 x 0.20m)	Friable, mid orange brown silty sand with occasional gravel. Environmental sample 2.12 taken	Pit; cut L2018; sealed by L2001	-
2033	2034	Circular/ moderately sloping sides, concave base (0.40 x 0.35 x 0.13m)	Friable, mid orange brown silty sand with occasional gravel. Environmental sample 2.25 taken	Posthole; cut L2018; sealed by L2001	-
2121	2122	Sub-circular/ gently sloping sides, concave base (1.85 x 1.30 x 0.18m)	Friable, dark grey brown silty sand with occasional charcoal flecks, clay lumps and small sub-angular to sub-rounded stone. Environmental sample 2.91 taken	Pit; cut L2003; sealed by L2001	-
2123	2124	Sub-circular/ gently sloping sides, concave base (1.60 x 1.27 x 0.3m)	Friable, mid grey brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2143	2144	Sub-circular/ moderately sloping sides, flattish base (1.40 x 1.20 x 0.40m)	Loose, mid brown yellow sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2145	2146	Sub-circular/ moderately sloping sides, flattish base (0.80 x 1.30 x 0.41m)	Loose, mid brown yellow sand with occasional gravel	Pit; cut L2003; sealed by L2001	-
2147	2148	Sub-circular/ steep sides, flattish base (0.85 x 0.70 x 0.45m)	Loose, dark grey brown silty sand with occasional gravel	Pit; cut L2003; sealed by L2001	Animal bone (165g)
2161	2162	Linear/ moderately sloping sides, flattish base (9.0+ x 0.65 x 0.35m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2003; sealed by L2001	-
2163	2164	Linear/ moderately sloping sides, concave base (18.00+ x 1.30 x 0.35m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2136=L2401; sealed by L2001	-
2177	2178	Linear/ moderately sloping sides, flattish base (6.00m x 2.20 x 0.70m)	Compact, mid yellow brown silty sand with occasional gravel. Environmental sample 2.94 taken	Gully cut L2003; sealed by L2001	-
2184	2185	Sub-circular/ moderately sloping to steep sides, concave base (0.75 x 1.20 x 0.46m)	Compact, dark red brown silty sand with frequent gravel and occasional small clay mottles	Pit; cut L2003; sealed by L2001	-
2194	2195	Sub-circular/ moderately sloping sides, concave base (1.25 x 1.25 x 0.60m)	Friable, mid grey brown silty sand with occasional gravel	Tree Hollow; cut L2176=2193; sealed by L2001	-
2196	2197	Linear/ gently sloping sides, concave base (6.25+ x 0.9 x 0.30m)	Friable, dark yellow brown silty sand with occasional small sub-angular gravel	Ditch; cut L2003; sealed by L2001	-
2203	2204	Linear/ gently sloping sides, flattish base	Friable, mid grey brown silty sand with occasional gravel	Ditch; cut L2003; sealed by L2001	-

		(10.00 x 0.55 x 0.08m)			
2205	2206	Sub-circular, moderately sloping sides, concave base (0.52 x 0.56 x 0.07m)	Friable, mid grey brown silty sand with frequent small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2207	2208	Sub-circular, moderately sloping sides, concave base (0.61 x 0.73 x 0.41m)	Friable, mid grey brown silty sand with frequent small sub-angular gravel and flint. Environmental sample 2.102 taken	Posthole; cut 2003; sealed by L2001	Animal bone (1g); struck flint (3g)
2209	2210	Sub-circular, moderately sloping sides, concave base (0.40 x 0.32 x 0.19m)	Friable, mid grey brown silty sand with frequent small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2211	2212	Sub-circular, moderately sloping sides, concave base (0.49 x 0.45 x 0.32m)	Friable, mid grey brown, silty sand with frequent small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2213	2214	Sub-circular, moderately sloping sides, concave base (0.45 x 0.35 x 0.34m)	Friable, mid grey brown silty sand with frequent small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2215	2216	Sub-circular, moderately sloping sides, concave base (0.25 x 0.22 x 0.18m)	Friable, mid grey brown silty sand with frequent small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2217	2218	Sub-circular, moderately sloping sides, concave base (0.44 x 0.55 x 0.07m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2219	2220	Sub-circular, moderately sloping sides, concave base (0.50 x 0.55 x 0.22m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2221	2222	Sub-circular, moderately sloping sides, concave base (0.30 x 0.31 x 0.08m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut L2278; cut by F2281=2328	-
2223	2224	Sub-circular, moderately sloping sides, concave base (0.50 x 0.40 x 0.26m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint. Environmental sample 2.100 taken	Posthole; cut 2003; sealed by L2001	-
2225	2226	Sub-circular, moderately sloping sides, concave base (0.55 x 0.59 x 0.38m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2227	2228	Sub-circular, moderate sloping sides and a concave base (0.4 x 0.34 x 0.39m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2229	2230	Sub-circular, moderately sloping sides, concave base (0.47 x 0.35 x 0.07m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2231	2232	Sub-circular, moderately sloping sides, concave base (0.65 x 0.80 x 0.78m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint. Environmental sample 2.99 taken	Posthole; cut 2003; sealed by L2001	-
2233	2234	Sub-circular, moderately sloping sides, concave base (0.52 x 0.59 x 0.24m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2235	2236	Sub-circular, moderately sloping sides, concave base (0.46 x 0.49 x 0.15m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	Struck flint (2g)
2239	2240	Sub-circular, moderately sloping sides, concave base (0.32 x 0.49 x 0.39m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut L2282=2329; sealed by L2001	Struck flint (1g)
2241	2242	Sub-circular, moderately sloping sides, concave base (0.48 x 0.46 x 0.20m)	Friable, mid grey brown, silty sand with moderate to frequent small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-

2243	2244	Sub-circular, moderately sloping sides and a concave base (0.62 x 0.61 x 0.20m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2245	2246	Sub-circular, moderately sloping sides, concave base (0.70 x 0.69 x 0.18m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2247	2248	Sub-circular, moderately sloping sides, concave base (0.40 x 0.35 x 0.15m)	Friable, mid grey brown, silty sand with moderate to frequent small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2249	2250	Sub-circular, moderately sloping sides, concave base (0.39 x 0.40 x 0.09m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2251	2252	Sub-circular, moderately sloping sides, concave base (0.56 x 0.49 x 0.10m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2253	2254	Sub-circular, moderately sloping sides, concave base (0.55 x 0.65 x 0.48m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint. Environmental sample 2.97 taken	Posthole; cut 2003; sealed by L2001	Struck flint (3g)
2255	2256	Sub-circular, moderately sloping sides, concave base (0.44 x 0.45 x 0.15m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2257	2258	Sub-circular, moderately sloping sides, concave base (0.46 x 0.51 x 0.38m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2259	2260	Sub-circular, moderately sloping sides, concave base (0.52 x 0.57 x 0.15m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2261	2262	Sub-circular, moderately sloping sides, concave base (0.80 x 0.52 x 0.47m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; cut by F2355 sealed by L2001	-
2263	2264	Sub-circular, moderately sloping sides, concave base (0.45 x 0.55 x 0.54m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2265	2266	Sub-oval, moderately sloping sides, concave base (0.74 x 0.53 x 0.38m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint. Environmental sample 2.101 taken	Posthole; cut 2003; sealed by L2001	-
2267	2268	Sub-oval, moderately sloping sides, concave base (0.50 x 0.80 x 0.10m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2269	2270	Sub-circular, moderately sloping sides, concave base (0.42 x 0.69 x 0.22m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2271	2272	Sub-circular, moderately sloping sides, concave base (0.29 x 0.30 x 0.10m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2273	2274	Sub-circular, moderately sloping sides, concave base (0.40 x 0.36 x 0.10m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2275	2276	Sub-circular, moderately sloping sides, concave base (0.42 x 0.38 x 0.09m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2285	2286	Sub-circular, moderately sloping sides and a concave base (0.33 x 0.34 x 0.10m)	Friable, mid grey brown, silty sand with small sub-angular gravel and flint	Posthole; cut 2003; sealed by L2001	-
2288	2289	Linear/ moderately sloping sides, concave	Friable, light grey brown silty sand with occasional gravel.	Ditch; cut L2003; sealed by L2001.	Struck flint (4g)

		base (5.10 x 0.31 x 0.10m)	Environmental sample 2.103 taken		
2302	2303	Linear/ moderately sloping sides, concave base (0.56+ x 0.35 x 0.10m)	Friable, light red brown silty sand with occasional gravel	Ditch; cut L2003; sealed by L2001	-
2304	2305	Sub-circular/ steep sides, concave base (0.91 x 0.90 x 0.31m)	Friable, light grey brown silty sand	Pit; cut L2003; sealed by L2001	-
2322	2323	Linear/ steep to moderately sloping sides, uneven base (3.50 x 0.39 x 0.27m)	Friable, dark brown/ black sand with frequent gravel and charcoal flecks. Environmental samples 2.111 and 2.112 taken	Pit; cut L2003; sealed by L2001	-
2342	2344 (primary)	Linear/ steep to moderately sloping sides, concave base (6.00+ x 1.40 x 0.95m)	Compact, mid brown/ black silty sand with occasional small sub-angular stone	Gully; cut L2003; cut by F2345	-
	2343 (uppermost)		Compact, mid yellow brown sandy silt with occasional small sub-angular stone		-
2428	2429	Sub-circular/ gently sloping sides, concave base (1.0 x 1.10 x 0.13m)	Friable, mid yellow brown silty sand with moderate gravel	Pit; cut L2427; sealed by L2001	Struck flint (79g)
2430	2431	Circular/ moderately sloping side, concave base (0.50 x 0.45 x 0.14m)	Friable, dark grey brown sandy silt with moderate small angular burnt flint and charcoal flecks	Pit; cut L2003; sealed by L2001	-
2432	2433	Linear/ moderately sloping sides, concave base (10.00+ x 0.60 x 0.25m)	Compact, mid grey brown silty sand with occasional gravel	Gully; cut L2003; cut by F2345	-
2434	2435	Curvilinear/ moderately sloping sides, concave base (3.00+ x 0.35 x 0.18m)	Compact, mid grey brown silty sand with occasional gravel	Gully; cut L2003; sealed by L2001	-
2451	2452	Sub-circular/ moderately sloping sides concave base (1.70 x 1.60 x 0.80m)	Friable, dark brown/ black silty sand with occasional gravel	Pit; cut L2450; sealed by L2001	-
2457	2458	Linear/ moderately sloping sides, irregular base (14.9 x 0.70 x 0.38m)	Friable, mid yellow brown silty sand with occasional gravel	Ditch; cut L2003; cut by F2139=2186 and F2175=2192	-

Table 15: Unphased features

### 3 SPECIALIST FINDS AND ENVIRONMENTAL REPORTS

#### The Pottery

Peter Thompson

#### Introduction

The combined project at Ashcroft Farm, Bradwell recovered 416 sherds of pottery weighing 4430g (Table 16).

Type of Archaeological Investigation	Sherd Number	Fabric Weight (g)
Field Walking	19	289
Trial Trench Evaluation	44	292
Excavation	353	3849
Total	416	4430

Table 16: Quantification of pottery by project phase

The majority of the pottery (392 sherds/ 4276g) dates at its broadest range between the Saxo-Norman and early post-medieval periods (10<sup>th</sup>/ 11<sup>th</sup> to 17<sup>th</sup>/ 18<sup>th</sup> centuries AD). There are additionally 15 residual prehistoric sherds (75g), and 9 sherds (79g)



of early modern to modern date (Table 17). The assemblage is in a mixed condition ranging from lightly abraded, good diagnostic rim fragments to heavily abraded, small body sherds. There is a fairly high degree of residuality, where Saxo-Norman and medieval sherds in quite good condition are associated with post-medieval pottery, particularly in the case of features associated with the Phase 3 windmill.

Period	Date Range	Sherd No.	Fabric Weight (g)	Mean Sherd Weight (g)
<b>Bronze Age to Iron Age</b>	2 <sup>nd</sup> to 1 <sup>st</sup> millennia BC	14	71	5
<b>Late Iron Age to early Roman</b>	Late 1 <sup>st</sup> century BC to late 1 <sup>st</sup> century AD	1	4	4
<b>Saxo-Norman</b>	Mid 9 <sup>th</sup> to mid 12 <sup>th</sup> century	36	196	5.4
<b>Medieval</b>	11 <sup>th</sup> to 14 <sup>th</sup> century	273	2775	10.1
<b>Late medieval and transitional</b>	15 <sup>th</sup> to 16 <sup>th</sup> century	38	589	15.5
<b>Post-medieval</b>	16 <sup>th</sup> to 18 <sup>th</sup> century	45	716	15.9
<b>Early modern to modern</b>	Mid 18 <sup>th</sup> century+	9	79	8.8
	<i>Total</i>	416	4430	

Table 17: Quantification of sherds by time period

### Methodology

The pottery was examined using a x35 binocular microscope and recorded directly into an *Excel* spreadsheet which forms part of the site archive. The recording was carried out in keeping with the Medieval Pottery Research Group (MPRG) Guidelines (MPRG 1998; Slowikowski *et al.* 2001). The fabric codes used are acceptable to Norfolk and include mnemonics and codes used by the Museum of London. Details including sherd number and weight, fabric type, vessel or rim type, decoration, and diameter (rim and base) were recorded where possible.

### The Pottery

The fabrics and wares from Bradwell are presented in Table 18.

Fabric Code	Ware	Description and Date	Sherd No.	Fabric Weight (g)
<b>PFTW</b>	Prehistoric flint tempered ware	Medium to very coarse angular flint present, outer surfaces usually oxidised; Bronze Age to Iron Age	14	71
<b>PGTW</b>	Prehistoric grog tempered ware	Fine fabric, grey throughout with black and grey grog inclusions; Late Iron Age to Early Roman	1	4
<b>THET</b>	Thetford type ware	As described by Dallas (1984) and Little (1994); 10 <sup>th</sup> to 11 <sup>th</sup> /mid 12 <sup>th</sup> century	37	223
<b>MCW1</b>	Medieval coarse ware 1	sandy matrix with moderate mainly sub-rounded medium quartz. Similar to Thetford type ware but a little coarser, and can be more micaceous; 11 <sup>th</sup> to 13 <sup>th</sup> / 14 <sup>th</sup> century	48	268
<b>MCW2</b>	Medieval coarse ware 2	Moderate to abundant fine to medium mainly sub-rounded grey and clear quartz. Can contain rare red ferruginous material or grey pellets, and occasionally other coarser inclusions or burnt organics. Surfaces range from buff/pale grey sometimes mottled with darker grey, to dark grey. Occasionally oxidised examples; 11 <sup>th</sup> to 14 <sup>th</sup> century	146	1799
<b>MCW3</b>	Medieval coarse ware 3	Fine to medium sub-rounded quartz with occasionally larger inclusions and sparse white shell or voids where it has leached. Dark grey with oxidised inner surface; 11 <sup>th</sup> to 13 <sup>th</sup> century	3	31
<b>MCW4</b>	Medieval coarse ware 4	Sandy matrix with moderate fine to medium sub-angular to sub-rounded clear and grey quartz. Occasional rounded black or red brown slag like material, and rare coarse mineral; 11 <sup>th</sup> to 13 <sup>th</sup> century	1	2
<b>MCW5</b>	Medieval coarse ware 5	Similar to Thetford ware but finer compact quartz sand arrangement, mainly grey throughout 11 <sup>th</sup> to 13 <sup>th</sup> / 14 <sup>th</sup> century	4	22
<b>MCW6</b>	Medieval coarse ware 6	Abundant fine to medium mainly sub-rounded quartz with occasional coarse rounded quartz. Sparse to moderate rounded	2	6

		white chalk; 12 <sup>th</sup> to 14 <sup>th</sup> century		
<b>GRCW</b>	Grimston type coarse ware	As described by Little (1994); mid 12 <sup>th</sup> to 14 <sup>th</sup> century	24	226
<b>HOLL1/2</b>	Hollesley type coarse ware	As described by Anderson and Thompson (forthcoming) 13 <sup>th</sup> -14 <sup>th</sup> c.	26	206
<b>BCSW</b>	Bury Coarse Sandy ware	As described by Anderson and Thompson (forthcoming); late 12 <sup>th</sup> to 14 <sup>th</sup> century	2	43
<b>GRIMG</b>	Grimston glazed ware	As described by Little (1994); late 12 <sup>th</sup> to early 16 <sup>th</sup> century	7	78
<b>HOLLG</b>	Hollesley-type glazed ware	As described by Anderson and Thompson (forthcoming)	1	8
<b>ROUL</b>	Rouen ware	As described by Jennings (1981)	1	10
<b>MGL1</b>	Medieval glazed ware 1	grey sandy fabric with olive green glaze; late 12 <sup>th</sup> to 14 <sup>th</sup> century	1	9
<b>MGL2</b>	Medieval glazed ware 2	oxidised sandy fabric, medium sub-rounded to rounded quartz; 13 <sup>th</sup> to 15 <sup>th</sup> century	2	15
<b>MGL3</b>	Medieval glazed ware 3	Medium to coarse sub-rounded to rounded quartz with red-brown iron mineral inclusions. Grey exterior, orange brown interior. Glaze clear with abundant green copper speckling; 13 <sup>th</sup> to 14 <sup>th</sup> century	1	6
<b>MGL4</b>	Medieval glazed ware 4	Fine to medium sub-rounded clear, grey and white quartz. Oxidised outer surface and core, pale grey inner surface and core Patchy clear glaze and vertical lines of red slip; 13 <sup>th</sup> to 14 <sup>th</sup> century (Hollesley glazed ware?)	3	19
<b>LMT</b>	Late medieval and Transitional ware	As described in Jennings 15 <sup>th</sup> -16 <sup>th</sup>	22	390
<b>USTON</b>	Unprovenanced stoneware	Grey almost vitrified body with an iron-washed, orange-brown surface and ash-glaze treatment producing a slightly glossy glaze; 14 <sup>th</sup> to 16 <sup>th</sup> century	1	4
<b>RAER</b>	Raeren stoneware	As described in Jennings; mid/ late 15 <sup>th</sup> to 16 <sup>th</sup> century	15	195
<b>FRECH</b>	Frechen stoneware	As described in Jennings; mid 16 <sup>th</sup> to 17 <sup>th</sup> century	1	1
<b>PMRE</b>	Post-medieval red earthenware	As described in Jennings; 16 <sup>th</sup> to 18 <sup>th</sup> century (see GRE glazed red earthenware)	40	666
<b>PMBL</b>	Post-medieval black/iron glazed red earthenware	As described in Jennings; 16 <sup>th</sup> to 19 <sup>th</sup> century	2	33
<b>BORDG</b>	Green glazed Border ware	As described in Cotter (2000); mid 16 <sup>th</sup> to 17 <sup>th</sup> century	2	16
<b>ENGS</b>	English stoneware	As described in Cotter (2000); late 17 <sup>th</sup> century +	2	22
<b>ENPO</b>	English porcelain	As described in Jennings (1981); mid 18 <sup>th</sup> century +	2	3
<b>RWE</b>	Factory made refined white earthenware	As described by Anderson and Thompson (forthcoming); late 18 <sup>th</sup> century +	4	17
<b>CP</b>	Ceramic pipe	Modern	1	37
		<i>Total</i>	<b>416</b>	<b>4430</b>

Table 18: Quantification of pottery by ware/fabric

## Fabrics and forms

### The prehistoric pottery

Pit F2345 (L2346) was the only feature to contain only prehistoric pottery, thus potentially dating it<sup>1</sup>. The feature contained six flint tempered sherds of probable Late Bronze Age date representing a minimum of three vessels. The remaining flint tempered prehistoric sherds from the site are residual from later features or the topsoil. A single Late Iron Age to Early Roman grog tempered sherd was recovered from the topsoil during field walking.

### Thetford ware and Thetford type ware

The Thetford ware, comprising 36 sherds (198g), ranges in colour between dark grey and pale grey, and includes four rims all from cooking pots with respective diameters

<sup>1</sup> F2345 was assigned to the early modern/ modern period based on its uniformity in plan and section

of 12cm, 14cm, 16cm and 20cm (Figs. 46.1-2). These rims all derive from separate ditches, as did an additional shoulder of a fifth cooking pot, from Ditch F2426 (L2427), which contained roulette decoration. Thetford ware ranges at its broadest dates between c. the mid 9<sup>th</sup> and 12<sup>th</sup> centuries and was manufactured at several known centres including Grimston, Norwich and Ipswich, but it is likely to have also been manufactured at other locations. The closest known kiln site to Bradwell is Norwich, where manufacture is dated between the late 10<sup>th</sup> and early 12<sup>th</sup> centuries (Jennings 1981, 22; Jennings 1983, 93).

#### Grimston and Hollesley type coarse wares

Twenty-five sherds (253g) are in quartz sand fabrics with brown or grey surfaces, similar to Grimston coarse ware manufactured near Kings Lynn (although they could derive from a local source). A thumb decorated rim and neck from a deep bowl is not closely paralleled to published material from Grimston (Clarke 1970) and Kings Lynn (Clarke and Carter 1977), but could be either a Grimston-Thetford ware (c. mid 11<sup>th</sup> to mid 12<sup>th</sup> century), or an early Grimston product (c. mid 12<sup>th</sup> to mid 13<sup>th</sup> century) (Fig 46.3). In addition, a Grimston ware cooking pot with a 30cm rim diameter came from Pit F2133 (L2134). Ditch F2088 (L2089 (Seg.V)) contained a Hollesley E4 type bowl rim approximately 50cm in diameter, with an associated finger decorated shoulder sherd probably deriving from the same vessel (Fig. 46.8). Another 23cm diameter E4 type jar rim came from Ditch F2010 (L2031). The Hollesley kilns which are located east of Ipswich have been dated to the late 13<sup>th</sup> to 14<sup>th</sup> century, although it is possible that the industry had a greater longevity (Anderson n.d; Anderson and Thompson forthcoming). Ditch F2010 (L2012 (Seg.T)) contained a residual flat base sherd in a coarse buff fabric similar to Bury coarse sandy ware, which is thought to have been manufactured in the Newmarket/ Cambridge area, although the South Bradwell example may be a local product.

#### Unprovenanced medieval coarsewares

These can largely be divided into two main groups, MCW1 and MCW2. The MCW1 group of fabrics (47 sherds (267g)) are grey wares fairly similar in appearance to Thetford ware, but with coarser inclusions and sometimes slightly micaceous surfaces, and they may also contain burnt organics. This group of early medieval sandy wares would fit a c. 11<sup>th</sup> to 13<sup>th</sup> century date range, but may be broadly contemporary to Thetford ware (c. late 10<sup>th</sup> to mid 12<sup>th</sup> century). A fragment of spouted pitcher with oxidised margins in a similar form to Thetford ware, came from Ditch F1102 (L1103) (Fig. 46.4). A rounded cooking pot rim of approximately 14cm diameter came from Ditch F2347 (L2348) (Fig 46.5).

MCW2 forms the largest group of miscellaneous, unsourced sand tempered medieval coarsewares. The fabrics can sometimes contain other inclusions such as red iron oxide, clay pellets or sparse coarser quartz or mineral. Surface colours vary from buff, sometimes mottled with darker grey, through brown to dark grey, with occasional oxidised examples. These are fabrics that began to be produced in the 11<sup>th</sup> century, replacing Thetford ware around the mid 12<sup>th</sup> century, which continued throughout the 14<sup>th</sup> and into the 15<sup>th</sup> century, with relatively little change in fabric or form (Jennings 1981, 41). The identifiable forms from Bradwell are nearly all cooking pots or deep bowls (Table 19), with a tendency towards 'hammerhead' rims, i.e. flat

topped and expanded both externally and internally. A jug strap handle was present in Ditch F2125 (L2126 (Seg.B)).

		Rim Diameter (cm)	16	20	24	25	26	30	32	40	42	45
Forms	Cooking Pots		2	1	2	1	1	1				
	Bowls		-	-	-	-	-	-	1	2	1	1

Table 19: MCW2 rim diameters

In addition to the above, six coarse ware sherds differ from the typical sand tempered fabrics recovered from the site. Three sherds in MCW4 (31g) contain sparse shell or voids where the shell has leached; two sherds (6g) contain sparse to moderate rounded white chalk (MCW6), and a single small sherd (2g) contains rounded black or red-brown slag-like inclusions.

### Medieval glazed wares

Sixteen glazed medieval body sherds (145g) were recovered, of which seven are Grimston wares. A glazed Hollesley-type jug neck was present in Ditch F2133 (L2134) which is dated between the late 13<sup>th</sup> and early 14<sup>th</sup> century. A single white ware with a yellow glaze from Ditch F2010 (L2012 T) is probably from an imported Rouen jug, introduced between the mid 13<sup>th</sup> and 14<sup>th</sup> centuries (Jennings 1981, 35). The remaining sherds are unprovenanced, but three sherds (19g) with Rouen style decoration of vertical red slip lines indicate a late 12<sup>th</sup> to mid 13<sup>th</sup> century date (Cotter 2000, 91).

### Late medieval wares

There are 22 sherds (390g) of late medieval and transitional ware including a splash glazed handle and upper body profile of a skillet from Ditch F2094 (L2096 (Seg.W)) (Fig. 46.12). A jar base/ body profile is also present from this context, while a jug base/ body profile with dispersed fingertip decoration came from Ditch F2010 (L2012 (Seg.Q)). Late medieval transitional ware is dated between the 15<sup>th</sup>/ mid 15<sup>th</sup> and 16<sup>th</sup> centuries, and although most sites of manufacture are not known the South Bradwell examples may derive from the Waveney Valley where a thriving industry is known to have existed (Anderson 1996). Also of this period are 17 sherds (200g) of imported German stoneware; all but two are from Siegburg and Raeren drinking jugs dated between the 15<sup>th</sup> and 16<sup>th</sup>/ early 17<sup>th</sup> centuries (Fig. 46.13).

### Post-medieval wares

The assemblage includes 40 sherds (666g) of post-medieval red earthenware, most showing evidence of glaze. A fragment of bung-hole jar was recovered from Ditch F2059 (L2060 (Seg.T)) (Fig. 46.14). The same context contained the complete profile of a shallow dish or bowl that was probably manufactured locally (Fig. 46.15). Two sherds of green glazed Border ware (c. mid 16<sup>th</sup> to 17<sup>th</sup> century) are present, and include a bowl rim from Ditch F2088 (L2098 (Seg.U)), and one or two sherds of Frechen stoneware. The remaining 11 sherds are all of early modern to modern date.

## Dating of Features

This section discusses the features containing the largest quantities of pottery or the most diagnostic material. Features containing the most pottery, 10 sherds or more are listed in Table 20.

Feature	Context	Thetford ware (sherd no./ weight (g))	Medieval wares (11 <sup>th</sup> -14 <sup>th</sup> century)	Late medieval to post-medieval wares	Early modern to modern wares	Total
2010	2011, 2012, 2031, 2032	1/3	33/358	18/145		52/506
2059	2060, 2080		21/528	31/618		52/1,146
2088	2089		27/204	1x15		28/219
-	2016	9/28	17/122			26/150
2050	2051		9/41	14/146		25/187
2332	2333		10/103		1/4	11/107
F2347	2348		11/53			11/53

Table 20: Features containing 10 sherds or more

## The windmill

Three buried soil layers predated the Phase 3 windmill. Layer L2018 sealed the natural geology and was physical truncated by features forming the windmill. L2018 contained three early medieval sherds (10g), including a sagging base from a cooking pot or jar. Layer L2016 (=2064) stratigraphically sealed L2018, and contained 9 sherds (28g) of Thetford ware including a 16cm cooking pot rim, and a further 17 sherds (122g) of medieval sandy coarse wares. The latter can only broadly be dated between the 11<sup>th</sup> and 14<sup>th</sup> centuries, but the presence of the Thetford ware would suggest an earlier date of 11<sup>th</sup> to 12<sup>th</sup>/ 13<sup>th</sup> century. Layer L2017 sealed L2016 (=2064) and contained three further medieval sandy coarse ware sherds (9g).

Windmill Ditch F2010 contained jointly the most pottery from any feature (52 sherds; 506g), which are very mixed in both the range of dates and fabrics present. Thirty-four sherds (361g) date between the early and High medieval periods (c. 11<sup>th</sup> to 14<sup>th</sup> centuries). They included a tiny sherd of Thetford ware from the primary fill (L2011 (Seg.C)), and medieval sandy coarse wares including the only examples of BSCW coarse sandy ware identified from the site. A 22cm diameter Hollesley type E4 jar rim is from Fill L2031. The medieval glazed sherds present included the Rouen ware sherd and all three of the MGL4 sherds with Rouen style decoration, the latter from contexts Fills L2012 (Seg.I) and L2012 (Seg.Q). The late medieval, transitional and post-medieval sherds present (18 sherds; 145g) included six sherds of post-medieval glazed red earthenware, including a rim from a cooking pot or cauldron with external sooting from L2012 (Seg.T). These post-medieval sherds would fit a broad date between the 16<sup>th</sup> and 18<sup>th</sup> centuries (Jennings 1981, 157). The only example of Frechen stoneware came from L2012 (Seg.U), and the unprovenanced stoneware sherd which may also be a Frechen product, along with a tiny fragment of green glazed Border ware came from L2012 (Seg.T). The latter sherds, along with a small piece of clay pipe (2g) indicate a date not preceding the mid 16<sup>th</sup> century, and probably not later than c. 1700, although they were all small fragments of 4g or less.

Ditch F2059 which re-cut the southern section of Windmill Ditch F2010 also contained 52 sherds (1146g), of which 21 sherds (528g) are residual medieval wares, and the remainder late medieval and post-medieval wares. The medieval

pottery includes two lightly abraded open bowls that would fit a 12<sup>th</sup> to 14<sup>th</sup> century date range (Fig. 46.6-7). Heavy sooting on the latter (Fig. 46.7) suggests that it may have served as a curfew. The upper profile of a Raeren jug came from L2060 (Seg.K) (Fig. 46.13), while the glazed post-medieval red earthenwares include the bung-hole jar from L2060 (Seg.T) (Fig 46.14). A bowl from the same context is either very similar to, or part of the same bowl recovered from L2080 (Seg.T) (Fig. 46.15). The combination of pottery sherds suggests that the assemblage dates between the mid 16<sup>th</sup> and early 17<sup>th</sup> centuries, although a later date is possible subject to residuality. Re-cut Ditch F2050 (L2051), on the northern circuit of the windmill, contained nine residual medieval sherds (41g) including a single glazed Grimston body sherd with trailed brown slip decoration indicating a 13<sup>th</sup> to 14<sup>th</sup> century date. Also present from this feature are 14 sherds (146g) of late medieval and post-medieval pottery including a post-medieval red earthenware rod handle and cooking pot base.

Ditch F2088 contained 27 medieval sherds in (from L2089 (Seg.V)) including a c. 50cm diameter Hollesley ware bowl rim of 13<sup>th</sup> to 14<sup>th</sup> century date (Fig. 46.8). Also present from L2089 (Seg.V) is a 16cm diameter cooking pot rim. However, L2089 (Seg.U) contained a lone, heavily abraded green glazed Border ware bowl rim indicating a mid 16<sup>th</sup> to 17<sup>th</sup> century date.

Ditch F2332 (L2333) yielded 11 unglazed medieval sherds (107g) including two cooking pot rims of 14cm and 16cm diameter respectively. An additional glossy black glazed sherd (4g) of 18<sup>th</sup> to 19<sup>th</sup> century date is likely to be intrusive. Ditch F2347 (L2348) contained a 14cm diameter cooking pot rim of 11<sup>th</sup> to 13<sup>th</sup> century date (Fig. 46.5).

### Kiln 1/ Structure 1

Structural Feature F2359 contained nine sherds (99g). Seven are Thetford wares including two cooking pot rims, one 12cm in diameter and the other 14cm (Fig. 46.2) and a single base fragment. The remaining two sherds (9g) are medieval sandy wares indicating an 11<sup>th</sup> to 12<sup>th</sup> century date.

### Kiln 2

Stoke Hole F2376 (L2377) contained two medieval sandy sherds (7g).

### Pits F2157, F2134, F2133 and F2353

Pit F2157 (L2158) contained a cooking pot rim with internal bead in fairly good condition, of a form local to the Norwich area and dating to the 13<sup>th</sup> or 14<sup>th</sup> century (Fig. 46.9). It was associated with a cooking pot with a 'hammerhead rim' and a perforated hole probably for suspension, also of a local form and probably from a bowl indicated by its thickness and wide (45cm) rim diameter (Fig. 46.10). Pit F2133 (L2134) contained the upper profiles of two lightly abraded cooking pots with 'hammer head' rims datable to the 13<sup>th</sup>/ 14<sup>th</sup> centuries (Jennings 1981, 46) (Fig. 46.11). Also present was a sherd of highly decorated Hollesley glazed ware produced during the late 13<sup>th</sup> and 14<sup>th</sup> centuries.

Pit F2353 (L2354) contained nine sherds (33g) of Thetford ware, Grimston type coarse ware and glazed Grimston ware. The latter two sherds include a 12cm diameter jar rim and indicate a 13<sup>th</sup> to 14<sup>th</sup> century date.

### *Discussion*

The medieval and early post-medieval pottery assemblage mainly comprises local wares of a domestic nature with just 5.1% of the early to High medieval sherds being glazed. The presence of small amounts of pottery such as Hollesley ware and the Rouen ware sherd indicates that some pottery was imported onto the site from beyond the local area, probably arriving via the port of Great Yarmouth. The most stratigraphically complex area was the windmill site. The initial (Phase 2) ground surface contained Thetford ware and early medieval sandy wares, probably present from manuring and indicating an 11<sup>th</sup> to 12<sup>th</sup> century date or slightly later. The subsequent ditch fills contained medieval and post-medieval pottery. The presence of glazed post-medieval red earthenware indicates a date range from the early 16<sup>th</sup> to the 18<sup>th</sup> century. However, this pottery is associated with late medieval and transitional wares and Raeren stoneware of c. mid 15<sup>th</sup> to 16<sup>th</sup> century date, with only three or four further small sherds that could date to the 17<sup>th</sup> century. It is probable, therefore, that pottery ceased to be deposited on the site around the late 16<sup>th</sup> or early 17<sup>th</sup> centuries. This association of wares is largely applicable to the rest of the site, with the exception of the few features or layers containing early modern to modern pottery. The pottery assemblage therefore suggests that the site was more or less in continuous use between the 11<sup>th</sup>/ 12<sup>th</sup> century and the 16<sup>th</sup>/ 17<sup>th</sup> century.

### *List of Illustrations*

- Fig. 46.1 Ditch F2351 (L2352 (Seg.B)) Thetford ware dark grey cooking pot rim; mid 10<sup>th</sup> to mid 12<sup>th</sup> century
- Fig. 46.2 Pit F2359 (L2386) Thetford ware pale grey cooking pot rim with external sooting; mid 10<sup>th</sup> to mid 12<sup>th</sup> century
- Fig. 46.3 Pit F2326 (L2327) Thetford Grimston/ Grimston type decorated bowl rim, mid grey outer surface, orange inner surface; 11<sup>th</sup> to mid 13<sup>th</sup> century
- Fig. 46.4 Ditch F1102 (L1103) early medieval coarse ware spouted pitcher, dark grey surfaces with oxidized margins; 11<sup>th</sup> to 13<sup>th</sup> century
- Fig. 46.5 Ditch F2347 (L2348) early medieval dark grey sandy coarseware cooking pot rim; 11<sup>th</sup> to 13<sup>th</sup> century
- Fig. 46.6 Ditch F2059 (L2080) medieval coarse ware pale brown bowl rim with external sooting; 12<sup>th</sup> to 14<sup>th</sup> century
- Fig. 46.7 Ditch F2059 (L2080) medieval coarse ware bowl rim. Orange brown surfaces but darkened grey by sooting on both sides; 12<sup>th</sup> to 14<sup>th</sup> century
- Fig. 46.8 Ditch F2088 (L2089 (Seg.V)) Hollesley coarseware mid brown bowl rim; 13<sup>th</sup> to 14<sup>th</sup> century
- Fig. 46.9 Pit F2157 (L2158) medieval cooking pot rim. Buff with dark grey patches; 13<sup>th</sup> to 14<sup>th</sup> century
- Fig. 46.10 Pit F2157 (L2158) medieval bowl rim with perforated hole. Pale brown with external sooting; 13<sup>th</sup> to 14<sup>th</sup> century
- Fig. 46.11 Pit F2133 (L2134) medieval coarse ware cooking pot rim, buff surfaces; 13<sup>th</sup> to 14<sup>th</sup> century
- Fig. 46.12 Ditch F2094 (L2096W) late medieval and transitional skillet. Orange surfaces with patchy clear and brown glaze late; 15<sup>th</sup> to 16<sup>th</sup> century
- Fig. 46.13 Ditch F2059 (L2060) Siegburg drinking jug buff surfaces with patchy clear and brown speckled glaze; 15<sup>th</sup> to early 17<sup>th</sup> century
- Fig. 46.14 Ditch F2059 (L2060 (Seg.T)) Post-medieval red earthenware bung hole jar with patchy brown glaze; mid 16<sup>th</sup> to 17<sup>th</sup> century

Fig. 46.15 Ditch F2059 (L2060 (Seg.T)) post-medieval red earthenware shallow bowl/ dish with internal patchy brown glaze; mid 16<sup>th</sup> to 18<sup>th</sup> century

## **The Small Finds**

*Nicholas J. Cooper*

An assemblage of metal, glass and stone finds was recovered from various contexts across the site. The assemblage has been grouped by material and finds type and catalogued as follows:

### *Copper Alloy*

- 1) SF4; unstratified. Elongated bowl of spoon or scoop, beaten from roughly cut piece of copper alloy sheet; individual hammer marks are visible across the surface. The bowl is sheared transversely at the point where a handle would extend. The bowl has a stress tear at one edge. Length: 95mm, width 50mm, thickness of sheet: 1.5mm. This is a one-off, handmade piece and therefore difficult to date.

### *Iron*

With the exception of a possible blade fragment, and part of a hinge fitting, the iron assemblage comprises handmade carpentry nails with square-sectioned tapering shanks and flat round heads, varying in length between about 50mm and 100mm, the complete examples of which have been measured.

### Blade

- 2) F2010 (L2012 (Seg.X)). Tip of a blade with the back sloping down to the rounded tip. Broken length: 58mm, width of blade: 23mm.

### Hinge fitting

- 3) SF1; F2027 (L2028). Broken and bent length of forged iron sheet with one end squared off. Length: 98mm, width: 20mm. Possibly part of hinge or similar structural fitting.
- 4) F2027 (L2028). Flat fragment, possibly from a similar or the same fitting as above (SF1). Length: 30mm, width 20mm.

### Nails

- 5) F2010 (Segs. L and Q). Two nails; that from L is complete. Length: 65mm
- 6) F2010 (L2012 (Segs. L, P and T)). Three nail fragments.
- 7) L2016 (=2064). Nail shaft fragment.
- 8) F2050 (L2051 (Segs. E and F)). Four nail heads with upper shafts preserved.



- 9) F2059 (L2060 (Segs. L, P, R, S and T)). Nine nail fragments; one from Segment S is complete. Length: 60mm.
- 10) F2059 (L2080 (Seg.T)). Two nail heads with upper shaft and one longer shaft fragment. Length 86mm.

### Glass

- 11) F2098 (L2099 (Seg.V)), Sample No. 2.76. Glass bead. Small annular bead in blue-green glass. Length: 3mm, diameter: 5mm. As glass beads do not appear to be a common medieval dress accessory, even compared with those in other exotic materials, it is more likely that this is a residual bead of Roman date. However, as this example, extracted during sieving, shows, visibility may be an issue, and the small group from London does include a similar medieval bead in translucent green glass (Egan and Pritchard 1991, 316, fig. 209.1587).
- 12) F2359 (L2360), Structure 1. Small fragment of dark green vessel glass with pitted surfaces. Probably from a small bottle of post-medieval date (intrusive).

### Stone

The assemblage comprises two whetstones and numerous amorphous fragments of lava quern.

#### Whetstones

The whetstones are manufactured from a quartz mica schist known as Norwegian Ragstone, derived from quarries at Eidsborg in Norway, which were imported during the later Anglo-Saxon and medieval periods (Moore and Oakley 1979, 280). A range of parallels for both the large and small examples were excavated at Northampton (*ibid.* figs. 123.8 and 13)

- 13) SF2; F2069 (L2060 (Seg.R)). Small whetstone, heavily worn with convex surfaces and one end broken transversely. Originally of square section but worn to oval section at broken end. Length: 130mm, width: 18mm.
- 14) F2308 (L2309). Broken length of a large mullion of roughly square section (as preserved at one end) whilst remainder of length to broken end has rounded corners caused by wear. Length 160mm, width 30mm.

#### Quernstones

Numerous small fragments of lava quern were recovered from five contexts. The importation of lava querns (Niedermendig basalt) from the Eifel region of Germany, which began in the Romano-British period, was re-established during the Late Anglo-Saxon period and east coast ports, including Colchester, acted as the major conduits (Buckley and Major 1988, 36, fig. 42).

- 15) F2010 (L2012 (Seg.Q)); F2059 (2060 (Seg.T)); F2059 (2080 (Seg.T)); F2319 (2320); F2446 (2447 (Seg.A)). More than 50 undiagnostic fragments weighing 1275g, probably deriving from several different querns<sup>2</sup>.

## The Struck Flint

*Andrew Peachey*

Excavations recovered a total of 172 pieces (3085g) of struck flint, entirely in a fresh, un-patinated condition (Table 21). The technological traits of the implements and flakes recorded indicates a broad chronological range of prehistoric activity, ranging through the Mesolithic, earlier and later Neolithic, and early Bronze Age; however, the assemblage is sparsely distributed with contextual evidence suggesting the struck flint is largely, or wholly present as re-deposited, residual material. Where associated dating evidence is present, it appears indicative of medieval and post-medieval field systems or related agricultural activity, while significant quantities were recovered from topsoil and subsoil layers. Nonetheless, the struck flint remains an intrinsically diagnostic assemblage for prehistoric activity close to the North Sea coast, and includes evidence of Mesolithic microlith production and food processing (microburin, chopper, backed knife), earlier Neolithic blade technology (cores, blades, backed knife), Neolithic tool manufacture and utilisation (roughout, sickle), and later Neolithic to early Bronze Age activity and occupation (scrapers, piercer).

Struck Flint Type	Frequency	Weight (g)
Core	3	266
Core fragment	2	54
Roughout	1	148
Chopping tool	1	260
Sickle	1	23
Backed knife	2	124
Piercer	1	8
Scraper	23	723
Utilised flake	1	19
Microburin	2	5
Blade	12	86
Debitage	123	1369
<i>Total</i>	<i>172</i>	<i>3085</i>

Table 21: Quantification of struck flint implements and debitage by frequency (F) and weight (W, in grams)

### Methodology and Terminology

The flint was quantified by fragment count and weight (g), with all data entered into a Microsoft Excel spreadsheet that will be deposited as part of the archive. Flake type (see 'Dorsal cortex,' below) or implement type, patination, colour and condition were also recorded as part of this data set, along with free-text comments.

The term 'cortex' refers to the natural weathered exterior surface of a piece of flint, and the term 'patination' to the colouration of a flaked surface exposed by human or natural agency. Dorsal cortex is categorised after Andrefsky (2005, 104 and 115) with 'primary flake' referring to those with cortex covering 100% of the dorsal face; 'secondary flake' with 50-99%; 'tertiary' with 1-49% and 'un-corticated' to those with no dorsal cortex. A 'blade' is defined as an elongated flake whose length is at least twice as great as its breadth, often exhibiting parallel dorsal flake scars (a feature

<sup>2</sup> In three instances, fragments were recovered from features associated with the Phase 3 windmill

that can assist in the identification of broken blades that, by definition, have an indeterminate length/breadth ratio). Terms used to describe implement and core types follow the system adopted by Healy (1988, 48-9).

### *Commentary*

#### Raw material

The raw flint utilised for the production of tools, cores and flakes in the assemblage exhibits a moderate degree of variation, but within a consistent range of defined characteristics. The flint is typically mid to dark grey or occasionally near black, often quite mottled with significant cherty inclusions, while retaining a good structure for knapping. Cortex, where extant, is typically quite thin and ranges in colour from mid grey-brown to a smooth off-white, with occasional fragments exhibiting a thicker white chalky cortex. The very occasional fragments with both a near black core and white chalky cortex (and the two need not be associated) indicate some flint may have been transported or carried from the Breckland area or chalk belt in central Norfolk; but the bulk of the assemblage is consistent with raw flint sourced from the local Quaternary gravels that underlie the site and east Norfolk coast, primarily of the Crag Group (in particular the flint-rich Norwich and Reg Crag groups). Comparing the variability of raw materials with technological traits, there does not appear to have been any greater degree of selection of raw materials between the implements/ flakes with affinities to the Mesolithic, earlier or later Neolithic, or early Bronze Age, suggesting that the locally-available flint deposits were more than sufficient for the tasks required. This selection strategy is comparable to the exploitation of readily-available, natural gravels at several sites in Norfolk not on the Breckland or similar shallow chalk deposits, including in the Yare Valley at Harford Farm, Norwich (Kemp 2000, 88), on hill gravels at Spong Hill (Healy 1988, 33), the possible use of beach pebbles at Hunstanton (Healy 1993, 28 and 33).and the seemingly expedient use of surface material at Broome Heath, Ditchingham (Wainwright 1972, 21),

#### Mesolithic

Mesolithic flint technology utilised by hunter-gatherer groups is focussed on the production of microliths and limited cutting/ chopping tools, with evidence for both implement types within this assemblage. Actual finished microliths, comprising retouched sections of truncated blades are absent, but they were produced using the microburin technique which leaves characteristic discarded sections of blade, in this instance comprising proximal microburins recovered from Subsoil L2001 and Natural Layer L2018, and possibly a snapped blade from Topsoil L1000. Both exhibit the remnants of a notch worked into the lateral edge of a blade to facilitate it being snapped (truncated), with the former also exhibiting an abraded butt end indicative of platform preparation, and the latter with limited abrupt retouch on its lateral edges from where the blade was shaped. Both microburins also exhibit very shallow, small, elongate bulbs of percussion consistent with the use of a soft fabricator for indirect percussion, such as antler, bone or wood, which is in contrast to the slightly more pronounced, small bulbs of percussion on earlier Neolithic blades produced using indirect percussion, probably with a flint (or stone) fabricator.

The production of microliths required the careful maintenance and exploitation of cores to produce relatively long blades, also utilised for other implement types, probably including an un-modified 85mm long blade from Topsoil L2000 with traces of wear on one lateral edge, and a backed knife manufactured on a long blade contained in Ditch F1067 (Fig. 47.1). The implement exhibits a prepared (abraded) striking platform with abrupt retouch blunting the approximately half of one lateral edge, and fine ventral retouch at c. 45° to sharpen the length of the opposing edge. Mesolithic flint assemblage also include a limited number of non-blade tools, principally chopping tools, such as that recovered from Topsoil L2000 (Fig. 47.2). This tool, as is typical of Mesolithic examples, was manufactured on a rounded pebble, differentiating it from chopping tools that re-emerge in the Bronze Age on cores and thick flakes. Two large flat flakes have been removed from opposing faces to create an acute straight cutting edge, backed by cortex with limited coarse retouch at either end, forming a tactile hand tool with chipped edge wear to the length of the cutting edge. Although limited in quantity, the presence of this flint technology presents conclusive evidence for the presence of Mesolithic hunter-gatherers on the site, with the production of microliths in conjunction with cutting and chopping tools potentially consistent with a seasonal hunting or multifunctional camp rather than longer term occupation (Butler 2005, 116-17).

### Earlier Neolithic

Flint technology in the earlier Neolithic continues to use blade technology, although the method of production changes slightly in comparison to the Mesolithic, with a decline in platform preparation and the creation of more striking platforms by the rotation of cores. This process is evident in blade cores recovered from Topsoil L2000 and Subsoil L1001, as well as core fragments contained in Ditch F2008 and Buried Soil L2017, which consistently exhibit two or three striking platform perpendicular to one another (Core types B2/C). The core from Subsoil L1001 is probably exhausted and has been reduced to a sub-cuboid profile, while the remainder appear materially viable but possibly abandoned due to mis-hits/shatter, and suggest pebble cores were being exploited rather than larger nodules, consistent with the exploitation of local gravels for raw material. The extensive exploitation of multi-platform blade cores is consistent with earlier Neolithic flint technology in the region, notably at Kilverstone (Beadmores 2006, 58) and Mousehold Heath, Norwich, with the latter also exhibiting fractured cores and cobbles/ pebbles as raw material, indicative of the varying skill of knappers and availability of raw materials (Bishop 2011, 38).

The dimensions of the cores suggests the production of blades 45mm in length or less, consistent with 10 of the soft-hammer struck blades in the assemblage, notable two blades contained in each of Ditches F1067 and F2324, with further blades contained in Ditch F2298, Gully F2888, Posthole F2239 and Buried Soil L2016. Of the blades that appear consistent with earlier Neolithic technology, seven (of ten) have traces of wear on one lateral edge, suggesting limited activity in the vicinity, potentially similar to the seasonal activity postulated for the Mesolithic period. This range of blades is closely comparable to those recorded in early Neolithic pits at Kilverstone (Beadmores 2006, 64) and Mousehold Heath Norwich (Bishop 2011, 47-48). A bi-product of the blade production process, a total of 64 tertiary and un-corticated flakes were soft-hammer struck with blade-like proportions, accounting for

c. 52% of the debitage in the assemblage, suggesting they were produced by earlier Neolithic core reduction. However; the bulk were recovered from topsoil/subsoil contexts, with the bulk occurring as only 1 or 2 flakes in medieval contexts therefore unlikely to be associated with a working area. The only exception was Ditch F2324, which contained five debitage flakes associated with two blades and an end scraper, potentially re-deposited as a group; while four very small flakes in Ditch F2392 could be bladelets of Mesolithic or earlier Neolithic date.

The blades are supplemented by a low quantity of other implements, notable a D-shaped backed knife (Fig. 47.3) contained in Pit F2428, and an end scraper on a fragment of blade core (Fig. 47.4) in Ditch F2029. The backed knife was manufactured on a large flake of dark grey to near black flint, with a high quality, consistent, flawless appearance suggesting it may be chalk-derived flint, possibly from the Breckland. The knife has a straight cutting edge that exhibits damage as a result of wear, while the opposing convex edge and distal end have been bunted by abrupt retouch. Comparable D-shaped knives are present in the early Neolithic assemblage from Hurst Fen, Mildenhall (Clark *et al.* 1960, 222: F51 and F54). The end scraper appears to have been manufactured on an inconvenient ridge removed from a blade core so the striking platform remained viable, and has fine retouch applied to the distal. The remaining scrapers in the assemblage have technological affinities that indicate they probably post-date the earlier Neolithic, however this distinction is frequently unclear, and one disc scraper (Fig. 47.5) in Ditch F1089 exhibits fine retouch at a c. 45° angle on a thin un-corticated flake with a slight distal depression that is more consistent with earlier Neolithic implements, and contrasts with the distinctly hard-hammer struck, thicker flakes generally associated with later Neolithic and early Bronze Age scrapers. The use of a blade core rejuvenation flake and thin flakes for the manufacture of scrapers is paralleled in early Neolithic deposits at Mousehold Heath, Norwich (Bishop 2011, 40), with similar scrapers also recorded at Kilverstone (Beadsmore 2006. 62).

In contrast to the differing core reduction technologies whose prevalence aids differentiating the flint work of the earlier and later Neolithic periods, larger tool types that required more investment of time remained in use throughout the Neolithic, and included axes and sickles. Topsoil L2000 contained the roughout (Fig. 47.6) for a Neolithic axe or similar implement; formed on a pebble with cortex removed from one side and limited areas of coarse invasive flaking around a postulated butt end and cutting edge, though it is unclear why this attempt was abandoned at a preliminary stage, possibly because the tool would be too small but this remains conjecture. A similar roughout was recovered from Harford Farm, Norwich (Kemp 2000, 89: F22), while it was noted axe manufacture may have been taking place at Bixley, a short distance east along the Yare Valley.

At the opposite end of the manufacture and use process is a sickle (SF3; Fig. 47.7) contained in isolation in Pit F2119. The sickle is manufactured on a large blade and one-piece types are more typical of later Neolithic to early Bronze Age technology, as opposed to composite earlier Neolithic sickles that utilised a series of blades, but this distinction is not exclusive and a fragment of an early Neolithic one-piece sickle with near identical retouch was recorded at Hurst Fen, Mildenhall (Clark *et al.* 1960, 222: F55). The sickle has been regularly bi-facially retouched with the final flakes removed perpendicular to the lateral edges creating a slightly ridged finish. The

sickle is c. 4mm thick, with the back edge slightly straighter than the more convex cutting edge, which was sharpened by the application of finer retouch. Comparable biased retouch on one edge (combined with edge gloss, as below) was recorded on a comparably manufactured knife of probably later Neolithic date at Marsh Lane East Site 1 of the Maidenhead, Windsor and Eton Flood Alleviation Scheme (Durden and Anderson-Whymark 2013, 331: fig. 6.41.10), with the only contrast between the implements being the knife had more symmetrical, slightly concave edges. The cutting edge of this example preserves a c. 2mm wide band of edge-gloss on both faces, resulting from its use, probably for the processing of silica-rich plants, as demonstrated by microwear analysis of blades at Tattershall Thorpe, Lincs (Bradley 1993), Spong Hill, Norfolk (Bradley 1988, 37-8). Experiments with obsidian blades, whose polish compares well to flint, has demonstrated that edge-gloss such as this begins to build up after 10 minutes of use, but is fully built up between 30 and 70 minutes of use (Hurcombe 1992, 41). Thus the depositional context of the sickle becomes intrinsically interesting, as the implement is clearly not broken following a meaningful period being utilised for its primary function, and as it is the only artefact contained in Pit F2119, there is a high probability it was deliberately placed and was recorded *in situ*. Although no additional material was present within this feature (see Appendix 1), it is possible that the sickle formed part of a structured deposition, perhaps accompanied by organic remains that had not survived in the burial environment (cf. Davies and Robb 2004). Regional examples of structured deposition within Neolithic pits include Kilverstone (Garrow *et al.* 2006) and Hall Road, Hopton-on-Sea (Tinsley 2015; see below). Structured deposition has also been recorded in association with a probable prehistoric trackway at Hopton-on-Sea (NHER 43501).

#### Later Neolithic to early Bronze Age

The progression from the earlier to later Neolithic is marked by a move from the systematic production of flint blades to the production of flakes, a system that persists into the early Bronze Age. The flakes were struck with a lesser degree of skill, typically by hard-hammer removal from multi-directional or un-systematic cores. The multi-directional cores include Levallois-type, discoidal cores, shaped by initial removal to allow a flake of predetermined size and regularity to be removed. A single exhausted Levallois-type core was recovered from Topsoil L1000, with disc scrapers from the topsoil and Gully F2412 (Fig. 47.8) probably manufactured on Levallois-type flakes, and un-corticated flakes in Pit F2332, gully F2410 and Ditch F2446 also removed in this manner, resulting in flakes with a sub-circular profile c. 45-55mm wide.

However, the bulk of hard-hammer struck flakes, including scrapers and debitage, appear to have been struck from un-systematic multi-directional cores, resulting in broad, squat flakes with broad butts preserving the remnant of faceted striking platforms, often partially shattered, and a high incidence of irregular terminations, as are common components of later Neolithic to early Bronze Age flint assemblages from the region. The application of abrupt retouch to limited edges of these flakes was used to create a range of scrapers, accounting for 20 of those in the assemblage, with end scrapers and horseshoe scrapers the most common types. End scrapers included examples contained in: Topsoil L2000 (Fig. 47.9), Ditch F2298 (Fig. 47.10), Ditch F2317 (Fig. 47.11) and F2345 (Fig. 47.12); horseshoe

scrapers in: Subsoil L2001 (Fig. 47.13), Buried Soil L2017 (Fig. 47.14) and Ditch F2422 (Fig. 47.15); with a single side scraper in Subsoil L2001 (Fig. 47.16). The assemblage also included a low number of thumbnail (horseshoe) scrapers with more regular retouch than the larger variants, characteristic of implements in early Bronze Age assemblages and including examples in Topsoil 1000 (Fig. 47.17) and Ditch F2029 (Fig. 47.18). The remaining re-touched implement comprises a piercer or graver (Fig. 47.19) in Ditch F2188, with limited retouch to a notch and lateral edge, a faceted butt, which may be of Neolithic or early Bronze Age date. A similar range of scrapers, also tentatively dated to the late Neolithic or early Bronze Age was recorded at Hunstanton (Healy 1993, 34) and Bixley, Harford Farm and Caistor St. Edmund, Norwich (Kemp 2000, 39, 88 and 197), albeit the latter recovered from gravels in association with Mesolithic and earlier Neolithic flint work similar to this assemblage. However; the presence of some similar scrapers in the earlier Neolithic assemblage from Hurst Fen, Mildenhall (Clark *et al.* 1960, 218) indicates that a proportion of flakes were utilised earlier and a note of caution must be applied in relating technological traits absolutely to chronology.

The hard-hammer struck debitage flakes comparable to those used to manufacture these scrapers is similarly sparsely distributed to their earlier Neolithic counterparts, with only a small group seven tertiary and un-corticated flakes sealed in Buried Soil L2016, with the distinctive dorsal scars of previous multi-directional flake removals. The implements and flakes with affinities to later Neolithic and early Bronze Age technology form a relatively cohesive group that certainly represents activity, probably domestic or processing tasks being conducted in the local area, possibly similar to groups associated with settlement at Spong Hill (Healy 1988, 47), but the limited quantity combined, lack of associated groups/ artefacts and residual deposition restricts any conclusions on the nature of this activity, be it seasonal or episodic, or of a longer duration related to the exploitation of the coastal area.

## **The Animal Bone**

*Julia E.M. Cussans*

### *Introduction*

A small assemblage of domestic mammal bones and a large collection of goose bones was recovered from excavations at South Bradwell. The goose bones were of particular interest due to the large quantity present and the presence of medullary bone in some of the specimens. All of the goose bones derived from two Phase 2 contexts found in close association with Structure 1/ Kiln 1.

### *Methods*

The entire animal bone assemblage was scanned one context or context segment at a time and the results recorded on a bone scan pro-forma. The pro-forma took into account observations on bone condition including general preservation, colour, abrasion, fresh breaks and gnawing. Bone identifications were made using the in house reference collection and with the aid of reference manuals (e.g. Schmid 1972; Pales and Lambert 1971 a and b; Pales and Garcia 1981 a and b; Hillson 1992; Cohen and Serjeantson 1996). Mammal bones were quantified by species where possible or where this was not possible by size category, where large indicates cattle

or horse sized, medium is sheep/ goat, pig or large dog sized and small mammal is cat or hare sized. The presence of bird, fish and other small fauna could also be noted. For the identified mammal species the dominance of particular body parts was noted as was the presence of butchery, ageable mandibles and teeth, unfused epiphyses, measurable bones and those displaying pathologies. The presence of such features was noted in a semi-quantitative manner (none, few, some, many). Further to this, notes were made on any particular points of interest. Once recorded the data from the scan was entered into an MS Excel spreadsheet along with context descriptions, spot dates and phasing to assist with data processing and analysis.

Following the original assessment domestic mammal assemblage was revisited to record further details on features of interest such as butchered, ageable or pathological elements. Butchery marks were recorded as knife cuts (KN) or heavy blade chops (CH) and their locations and possible functions described. Tooth eruption and wear was recorded following Grant (1982) and age stages assigned following Halstead (1985) for cattle and Payne (1973) for sheep/goat; no ageable pig teeth were present. Epiphysial fusion of long bones was assigned to age stages (Early, Intermediate, Late) following O'Connor (1989). Pathological lesions were located and described. The goose bone assemblage was recorded in detail including element, end and side present and the exact nature of any butchery marks, medullary bone and any other features of interest, full data are available in the archive. Elements present were quantified in relation to the minimum number of individuals (MNI), to examine element representation and what proportion of the birds was present.

## *Results*

### Taphonomy

Bone preservation was rated for each context or context segment on a five point scale ranging from very poor (highly fragmented, poor surface condition and no identifiable fragments) through to excellent (bone has low fragmentation rate and bone surfaces appear fresh, all or almost all elements identifiable to specific body part); Chart 1 shows preservation ratings for Phases 2 and 3. None of the contexts were rated as having excellent preservation and in Phase 2 the majority of contexts were recorded as having *ok* preservation, whereas for Phase 3 the largest group was *very poor* preservation.



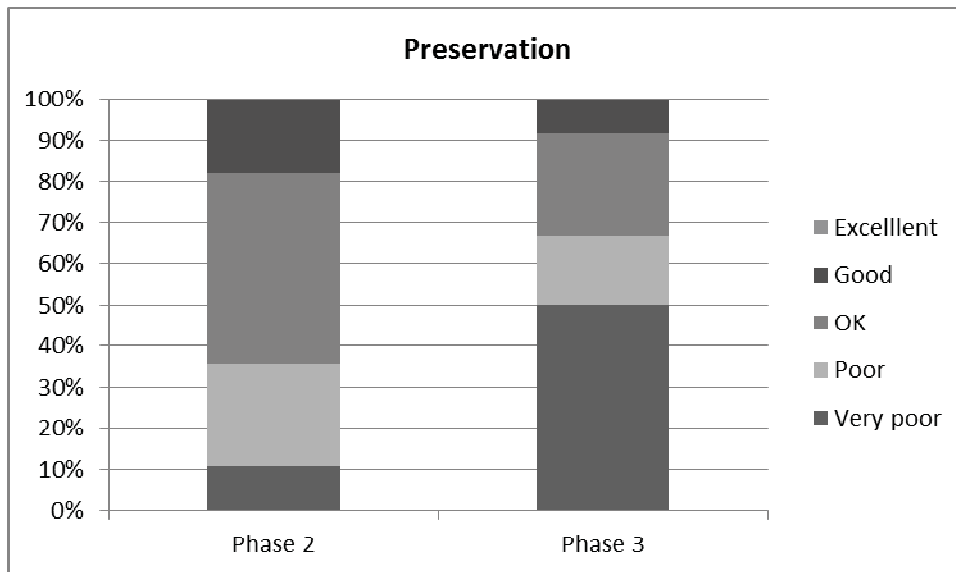


Chart 1: Context preservation ratings for bones from Phases 2 and 3.

Bone abrasion (Chart 2) was also rated for each context on a semi-quantitative scale (none, few, some, many) and again it appeared that overall the bones from Phase 3 were in slightly poorer condition than those from Phase 2 with a larger proportion of the Phase 3 contexts being noted as having *many* abraded bones compared to Phase 2, and no contexts where bone abrasion was rated as *none*, again in contrast to Phase 2. Fresh breakages (Chart 3) were also more frequent in Phase 3 contexts than Phase 2 indicating the more friable nature of these bones. Gnawed bones were extremely rare and were only noted in Phase 3 context L2060 (Seg.S), which also included the majority of dog bones present in the assemblage.

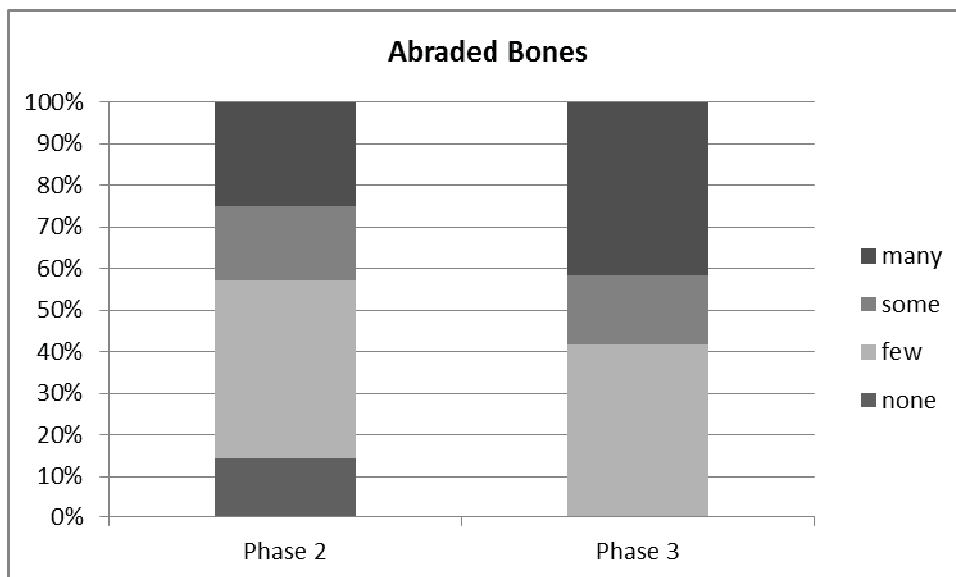


Chart 2: Abraded bones from Phases 2 and 3

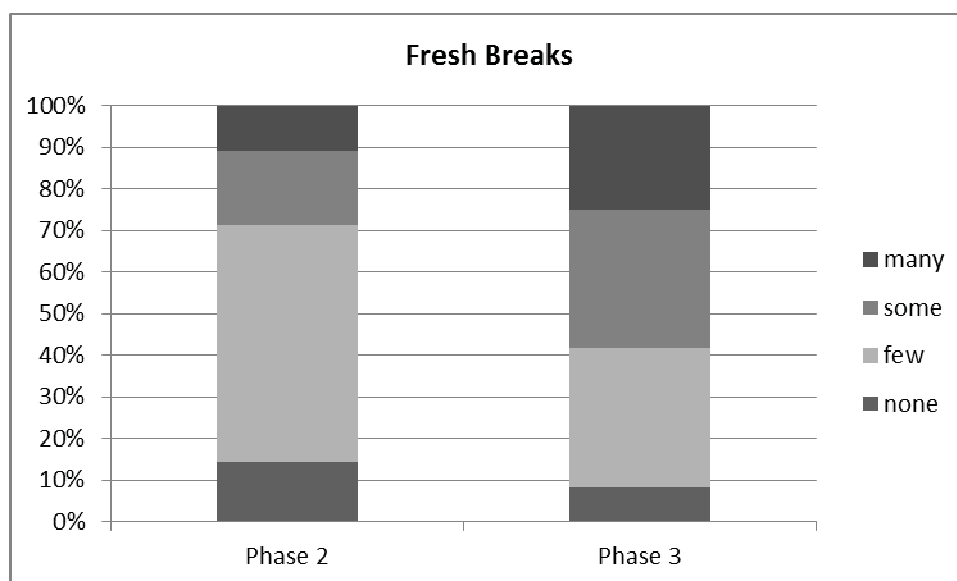


Chart 3: Fresh breakages for bones from Phases 2 and 3

### Taxa present and quantification

A limited number of taxa were identified at the site and this is likely in part due to the small overall size of the assemblage. Domestic mammals present in order of total number of identified specimens (NISP) (Table 22) were cattle, dog, horse, sheep/ goat and pig. However dog is likely over represented by NISP as the majority of these bones come from an associated bone group (ABG), which probably represent a single animal (L2060 (Seg.S)). Horse is also likely over represented to some extent as six horse teeth and mandible fragment from L2149 all most likely belong to the same animal. To counteract this probable over representation of some of the taxa ubiquity (number of contexts a taxon appears in) (Table 23) was also examined. This shows a lower relative representation of Phase 2 horse and Phase 3 dog; however for Phase 2 horse is still more abundant than sheep/ goat and pig. When dealing with such small sample sizes it is difficult come to any firm conclusions but it seems that sheep/ goat and pig had relatively minor economic roles at this time or their carcasses were disposed of elsewhere. Phase 3 appears to show a more even representation of cattle, sheep/ goat and pig.

The largest taxon represented in terms of NISP (Table 22) is bird, the majority of which was identified as Greylag or domestic goose (*Anser anser*). These all came from just three Phase 2 deposits and will be discussed more fully below. A significant proportion of the assemblage was also designated as large or medium mammal.

	Phase 2	Phase 3	Phase 4	Undated	Total
Cattle	19	14	0	0	33
Sheep/ goat	2	8	0	0	10
Pig	2	5	0	0	7
Horse	10	2	0	1	13
Dog	1	15	0	0	16
Bird	293	0	0	0	293
Large mammal	65	58	0	0	123
Medium mammal	13	72	1	6	92
Total	405	174	1	7	587

Table 22: Quantification of taxa present by number of identified specimens (NISP)

	Phase 2 (n=28)	Phase 3 (n=12)
Cattle	14	4
Sheep/ goat	1	3
Pig	2	3
Horse	4	2
Dog	1	1

Table 23: Ubiquity of domestic taxa; n=total number of contexts/ context segments examined for each phase

## Domestic mammals

### Animal age and sex

A small amount of age and sex data was available for some of the domestic mammals present. Cattle and sheep/ goat tooth wear data are shown in table 24. For cattle a range of ages are represented which possibly represent prime meat animal and breeding or traction animals. Both of the sheep/ goat samples belonged to Payne's (1973) wear stage F with an indicative age of 3-4 years, these may represent animals culled for mutton. The presence of young horses and pigs was attested to by the occurrence of deciduous teeth in Phase 2 (L2149) and Phase 3 (L2080 (Seg.T)) respectively.

A very small quantity of bone fusion data was available (Table 25). For cattle most bones present were fused with the exception of a distal metatarsal which was completely unfused and a distal tibia where the fusion line was visible, indicating incomplete fusion of the epiphysis. Both of these epiphyses belong in the intermediate fusion group indicating that some cattle did not live beyond this stage. Other intermediate fusing bones were found to be fused indicating some animals living beyond this stage; no late fusing bones were present. All early fusing bones present were found to be fused. The small quantity of sheep/ goat and horse bones present, where fusion could be determined, were all fused (Table 25) showing animals surviving as late and the intermediate II and late fusion stages respectively. All dog bones present were fused; no fusion evidence was available for pigs.

Species	Phase	Context	P2	P3	P4	M1	M2	M3	Age Stage
Cattle	2	2299	\	\	\	\	\	d	E (30-36 mths)
Cattle	2	2299	\	\	\	m	k	\	G-I (adult-senile)
Cattle	2	2354	\	\	\	\	\	k	I (senile)
Cattle	2	2371	\	in wear	f	k/l	\	\	>C (>8-18moths)
Cattle	3	2060	\	\	\	\	g	g	G (adult)
Sheep/ goat	2	2149	\	\	\	\	\	e	F (3-4 years)
Sheep/ goat	3	2060	\	in wear	f	g	g	e	F (3-4 years)

Table 24: Available tooth wear data for cattle and sheep/ goat. Age stages follow Halstead (1985) for cattle and Payne (1973) for sheep/ goat

Aside from the tooth wear and fusion data presented above a single fragment of neonate cattle humerus shaft was noted in L2060 (Seg.S). This likely indicates that cattle were bred on site and this animal may have been a natural death or the result of a cull to remove calves as part of a dairy economy. However such interpretations cannot be made on such slim evidence.

The only taxa for which there was any sex data available was pig. Three lower canines were present in the assemblage all of which were male.

Species	Phase	Context	Bone	P/D	Fusion Group	Fused?
Cattle	2	2387 D	Metatarsal	D	Intermediate	u
Cattle	2	2413 A	Metatarsal	D	Intermediate	f
Cattle	2	2387 D	Metatarsal	P	Birth	f
Cattle	2	2413 A	Metatarsal	P	Birth	f
Cattle	2	2375 A	Tibia	D	Intermediate	i
Cattle	3	2060 T	Metatarsal	D	Intermediate	f
Cattle	3	2060 S	Metatarsal	P	Birth	f
Cattle	3	2060 S	1st Phalanx	P	Early	f
Cattle	3	2080 T	2nd Phalanx	P	Early	f
Cattle	3	2012 Q	Radius	P	Early	f
Sheep/ goat	3	2060 S	Tibia	D	Intermediate II	f
Sheep/ goat	3	2080 T	Tibia	D	Intermediate II	f
Horse	2	2193 A	Metatarsal	P	Birth	f
Horse	2	2360 B	Radius	D	Late	f
Horse	2	2360 B	Radius	P	Early	f

Table 25: Available bone fusion data for cattle, sheep/ goat and horse

### Butchery and body part

A small quantity of butchery evidence was present in the assemblage and is detailed in Table 26. Cattle had the most butchered bones, followed by sheep/ goat. No butchery was recorded for pig, horse or dog; some large mammal rib fragments were noted as being butchered. The majority of butchery marks came from Phase 3 contexts and overall chop marks were more common than cut marks. However where poor preservation conditions prevail fine cut marks may have been obscured by poor bone surface condition and so may be underrepresented particularly in Phase 3 where preservation was relatively poor.

Distribution of body parts is shown in Table 27. Cattle appear to have been represented by whole carcasses. The picture for the other taxa is difficult to assess given the very small sample sizes. However in Phase 3 the lack of metapodials for sheep/ goat and low numbers of teeth may indicate that only meat joints were making it onto this part of the site; conversely for pig such meaty elements appear to be missing. Head, feet and limbs of horses are all present in Phase 2.

Taxa	Phase	Context	Element	CH/KN	Description
Cattle	2	2321	Scapula	CH	Chopped through diagonally, below neck
Cattle	2	2375A	Tibia	KN	Vertical cuts on lateral towards proximal end
Cattle	2	2413A	Metatarsal	KN	Transverse cut on medial
Cattle	3	2060S	Metatarsal	KN	Transverse cut on medial and diagonal cut on lateral, near to proximal end
Cattle	3	2060S	Mandible	CH	Removal of coronoid process
Cattle	3	2060S	Calcaneus	CH	Vertical chop onto inner surface
Cattle	3	2060T	Pelvis	CH	Chop through acetabulum between pubis and ilium
Sheep/ goat	3	2080T	Tibia	KN	Fine horizontal cuts, mid-shaft
Sheep/ goat	3	2080T	Axis	CH	Chopped through at slight angle, towards caudal end
Large mammal	3	2080T	Rib frags	CH	Transverse chops through ribs

Table 26: Description of butchery evidence for mammal bones

		Cattle		Sheep/ goat		Pig		Horse		Dog	
		Ph 2	Ph 3	Ph 2	Ph 3	Ph 2	Ph 3	Ph 2	Ph 3	Ph 2	Ph 3
Head	Skull		1								
	Occipital						1				
	Mandible	3	1					2		1	
	Molar	7	4	2	1			6	2		
	Premolar										
	Canine					2	1				
	Insisor						2				
Tooth frags	2										
Neck	Atlas										
	Axis				1						
Forelimb	Scapula	2			1						
	Humerus										
	Radius		1		1			1			
	Ulna										
Hind limb	Pelvis		1								2
	Sacrum										1
	Femur	1									2
	Tibia	2			3						2
	Fibula										2
Feet	Carpals										
	Metacarpals										
	Tarsals		1								1
	Metatarsals	2	2					1			2
	Phalanges		2				1				

Table 27: Quantification of body parts present by NISP for domestic mammals

## Pathology

A very small quantity of pathological bones were noted, all belonging to cattle. These were an upper molar with slightly uneven wear (L2187 (Seg.C), Phase 2), a metatarsal with an asymmetrical distal end (L2413 (Seg.A), Phase 2) and a second phalanx with slight eburnation and lipping on the proximal articulation (L2080 (Seg.T), Phase 3). Both asymmetry of the metatarsals (Bartosiewicz *et al.* 1993; Bartosiewicz 2013) and eburnation and lipping of the phalanges (Bartosiewicz *et al.* 1997) have been associated with the use of cattle for traction.

## Goose

Bird bones make up 50% of the animal bone assemblage by NISP (Table 22) and were recovered from just three fills, all of which belonged to Phase 2. A single rib bone fragment came from Posthole F2148 (L2149) and will not be discussed any further. All of the other bird remains were identified as either goose (*Anser anser* – domestic or Greylag goose) or goose sized bones and the vast majority came from Posthole F2378 (L2379), all bar two of which were recovered as part of sieved Sample 2.126. A smaller sample of goose/ goose sized bones came from Structure 1 Feature F2359 (L2386 (Seg.A)), close by to Posthole F2378 and may have spread out from this original deposit. In total 293 bones were present, with the minimum number of individuals (MNI) determined as four.

## Body part quantification

Details of the particular body parts present are given in Table 28, Chart 4 and Figure 48. Table 28 gives raw counts of elements and parts present and Chart 4 shows the percentage presence of each element based on their expected frequency given an MNI of four; a pictorial representation of this is shown in Figure 48. The data show that most body parts are present to some extent, with the exception of the sternum,

which appears to be absent from the assemblage. Detailed examination of the bones present shows that the extremities of the body are much better represented than those belonging to the more meaty areas of the axial skeleton. By far the best represented bones are those of the distal wing, feet and head. From this distribution it would appear that these remains are the waste from the preparation of carcasses for cooking and consumption, where the majority of meat has been removed on the breast bone, possibly also along with ribs and vertebrae, which are only present in small quantities.

	Element	Left/ unsided				Right				MNI	NISP
		W	P	D	F	W	P	D	F		
Head	Skull	2			4					2	6
	Quadrate	3								-	3
	Premaxillar	1			1					2	2
	Mandible	2			2	2			2	2	8
Forelimb	Furcula				2					1	2
	Coracoid	1				1				1	2
	Scapula		2				2			2	4
	Humerus						1	1		1	2
	Radius		2	2			1	2		2	7
	Ulna		2	3			1	2		3	8
	Carpals	3								-	3
	carpo-metacarpus	1	2	1	1		4	1		4	10
	1st phalanx (major digit - wing)	3				1				3	4
	Other phalanges (wing)	9	1							-	10
Hind limb	Synsacrum/pelvis	1								1	1
	Femur	1		1		1				2	3
	Tibio-tarsus		1	1		1				1	3
	Fibula		1							1	1
	Tarso-metatarsus	4				1		1		4	6
	Other phalanges (foot)	55	4	3						-	62
Other	Sternum									0	0
	Ribs		10		1					-	11
	Vertebrae	15								-	15
	Unid frags				120					-	120
	Total									4	293

Table 28: Quantification of goose remains from L2379 and L2386 (Seg.A). Entries in *italic* include bones from L2386 (Seg.A), all others are from L2379. Shaded cells = unsided

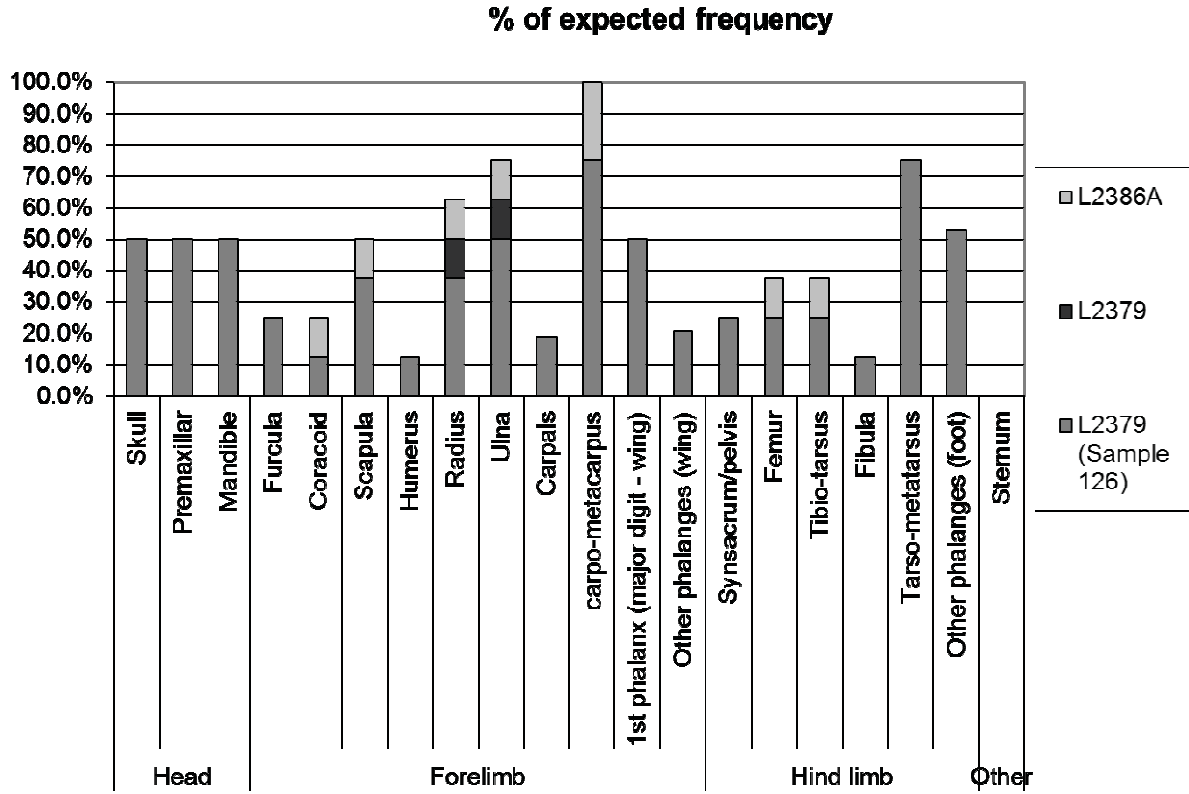


Chart 4: Goose body part distribution shown as a percentage of expected frequency based on an MNI of 4

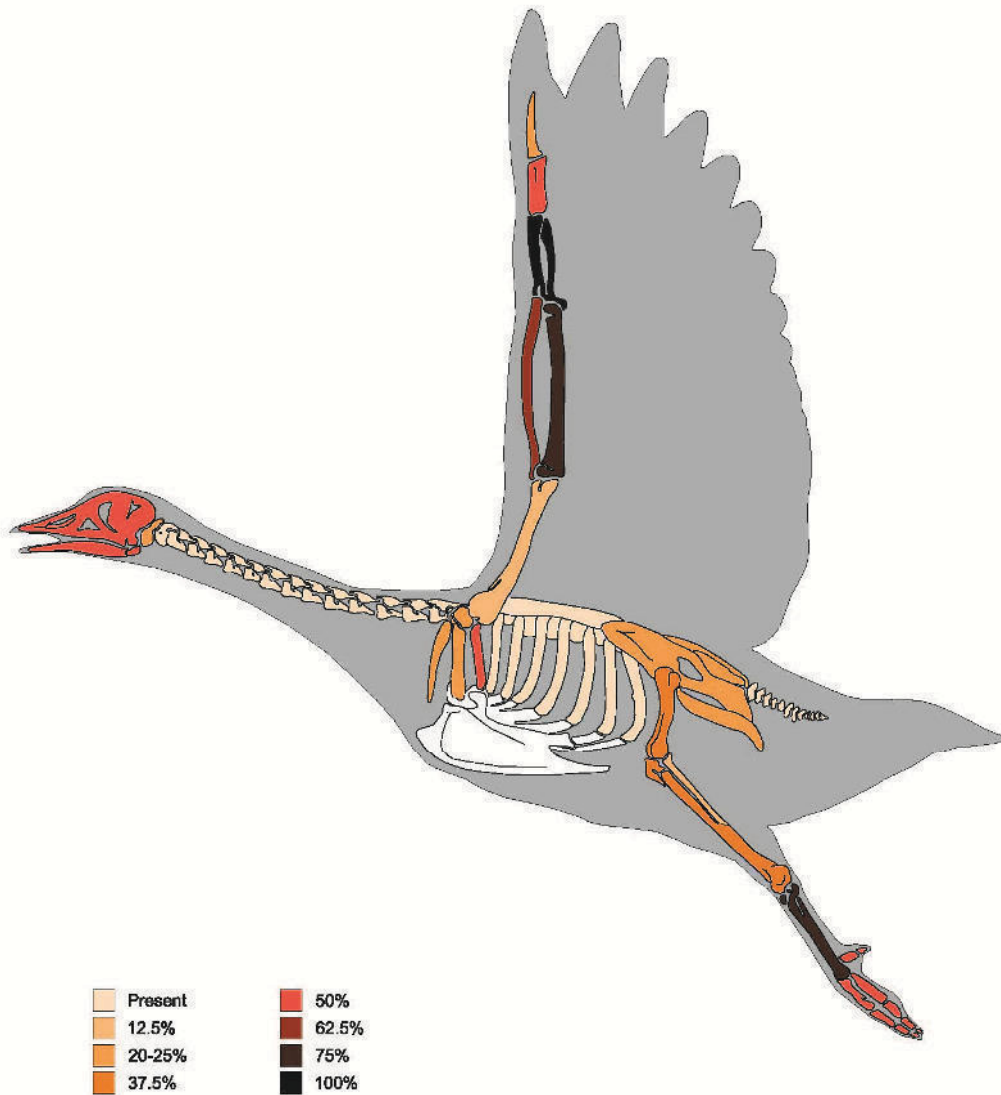


Figure 48: Schematic diagram of a goose skeleton showing percentage presence of elements

### Butchery

A small quantity of bone was found to be butchered. Cut marks were present on a fragment of furcula, one left and one right scapula and a right femur; a left coracoid was cut mid-shaft and chopped through the proximal end and a right coracoid was cut around the proximal end. All of these cut marks would appear to be indicative of the removal of the limbs from the main body of the bird, which would be in keeping with the body part distribution noted above. There are only enough butchered bones to account for an MNI of one; however they do not necessarily all belong to the same bird.

### Medullary Bone

Medullary bone is a temporary woven bone structure found in the bones of egg laying female birds, used as a labile calcium store to aid in egg calcification (Simkiss 1961; Rick 1975), some of which was noted in the assemblage of goose bones presented here. As many of the bones were complete not all of them could be



assessed for the presence of medullary bone, as this could only be achieved where bones were broken. In total 41 bones could be assessed for the presence of medullary bone and are detailed in Table 29. Of these only eight contained any medullary bone; all of the femora and tibio-tarsi present contained significant quantities and very small amounts were seen in two of the scapula fragments but this was only visible under magnification. None of the other bones showed any signs of medullary bone deposits. Elements containing medullary bone account for an MNI of 2, but may represent more individuals.

Element	NISP	No	Yes
Furcula	2	2	0
Coracoid	1	1	0
Scapula	4	2	2
Humerus	2	2	0
Radius	7	7	0
Ulna	8	8	0
Carpo-metacarpus	10	10	0
Femur	3	0	3
Tibio-tarsus	3	0	3
Tarso-metatarsus	1	1	0
<i>Total</i>	<i>41</i>	<i>33</i>	<i>8</i>

Table 29: Presence of medullary bone in goose elements from L2379 and L2386 (Seg.A)

## Summary and Discussion

### Domestic mammal economy

Cattle, dog, horse, sheep/ goat and pig are all represented in the assemblage. Both dog and horse appear to be over represented by the NISP count to some extent but sheep/ goat and pig appear to have a relatively low economic importance in Phase 2 compared to cattle. It should be reiterated however that the small sample size significantly impairs the interpretation of this assemblage. Cattle of a variety of ages were present from neonate through to senile and indicate a likely mixed utilisation of this species. It is difficult to determine the economic importance of the other animals present but it seems likely that mutton and pork were both consumed; the lack of meat bearing bones in the pig assemblage should be noted but again this may well be the result of small sample size. The consumption of beef and mutton or goat meat is attested to by the presence of butchery marks for both taxa. Pathological evidence indicates the likely use of cattle for traction and sheep are also highly likely to have been valued for their wool with two to three clips having been available from the individuals represented by the tooth wear data.

In general terms this assemblage seems to fit well with what may be expected for medieval rural England. Sykes (2006) documents that although cattle, sheep and pig were the main meat providing animals throughout the medieval period cattle and sheep were often more valued for their secondary products, such as milk, manure, traction and wool. From the 11<sup>th</sup> century onwards sheep increased in numbers and wool became hugely economically important with the wool trade peaking between the 12<sup>th</sup> and 14<sup>th</sup> centuries (Ryder 1983). Grant (1984) emphasised the importance of horse to the wool trade as pack animals and points out that they are probably often

underrepresented in archaeological assemblages as they were not generally used as food animals and were likely often disposed of differently to cattle, sheep and pigs.

### Goose bones

The collection of goose bones made up the larger part of the assemblage and represented an MNI of four. Of these an MNI of two were shown to be egg laying females, at least one of which had been butchered. The large quantity of goose bones present would tend to indicate that these belonged to domestic geese kept at the site rather than wild, hunted specimens; biometrical examination may help clarify this. Domestic geese are common on medieval sites in England (Albarella 2005; Serjeantson 2002) and the element distribution and butchery marks are suggestive of waste from carcass preparation for cooking, with the meatiest elements largely having been removed. It seems possible that goose 'crowns' were being prepared and then cooked in or close to the kiln.

The presence of medullary bone is unusual. Serjeantson (2002) points out that due to the more seasonal laying behaviour of geese compared to chicken it was less likely that geese would have been killed during their laying period than chickens and consequently less likely that archaeological goose bones would contain medullary bone. Upon examination of goose bones from several medieval sites in Winchester Serjeantson (*ibid.*) found that no medullary bone was detectable. It seems possible that the geese present here were killed shortly after egg laying ceased and hence still retained some of their medullary bone. Although little information is available on medullary bone in geese, studies of chicken and pigeons have shown that after the end of laying medullary bone takes one to three weeks to be broken down completely (Simkiss 1967, 168-9; Taylor 1970, 92-3; both cited in Rick 1975). This may also explain why medullary bone was present in some elements and not others; although it appears that the femur and tibio-tarsus are the most common elements in which medullary bone is detected (Eda *et al.* 2013; Lentaker and Van Neer 1996; Rick 1975; Serjeantson 2009) for chickens and geese.

A preliminary search of the literature showed very little in terms of archaeological goose medullary bone, with only two examples, aside from the one presented here, being found. Eda *et al.* (2013) noted two cases of medullary bone from 233 samples checked for sites in Japan, both of which were femora, and took this as an indication of the presence of domestic geese as no wild geese breed within Japan. Rick (1975) notes that medullary bone was found in Canada goose (*Branta canadensis*) bones recovered from archaeological contexts in Canada, but does not give any further details.

In terms of the utilisation of the geese at the site it seems clear that they were valued for their meat and eggs but were also likely exploited for their down and quill feathers, both of which could be harvested from either live or dead birds (Albarella 2005). They were also possibly used as guard animals (*ibid.*). Birds raised specifically for meat consumption are likely to have been killed at a much younger age than the egg laying females seen here and it is possible that some of the bones present do belong to younger individuals. Serjeantson (2002) noted that where geese were raised for meat three age peaks were likely to be present in archaeological remains indicating geese of 12 weeks (green geese), 5-10 months

old and five years after egg production had peaked, with the first two categories being much larger. However due to the early fusion of the goose skeleton distinguishing the different age groups is currently almost impossible, although bones of geese as young as 12 weeks are likely to appear more porous than those of older specimens (*ibid.*). The presence of medullary bone here indicates that these birds were of at least two years of age and were killed between February and June (Serjeantson 2002). If they were killed at the end of the laying season, as postulated above, then May or June seem to be the most likely months for them to have been killed. This would also have been the time for slaughtering green geese, however although it is possible, even likely, that not all of the geese represented here were egg laying females, none were noted as having young looking, porous bones so green geese do not appear to be represented.

The relationship between the goose bones and the kiln may simply have been a convenient place to butcher and cook the geese; however it is also possible that the laying geese were kept within the vicinity of the kiln to promote good health and aid egg incubation. There is some anecdotal evidence for chickens being brought into warm places such as blacksmiths, before the advent of modern egg incubators, for just this purpose (J. Best *pers. comm.*).

### Conclusions

Domestic mammal bones appear to fall into line with the general pattern for animal husbandry and economy in medieval England; however the sample is very small and unlikely to reliably show any anomalies. The collection of goose bones is of particular interest due to the quantity of bones present and the unusual presence of medullary bone, frequently observed in archaeological chickens but not geese.

### The Shell

*Julia E.M. Cussans*

A small quantity of marine shell was recovered from excavations at South Bradwell. In total 41 pieces of oyster shell (*Ostrea edulis*) were recovered from four contexts/ context segments (Table 30), the majority of which came from Phase 3 Ditch F2059. Shell preservation was rated as ok or poor on a five point scale from very poor through to excellent, and shells were noted as being chalky and fairly abraded. A small number of shells were noted as having evidence for polychaete worm infestations. None of the shells were noted as having any obvious human modifications. Upper and lower valves were roughly evenly represented and the shells were noted to vary considerably in size. No other species were present and it is not felt that any further work is merited on this small assemblage.

Feature	Context	Description	Phase	Oyster			NISP	MNI
				Lower	Upper	Frag		
2300	2301	Pit	2		1		1	1
2059	2060S	Ditch	3		1		1	1
	2060T		3			2	2	1
	2080T		3	10	11	16	37	11
			<i>Total</i>	10	13	18	41	13

Table 30: Quantification of oyster shells by context/ context segment. NISP = number of identified specimens, MNI = minimum number of individuals

## The Environmental Samples

John R. Summers

### Introduction

Excavations of medieval archaeological deposits at South Bradwell resulted in 132 bulk soil samples (3060 litres) for environmental archaeological investigation, adding to a further 29 from a previous trial trench excavation on the site (Summers 2014). The sampled features included two medieval agricultural kilns and the ditches associated with a medieval/ post-medieval windmill. This report follows on from an initial assessment of the samples from the evaluation (Summers 2014) and excavation (Summers 2015), which recommended a number of samples for full analysis and reporting. This report presents the results from the archaeobotanical analysis of the bulk sample light fractions, and discusses the results in their regional archaeological and archaeobotanical context.

### Methods

Samples were processed at the Archaeological Solutions Ltd facilities in Bury St. Edmunds using standard flotation methods. The light fractions were washed onto a mesh of 500µm (microns), while the heavy fractions were sieved to 1mm. The dried light fractions were sorted under a low power stereomicroscope (x10-x30 magnification). Botanical and molluscan remains were identified using reference literature (Cappers *et al.* 2006; Jacomet 2006; Kerney and Cameron 1979; Kerney 1999) and a reference collection of modern seeds. All samples recommended for analysis were fully quantified. The criteria for full analysis was the potential for a sample to produce a record of >30 identifiable specimens, which was considered the minimum able to be useful for basic numerical analysis.

### Results

Table 31 shows the distribution of samples by Phase, while the quantified data from Phases 2 and 3 are shown in Tables 32 and 33 respectively.

Phase	Number of samples	Volume (litres)
Phase 1 - Neolithic (4300-2100BC)	1	20
Phase 2 - Saxo-Norman to High Medieval (10 <sup>th</sup> to 13 <sup>th</sup> / 14 <sup>th</sup> century AD)	66	1530
Phase 3 - High medieval to post-medieval (14 <sup>th</sup> / 15 <sup>th</sup> to 17 <sup>th</sup> century AD)	54	1270
Phase 4 - Early modern/ modern (18 <sup>th</sup> century+ AD)	10	220
Undated	30	560
<i>Total</i>	<i>161</i>	<i>3600</i>

Table 31: The distribution of samples by phase

#### Phase 1 - Neolithic (4300-2100BC)

A single sample was present from Phase 1 pit Fill L2120 (F2119). No remains of archaeobotanical significance were recovered.

#### Phase 2 - Saxo-Norman to High Medieval (10<sup>th</sup> to 13<sup>th</sup>/ 14<sup>th</sup> century AD)

Phase 2 activity was prevalent across the site and 66 samples were taken and processed from these medieval deposits. Cereal remains were recorded in over half

of the samples (56.06% ubiquity). Most common were barley (*Hordeum* sp.) and oats (*Avena* sp.), both recorded in 36.36% of samples. Where possible to determine, barley grains were identified as hulled. No asymmetric grains were present, which suggests the cultivation of a 2-row variety (*Hordeum distichon*), although this cannot be confirmed without rachis nodes for precise identification. No diagnostic oat chaff elements were identified in the samples but it is likely that the remains were of a domesticated variety (i.e. *Avena sativa*). After barley and oats, the next most commonly recorded cereal was rye (*Secale cereale*) in 22.73% of samples, followed by wheat (*Triticum* sp.) in 19.7% of samples. Where identifiable, all wheat remains were of a free-threshing variety (*T. aestivum/ turgidum* type), although no rachis remains were recovered to allow a more precise identification.

A number of rich samples were recorded (Appendix 2), the majority of which were from Kiln 1 and its associated activity area. These are discussed in detail below:

### Kiln 1

The majority of the rich samples from Phase 2 were associated with Kiln 1, coming from the stokehole (F2363; 1 sample) and the sunken activity area that partially enclosed the kiln (F2359 (Structure 1); 8 samples).

Four of the samples from the kiln were very rich, producing >10 items per litre, and are likely to represent the remains of discrete dumps of carbonised remains, perhaps from cleaning of the kiln or grain drying accidents. These included samples from L2386 (Seg.B), L2387 (Seg.C) and L2387 (Seg.D) in Structure 1 (F2359). The fourth sample was from L2365, the fill of Stoke Hole F2363, which is likely to represent the remains from the final use of the kiln.

Cereal grain dominated the sampled deposits associated with Kiln 1, accounting for 82% of the identified specimens. Rye grains were numerically dominant (48.88%), followed by barley (28.18%) and oat (21.07%). Wheat made only a minor contribution to the assemblage (1.87%). Rye was dominant in seven of the nine samples, while barley was dominant in the remaining two. These proportions suggest that the kiln was used in the processing of three main cereals; rye, barley and oats. Rye appears to have been processed in the greatest concentration but all three are likely to have been significant in the kiln's function.

A small range of non-cereal crop taxa were also present, including pea/ bean (Fabaceae) and a single flax (*Linum usitatissimum*) seed in L2387 (Seg.D). It is likely that these represent a contaminant of cereal products in this instance and it is unlikely that Kiln 1 was associated with the processing of these crops. However, it is an indication of wider elements of the agricultural economy at South Bradwell.

Chaff remains were rare, with only rye rachis being recorded in six of the nine samples. The concentration of rachis remains was relatively low, producing a ratio of 22:1 (grains : rachis). This shows that the proportion of grain to rachis was much higher than the 3:1 expected in an unprocessed ear, indicating the presence of predominantly clean grain in the deposits. Rye, barley and oat are all free-threshing cereals and it is likely that drying was carried out for fully processed cereals prior to storage. Primary processing is likely to have been carried out elsewhere, away from

the kiln area. An assemblage of cereals from a 12<sup>th</sup> century granary at Lydford, Devon (Green 1980), indicated that oats and rye were stored in a fully processed state during this period.

Non-cereal taxa included goosefoot (*Chenopodium* sp.), chickweed (*Stellaria media*), corn spurrey (*Spergula arvensis*), corncockle (*Agrostemma githago*), knotweed (*Persicaria* sp.), black bindweed (*Fallopia convolvulus*), dock (*Rumex* sp.), wild radish (*Raphanus raphanistrum*), vetch/ wild pea (*Vicia/ Lathyrus* sp.), cleavers (*Galium aparine*), stinking chamomile (*Anthemis cotula*), scentless mayweed (*Tripleurospermum inodorum*), sedge (*Carex* sp.), chess (*Bromus secalinus* type), barren brome (*Anisantha sterilis* type) and other wild grasses (Poaceae). Goosefoot, knotweed and dock tend to prefer more fertile soils and may reflect amendment of cultivated land. Corn spurrey, scentless mayweed and wild radish are more common on free-draining soils, while stinking chamomile prefers heavier soils. This produces a mixed view of cultivated soils, although free-draining sandy soils predominate around the site itself (Soilscapes 2015). The presence of stinking chamomile in the assemblage may point towards a proportion of imported grain product or seed corn from areas with heavier soils, such as those inland to the west.

The range of cultivated taxa is consistent with the prevailing soil conditions around the site. The sandy soils in the vicinity of South Bradwell would have been at a high risk of summer drought. Rye, barley and oats are better suited to these conditions than wheat, in particular rye, which has extensive root systems. Rye was often grown as an alternative to wheat as the primary winter cereal in areas unsuitable for wheat cultivation, although it is likely to have been a lower status crop (Campbell and Overton 1993, 57-58). Norfolk was responsible for a significant barley export during the medieval period (Campbell and Overton 1993, 55), which reflects the focus of the region's cereal economy. This is at odds with the expected pattern for the period on a national level, during which wheat tended to be the dominant cereal (e.g. Moffett 2006; Ballantyne 2005; Carruthers 2008; Fryer and Summers forthcoming), although it is similar to other medieval sites studied close to the Norfolk coast (e.g. Summers 2012 a and b).

It seems likely that the kiln was being used predominantly to dry locally grown cereals for storage or export. The identification of probable gorse charcoal (cf. *Ulex* sp.) in a number of the samples indicates that gorse constituted a significant proportion of the kiln's fuel supply. Gorse is a fast burning fuel that can provide a high temperature. It also has the benefit of being readily available from scrub habitats, which are likely to have existed in the vicinity of the site.

#### Other deposits

Other rich samples were recovered from posthole Fill L2238, and ditch Fills L2278 (Seg.D) and L2187 (Seg.D). The richest of these was posthole Fill L2238 (F2237), which produced 13 items per litre. This deposit was dominated by oat grains (78%), accompanied by a smaller proportion of barley (20%) and rye (2%). A small number of non-cereal taxa were also present, although the majority were identified as 'large grass' and could also have been poorly preserved specimens of oat. Therefore, it is likely that this deposit represents the carbonised remains of a cleaned oat crop, perhaps destroyed during drying or in a storage accident.

Ditch Fills L2278 (Seg.D; F2277) and 2187 (Seg.D; F2186) were both dominated by the seeds of non-cereal taxa. The material from L2278 (Seg.D) contained a range of likely arable weed taxa. However, the dominant taxon was sedge (*Carex* sp.), which is typically a plant of wetter, more marginal habitats. It can grow as an arable weed in marginal areas of cultivated land but could also have been gathered from nearby heathland/ wetland habitats. The non-cereal taxa in L2187 (Seg.D) were dominated by pondweed (*Potamogeton* sp.). This plant flowers and fruits underwater, which means it cannot be part of an arable weed community. The rest of the sample is composed of cereal grains and associated arable weed taxa and the origin of the pondweed is uncertain. It possible that it was gathered through the clearing of a pond or well and subsequently burned as a means of disposal.

### Phase 3 - High medieval to post-medieval (14<sup>th</sup>/ 15<sup>th</sup> to 17<sup>th</sup> century AD)

In the 54 samples from Phase 3 deposits, cereals were present in 44.44%. Amongst these, barley (*Hordeum* sp.) was recorded in 22.22% of samples, followed by oat (*Avena* sp.) and wheat (*Triticum* sp.) in 14.81%, and rye (*Secale cereale*) in 11.11%. This appears to represent a decline in the recovery of cereal remains, which may reflect a decrease in the intensity of arable processing. However, a significant number of samples were recovered from Windmill Ditch F2059, many of which were devoid of carbonised material and may have skewed the dataset.

Two samples from segment T of Ditch F2059 (L2060 and L2080) were rich in carbonised remains and were fully quantified (Appendix 3). Both deposits were dominated by carbonised cereal grains, with free-threshing type wheat (*T. aestivum*/ *turgidum* type) predominating in L2060 (Seg.T), accompanied by a significant proportion of barley. The cereal grain in L2080 (Seg.T) was dominated by barley, with a significant proportion of wheat also present. The small proportion of oat and rye are perhaps more likely to represent a contaminant in this instance. A single specimen of bread wheat (*T. aestivum*) rachis was recorded in L2080 (Seg.T), indicating that this may have been the dominant wheat type. Pea/ bean seeds were also present, along with arable weeds goosefoot (*Chenopodium* sp.), dock (*Rumex* sp.), vetch/ wild pea (*Vicia*/ *Lathyrus* sp.) and sedge (*Carex* sp.).

The material from L2060 (Seg.T) and L2080 (Seg.T) could represent the remains of a processing or storage accident. The large number of blank or low density samples from the rest of the ditch fills suggests an input of carbonised material as background debris from activities on the site, rather than discrete dumps of material like that in segment T.

Other rich Phase 3 samples were those from the fill of Kiln 2 Stoke Hole F2376 (L2377). Both samples were dominated by cereal remains, accompanied by a small proportion of non-cereal taxa and chaff. Oat remains were numerically dominant and rye was also well represented, particularly in sample 2.130. Barley constituted around 14% of the identified cereal grains and may also have played a role in the feature. Being from the kiln stokehole, it is likely that the sampled remains represent a mixed assemblage of material from multiple firings. The kiln appears to have been used to dry clean cereal crops, predominantly of oats and rye. Barley remains were much less numerous but may also have been dried in the feature. This is slightly

different to the pattern seen in Phase 2 Kiln 1, which was dominated by the remains of rye and had a higher proportion of barley grain.

Non-cereal taxa included goosefoot (*Chenopodium* sp.), oraches (*Atriplex* sp.), knotweed (*Persicaria* sp.), black bindweed (*Fallopia convolvulus*), dock (*Rumex* sp.), wild radish (*Raphanus raphanistrum*), knapweed (*Centaurea* sp.), stinking chamomile (*Anthemis cotula*), common spike-rush (*Eleocharis palustris*) and brome grass (*Bromus* sp.). This is a common range of arable weeds that reflects relatively fertile soils. As in Phase 2 deposits, there are indicators for both sandy soils (*Raphanus raphanistrum*) and heavier soils (*Anthemis cotula*).

## Summary

A comparison of the material from Kiln 2 and that from the windmill ditch show a contrasting pattern. The increased presence of wheat in L2060 (Seg.T) and, to an extent, L2080 (Seg.T) suggests that this crop had a stronger association with the windmill. This may represent wheat brought to the site for milling, which is likely to have been cultivated on more fertile soils further afield. The oat and rye dominated assemblage from Kiln 2 is more likely the product of local cultivation on sandy soils.

## Phase 4 - Early Modern/ Modern (18<sup>th</sup> century+ AD)

The ten Phase 4 samples produced very few carbonised plant macrofossils. This most likely reflects a decline in the association of arable processing activities with the site.

## Undated features

Archaeobotanical remains in the 30 samples from undated deposits were quite comparable to those from both Phase 2 and Phase 3. A number of quite rich samples were recovered, including those from F2207, F2253, F2265 and F2322. The material from pit fill L2323 (F2322) was particularly rich, with a large volume of cereal remains likely to represent a significant cereal drying or storage accident. This deposit was dominated by hulled barley and oat. This was also the case for three undated postholes (F2207, F2253 and F2265). These features are in the vicinity of rich Phase 2 deposit L2238 (F2237) and could represent debris from related arable processing or storage activities in this part of the site (Enclosure 7). However, none of these features could be accurately phased and, as a result, the samples were not subject to full identification and quantification.

## *Discussion and Conclusions*

The site at South Bradwell was involved in arable production and processing throughout much of the medieval period and, during Phase 3, was a focal point for the import and processing of cereals from a wide area, with activity focussed on the windmill. Locally produced cereals in Phases 2 and 3 appear to have been dominated by the hardier, more drought tolerant types, barley, oat and rye, which would have been well suited to the local free draining soils. Pulses and flax may also have been locally cultivated as part of the broader mixed economy.



Kiln 1 demonstrates bulk processing of cereals during Phase 2. It is most likely that these were locally produced, being processed for local consumption and local markets, such as in nearby medieval settlements at Gorleston-on-Sea or Browston. The relatively modest scale of the kiln (c. 2m diameter of drying chamber) and the mixed range of crops associated with it support this interpretation. The wide distribution of carbonised cereals across the site and occasional rich deposits demonstrate that cereals were in common usage and being handled in sufficient quantities to result in occasional drying and storage accidents. This is likely to have continued in Phase 3, as evidenced by Kiln 2. At this time, the windmill on the site is likely to have exceeded the processing requirements of local cereals and been used to process cereals brought from other farms for milling. The elevated levels of wheat grains in L2060 (Seg.T) and L2080 (Seg.T) may be a reflection of this pattern, with wheat being imported from areas of more fertile, heavy soils to the west or possible drained areas of fen on the edge of the broads to the north and west.

## **4 DISCUSSION**

### **Summary**

4.1 The excavation at Wheatcroft Farm revealed a dense concentration of Saxo-Norman to High medieval ditches/ gullies, defining a number of rectilinear enclosures, especially in the north and east of the site. This evidence complemented that encountered by the forerunning trial trench evaluation (Fairclough 2014) and was superseded by a more open, High medieval to post-medieval landscape including the site of a post mill. Modest agricultural kilns were also identified within these phases of activity. Earlier, prehistoric evidence was sparse, comprising a single pit and a quantity of residual pottery and struck flint. Early modern/ modern evidence was also poorly represented, suggesting that the focus of settlement activity and agricultural industry had shifted away from the site by this time. Historic cartographic sources, including the 1885 and subsequent OS maps show the site as occupying an extensive agricultural landscape with little encroachment of modern Bradwell and Gorleston-on-Sea until the late 1950's.

4.2 The following discussion will focus on the pre-modern phases of activity at the site, with particular emphasis on the Saxo-Norman to post-medieval periods.

### **The Site within its Landscape**

4.3 The predominantly agricultural nature of the site's hinterland appears to have persisted since at least the medieval period. The Domesday entries for Gorleston and Browston record plough teams and a predominance of sheep in both manors, while the population of coastal Gorleston also included a notable number of fisherman ([www.opendomesday.org](http://www.opendomesday.org)). The locally undulating coastal plain includes the Rivers Yare and Waveney, and the site's free-draining soils are well suited to cereal cultivation (Soil Survey of England and Wales 1983, 9). The local agricultural economy would also, no doubt, have benefited from its location in respect to the sizable port of Great Yarmouth. The town – the historical core of which is located c. 4.5km to the north-east of the current site – received a royal charter in the early 13<sup>th</sup>

century and its prosperity grew around the North Sea herring industry and trade (Meeres 2007).

4.4 Bradwell – part of the Hundred of Lothingland (-1746) – has no separate Domesday entry, having been included in the returns for Gabbetun [Gapton] (Suckling 1846), a settlement of ten households to the north-east of modern Bradwell ([www.opendomesday.org](http://www.opendomesday.org)). The current site is geographically closer to the Ville of Browston, however, a similarly small settlement of just nine households (<https://heritage.suffolk.gov.uk/Data/Sites/1/media/parish-histories/bradwell.pdf>). As a parcel of the lordship of Gapton, Bradwell was royal demesne following the Conquest (Suckling 1846), and was apparently later ‘vested in Alexander Fastolf’ in the early 14<sup>th</sup> century (Copinger 1909, 14). It may have been always amalgamated with the manor of Bradwell Hall (*ibid.*), the two having been jointly auctioned in 1800. The parish of Bradwell was enclosed by Private Act of Lands 1809 (awarded 1814; Tate 1952, 248). Given the situation of the current site it is not unreasonable to suggest that it may have been part of a manor/ demesne farm.

## The Prehistoric

4.5 The only Prehistoric feature (Pit F2119 (L2120)) was located close to the northern edge of the excavation. This feature was tentatively dated based on the presence of an earlier Neolithic worked flint sickle (SF3) in its fill. This may have comprised a structured deposit, perhaps originally accompanied by organic material that had perished in the burial environment (cf. Davies and Robb 2004); structured deposits of multiple flint tools and/ or pottery sherds are more usual, however (e.g. Garrow 2007). At Hall Road, Hopton-on-Sea, some 3.6km to the south-east of the current site, a recent excavation by Pre-Construct Archaeology Ltd encountered evidence for the possible structured deposition of early Neolithic pot sherds, of ‘near-identical form, colour and decorative treatment’ within separate pits forming discrete feature clusters (Tinsley 2015, 114). Structured deposition of Neolithic material on a more sophisticated level has also been recorded at Kilverstone near Thetford (Garrow *et al.* 2006; after Tinsley 2015, 116). The remaining Wheatcroft Farm assemblage – largely or wholly comprising redeposited, residual material – dates between the Mesolithic and early Bronze Age (see *The Struck Flint*). The Mesolithic component includes discarded blade sections indicative of microlith production, while a blade-based technology also dominates the earlier Neolithic group, albeit with a slightly altered production technique (*ibid.*). Other earlier Neolithic tool types present include a D-shaped backed knife from unphased Pit F2428 (Fig. 47.3) and the roughout of an axe or similar from Topsoil L2000 (Fig. 47.6). The later Neolithic to early Bronze Age assemblage is characterised by flakes (including debitage and scrapers) produced by hard-hammer removal from multi-directional or un-systematic cores (*ibid.*).

4.6 Overall, the struck flint assemblage attests to little more than transient (possibly seasonal) activity, with no defined ‘activity area(s)’ being identified. However, we cannot discount the possibility of more sedentary activity within the local landscape – especially in later periods – given the disturbed/ dispersed nature of the assemblage. The spread of tool types and periods represented accords well with known finds from the local area.

## The Saxo-Norman to High Medieval Period

4.7 The Saxo-Norman to High medieval site was defined by a series of rectilinear, ditched enclosures (numbering at least seven), particularly across the northern and eastern areas (Fig. 8); a possible ditched pen or similar was also identified. These apparently agricultural enclosures (see below) occupied land between two known medieval villages (Gorleston-on-Sea and Browston; [www.opendomesday.org](http://www.opendomesday.org)) and probably formed part of a nearby farmstead. The deserted medieval village of Browston is thought to be located in the vicinity of Browston Hall (NHER 11433), some 1.2km to the south of the site, while the historic core of Gorleston-on-Sea is over 2km away to the north-east. It is conceivable that the Phase 2 site had close social and/ or economic ties with one or both settlements, plus the nearby port of Great Yarmouth. Also present within the Phase 2 site were the remains of a kiln and associated, semi-subterranean structure. Environmental evidence from the kiln suggests a use for the drying of locally produced cereal crops for storage or export, with oat and barley dominating the assemblage.

### *Nature of the Saxo-Norman to High Medieval Enclosures*

4.8 Finds and environmental evidence from Phase 2 deposits suggest a predominantly agricultural economy. Environmental remains are richest from the area of Kiln 1/ Structure 1 (discussed separately), although also include rich deposits from Posthole F2237, and Ditches F2139 (=2186) (Enclosure 1) and F2277 (Enclosure 7). Material from Posthole F2237 is dominated by oat grains (78%), with lesser proportions of barley (20%) and rye (2%) (see *The Environmental Samples*). This is thought to represent a cleaned oat crop that was burnt during drying or accidentally during storage (*ibid.*). Plant remains from Ditches F2139 (=2186) and F2277 are dominated by non-cereal taxa, although those from F2277 (L2278 (Seg.D)) include a range of likely arable weed species (*ibid.*). The dominant taxa was sedge – indicative of more marginal habitats – while the presence of pondweed from Ditch F2139 (=2186) suggests the possible cleaning out of a pond or well and the subsequent burning of waste (*ibid.*). No such features were identified within the excavation, although may well have been present nearby. Regional examples of rural medieval wells and ponds are known from Cedars Park, Stowmarket (Woolhouse forthcoming) and the villages of Brettenham and Darsham (Mustchin *et al.* forthcoming). It is also possible that pondweed may have originated from waterlogged boundary ditches. However, no gleyic fills – indicative of at least intermittent or seasonal waterlogging (Ashman and Puri 2002; Lindbo *et al.* 2008) – were present within the Phase 2 ditches/ gullies and the local free-draining soils would not promote such waterlogging (Soil Survey of England and Wales 1983, 9).

4.9 The Phase 2 animal bone assemblage is dominated by cattle with lesser numbers of other species (see *The Animal Bone*). Horse is also abundant (by NISP) but is likely over represented, with the majority of identified fragments (teeth) most probably deriving from a single individual (*ibid.*). Medium sized and large mammal bones (not identifiable to species) are present in reasonable quantities, while a single dog is also represented; the presence of dog is otherwise evidenced by gnawing (*ibid.*). Young pig and horse are sparsely represented in the assemblage, while a single neonate cattle bone suggests the on-site breeding of this species (*ibid.*). Biometrical and age-at-death data suggest the use of cattle for meat,

breeding or traction, with a pathological metatarsal from Gully F2412 also suggesting the presence of traction animals (*ibid.*). Dispatch of sheep/ goat for mutton is also suggested, although the overall small size of the animal bone assemblage hinders interpretation (*ibid.*).

4.10 In summary, the use of the Phase 2 enclosures appears to have been agricultural, with the local landscape forming part of a farmstead or similar. The concentration of enclosures in the north and east of the site (Fig. 8) may suggest that the focus of agricultural activity (the farmyard) lay beyond the excavation in one of these directions. The Saxo-Norman to High medieval pottery assemblage (totalling 309 sherds (2971g)) was predominantly domestic in nature and dominated by coarse wares (see *The Pottery*), while the small finds included quern stone fragments and a fragment of whetstone from Phase 2 Pit F2308. Possible depositional processes may have included manuring, loss or casual discard.

#### *Kiln 1/ Structure 1*

4.11 Of particular interest within the Phase 2 landscape were the remains of a clay-lined agricultural kiln (Kiln 1) set within the southern end of a semi-subterranean structure (Structure 1). The latter comprised a sunken, sub-rectangular feature and a small number of structural postholes (Plates 2-3; Figs. 8 and 16/ 16a). It is possible that the structure comprised a simple shelter or enclosed space from within which the interior of the kiln could be accessed and worked (at a level above the preserved archaeological horizon). The kiln's stoke hole was located beyond Structure 1, to the south-west, and was linked to the kiln's firing chamber via a clay-lined flue (since collapsed; Figs. 16/ 16a and 26). It is conceivable that the 'exterior' placing of the stoke hole was deliberately done to separate it from any grain being dried or stored within the structure, thus minimising the risk of fire. Similar measures to prevent sparks entering the firing chamber have been noted elsewhere (Monk and Kelleher 2005).

4.12 Rickett (1975, 4) defines drying kilns as 'structure[s] specifically designed, built and originally used for the drying of some commodity' (after Monk and Kelleher 2005, 77). They are an important part of the agricultural economy in temperate climates where cool summers prevent natural drying of crops (Gibson 1988, 219). Fenton (1997, 375) outlines the main uses of agricultural kilns as being for the drying of unripened seed grain; for the malting of grain as part of the brewing process; and for the preparation of grain for grinding [milling]. Although such structures are more common to northern and western regions (e.g. Fenton 1997), their occurrence in East Anglia during the medieval period may be in part due to a late 13<sup>th</sup>/ 14<sup>th</sup> century shift in climate. The latter part of Phase 2 at Bradwell occupies the interface between the so-called *Medieval Warm Period* (dating between c. AD 950 and 1250) and the *Little Ice Age* (dating between c. AD 1300 and 1850; Fagan 2000; Grove 2004, 419, table 15.3; Mann *et al.* 2009). Worsening conditions from this time resulted in cooler, wetter summers and a restricted growing season (Fagan 2000). The regular failure of crops to naturally ripen under such conditions resulted in the widespread need to artificially dry grain in kilns and ovens (Fagan 2000, 40).

## The function of Kiln 1

4.13 Environmental sampling in the area of Kiln 1/ structure 1 – including samples from the Kiln's stoke hole and the structure's fills – yielded a rich assemblage of charred plant remains dominated by cereal grains. The cereal component represents a fully cleaned product and is dominated by rye grains (48.88%; dominant in seven of the nine samples taken), followed by barley (28.18%) and oat (21.07%) (see *The Environmental Samples*); wheat is comparatively scarce (1.87%). As such, the kiln appears to have been used predominantly in the processing of three main cereal grains, but chiefly rye. The predominant species are typical of the site's sandy soils, while the fully cleaned nature of the grains suggests drying as a prelude to storage or export. The possibility of drying as a response to the onset of the Little Ice Age must also be considered, however.

4.14 The non-cereal component of the assemblage includes pea/ bean (Fabaceae) and a single flax seed (*ibid.*). Although thought to represent contaminants, these remains give an indication of the broader agricultural economy at this time. The non-cereal taxa include a variety of arable weeds and other species representing a broad range of soil types. Species including Corn spurrey and wild radish are common plants on sandy, free-draining soils – such as those present at the site – while goosefoot, knotweed and dock tend to prefer more fertile soils and may reflect amendment of cultivated land (*ibid.*). The presence of stinking chamomile is more unusual, however. This arable weed prefers heavier soils and might suggest the importation of corn on some scale from other areas. The occurrence of probable gorse charcoal in a number of samples indicates the probable contribution of this species as a fuel, used to fire the kiln.

4.15 Regional examples of medieval agricultural kilns/ ovens include an excavated example at Old Hall Farm, on the route of the Bacton to King's Lynn gas pipeline (Clay and Wilson 2012, 154-5). The kiln at this site – dated between the 11<sup>th</sup> and 14<sup>th</sup> centuries – underwent three phases of construction/ use, the earlier of which were probably associated with the drying of cereal grains (*ibid.*). Also identified at this site was a possible sunken floored building of unknown date (*ibid.* 170). The building was not thought to be Anglo-Saxon (as its form implied), owing to the total lack of supporting, datable evidence (*ibid.*) and there remains a strong possibility that it was also of medieval date. Medieval corn drying kilns from further afield include a stone built example from Kilnsey Green, North Yorkshire (Johnson *et al.* 2009). Structures of this type were a common feature of the medieval British landscape, especially in areas where a damp climate inhibited the air drying of grain (*ibid.* 20).

## Goose remains

4.16 Also of interest from the area of Kiln 1/ Structure 1 was a collection of goose remains, representing at least four individuals, two of which were egg laying females (see *The Animal Bone*). One of the latter had also been butchered, probably a short time after the cessation of egg laying based on the presence of medullary bone. The recorded distribution of elements and butchery marks point towards carcass preparation for cooking – possibly in or close to the kiln (*ibid.*). Besides a possible cooking function, the kiln and Structure 1 may also have provided temporary housing for geese, promoting health and a warm environment for egg incubation (*ibid.*).

Anecdotal evidence indicates that chickens were brought into warmer environments prior to the introduction of modern incubators (J. Best *pers. comm.*). In addition to eggs and meat, it is probable that the geese were exploited for their down and quill feathers (Albarella 2005), and they may have functioned as guard animals (see *The Animal Bone*).

## The High Medieval to Post-Medieval Period

4.17 Phase 3 witnessed a significant reduction in the intensity of activity within the site – compared to preceding Phase 2 – and an opening up of the agricultural landscape. Only one enclosure (Enclosure 8) was encountered, although it is possible that more existed in the northern part of the site (Fig. 9). Of particular interest was the site of a post mill in the south-west corner of the excavation, while a second agricultural kiln was also present. Three Phase 3 pits (excluding ‘internal’ features associated with the windmill) were identified in the south-western area of the site.

### Enclosure 8

4.18 Enclosure 8 was delineated by L-shaped Ditch F2125 (Grid Squares L5-L6 and L5-N5; Fig. 15) and north to south aligned Ditch F2330 (Grid Squares N4-N5). A second Phase 3 enclosure may have been present to the west. Internally, Enclosure 8 measured just c. 370m<sup>2</sup> within the excavation, although would have originally been larger. Despite the comparative lack of enclosure features in Phase 3, those present appeared to loosely reflect the alignments of the earlier Phase 2 boundaries, possibly suggesting that Enclosure 8 was a direct development of the forerunning agricultural ‘system’.

### Kiln 2

4.19 A second drying kiln (Kiln 2) was associated with the Phase 3 landscape. This kiln was less well preserved than Kiln 1 (see above) with little of its floor or primary fill remaining *in situ*. However, environmental sampling of Stoke Hole Fill L2377 yielded abundant charred cereal grains, dominated by oat and rye. Raistrick (1972, 90) highlighted the relationship between mills and drying kilns (after Johnson 2009, 21), and it is conceivable that grain processed in Kiln 2 was also milled at the site. The Phase 3 windmill was c. 260m to the west of Kiln 2. It has been noted that wet grains, particularly oats, cannot be effectively milled and require thorough drying beforehand (Johnson *et al.* 2009, 20). Drying oats also allows for effective dehushing (*ibid.*).

4.20 The dating of Phase 3 places it within the span of the *Little Ice Age* (c. AD 1300-1850); a period of climatic deterioration which resulted in cooler and wetter weather and a restricted growing season (Fagan 2000; Grove 2004, 419, table 15.3; Mann *et al.* 2009). As with Kiln 1 (above), it is possible that Kiln 2 was a direct response to the need to artificially dry cereal grains that would not naturally ripen in the field.

## *The Windmill*

4.21 The windmill was represented by two phases of intercutting, ring-ditches, truncating buried soils of Saxo-Norman to High medieval date (Figs. 9 and 12). The earlier ring-ditch (F2010) formed a continuous circuit, while the latter 'boundary' was segmented (formed by Ditches F2050, F2059 and F2472) with the broadest opening or 'causeway' to the west (facing Browston Lane). A possible remnant of the mill mound/ hill (L2015) was present within the area of the ring-ditches, although appeared heavily ploughed out. The blue/ grey colour and chalky clay consistency of L2015 was dissimilar to the underlying sandy strata, possibly suggesting that it had been imported from elsewhere. In places, L2015 was truncated by Ring-Ditch F2010 which indicates that the latter post-dated the construction of the mound, although not necessarily by much. 'Internal' features were sparse, although included square-cut Pit F2027 which may have formed part of a footing for a post mill.

4.22 The primary windmill ditch (F2010) yielded the largest pottery assemblage of any feature at the site, comprising 52 sherds in total (see *The Pottery*). The group includes a sizable quantity of early to High medieval material (34 sherds), although also contains a variety of late medieval, transitional and post-medieval wares, including the rim of a post-medieval red earthenware cooking pot with external sooting (*ibid.*). Also present from this feature are a sherd of Frechen stoneware, and unprovenanced stoneware sherd and a fragment of clay pipe, which together suggest a date for the windmill not predating the mid 16<sup>th</sup> century (towards the end of Phase 3) (*ibid.*).

4.23 Medieval and post-medieval post mills are a common feature of the Norfolk landscape, with numerous examples recorded by the county's Historic Environment Record (NHER). Excavated examples include a medieval mill hill at Mount Close, Swaffham (NHER 2655). The part excavation of this monument in 1958 revealed made ground layers dating between the 13<sup>th</sup> and 17<sup>th</sup> centuries AD (*ibid.*), and the site was also labelled as 'Millhill piece' on the tithe map of 1843 (*ibid.*). The site of a possible medieval/ post-medieval mill was also excavated at Witton, near North Walsham (NHER 7071; Lawson 1983, 90). In this instance, the monument comprised a circular ditch with V-shaped profile and causeways to the north-west and south. The ditch was c. 1.5m wide and formed a cropmark some 18.2m in diameter (*ibid.*), only marginally smaller than the Bradwell ditches which formed a c. 20m wide circuit. The only finds from Witton were late medieval pot sherds consistent with wares being produced at Potter Heigham (*ibid.*), some 13km to the south-east; an industry that dates between the 12<sup>th</sup> and 15<sup>th</sup> centuries AD (NHER 8388). The site of the Witton mill is accessible via a road marked on Faden's map of 1797, although the mill was no longer in use by this time (Lawson 1983, 90).

4.24 Unexcavated mill hills are more numerous and include examples at Shropham (NHER 9028) and Broome (NHER 31444), the cropmarks of which comprise ring-ditches with characteristic central crosses (representing a pair of cross beams or 'cross-tree' (English Heritage 2011, 3-4)). The mound of the Shropham mill was still extant in 1976 but had been ploughed out by the mid 1990's (NHER 9028). Surviving windmill mounds include a low example at Beeston with Bittering (NHER 18227), associated with surface finds of medieval pottery and mill stone/ quern, and a possible mound in the Breckland parish of Thompson (NHER 8952). Additional

ploughed out examples include one at Tivetshall St Mary (NHER 12186). Within the immediate vicinity of the Bradwell site, a medieval post mill, possibly set within a Bronze Age barrow is recorded on Dorothy Avenue, c. 1.3km to the north-east.

4.25 Post mills were often sited on hills or mounds (Hills 1996, 42). In later examples the mound is thought to have allowed the mill to catch more wind, while in earlier mills – with lighter structures – the mound would have acted as an anchoring mechanism, designed to encase the mill’s cross-tree (English Heritage 2011, 4; Hills 1996, 42). Encircling ditches were also a common feature and may have acted as boundaries, designed to exclude livestock which ‘might have been hit by the sails’ (Hills 1996, 42-3). Good road access is also a feature of windmills, allowing for the effective import of grain and export of flour (English Heritage 2011, 3). The Bradwell windmill site sits adjacent to modern Browston Lane, an earlier incarnation of which may have been delimited to the east by Phase 3 Ditch F2029 (Figs. 9 and 12).

### *The High Medieval to Post-Medieval Economy*

4.26 Finds from Phase 3 are largely unremarkable. The comparative dearth of material from these features – with the possible exception of the windmill ditches – suggests that they were not regularly receiving deliberate dumps of domestic or other material. This is not unexpected, however, given the continuing agriculture character of the site at this time. Plant remains from environmental samples were also sparse. Overall, just over 40% of bulk samples from Phase 3 deposits yielded cereal remains, with barley being recorded in 22.22% of samples, oat in 14.81% and rye in 11.11% (see *The environmental Samples*). This pattern may reflect a decline in arable processing at the site, although may be skewed by the large number of negative samples collected from the area of the windmill (*ibid.*).

4.27 The Phase 3 animal bone assemblage is small. However, as with preceding Phase 2, all of the main domestic ungulates are represented. Cattle are once again dominant, with the presence of a single pathological bone hinting at the continued use of this species for traction. In contrast to the Phase 2 assemblage, the sheep/goat element lacks metapodia and only a small number of teeth are present. This suggests that only meat joints – indicative of food preparation and consumption – are represented. Dog was the second most abundant domestic species in Phase 3 (by NISP), although is likely over-represented.

## **5 CONCLUSIONS**

5.1 The encountered Saxo-Norman to Post-medieval archaeology at Wheatcroft Farm, Bradwell was consistent with a rural, agricultural landscape. The earlier part of this period was characterised by a series of rectilinear enclosures incorporating a small, semi-subterranean structure and associated agricultural kiln. The subsequent High medieval period also contained the remains of a kiln, but witnessed an opening up of the immediate landscape, akin to the area’s modern layout. Also of significance within the latter medieval/ post-medieval landscape was the site of a post mill located adjacent to existing Browston Lane. The site falls between two rural settlements recorded in Domesday – Gorleston and Browston – while the historical port of Great Yarmouth is located a short distance to the north-east. It is thought that



the site represented part of a nearby farmstead, possibly located to the north in the area of Gorleston.

5.2 The medieval/ post-medieval site appears to have been based on a mixed agricultural regime, with the animal bone assemblage attesting to a dominance of cattle throughout. However, crop husbandry appears to have been the mainstay of the farming economy, with a clear bias towards crops that are well suited to the area's free-draining, sandy geology. Some importing of wheat from the wider area is also suggested. The processing of crops was clearly indicated by the presence of agricultural kilns and a post mill, the former perhaps representing a reaction to poorer climatic conditions during the *Little Ice Age*. The drying of grain as a prelude to milling is also a clear possibility, however.

5.3 The need to investigate the development and dynamics of different rural medieval settlement types is an important regional research priority (Medlycott 2011, 70). There is also a need to better understand any potential link between field size and different agricultural regimes (*ibid.*). The current site provides a useful insight into a landscape between two medieval villages and attests to a generally consistent agricultural economy from the Saxo-Norman period onwards, regardless to clear developments in the division of the landscape.

5.4 The Saxo-Norman and later phases were indirectly preceded by prehistoric activity, chiefly represented by residual struck flint within later features and the overlying geology. No evidence of sedentary settlement was encountered and it may be that the prehistoric finds account for little more than transient, possibly seasonal activity. The nature of the recovered material is in keeping with other prehistoric finds from the local area.

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## BIBLIOGRAPHY

Albarella, U., 2005

'Alternate fortunes? The role of domestic ducks and geese from Roman to Medieval times in Britain', in Grupe, G. and Peters, J. (eds.), *Documenta Archaeobiologiae III. Feathers, Grit and Symbolism* (Leidorf, Rahden-West), 249-58

- Anderson, S., 1996  
'The Pottery', in Breen, A., Caruth, J. and Gill, D. (eds.), 'The Late Medieval Pottery Industry on the North Suffolk Border', *Medieval Ceramics* 20, 3-12
- Anderson, S., n.d.  
'The Fabrics ' in West, S. (ed.) *The Excavation of a Medieval Pottery Making Site at Hollesley, Suffolk in 1971* unpublished report
- Anderson, S. and Thompson, P., forthcoming  
'Medieval Pottery', in Woolhouse, T., *Dispersed Medieval Settlement on the Mid Suffolk Clay at Cedars Park, Stowmarket*, East Anglian Archaeology Report (Bury St Edmunds, Archaeological Solutions Ltd)
- Andrefsky, W., 2005  
*Lithics: Macroscopic Approaches to Analysis* (2<sup>nd</sup> edition, Cambridge, Cambridge University Press)
- Ashwin, T., 1996  
'Neolithic and Bronze Age Norfolk', *Proceedings of the Prehistoric Society* 62, 41-62
- Ashman, M. and Puri, G., 2002  
*Essential Soil Science: a clear and concise introduction to soil science* (Oxford, Blackwell Science Ltd)
- Ballantyne, R., 2005  
'Plants and seeds', in Mortimer, R., Regan, R. and Lucy, S., *The Saxon and Medieval Settlement at West Fen Road, Ely: The Ashwell Site*, East Anglian Archaeology Report No. 110 (Cambridge, Cambridge Archaeological Unit), 100-112
- Bartosiewicz, L., 2013  
*Shuffling Nags, Lamé Ducks, the Archaeology of Animal Disease* (Oxford, Oxbow Books)
- Bartosiewicz, L., van Neer, W. and Lentacker, A., 1993  
'Metapodial asymmetry in draught cattle', *International Journal of Osteoarchaeology* 3, 69-75
- Bartosiewicz, L., van Neer, W. and Lentacker, A. 1997  
*Draught Cattle: their osteological identification and history*, Annales Sciences Zoologiques (Tervuren, Belgique, Musée Royale de l'Afrique Central)
- Beadsmore, E., 2006  
'Earlier Neolithic Flint', in Garrow, D., Lucy, S. and Gibson, D., *Excavations at Kilverstone, Norfolk: an Episodic Landscape History*. East Anglian Archaeology 113 (Cambridge, Cambridge Archaeological Unit), 53-70
- Beresford, M.W. and Hurst, J.G. (eds.), 1989  
*Deserted Medieval Villages* (Stroud, Sutton Publishing)

Bishop, B., 2011

'Early Neolithic Flintwork', in Bishop, B. and Proctor, J., *Settlement, Ceremony and Industry on Mousehold Heath*, Pre-Construct Archaeology Ltd, Monograph No. 13, 31-48

Bradley, R., 1988

'Microwear Analysis', in Healy, F., *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part VI: Occupation during the Seventh to Second Millennium BC*. East Anglian Archaeology Report No. 39 (Dereham, Norfolk Archaeological Unit/ Norfolk Museums Service), 36-9 and Appendix 2 (microfiche)

Bradley, R., 1993

'The Microwear Analysis', in Bradley, R., Chowne, P., Cleal, R., Healy, F. and Kinnes, I., *Excavations on Redgate Hill, Hunstanton, Norfolk, and at Tattershall Thorpe, Lincolnshire*, East Anglian Archaeology Report No. 57 (Dereham, Norfolk Museums Service), 106-10

British Geological Survey, 1978

*Legend for the 1:625,000 Geological map of the United Kingdom (solid geology)* (London, Mansfield)

Buckley, D.G. and Major, H., 1988

'Quernstones', in Crummy, N., *The post-Roman small finds from Excavations in Colchester 1971-85*, Colchester Archaeological Trust Report No. 5, 36-9

Bull, K. and Mustchin, A.R.R., 2015

*Phase 1, Land at Wheatcroft Farm, Bradwell, Norfolk. Archaeological Assessment and Updated Project Design*, Archaeological Solutions Ltd Report No. 4976

Butler, C., 2005

*Prehistoric Flintwork* (Stroud, Tempus)

Campbell, B.M.S. and Overton, M., 1993

'A new perspective on medieval and early modern agriculture: six centuries of Norfolk farming c. 1250-c.1850', *Past and Present* 141, 38-105

Cappers, R.T.J., Bekker R.M. and Jans J.E.A., 2006

*Digital Seed Atlas of the Netherlands. Groningen Archaeological Studies Volume 4* (Eelde, Barkhuis Publishing)

Carruthers, W.J., 2008

'Charred, mineralized and waterlogged plant remains', in *Framework Archaeology, From Hunter-Gatherers to Huntsmen: A History of the Stansted Landscape* (Salisbury, Wessex Archaeology), Chapter 34 on CD

Clarke, H., 1977

'Excavations on a Kiln Site at Grimston, Pott Row, Norfolk', *Norfolk Archaeology* 35, 75-95

Clarke, H. and Carter, A., 1977  
*Excavations in Kings Lynn 1963-70*, Society for Medieval Archaeology Monograph Series 7

Clay, C. with Wilson, T., 2012  
'Medieval industry and settlement at Old Hall Farm, Themelthorpe, in Wilson, T., Cater, D., Clay, C. and Moore, R., *Bacton to King's Lynn Gas Pipeline Volume I: Prehistoric, Roman and Medieval Archaeology*, East Anglian Archaeology Report No. 145 (Lincoln, Network Archaeology), 152-71

Clark, J.G.D., Higgs, E.S. and Longworth, I.H., 1960  
'Excavations at the Neolithic Site at Hurst Fen, Mildenhall, Suffolk (1954, 1957 and 1958)', *Proceedings of the Prehistoric Society* 26, 202-45

Cohen, A. and Serjeantson D., 1996  
*A Manual for the Identification of Bird Bones from Archaeological Sites* (2<sup>nd</sup> Edition, London, Archetype Publications Ltd)

Copinger, W.A., 1909  
*The Manors of Suffolk: notes on their history and devolution, Vol. 5* (Manchester, Taylor, Garnett, Evans & Co.)

Cotter, J., 2000  
*Post-Roman Pottery from Excavations in Colchester, 1971-85*, Colchester Archaeological Report No. 7 (English Heritage)

Dallas, C., 1984  
'The pottery', in Rogerson, A. and Dallas, C., *Excavations in Thetford 1948-59 and 1973-80*, East Anglian Archaeology Report No. 22 (Norfolk Archaeological Unit), 117-66

Davies, P. and Robb, J.G., 2004  
'Scratches in the earth: the underworld as a theme in British prehistory, with particular reference to the Neolithic and earlier Bronze Age', *Landscape Research* 29(2), 141-51

Durden, T. and Anderson-Whymark, T., 2013  
'Struck Flint from Marsh Lane East Site 1', in Allen, T., Barclay, A., Cromarty, A., Anderson-whymark, H., Parker, A., Robinson, M. and Jones, G., *Opening the Wood. The Archaeology of a Middle Thames Landscape: Mesolithic, Neolithic and early Bronze Age; the Eton College Rowing Course Project and the Maidenhead, Windsor and Eton Flood Alleviation Scheme*, Oxford Archaeology Thames Valley Landscapes Monograph 38, 327-31

Eda, M., Yashima, S. and Inoué, T., 2013  
'Medullary Bone in Goose Remains: A Reliable Indicator of Domestic Individual in Non-Breeding Regions', *International Journal of Osteoarchaeology*, doi: 10.1002/oa.2355

- Egan, S., 2012  
*South Bradwell, Great Yarmouth, Norfolk. An Archaeological Evaluation (Field Survey)*, Archaeological Solutions Ltd Report No. 4025
- Egan, G. and Pritchard, F., 1991  
*Dress Accessories: medieval finds from excavations in London* (London, Museum of London/ HMSO)
- Fagan, B.M., 2000  
*The Little Ice Age: how climate made history 1300-1850* (New York (US), Basic Books)
- Fairclough, J., 2014  
*South Bradwell, Great Yarmouth, Norfolk. Archaeological Trial Trench Evaluation*, Archaeological Solutions Ltd Report No. 4837
- Fenton, A., 1997  
*The Northern Isles: Orkney and Shetland* (East Linton, Tuckwell Press)
- Fryer, V. and Summers, J.R., forthcoming  
'Charred plant macrofossils and other remains', in Woolhouse, T. *Medieval Dispersed Settlement on the Mid Suffolk Clay at Cedars Park, Stowmarket*, East Anglian Archaeology Report (Bury St Edmunds, Archaeological Solutions Ltd)
- Garrow, D., 2007  
'Placing pits: landscape occupation and depositional practice during the Neolithic in East Anglia', *Proceedings of the Prehistoric Society* 73, 1-24
- Garrow, D., Lucy, S. and Gibson, D., 2006  
*Excavations at Kilverstone, Norfolk: an Episodic Landscape History*, East Anglian Archaeology Report No. 113 (Cambridge, Cambridge Archaeological Unit)
- Gibson, A., 1988  
'Medieval corn-drying kilns at Capo, Kincardineshire and Abercairny, Perthshire', *Proceedings of the Society of Antiquaries of Scotland* 118, 219-29
- Grant, A., 1982  
'The use of toothwear as a guide to the age of domestic ungulates', in Wilson, B., Grigson, C. and Payne, S. (eds.), *Ageing and Sexing Animal Bones from Archaeological Sites*, British Archaeological Reports (British Series) 109 (Oxford, Archaeopress), 91-108
- Grant, A., 1984  
'Medieval animal husbandry: the archaeozoological evidence', in Grigson, C. and Clutton-Brock, J. (eds.), *Animals in Archaeology 4: Husbandry in Europe*, British Archaeological Reports (International Series) 227 (Oxford, Archaeopress), 179-87
- Green, F., 1980  
*Grain Deposits from the 12<sup>th</sup> Century Granary, Lydford, Devon*, AML Old Series 3108

- Grove, J.M., 2004  
*Little Ice Ages: ancient and modern, Vol. II* (2<sup>nd</sup> edition, London, Routledge)
- Gurney, D., 2003  
*Standards for Field Archaeology in the East of England*, East Anglian Archaeology Occasional Paper No. 14 (ALGAO East of England Region)
- Hall, D., 1998  
'Medieval fields in their many forms', *British Archaeology* 33
- Halstead, P., 1985  
'A study of mandibular teeth from Romano-British contexts at Maxey', in Pryor, F., French, C., Crowther, D., Gurney, D., Simpson, G. and Taylor, M. (eds.), *The Fenland Project: Archaeology and Environment in the Lower Welland Valley, Volume 1*, East Anglian Archaeology Report No. 27 (Cambridge, Cambridgeshire Archaeological Committee), 219-24
- Healy, F., 1988  
*The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part VI: Occupation during the Seventh to Second Millennium BC*. East Anglian Archaeology Report No. 39 (Dereham, Norfolk Archaeological Unit/ Norfolk Museums Service)
- Healy, F., 1993  
'Lithic Material', in Bradley, R., Chowne, P., Cleal, R., Healy, F. and Kinnes, I., *Excavations on Redgate Hill, Hunstanton, Norfolk, and at Tattershall Thorpe, Lincolnshire*. East Anglian Archaeology Report No. 57 (Dereham, Norfolk Museums Service), 28-39
- Hurcombe, L., 1992  
*Use Wear Analysis and Obsidian: theory, experiments and results*. Sheffield Archaeological Monographs No. 4. (Sheffield, J.R. Collis Publications, University of Sheffield)
- Hillson, S., 1992  
*Mammal Bones and Teeth: an introductory guide to methods of identification* (London, Institute of Archaeology)
- Institute for Archaeologists (IfA), 2013  
*Standard and Guidance for Archaeological Excavation* (Reading, IfA)
- Jacomet, S., 2006  
*Identification of Cereal Remains from Archaeological Sites* (2<sup>nd</sup> edition, Basel University, Laboratory of Palinology and Palaeoecology)
- Jennings, S., 1981  
*Eighteen Centuries of Pottery from Norwich*, East Anglian Archaeology Report No. 13 (Norwich, The Norwich Survey/ Norfolk Museums Service)

Jennings, S., 1983

'The Pottery', in Ayers, B. and Murphy, P., *A Waterfront Excavation at Whitefriars Street Car Park, Norwich, Norfolk, 1979*, East Anglian Archaeology Report No. 17 (Norwich, F. Crowe & Sons Ltd)

Johnson, D., Martlew, R., Carroll, P. and Carroll, P., 2009

*Report on the Excavation of a Corn Drying Kiln at Kilnsey Green, Kilnsey, North Yorkshire* (Skipton, Upper Wharfedale Heritage Group/ Ingleborough Archaeology Group)

Kemp, S., 2000

'Struck Flint', in Ashwin, T. and Bates, S., *Excavations on the Norwich Southern Bypass, 1989-91 Part I: Excavations at Bixley, Caistor St. Edmund, Trowse, Cringleford and Little Melton*, East Anglian Archaeology Report No. 91 (Dereham, Norfolk Museums Service), 38-40, 88-90 and 194-9

Kerney, M.P., 1999

*Atlas of the Land and Freshwater Molluscs of Britain and Ireland* (Colchester, Harley Books)

Kerney, M.P. and Cameron, R.A.D., 1979

*A Field Guide to Land Snails of Britain and North-West Europe* (London, Collins)

Lentacker A. and Van Neer, W., 1996

'Bird Remains from two Sites on the Red Sea Coast and some Observations on Medullary Bone', *International Journal of Osteoarchaeology* 6, 488-96

Lindbo, D., Miles, R., Presley, D. and Ransom, N.E., 2008

'Soil Profile Descriptions', in Longsdon, S., Clay, D., Moore, D. and Tsegaye, T. (eds.) *Soil Science: step-by-step field analysis* (Madison (US), Soil Science Society of America), 11-34

Little A. with Lentowicz I., 1994

'The Pottery', in Leah M. (ed.), *The Late Saxon and Medieval Pottery Industry of Grimston, Norfolk: Excavations 1962-92*, East Anglian Archaeology Report No. 64 (Dereham, Norfolk Museums Service), 84-100

Mann, M.E., Zhang, Z., Rutherford, S., Bradley, R.S., Hughes, M.K., Shindell, D., Ammann, C., Faluvegi, G. and Ni, F., 2009

'Global Signatures and Dynamical Origins of the Little Ice Age and Medieval Climate Anomaly', *Science* 326, 1256-60

McCarthy M. and Brooks C., 1988

*Medieval Pottery in Britain AD 900-1600* (Leicester, Leicester University Press)

McOmish, D., 2011

*Introduction to Heritage Assets: Field Systems* (English Heritage)

Medieval Pottery Research Group (MPRG), 1998  
*A Guide to the Classification of Medieval Ceramic Forms*, MPRG Occasional Paper No. 1

Meeres, F., 2007  
*A History of Great Yarmouth* (Chichester, Phillimore)

Moffett, L., 2006  
'The archaeology of medieval food plants', in Woolgar, C.M., Serjeantson, D. and Waldron, T. (eds.), *Food in Medieval England: diet and nutrition* (Oxford, Oxford University Press), 41-55

Monk, M.A. and Kelleher, E., 2005  
'An Assessment of the Archaeological Evidence for Irish Corn-Drying Kilns in the Light of the Results of Archaeological Experiments and Archaeobotanical Studies', *The Journal of Irish Archaeology* 14, 77-114

Moore, D.T. and Oakley, G.E., 1979  
'The hones', in Williams, J.H., *St Peter's Street, Northampton: excavations 1973-1976* (Northampton, Northampton Development Corporation), 280-83

Mustchin, A.R.R., Cussans, J.E.M. and Summers, J.R., forthcoming  
'Three Medieval Village Sites in Suffolk: Archaeological Excavations at Church Farm, Brettenham; Mill House, Darsham; and Semer Road, Whatfield, 2014', *Medieval Settlement Research*

O'Connor, T.P., 1989  
*Bones from Anglo-Scandinavian Levels at 16-22 Copppergate*, Archaeology of York Series 15/3 (London, Council for British Archaeology/ York Archaeological Trust)

Oosthuizen, S., 2006  
*Landscapes Decoded: the origins and development of Cambridgeshire's fields* (Hatfield, University of Hertfordshire Press)

Pales, L. and Garcia, M.A., 1981a  
*Atlas Ostéologique pour servir à l'identification des Mammifères du Quaternaire: II. Tête – Rachis Ceintures Scapulaire et Pelviene Membres. Herbivores*, Editions du Centre National de la Recherche Scientifique (Paris, CNRS)

Pales, L. and Garcia, M.A., 1981b  
*Atlas Ostéologique pour servir à l'identification des Mammifères du Quaternaire: II. Tête – Rachis Ceintures Scapulaire et Pelviene Membres. Carnivores, Homme*, Editions du Centre National de la Recherche Scientifique (Paris, CNRS)

Pales, L. and Lambert, C., 1971a  
*Atlas Ostéologique pour servir à l'identification des Mammifères du Quaternaire: I. Les membres. Carnivores*, Editions du Centre National de la Recherche Scientifique (Paris, CNRS)



Pales, L. and Lambert, C., 1971b

*Atlas Ostéologique pour servir à l'identification des Mammifères du Quaternaire: I. Les membres. Herbivores*, Editions du Centre National de la Recherche Scientifique (Paris, CNRS)

Payne, S., 1973

'Kill-off patterns in sheep and goats: the mandibles from Aşvan Kale', *Anatolian Studies* 23, 281-305

Rippon, S., 2002

'Infield and Outfield: the early stages of marshland colonisation and the evolution of medieval field systems', Lincolnshire Archaeological Heritage Reports Series No. 5

Rick, A.M., 1975

'Bird medullary bone: a seasonal dating technique for faunal analysis', *Bulletin (Canadian Archaeological Association)* 7, 183-90

Rickett, R.J., 1975

*Post-Roman and Medieval drying Kilns*, unpublished BA thesis (University College, Cardiff)

Rowley, T., 1982

'Medieval Field Systems', in Cantor, L. (ed.), *The English Medieval Landscape* (London, Croom Helm), 25-55

Ryder, M.L.,

1983, *Sheep and Man* (London, Duckworth)

Schmid, E., 1972

*Atlas of Animal Bones for Prehistorians, Archaeologists, and Quaternary Geologists* (London, Elsevier Publishing)

Serjeantson, D., 2002

'Goose husbandry in Medieval England, and the problem of ageing goose bones', *Acta zoologica cracoviensia* 45, 39-54

Serjeantson, D., 2009

*Birds*, Cambridge Manuals in Archaeology (Cambridge, Cambridge University Press)

Shaw, J., 2003

'Agricultural Structures 2: Storing and Processing Crops', in Stell, G., Shaw, J. and Storrier, S. (eds.), *Scottish Life and Society: A Compendium of Scottish Ethnology, Volume 3: Scotland's Buildings* (East Linton, Tuckwell Press), 438-64

Simkiss, K., 1961

'Calcium Metabolism and Avian Reproduction', *Biological Reviews* 36, 321-67

Simkiss, K., 1967

*Calcium in Reproductive Physiology, a Comparative Study of Vertebrates* (London, Chapman and Hall)

Slowikowski, A., Nenck, B. and Pearce, J., 2001  
*Minimum Standards for the Processing, Recording, Analysis and Publication of Post-Roman Ceramics*, Medieval Pottery Research Group Occasional Paper No. 2

Smalley, R., 2013  
*South Bradwell, Great Yarmouth*, Stratascan Geophysical Survey Report No. J3243

Soil Survey of England and Wales (SSEW), 1983  
*Legend for the 1:250,000 Soil Map of England and Wales* (Harpenden, SSEW)

Suckling, A., 1846  
*The History and Antiquities of the County of Suffolk, Volume 1* (Ipswich, WS Crowell)

Summers, J.R., 2012a  
'The environmental samples', in Leonard, C. and Thompson, P., *Land South of 21 Ashwicken Road, Pott Row, Grimston, Norfolk. An Archaeological Excavation*, Archaeological Solutions Ltd Report No. 4033

Summers, J.R., 2012b  
'The environmental samples', in Orzechowski, K. and Thompson, P., *Land at Sunnymead, Whiteway Road, Burnham Market, Norfolk. An Archaeological Evaluation*, Archaeological Solutions Ltd Report No. 4124

Summers, J.R., 2014  
'The environmental Samples', in Fairclough, J. and Waring, W., *South Bradwell, Great Yarmouth, Norfolk. An Archaeological Trial Trench Evaluation*, Archaeological Solutions Ltd Report No. 4601

Summers, J.R., 2015  
'The environmental samples', in Bull, K. and Mustchin, A.R.R., *Phase 1, Land at Wheatcroft Farm, Bradwell, Norfolk: Archaeological Assessment and Updated Project Design*, Archaeological Solutions Ltd Report No. 4976

Sykes, N.J., 2006  
'From *Cu* and *Sceap* to *Beffe* and *Motton*: the management, distribution, and consumption of cattle and sheep in medieval England', in Woolgar, C., Serjeantson, D. and Waldron, T. (eds.), *Food in Medieval England: history and archaeology* (Oxford, Oxford University Press), 57-72

Tate, W.E., 1952  
'A Handlist of Suffolk Enclosure Acts and Awards', *Proceedings of the Suffolk Institute of Archaeology and Natural History* 25(3)

Taylor, T.G., 1970  
'How an eggshell is made', *Scientific American* 222(3), 89-95

Thompson, P., 2013  
*South Bradwell, Great Yarmouth, Norfolk. An Archaeological Desk Based Assessment*, Archaeological Solutions Ltd Report No. 4400

Tinsley, A.S., 2015

'Prehistoric Pottery', in Morgan-Shelbourne, L., Hogan, S. and Woolhouse, T., *Land North of Hall Road, Hopton-on-Sea, Norfolk: Archaeological Excavation. Post-Excavation Assessment*, Pre-Construct Archaeology Ltd Report No. 11835, 100-116

Upex, S.G., 2008

*The Romans in the East of England: settlement and landscape in the Lower Nene Valley* (Stroud, Tempus)

Wainwright, G., 1972

'The Excavation of a Neolithic Settlement on Broome Heath, Ditchingham, Norfolk, England', *Proceedings of the Prehistoric Society* 38, 1-97

Walker H., 2012

*Heddingham Ware: a medieval pottery industry in North Essex; its production and distribution*, East Anglian Archaeology Report No. 148 (Chelmsford, Historic Environment, Essex County Council)

Whitefield, P., 2009

*The Living Landscape: how to read and understand it* (East Meon, Permanent Publications)

Woolhouse, T., forthcoming

'Medieval Dispersed Settlement on the Mid Suffolk Clay at Cedars Park, Stowmarket', *East Anglian Archaeology Report* (Bury St Edmunds, Archaeological Solutions Ltd)

## **Web-Based Resources**

Heritage Suffolk

<https://heritage.suffolk.gov.uk/Data/Sites/1/media/parish-histories/bradwell.pdf>  
(consulted 08/02/2016)

Historic England (also see above (McOmish 2011))

<https://content.historicengland.org.uk/images-books/publications/iha-fieldsystems/fieldsystems.pdf/> (consulted 06/01/2016)

Open Domesday

<http://opendomesday.org/> (consulted 08/01/2016)

Soilscapes 2015, National Soil Resource Institute, Cranfield University  
<https://www.landis.org.uk/soilscapes/> (consulted 21/10/2015)

## APPENDIX 1 CONCORDANCE OF FINDS

### Trial Trench Evaluation

Feature	Context	Trench	Description	Spot Date	Pottery	CBM (g)	Animal Bone (g)	Other
-	1000		Topsoil	19th-mid 20th C	(10) 32g	4		Clay Pipe Stem (13) - 37g Fe. Frags (2) - 115g Str. Flint (15) - 207g
-	1001	2 6 14 15 16	Subsoil	12th-13th C  12th-13th C	(1) 6g  (1) 13g	16	13  50	Str. Flint (1) - 1g Str. Flint (1) - 52g Str. Flint (2) - 28g  Fe. Frag (1) - 60g
1007	1008	3	Fill of Ditch	Late 10th-mid 12th C	(2) 8g			
1009	1010	3	Fill of Gully	11th-12th C	(1) 2g			
1011	1012	3	Fill of Ditch	17th/18th-19th C	(1) 10g			
1026	1027	2	Fill of Gully	12th-13th/14th C	(2) 12g			
1028	1029 1030	2	Basal Fill of Pit Upper Fill of Pit	Late 17th-18th C Late 17th-18th C	(2) 4g (1) 22g			Lava Stone - 460g Fe. Frags (5) 44g
1039	1040	6	Fill of Pit			188		B. Flint - 204g
1041	1042	6	Fill of Hedgerow					Coal - 3g
1055	1056	7	Fill of Pit	11th-12th C	(8) 52g	3		Shell - 2g
1057	1058	7	Fill of Pit	12th-13th C	(4) 51g			
1063	1064	9	Fill of Gully					Str. Flint (1) - 12g
1065	1080	8	Fill of Gully			8		
1067	1068	9	Fill of Ditch				52	Str. Flint (3) - 59g
1071	1072	9	Fill of Ditch					Str. Flint (4) - 41g
1081	1082	8	Fill of Ditch	11th-12th/13th C	(1) 3g			
1083	1084	15	Fill of Ditch					Str. Flint (3) - 65g
1089	1090	16	Fill of Ditch					Str. Flint (4) - 62g
1091	1092	16	Fill of Ditch				4	Str. Flint (1) - 2g
1102	1103	16	Fill of Ditch	11th-mid 12th C	(7) 42g			

1106	1107	17	Fill of Ditch	Late 10th-mid12th C	(1) 4g	21		
1114	1115	17	Fill of Flue	11th-12th/13th C	(1) 13g			

### Excavation

Feature	Context	Segment	Description	Spot Date	Pottery	Animal Bone (g)	Other
2000			Topsoil				Str. Flint (32) - 1141g
2001			Subsoil		(2) 16g		Str. Flint (35) - 562g
2004	2005	H	Fill of Gully				Clay Pipe Stem (1) - 5g
2006	2007	B	Fill of Ditch				Str. Flint (1) - 5g
2008	2009		Fill of Ditch				Fe. Nail (4) - 26g Str. Flint (2) - 20g
2010			Ditch	12th-15th C	(3) 35g	5	
		F		15th-16th C	(1) 6g		
		H					
		L					
		Q					
		X					
	2011	C	Fill of Ditch	10th/11th-13th C	(1) 2g	48	
	2012	A	Fill of Ditch	11th-14th C	(1) 4g		
		E		15th-16th C	(2) 22g		
		F					Rubber - 1g
		G		14th-16th C	(1) 6g		Clay Pipe Stem (1) - 2g
		L					Fe. Frag (1) - 3g
		M		12th-15th C	(1) 13g		
		N		11th-14th C	(5) 53g		
		P		15th-16th/early 17th C	(3) 24g	16	
		Q		15th-16th C	(1) 26g		Fe. Frag (1) - 5g
		T		15th-16th C	(9) 165g	91	Str. Flint (1) - 2g
		U		15th-16th C	(4) 24g		Lavastone - 441g
		X					Fe. Frag (1) - 6g
	2032	X	Fill of Ditch	15th-16th C	(1) 23g		Fe. Frag (1) - 18g
2016			Barrow Mound	12th-15th C	(19) 405g	2	Coal - 7g

							Fe. Frags (2) - 28g Str. Flint (11) - 129g
2017		X	Buried Soil Layer	12th-15th C	(3) 8g	46	Str. Flint (2) - 52g
2018		D U X	Natural II	10th/11th-13th C 11th-13th C	(1) 5g (2) 5g		Str. Flint (2) - 4g
2021	2022	D	Fill of Gully	10th-13th C	(1) 7g		
2027	2028		Fill of Pit	11th-13th C	(2) 4g	4	<b>SF1</b> Fe. Frag - 40g Fe. Frag (1) - 4g
2029	2030		Fill of Ditch				Str. Flint (3) - 100g
2039	2040		Fill of Gully				O. Shell - 18g
2045	2046	A B	Fill of Gully	12th-14th C	(1) 3g		Str. Flint (2) - 12g
2047	2048	C	Fill of Gully			25	
2050	2051	E	Fill of Ditch	13th-15th /early 16th C	(7) 24g		F. Clay - 220g Fe. Frags (2) - 16g Str. Flint (1) - 17g Fe. Frags (3) - 31g
		F G		Mid 16th-17th C 15th-16th C	(8) 85g (7) 85g		
2059	2060	C K L P  Q R  S T	Fill of Ditch	15th-16th C 13th/14th-early 16th C 15th-16th C	(1) 46g (1) 6g (3) 16g	500  57  6	Fe. Frag (1) - 18g Fe. Frag (1) - 4g Lavastone - 747g
				15th-16th C 15th-16th C	(11) 145g (19) 492g	4 153	Fe. Frag (3) - 33g <b>SF2</b> Whetstone - 66g Fe. Frag (2) - 20g Fe. Frag (2) - 23g Lava Stone - 292g O. Shell - 4g Str. Flint (1) - 23g
	2080	T	Fill of Ditch	15th-16th C	(19) 530g	108	Fe. Frag (3) - 37g Lavastone - 244g

							O. Shell - 336g
2067	2068	E	Fill of Ditch	?19th C+	(1) 4g		
2077	2078	P	Fill of Feature			40	
2088	2089	U	Fill of Ditch	Mid 16th-17th C	(1) 16g		
		V		13th-14th C	(27) 214g		
2090	2093	X	Fill of Ditch				Fe. Frag (2) - 9g
2094	2096	W	Fill of Ditch	15th-16th C	(3) 267g		
2098	2099	V	Fill of Ditch				Glass Bead - <1g
2098	2101	U	Fill of Feature				Fe. Frag (1) - 10g
2119	2120		Fill of Pit				SF3 Flint Blade - 23g
2125	2126		Fill of Ditch	12th-15th C	(1) 43g	16	
		B		12th-15th C	(2) 84g		
2127	2128		Fill of Ditch				Clay Pipe Stem (1) - 3g
2129	2130	C	Fill of Ditch				Str. Flint (1) - 3g
2131	2132		Fill of Pit	Modern	(11) 61g	2	Clay Pipe Stem (4) - 12g Fe. Frag (1) - 2g
2133	2134		Fill of Pit	13th-14th C	(8) 166g		
2135	2136	D	Fill of Ditch	10/11th-12th C	(3) 24g		
2148	2149		Fill of Posthole			165	
2157	2158		Fill of Pit	12th-14th C	(5) 138g		
2159	2160		Fill of Ditch	10th/11th-13th C	(1) 15g		
		B		11th- 13th /14th C	(1) 17g		
		C		11th -14th C	(2) 12g		
2167	2168	B	Fill of Gully	11th-13th C	(1) 2g		
2179	2180		Fill of Pit	12th-14th C	(2) 11g	53	
2186	2187	B	Fill of Ditch	10th- 12th /13th C	(1) 13g		Clay Pipe Stem (1) - 3g
		C				29	
2188	2189	B	Fill of Ditch			10	Str. Flint (1) - 15g
2192	2193	A	Fill of Ditch			94	
2200	2201		Fill of Pit	12th-14th C	(6) 10g	3	
	2202		Fill of Pit	12th-15th C	(2) 35g		
2207	2208		Fill of Posthole			1	Str. Flint (2) - 3g
2235	2236		Fill of Posthole				Str. Flint (1) - 2g
2237	2238		Fill of Posthole	11th-14th C	(1) 9g		

2239	2240		Fill of Posthole				Str. Flint (1) - 1g
2253	2254		Fill of Posthole				Str. Flint (1) - 3g
2277	2278	C D E	Fill of Ditch	10th/11th-13th C 12th-14th C	(2) 5g (3) 10g	64	
2283	2284		Fill of Ditch			93	
2288	2289		Fill of Gully				Str. Flint (1) - 4g
2294	2295	A B	Fill of Ditch	11th-14th C	(8) 6g		Str. Flint (2) - 4g
2296	2297	A	Fill of Ditch		(3) 8g		
2298	2299	B C D	Fill of Ditch			138 36	Str. Flint (1) - 16g Str. Flint (1) - 5g
2300	2301		Fill of Pit				O. Shell - 11g
2308	2309		Fill of Pit	11th-14th C	(2) 26g		Whetstone - 500g
2317	2318	A B	Fill of Ditch				Str. Flint (1) - 24g Str. Flint (1) - 32g
2319	2320 2321		Fill of Kiln Fill of Kiln			24	Lava Stone - 134g Str. Flint (1) - 6g
2324	2325		Fill of Ditch	11th-13th C	(4) 75g		Str. Flint (8) - 49g
2326	2327		Fill of Pit	12th-13th C	(5) 62g		
2328	2329	B	Fill of Ditch	12th-14th C	(1) 6g		
2332	2333		Fill of Pit	12th-14th C	(8) 101g	3	Str. Flint (1) - 32g
2336	2337	B C	Fill of Ditch	Late 12th-15th C	(1) 6g		Clay Pipe Stem (1) - 2g
2345	2346		Fill of Feature	?LBA	(6) 36g		Str. Flint (3) - 24g
2347	2348		Fill of Ditch	11th-13th C	(11) 44g		
2351	2352	B	Fill of Ditch	11th-14th C	(2) 41g		
2353	2354		Fill of Ditch	Late 12th-14th C	(9) 38g	16	
2357	2358		Fill of Ditch	10th/11th-13th C	(1) 4g		
2359	2360	B C	Fill of Stoking Pit	14th-16th C	(1) 29g	2 314	Glass (1) - 3g Str. Flint (3) - 11g Str. Flint (1) - 14g



	2386	A	Fill of Stoking Pit	10th/11th-12th C	(6) 65g	36	
		B			(1) 6g		
	2387	C	Fill of Stoking Pit			98	
		D				96	
2368	2369	A	Fill of Ditch			2	
2370	2371		Fill of Ditch			31	
		H		10th/11th-12th C	(1) 7g		
2372	2373	B	Fill of Kiln	Late 12th-15th C	(2) 11g	10	
2374	2375	A	Fill of Ditch	11th- 13th C	(4) 51g	137	
		B				114	
2376	2377		Fill of Stoking Pit	13th 16th C	(2) 7g		Fe. Frag (1) - 5g
2378	2379		Fill of Posthole			238	
2388	2389		Fill of Pit			3	
2392	2393	C	Fill of Ditch	10th/11th-13th C	(2) 13g		Str. Flint (4) - 10g
2410	2411	B	Fill of Gully				Str. Flint (1) - 47g
2412	2413	A	Fill of Gully			111	Str. Flint (2) - 158g
2422	2423		Fill of Ditch				Str. Flint (2) - 30g
2424	2425	B	Fill of Ditch			7	
2426	2427		Fill of Ditch	12th-15th C	(2) 25g		
2428	2429		Fill of Pit				Str. Flint (1) - 79g
2446	2447	A	Fill of Ditch	11th-13th/14th C	(1) 6g		Lavastone - 194g Str. Flint (3) - 96g
U/S	U/S		Unstratified			2	Cu. Alloy ?Spoon Bowl - 61g

## APPENDIX 2 QUANTIFIED ENVIRONMENTAL DATA FROM SELECTED PHASE 2 DEPOSITS

Sample number	2.115	2.117	2.119	2.120	2.121	2.122	2.123	2.124	2.125	2.98	2.116	2.138
Context number	2360	2365	2360A	2360B	2386B	2360C	2386C	2387C	2387D	2238	2278D	2187D
Feature number	2359	2363	2359	2359	2359	2359	2359	2359	2359	2237	2277	2186
Description	Fill of Structure 1	Fill of Stoke Hole - Kiln 1	Fill of Structure 1	Fill of Structure 1	Fill of Structure 1	Fill of Structure 1	Fill of Structure 1	Fill of Structure 1	Fill of Structure 1	Fill of Posthole	Fill of Ditch	Fill of Ditch
Phase	2	2	2	2	2	2	2	2	2	2	2	2
Volume (litres)	40	40	40	40	40	40	40	20	30	20	20	40
<b>Cereal grains:</b>												
Indet. cereal grain frags	XX	XXX	XX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	X	XX
Cereal NFI	9	172	38	154	228	100	111	200	498	88	12	41
(Cereal NFI - tail grain)	-	-	(2)	-	-	-	-	-	-	-	-	(1)
<i>Hordeum</i> sp. - Barley	6	27	14	29	22	19	17	25	61	9	6	14
<i>Hordeum</i> sp. - Hulled barley	-	12	4	4	9	4	12	8	28	21	2	4
<i>Triticum</i> sp. - Wheat	-	-	1	-	2	-	2	1	5	-	1	4
<i>Triticum aestivum/turgidum</i> type - Free-threshing type wheat	-	-	-	-	-	-	2	2	5	-	-	1
cf. <i>Avena</i> sp. - Oat	2	8	1	10	12	7	5	7	34	41	4	3
<i>Avena</i> sp. - Oat	1	20	1	13	11	10	11	19	53	76	4	1
cf. <i>Secale cereale</i> - Rye	1	36	8	17	41	13	16	33	74	-	-	-
(cf. <i>Secale cereale</i> - tail grain)	-	(2)	-	(1)	-	-	(1)	-	-	-	-	-
<i>Secale cereale</i> - Rye	2	36	8	27	47	13	20	53	77	3	3	16
( <i>Secale cereale</i> - tail grain)	-	-	-	-	-	-	(1)	-	-	-	-	-
Cereal indet. detached embryos	-	-	-	-	1	-	-	1	-	-	-	-
<b>Cereal chaff:</b>												
<i>Secale cereale</i> - Rye rachis	-	17	-	3	1	1	-	16	5	-	-	-
Cereal/large grass rachis	-	-	-	4	-	1	-	5	4	-	-	1
Cereal/large grass awn	-	-	-	-	-	-	-	-	-	-	-	1
Cereal indet. culm	-	1	-	-	-	-	-	1	-	-	-	-
<b>Other cultivars:</b>												
Fabaceae indet. (large) - Pea/bean	-	-	-	-	-	-	-	-	1	-	-	1
<i>Linum usitatissimum</i> L. - Flax	-	-	-	-	-	-	-	-	1	-	-	-

Phase 1: Land at Wheatcroft Farm, Bradwell, Norfolk

Wild taxa:												
<i>Chenopodium</i> sp. L. - Goosefoot	1	16	-	3	2	3	1	4	7	-	-	1
Chenopodiaceae - Goosefoot family	-	3	-	6	3	3	2	3	9	-	-	3
<i>Montia fontana</i> L. - Blinks	-	-	-	-	-	-	-	-	-	-	-	2
<i>Stellaria media</i> L. - Common chickweed	-	2	-	-	-	-	-	1	-	-	-	-
<i>Spergula arvensis</i> L. - Corn spurrey	-	2	-	1	-	-	-	3	1	-	1	2
<i>Agrostemma githago</i> L. - Corncockle	-	-	-	-	1	-	-	-	-	1	-	-
Caryophyllaceae indet. - Pink family	-	-	-	-	1	-	1	1	-	-	1	-
<i>Persicaria</i> sp. Mill. - Knotweed	1	6	1	2	3	1	2	1	2	-	1	1
<i>Polygonum aviculare</i> L. - Knotgrass	-	2	-	1	-	-	-	-	7	-	-	-
<i>Polygonum</i> sp. L. - Knotgrass	-	-	-	-	-	1	-	-	-	-	-	-
<i>Fallopia convolvulus</i> (L.) A.Love - Black-bindweed	-	3	-	1	-	1	1	1	1	-	-	-
<i>Rumex</i> sp. L. - Dock	2	12	-	8	10	4	4	14	11	-	1	6
Polygonaceae indet. - Knotweed family	-	1	-	3	3	-	3	1	4	-	-	1
<i>Raphanus raphanistrum</i> L. - Wild radish	1	14	1	4	7	1	2	5	7	-	-	-
<i>Vicia/Lathyrus</i> sp. L. - Vetch/wild pea	-	3	-	3	1	2	2	2	2	-	-	3
Fabaceae indet. - Pea family (medium)	-	17	-	6	7	5	8	7	17	-	-	21
Fabaceae indet. - Pea family (small)	-	-	-	-	-	-	-	-	-	-	-	3
<i>Galium aparine</i> L. - Cleavers	-	-	-	-	1	-	-	-	2	-	-	-
<i>Anthemis cotula</i> L. - Stinking chamomile	-	11	-	10	28	7	2	18	13	2	5	8
<i>Tripleurospermum inodorum</i> (L.) Sch. Bip. - Scentless mayweed	-	-	-	-	2	2	1	1	-	1	1	-
Asteraceae indet. - Daisy family	-	-	-	-	3	2	-	-	-	1	1	-
<i>Potamogeton</i> sp. L. - Pondweed	-	-	-	-	-	-	-	-	-	-	-	41
<i>Carex</i> sp. L. - Sedge	-	-	-	-	5	3	-	-	1	-	10	6
Cyperaceae indet. - Sedge family	-	2	-	-	-	-	-	-	-	-	-	6
<i>Bromus secalinus</i> type L. - Rye brome/ chess	-	1	-	-	-	-	-	-	-	-	-	-
<i>Bromus</i> sp. L. - Brome grass	-	2	-	-	1	1	-	3	1	1	-	-

<i>Anisantha sterilis</i> (L.) Nevski type - Barren brome	-	-	-	-	-	-	-	-	1	-	-	-
Poaceae indet. - Grass (large)	1	7	3	2	4	2	5	6	7	16	1	-
Poaceae indet. - Grass (medium)	-	-	-	-	-	-	-	1	1	-	-	-
Poaceae indet. - Grass (small)	-	1	-	-	-	-	-	4	-	-	2	6
Seeds indet.	-	-	-	-	-	-	-	-	-	-	-	7
<b>Charcoal:</b>												
Charcoal >2mm	XX	XX	X	X	X	XX	XX	XX	XX	X	XX	XX
<b>Other carbonised:</b>												
<i>Corylus avellana</i> - Hazelnut shell	-	-	-	-	-	-	-	1	-	-	-	-
Monocot culm base	-	-	-	-	-	-	-	-	-	1	-	-
Root/ tuber	-	-	-	-	-	-	-	-	-	1	2	-
Ericaceae charcoal	-	XX	-	-	-	-	-	-	-	-	XX	X
Ericaceae leaf	-	-	-	-	-	-	-	2	-	-	4	-
Ericaceae calyx	-	3	-	1	-	-	-	2	-	-	9	-
Ericaceae fruit	-	-	-	-	1	-	-	-	-	-	-	-
<b>Other:</b>												
Small mammal bone	-	-	-	-	3	1	-	1	-	-	-	-
Fish bone	-	-	-	-	-	-	1	-	-	-	-	-
<b>Molluscs:</b>												
<i>Pupilla muscorum</i>	-	-	-	-	-	-	-	-	-	-	X	-
<i>Vallonia</i> sp.	-	-	-	-	X	-	-	-	-	-	-	-
<b>Contaminants:</b>												
Modern roots	XX	XX	XX	XX	XX	XX	X	X	XX	X	XX	XX
Modern mollusc	-	-	-	-	-	-	-	-	-	-	-	X
Modern seeds	XX	X	X	X	X	X	X	X	X	-	X	X
Modern insect	-	-	-	-	-	-	-	-	X	-	-	-
Earthworm egg capsules	-	-	-	-	-	-	-	-	-	-	-	-

Key: X = present; XX = Common; XXX – Abundant

### APPENDIX 3 QUANTIFIED ENVIRONMENTAL DATA FROM SELECTED PHASE 3 DEPOSITS

Sample number	2.65	2.66	2.129	2.130
Context number	2060T	2080T	2377	2377
Feature number	2059	2059	2376	2376
Description	Fill of Ditch - Windmill	Fill of Ditch - Windmill	Fill of Stoke Hole - Kiln 2	Fill of Stoke Hole - Kiln 2
Phase	3	3	3	3
Volume (litres)	40	20	30	40
<b>Cereal grains:</b>				
Indet. cereal grain frags	X	X	XXX	XX
Cereal NFI	25	31	296	61
(Cereal NFI - tail grain)	(1)	-	(2)	-
<i>Hordeum</i> sp. - Barley	10	10	16	4
( <i>Hordeum</i> sp. - tail grain)	-	(1)	-	-
<i>Hordeum</i> sp. - Hulled barley	8	6	10	-
<i>Triticum</i> sp. - Wheat	11	6	7	-
<i>Triticum aestivum/ turgidum</i> type - Free-threshing type wheat	9	6	3	-
( <i>Triticum aestivum/ turgidum</i> type - tail grain)	-	(1)	-	-
cf. <i>Avena</i> sp. - Oat	1	2	59	9
<i>Avena</i> sp. - Oat	3	2	50	4
cf. <i>Secale cereale</i> - Rye	-	-	25	4
<i>Secale cereale</i> - Rye	-	1	16	8
Cereal indet. sprout	-	-	-	1
<b>Cereal chaff:</b>				
<i>Triticum aestivum</i> - Bread wheat rachis	-	1	-	-
<i>Secale cereale</i> - Rye rachis	-	-	1	-
Cereal indet. culm	-	-	2	-
<b>Other cultivars:</b>				
Fabaceae indet. (large) - Pea/ bean	1	2	-	-
<b>Wild taxa:</b>				
<i>Chenopodium</i> sp. L. - Goosefoot	-	-	3	-
<i>Atriplex</i> sp. L. - Oraches	-	1	1	-
Chenopodiaceae - Goosefoot family	-	-	1	-

<i>Persicaria</i> sp. Mill. - Knotweed	-	-	7	-
<i>Fallopia convolvulus</i> (L.) A.Love - Black-bindweed	-	-	1	-
<i>Rumex</i> sp. L. - Dock	-	1	1	-
Polygonaceae indet. - Knotweed family	-	-	2	1
<i>Raphanus raphanistrum</i> L. - Wild radish	-	-	1	1
<i>Vicia/Lathyrus</i> sp. L. - Vetch/wild pea	1	-	-	-
Fabaceae indet. - Pea family (medium)	5	2	1	1
<i>Centaurea</i> sp. L. - Knapweed	-	-	1	-
<i>Anthemis cotula</i> L. - Stinking chamomile	-	-	6	-
<i>Potamogeton</i> sp. L. - Pondweed	-	-	-	1
<i>Eleocharis palustris</i> (L.) Roem. & Schult. - Common spike-rush	-	-	1	-
<i>Carex</i> sp. L. - Sedge	-	1	-	-
<i>Bromus</i> sp. L. - Brome grass	-	-	2	1
Poaceae indet. - Grass (large)	-	-	5	-
Seeds indet.	-	-	1	-
<b>Charcoal:</b>				
Charcoal >2mm	XXX	XX	XX	XX
<b>Other carbonised:</b>				
Ericaceae charcoal	-	-	XX	-
<b>Other:</b>				
Small mammal bone	-	-	1	-
Fish bone	X	X	-	-
Fish scale	X	-	-	-
Bone	X	X	-	-
<b>Molluscs:</b>				
<i>Pupilla muscorum</i>	X	-	-	-
<b>Contaminants:</b>				
Modern roots	XX	XX	XX	XX
Modern mollusc	-	-	XX	XX
Modern seeds	X	X	-	X
Modern insect	-	-	-	-
Earthworm egg capsules	-	-	-	X

Key: X = present; XX = Common; XXX – Abundant

**APPENDIX 4      OASIS DATA COLLECTION FORM**

# OASIS DATA COLLECTION FORM: England

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## Printable version

**OASIS ID: archaeol7-242049**

### Project details

Project name	Phase 1: Land at Wheatcroft Farm, Bradwell, Norfolk
Short description of the project	In August 2014 Archaeological Solutions Ltd (AS) carried out an archaeological excavation at Wheatcroft Farm, Bradwell, Great Yarmouth, Norfolk. The project was undertaken in advance of the residential development of the site and was preceded by a geophysical survey, a desk-based assessment, field walking and an archaeological trial trench evaluation. Based on known sites/ find spots in the area and the results of earlier work the site was considered to have good archaeological potential, particularly for remains of prehistoric and Saxo-Norman/ medieval date. In the event, the excavation encountered an agricultural landscape dating between the Saxo-Norman and post-medieval periods. The earlier part of this range included a small, semi-subterranean structure and associated drying kiln. A second kiln was present within the High medieval to postmedieval landscape, in addition to the site of a post mill. The economy throughout the medieval to post-medieval period was based on a mixed farming regime, dominated by crop husbandry. At some time during or after the High medieval period, the site's layout developed from a complex system of ditched enclosures to a more open land-use. The Saxo-Norman to post-medieval evidence was indirectly predated by scattered prehistoric finds of struck flint - spanning the Mesolithic to Bronze Age - predominantly made up of residual material from later features/ contexts. A single Neolithic feature was encountered.
Project dates	Start: 01-08-2014 End: 31-08-2014
Previous/future work	Yes / Not known
Any associated project reference codes	ENF130238 - Sitecode
Any associated project reference codes	P4837 - Contracting Unit No.
Type of project	Field evaluation
Site status	None
Current Land use	Cultivated Land 4 - Character Undetermined
Monument type	PIT Early Neolithic
Monument type	POST-BUILT STRUCTURE; KILN; DITCHES/ GULLIES Early Medieval
Monument type	WINDMILL; KILN; DITCHES/ GULLIES Post Medieval
Significant Finds	STRUCK FLINT Early Neolithic
Significant Finds	POTTERY; STRUCK FLINT Late Prehistoric
Significant Finds	POTTERY; WHETSTONE Early Medieval



Significant Finds	POTTERY; WHETSTONE Post Medieval
Methods & techniques	"Fieldwalking", "Targeted Trenches"
Development type	Housing estate
Prompt	Planning condition
Position in the planning process	Not known / Not recorded

### Project location

Country	England
Site location	NORFOLK GREAT YARMOUTH BRADWELL Phase 1: Land at Wheatcroft Farm, Bradwell, Norfolk
Postcode	NR31 8TS
Study area	75 Hectares
Site coordinates	TG 5073 0302 52.566525051037 1.700193133709 52 33 59 N 001 42 00 E Point
Height OD / Depth	Min: 10m Max: 12m

### Project creators

Name of Organisation	Archaeological Solutions Ltd
Project brief originator	Norfolk County Council Historic Environment Service
Project design originator	Jon Murray
Project director/manager	Jon Murray
Project supervisor	Laszlo Lichtenstein
Project supervisor	Antony Mustchin
Type of sponsor/funding body	Persimmon Homes Limited
Name of sponsor/funding body	Persimmons Homes (Anglia) Ltd

### Project archives

Physical Archive recipient	Norfolk Museums and Archaeology Services
Physical Contents	"Animal Bones", "Ceramics", "Glass", "Metal", "Worked stone/lithics", "other"
Digital Archive recipient	Norfolk Museums and Archaeology Services
Digital Contents	"Animal Bones", "Ceramics", "Metal", "Worked stone/lithics", "other"
Digital Media available	"Images raster / digital photography", "Spreadsheets", "Text"
Paper Archive recipient	Norfolk Museums and Archaeology Services
Paper Contents	"Animal Bones", "Ceramics", "Metal", "Worked stone/lithics", "other"

Paper Media available "Context sheet","Drawing","Map","Photograph","Plan","Report","Section","Survey "

### Project bibliography 1

Publication type Grey literature (unpublished document/manuscript)

Title Phase 1: Land at Wheatcroft Farm, Bradwell, Norfolk

Author(s)/Editor(s) Mustchin, A

Author(s)/Editor(s) Bull, K

Author(s)/Editor(s) lichtenstein, L

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## OASIS:

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## PLATES



*1: Site shot, looking NW*



*2: Kiln 1 and Building 1 (mid excavation), looking NNW*



*3: Kiln 1 and Building 1 (mid excavation), looking SW*



*4: Redeposited Kiln Structure M2465 (post-excavation), looking N*



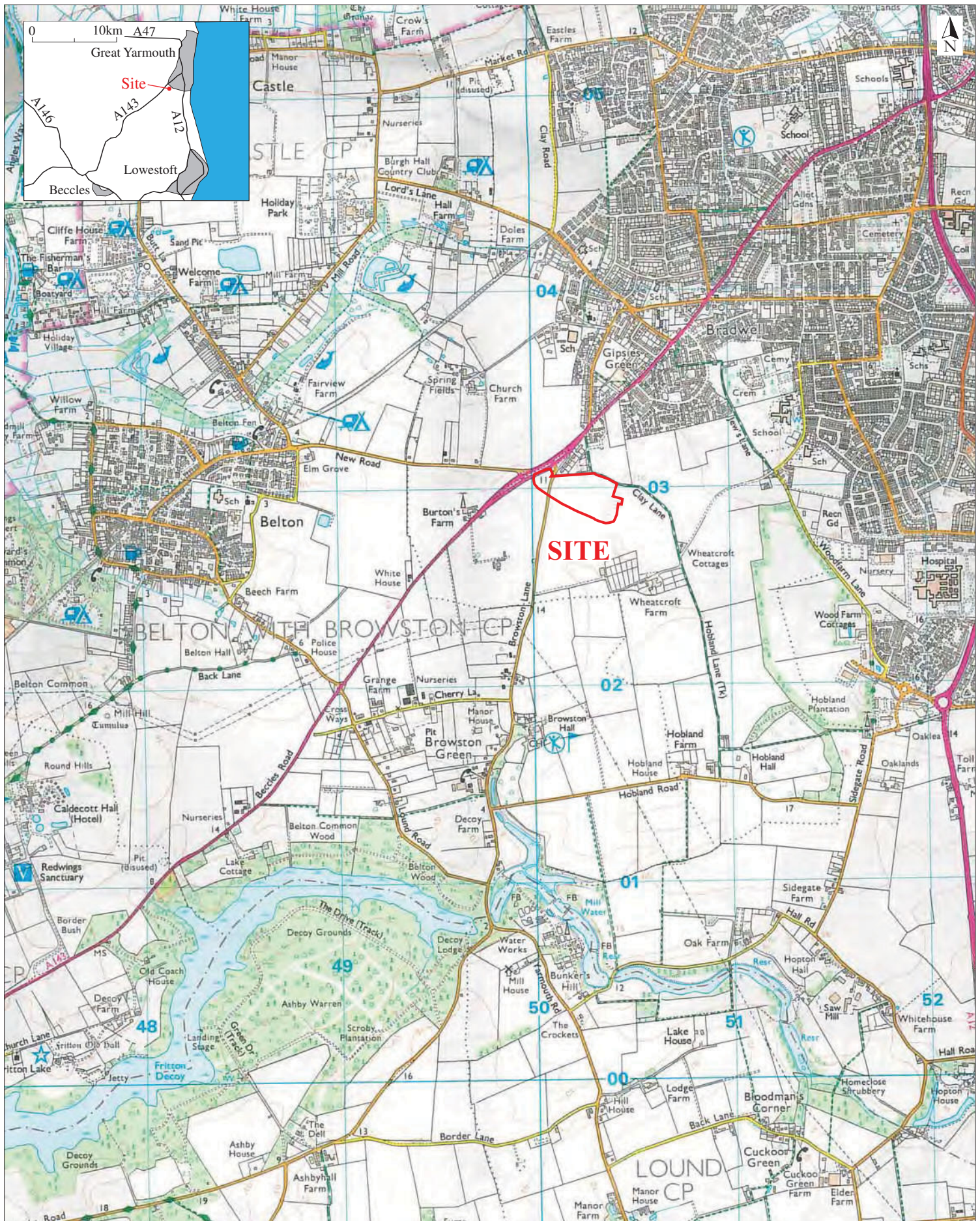
*5: Kiln 2 (post-excavation), looking W*



*6: The windmill (post-excavation), looking N*

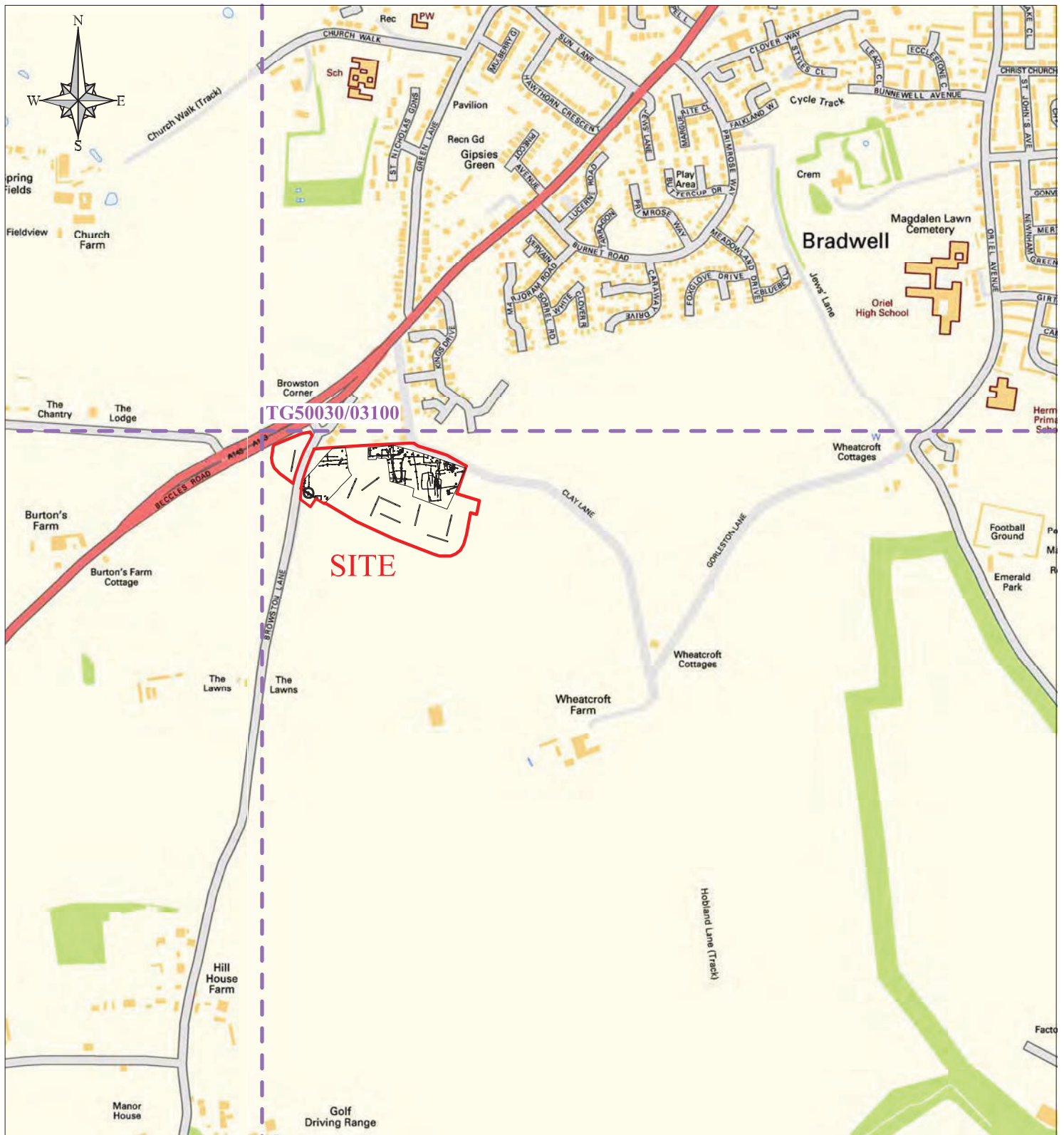


*7: The windmill (post-excavation), looking NW*



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Archaeological Solutions Ltd  
**Fig. 1 Site location plan**  
 Scale 1:25,000 at A4  
 South Bradwell, Norfolk (P4837)



Archaeological Solutions Ltd  
**Fig. 2 Detailed site location plan**  
 Scale 1:10,000 at A4  
 South Bradwell, Norfolk (P4837)

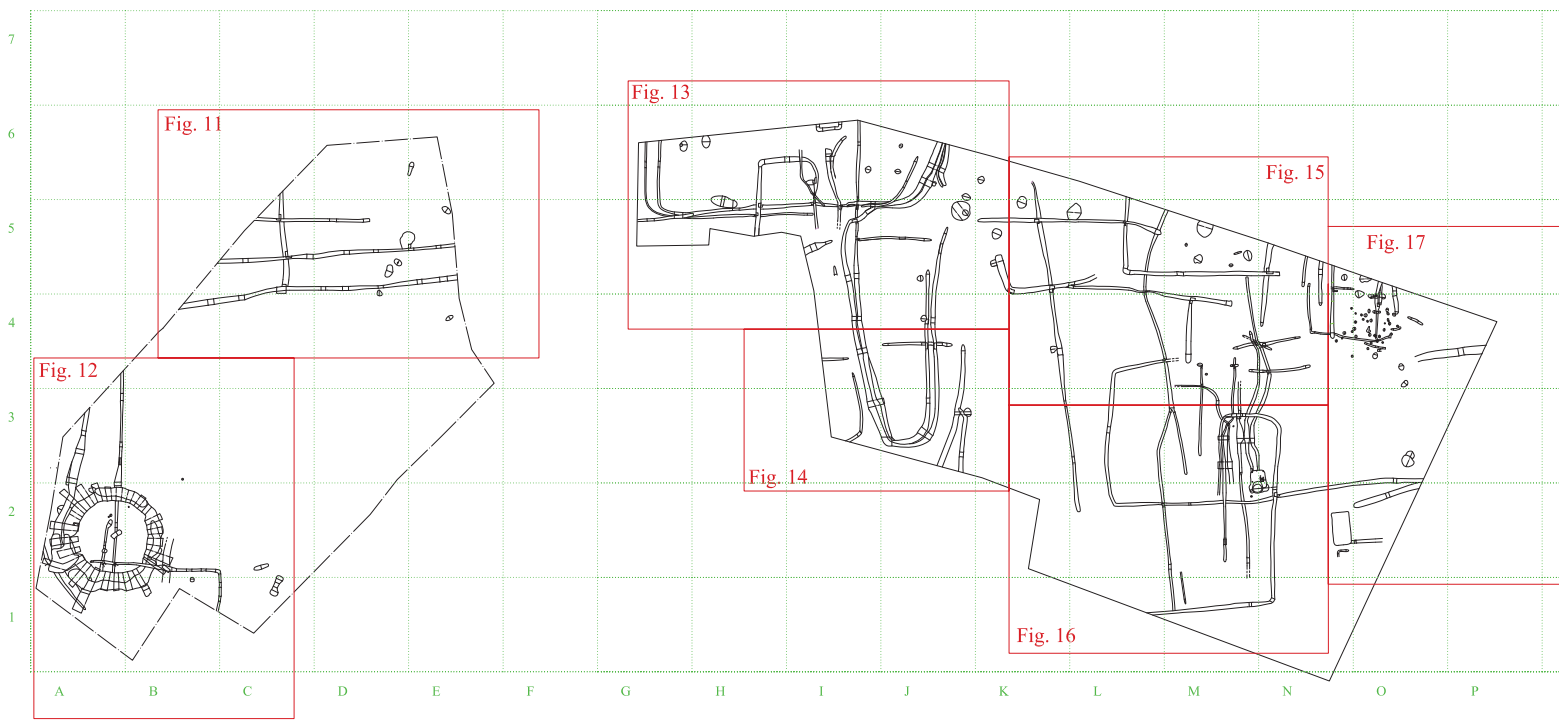




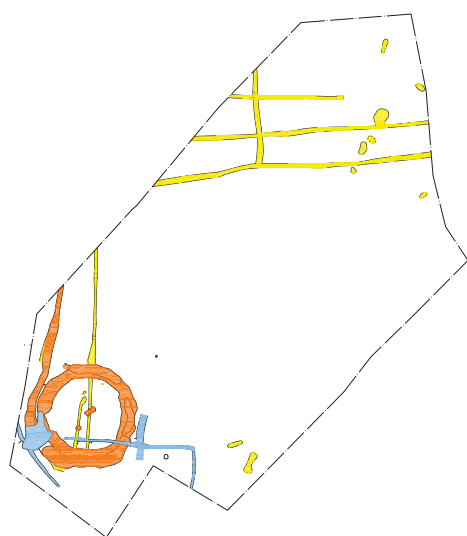
Archaeological Solutions Ltd  
**Fig. 3 Geophysical survey**  
 Scale 1:1250 at A3  
 South Bradwell, Norfolk (P4837)



Archaeological Solutions Ltd  
**Fig. 4 Geophysical survey with trial trenches**  
 Scale 1:1250 at A3  
 South Bradwell, Norfolk (P4837)

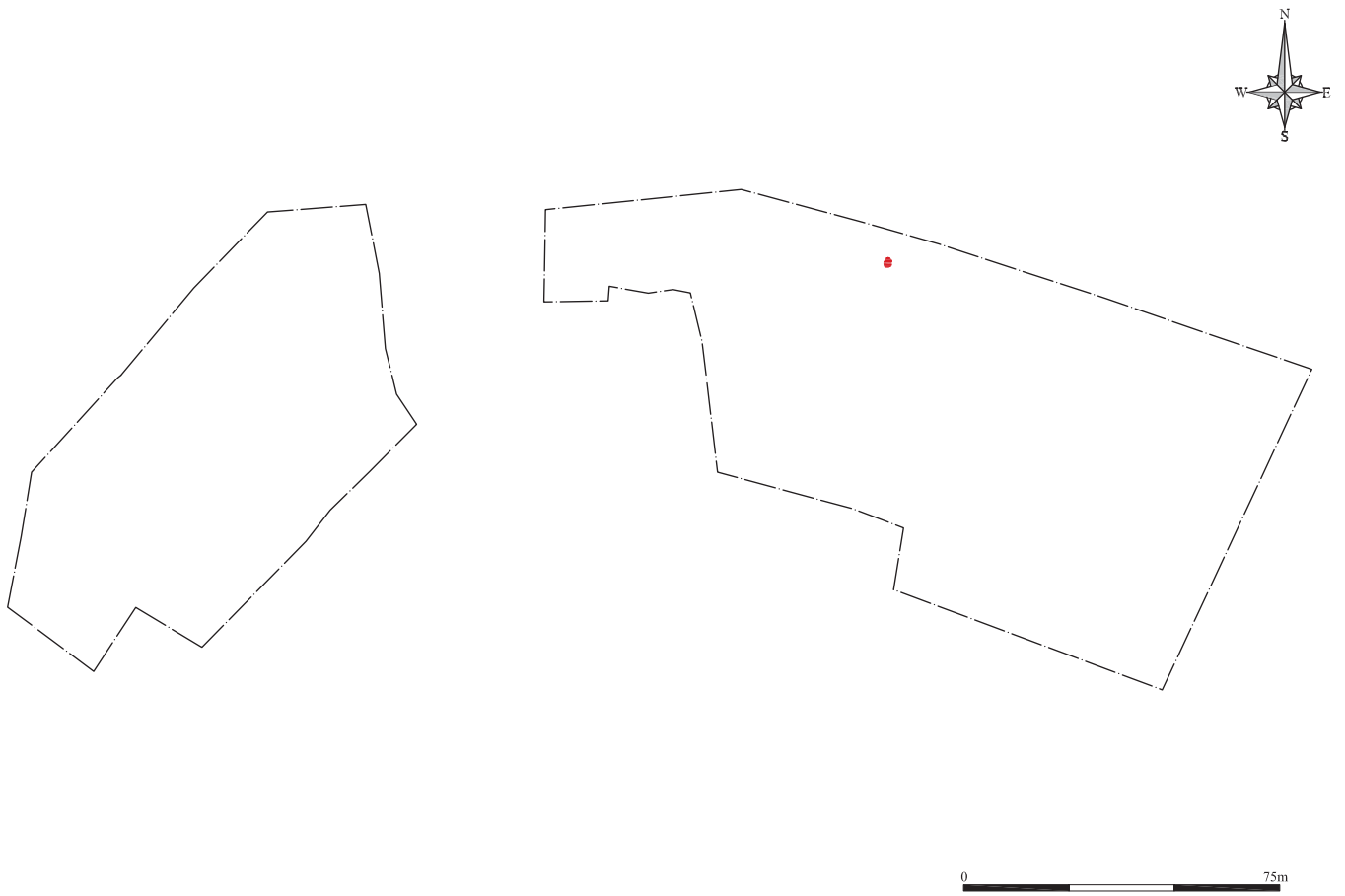


Archaeological Solutions Ltd  
**Fig. 5 All features plan**  
Scale 1:800 at A3  
South Bradwell, Norfolk (P4837)



- Phase 1: Early Neolithic
- Phase 2: Saxo-Norman to High Medieval
- Phase 3: High Medieval to Post-medieval
- Phase 4: Early Modern/ Modern
- Unphased

<i>Archaeological Solutions Ltd</i>
<b>Fig. 6 Multi-Phase plan</b>
Scale 1:800 at A3
South Bradwell, Norfolk (P4837)



*Archaeological Solutions Ltd*

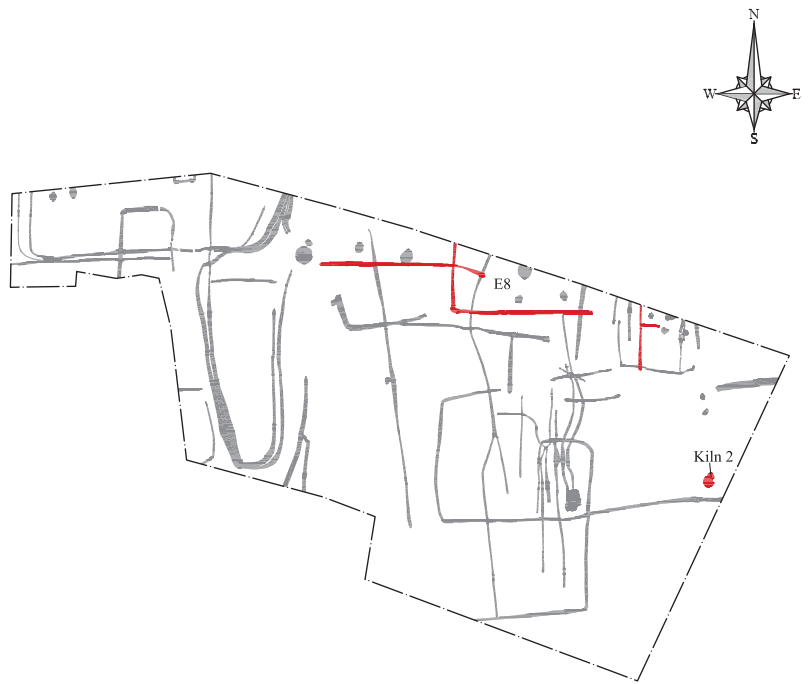
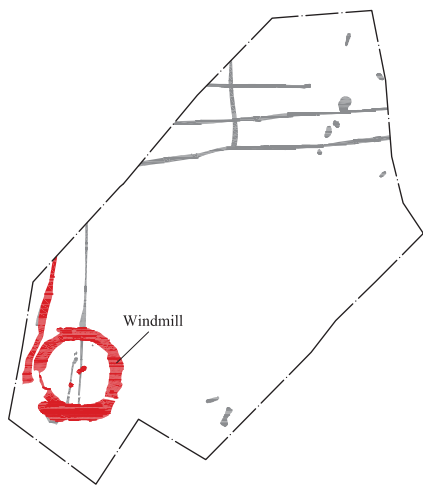
**Fig. 7 Phase 1: Early Neolithic**

Scale 1:1250 at A4

South Bradwell, Norfolk (P4837)

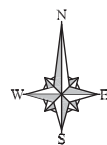
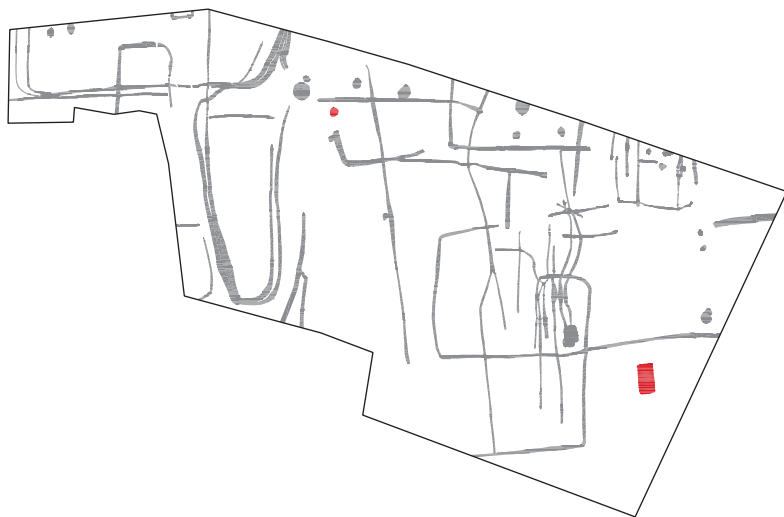
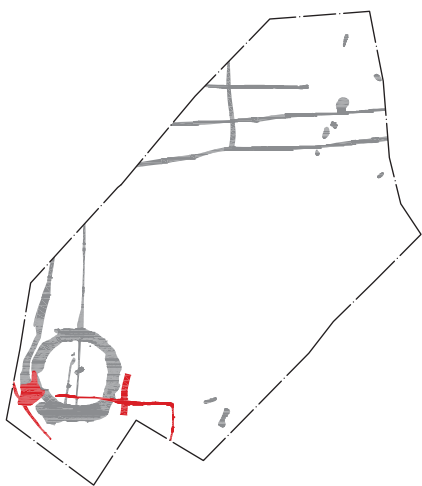


<i>Archaeological Solutions Ltd</i>
<b>Fig. 8 Phase 2: Saxo-Norman to High Medieval</b>
Scale 1:1250 at A4
South Bradwell, Norfolk (P4837)



0 E8 = Enclosure 75m

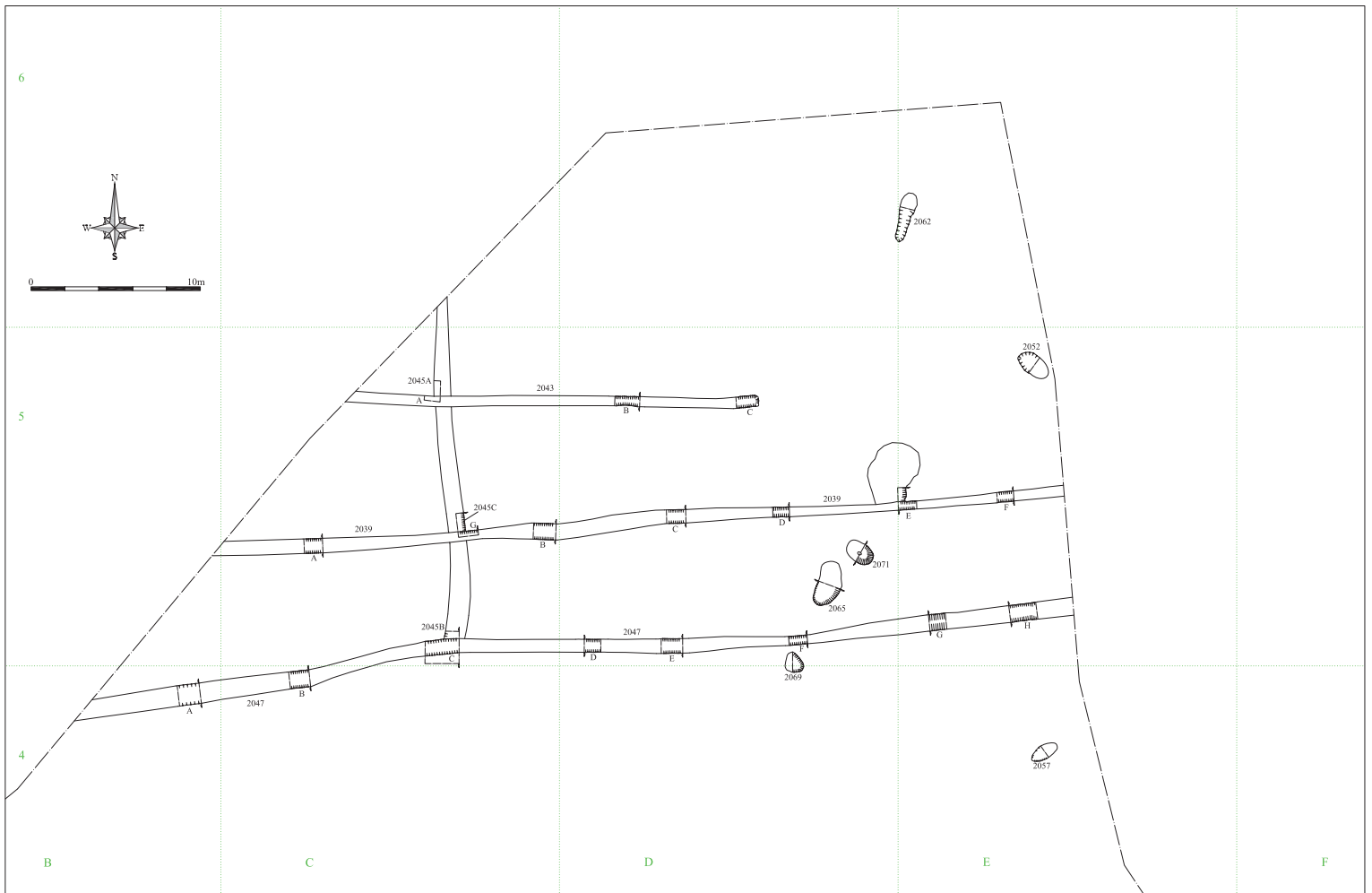
<i>Archaeological Solutions Ltd</i>
<b>Fig. 9 Phase 3: High Medieval to Post-medieval</b>
Scale 1:1250 at A4
South Bradwell, Norfolk (P4837)



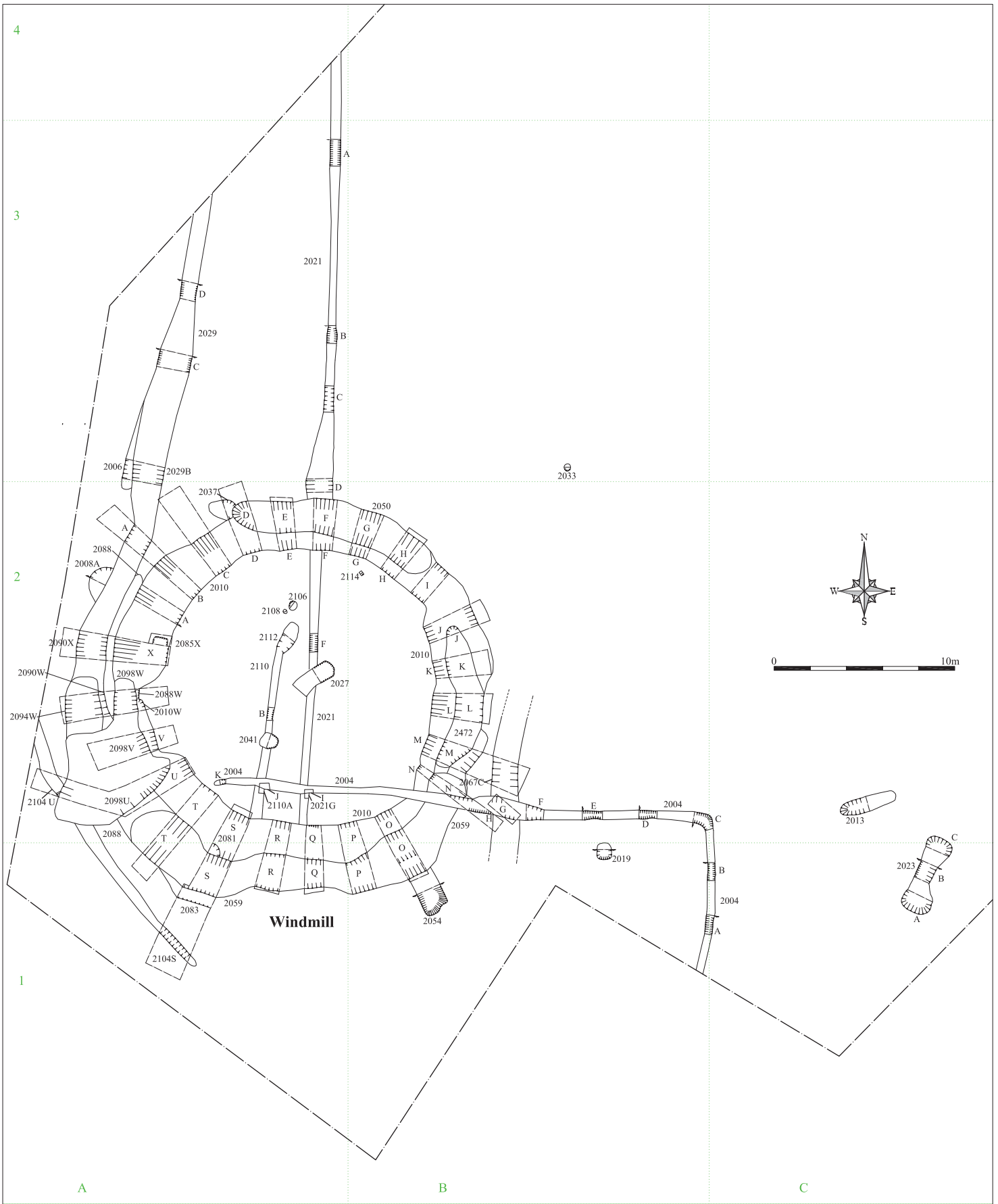
0 75m

<i>Archaeological Solutions Ltd</i>
<b>Fig. 10 Phase 4: Early Modern/ Modern</b>
Scale 1:1250 at A4
South Bradwell, Norfolk (P4837)





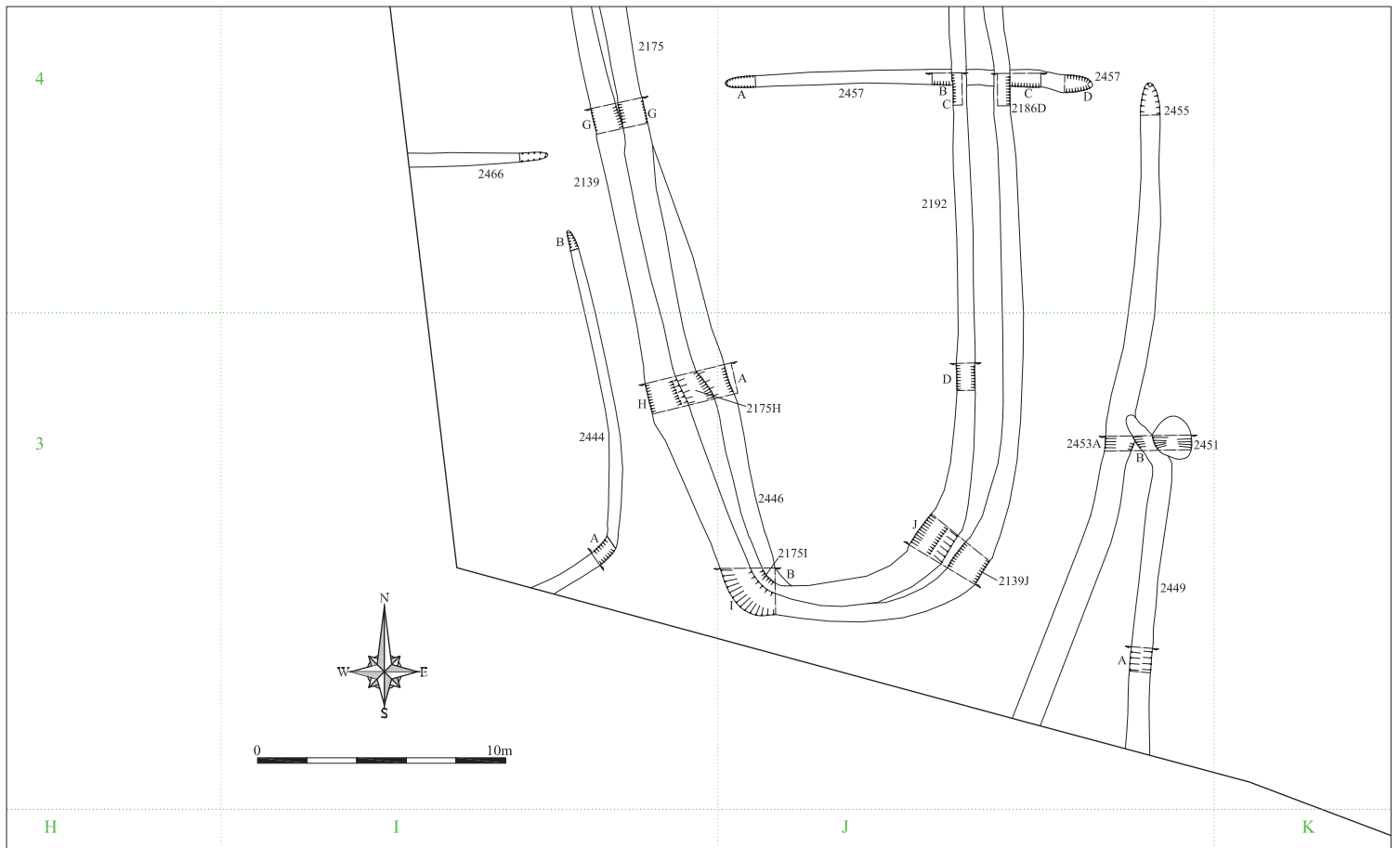
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**Fig. 11 Excavation plan**  
 Scale 1:200 at A3  
 South Bradwell, Norfolk (P4837)



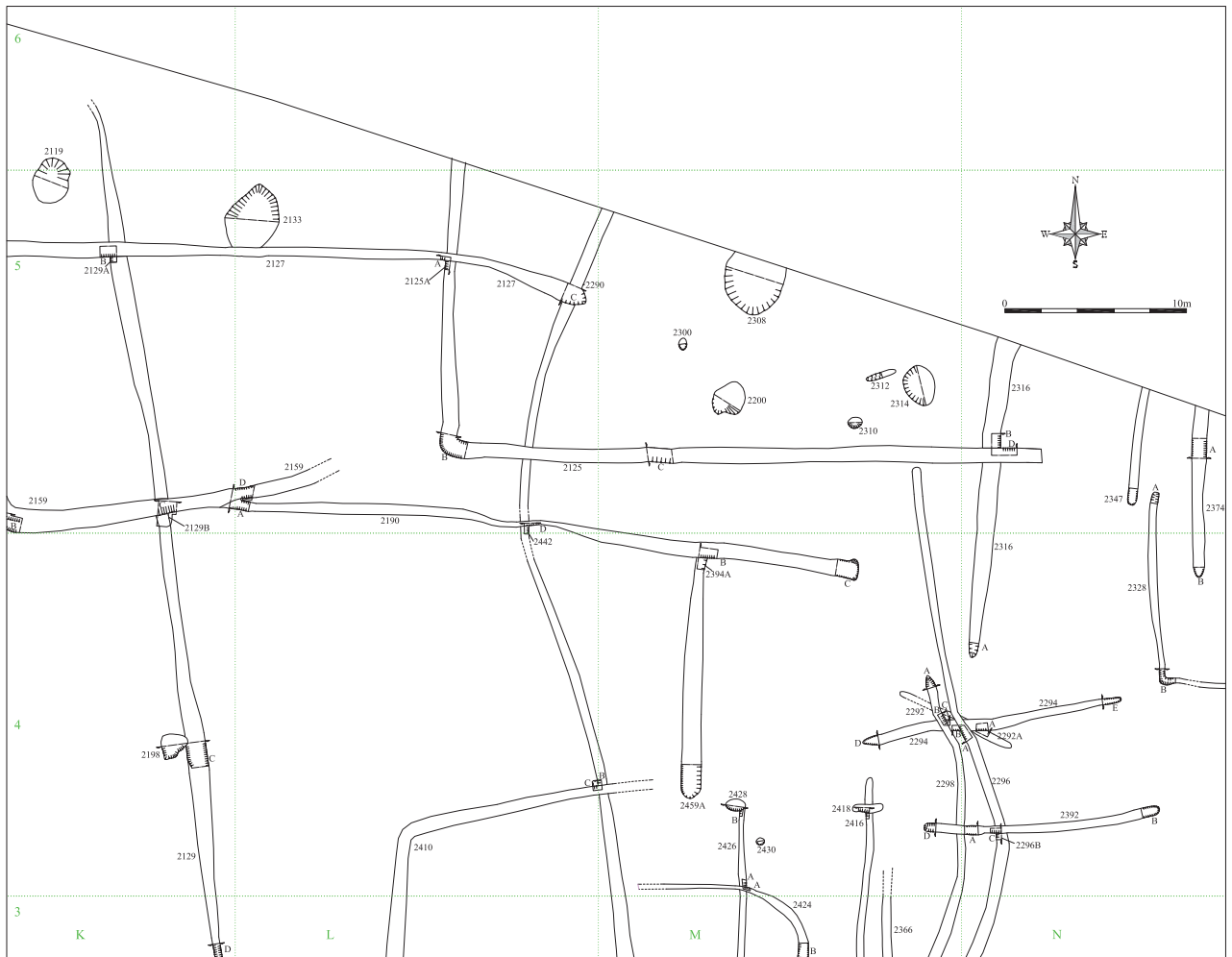
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**Fig. 12 Excavation plan**  
 Scale 1:200 at A3  
 South Bradwell, Norfolk (P4837)



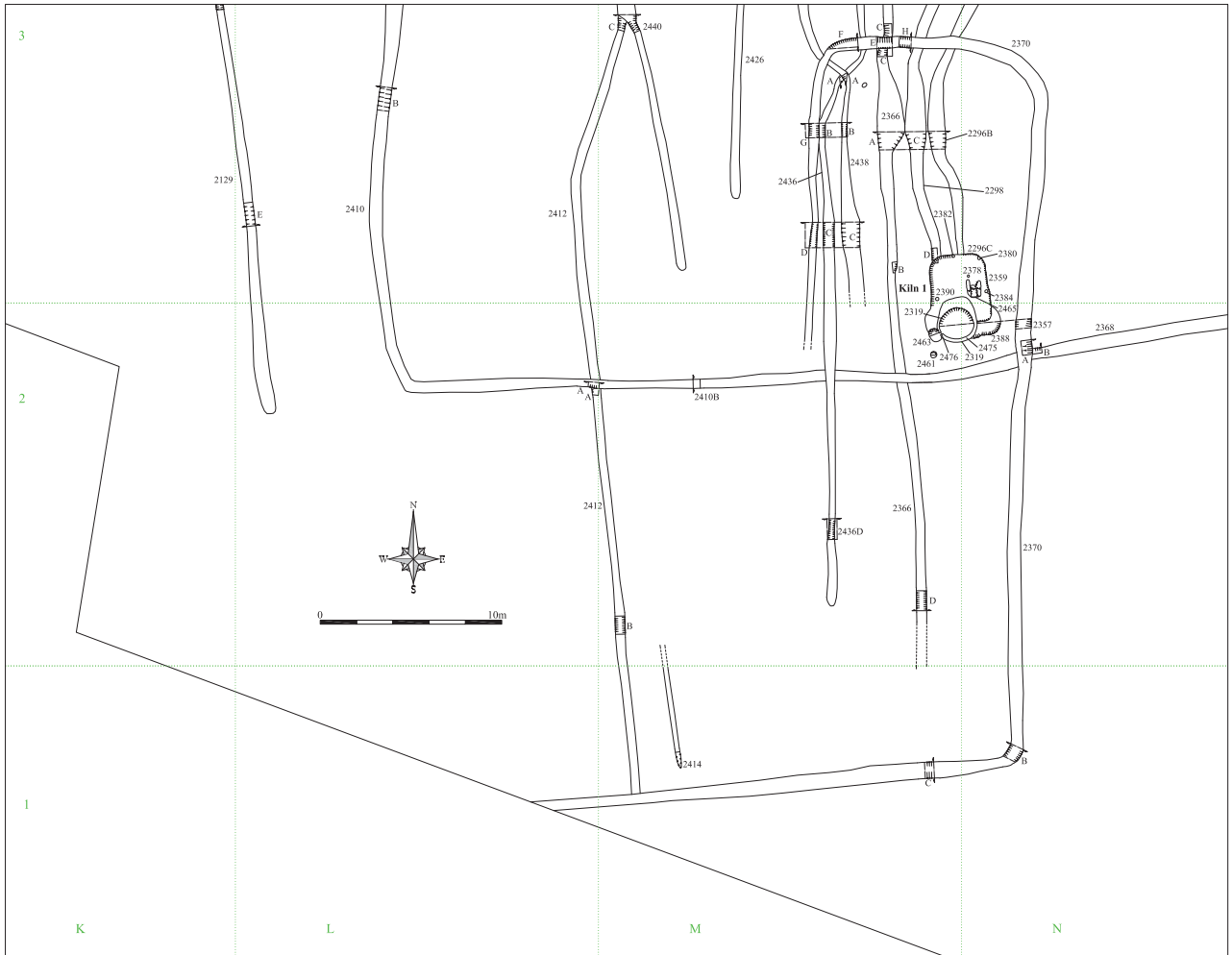
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**Fig. 13 Excavation plan**  
 Scale 1:200 at A3  
 South Bradwell, Norfolk (P4837)



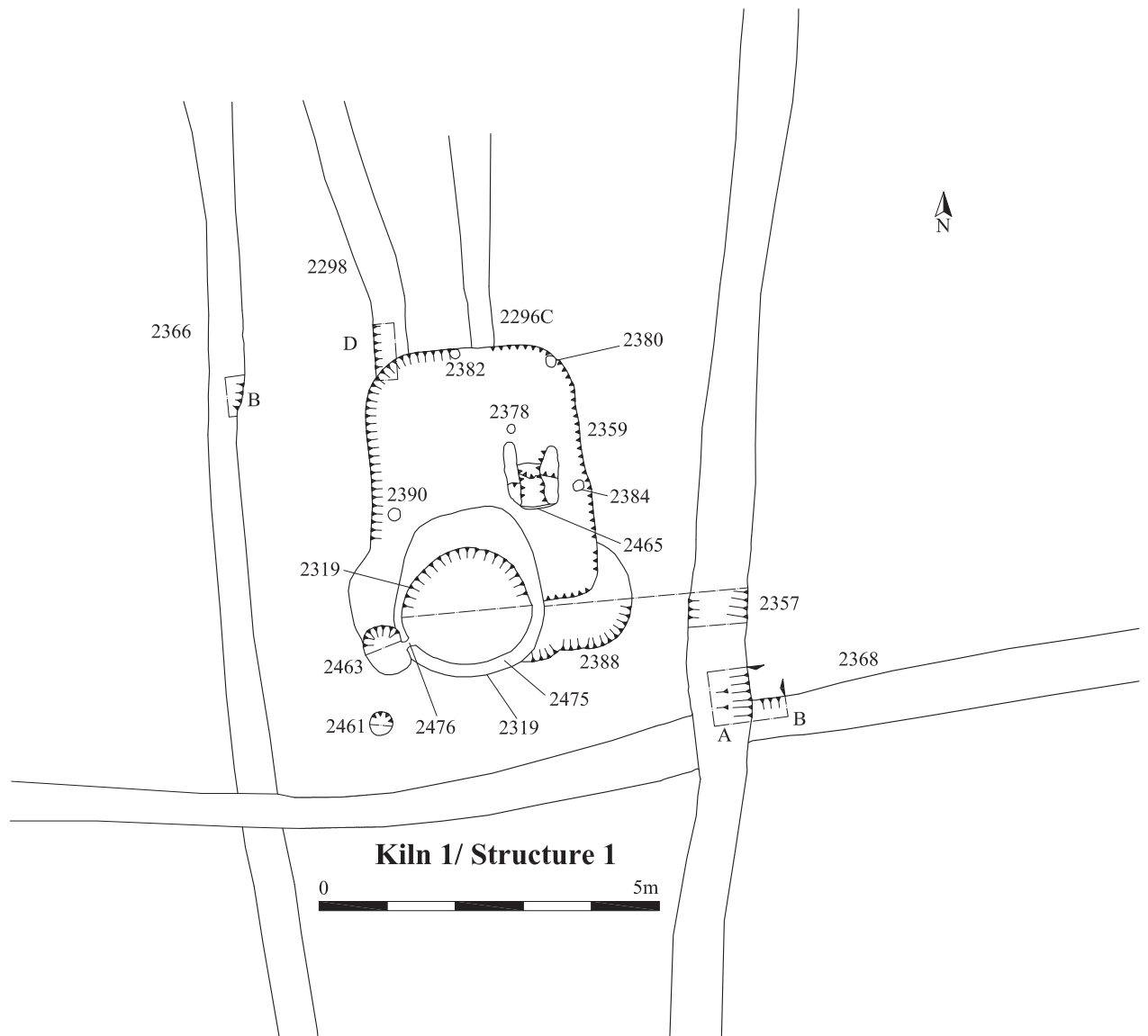
<i>Archaeological Solutions Ltd</i>
<b>Fig. 14 Excavation plan</b>
Scale 1:200 at A4
South Bradwell, Norfolk (P4837)



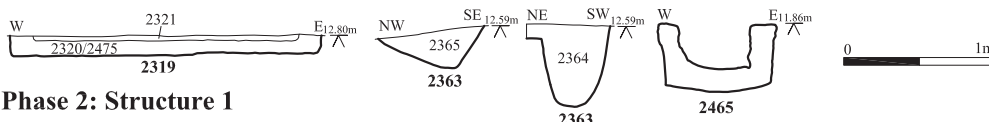
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**Fig. 15 Excavation plan**  
 Scale 1:200 at A3  
 South Bradwell, Norfolk (P4837)



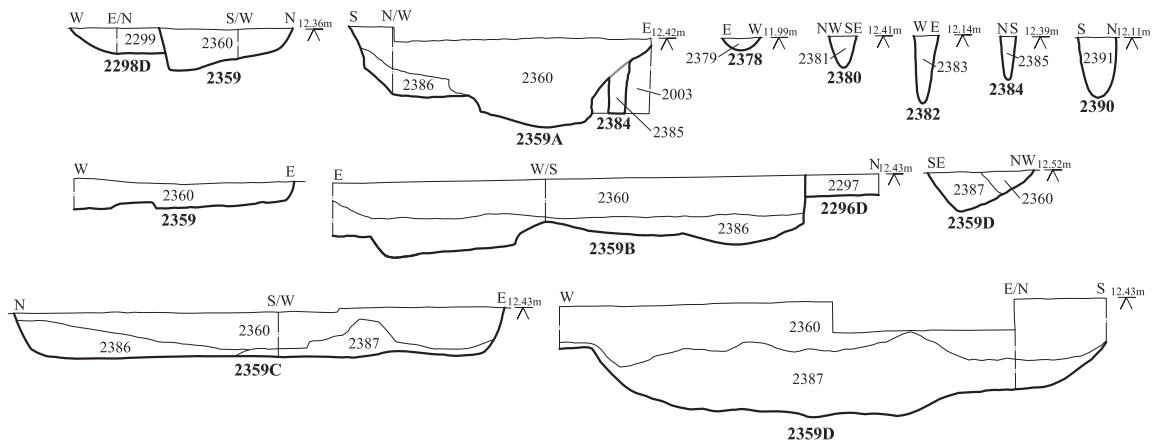
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**Fig. 16 Excavation plan**  
 Scale 1:200 at A3  
 South Bradwell, Norfolk (P4837)



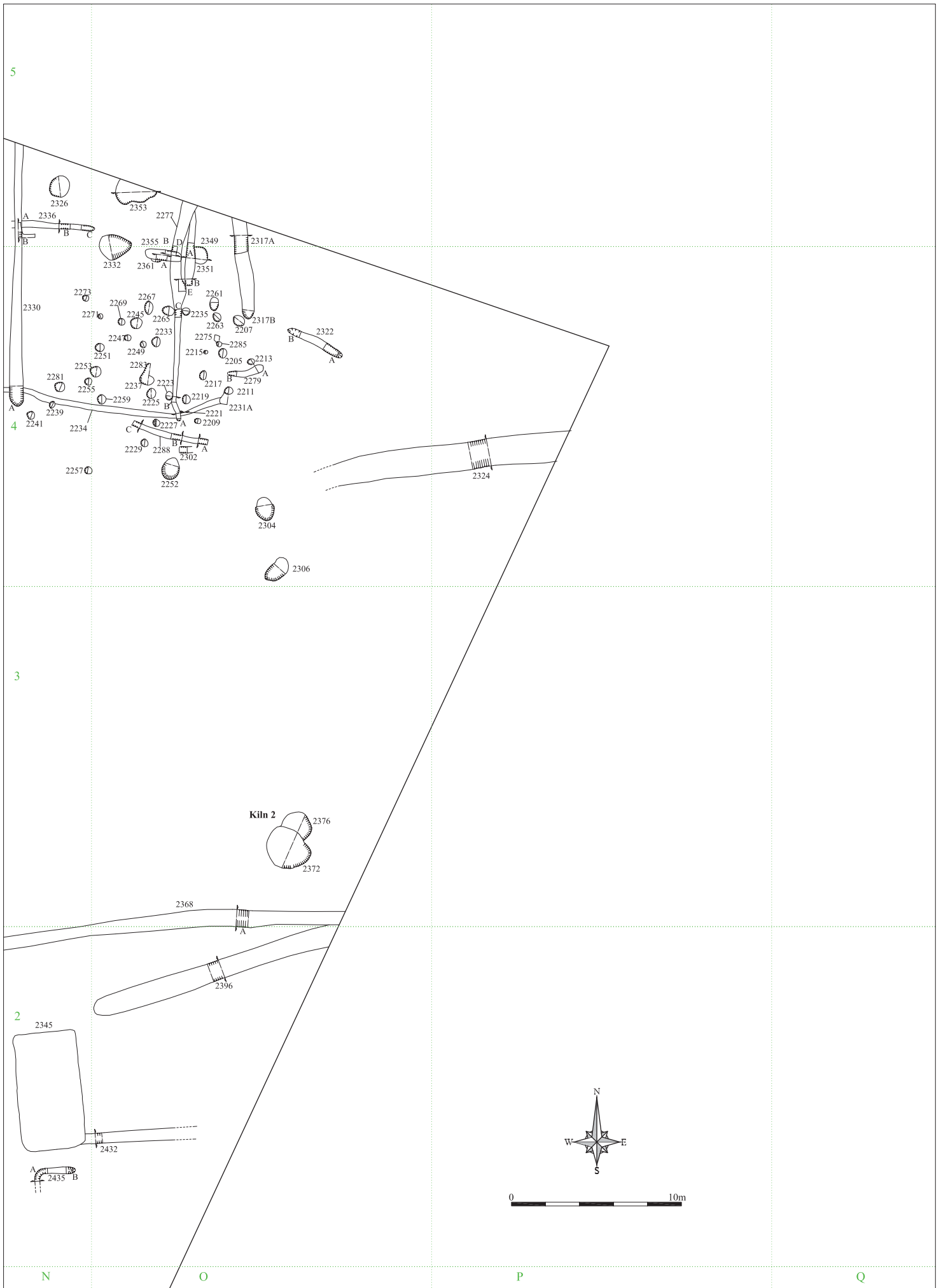
**Phase 2: Kiln 1**



**Phase 2: Structure 1**



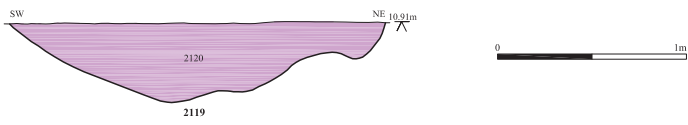
<i>Archaeological Solutions Ltd</i>
<b>Fig. 16a Kiln 1/Structure 1</b>
Scale 1:100 and 1:50 at A4
South Bradwell, Norfolk (P4837)



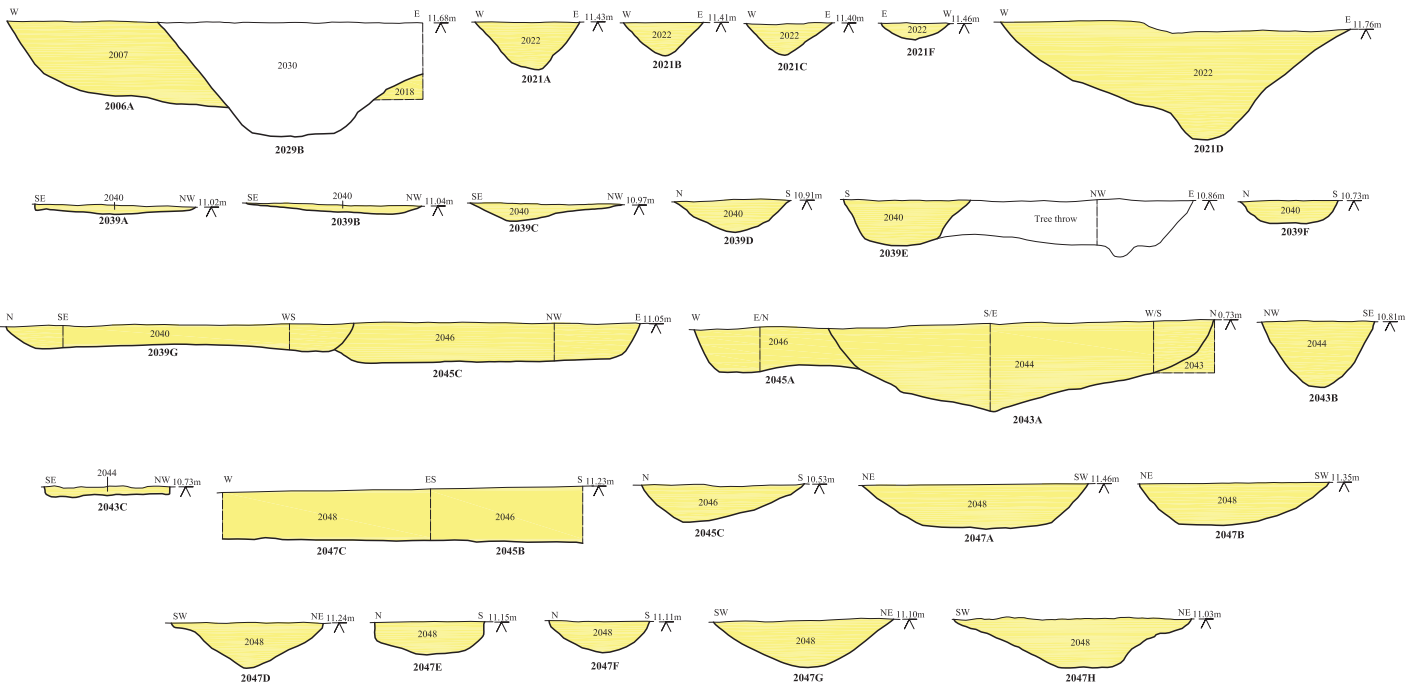
Archaeological Solutions Ltd  
**Fig. 17 Excavation plan**  
 Scale 1:200 at A3  
 South Bradwell, Norfolk (P4837)



**Phase 1: Pit F2119**

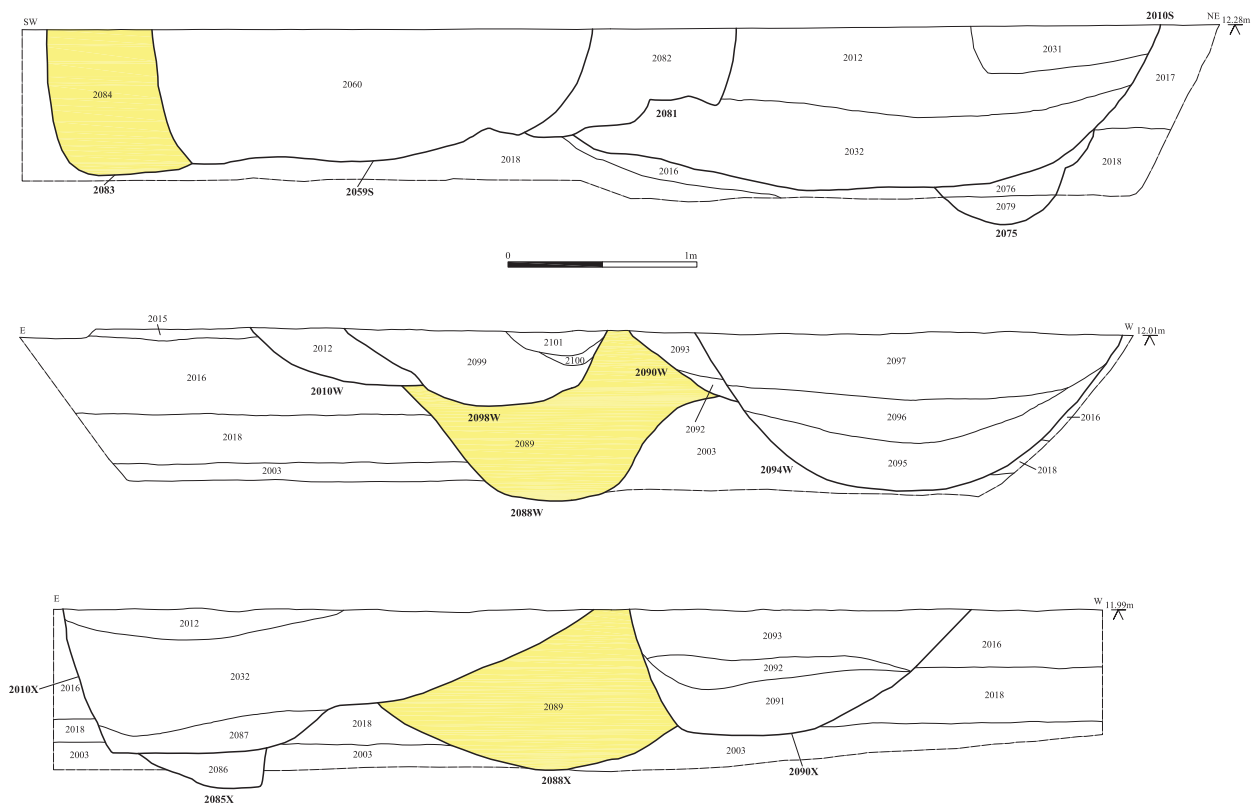


**Phase 2: Ditches and Gullies**



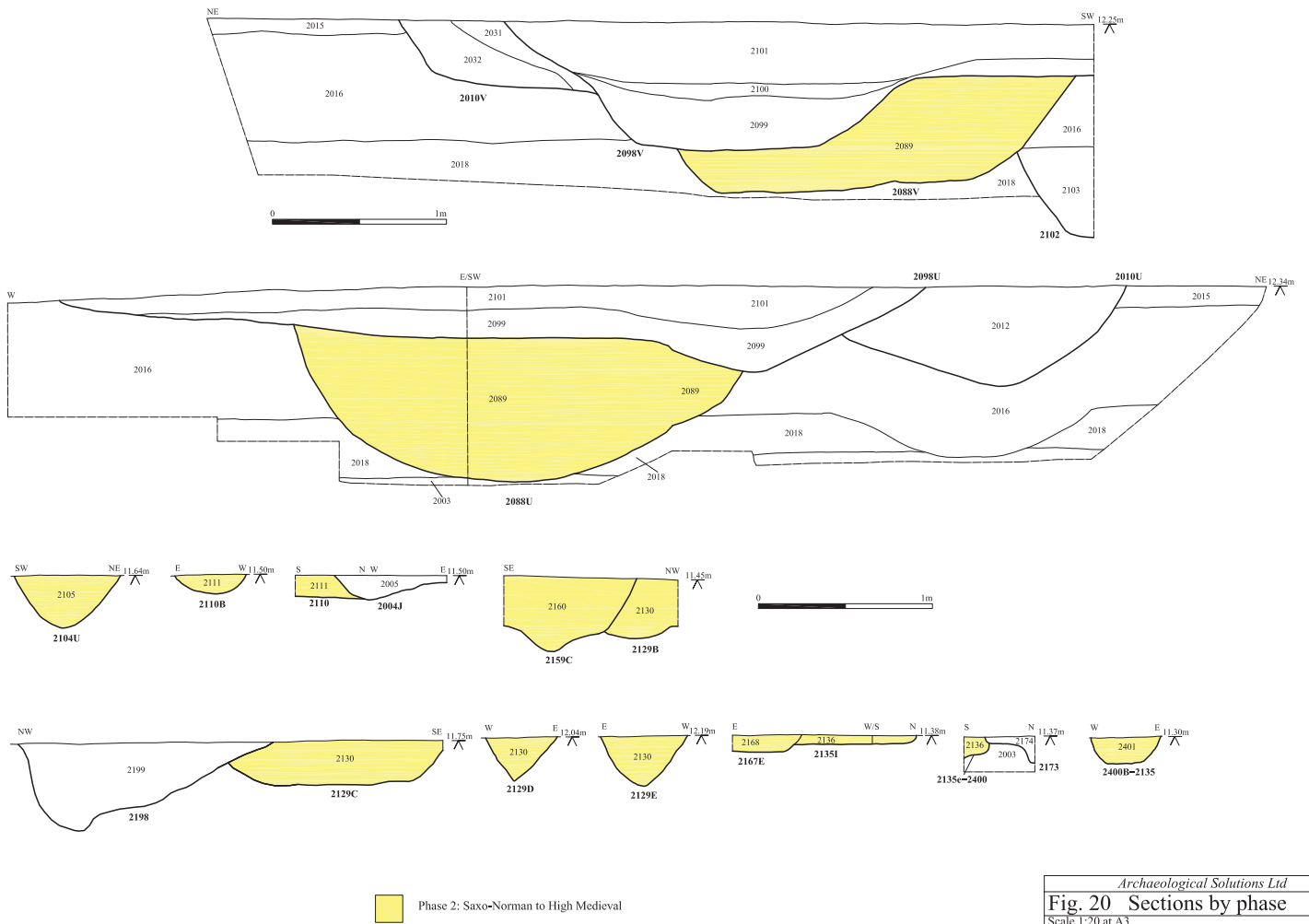
- Phase 1: Early Neolithic
- Phase 2: Saxo-Norman to High Medieval

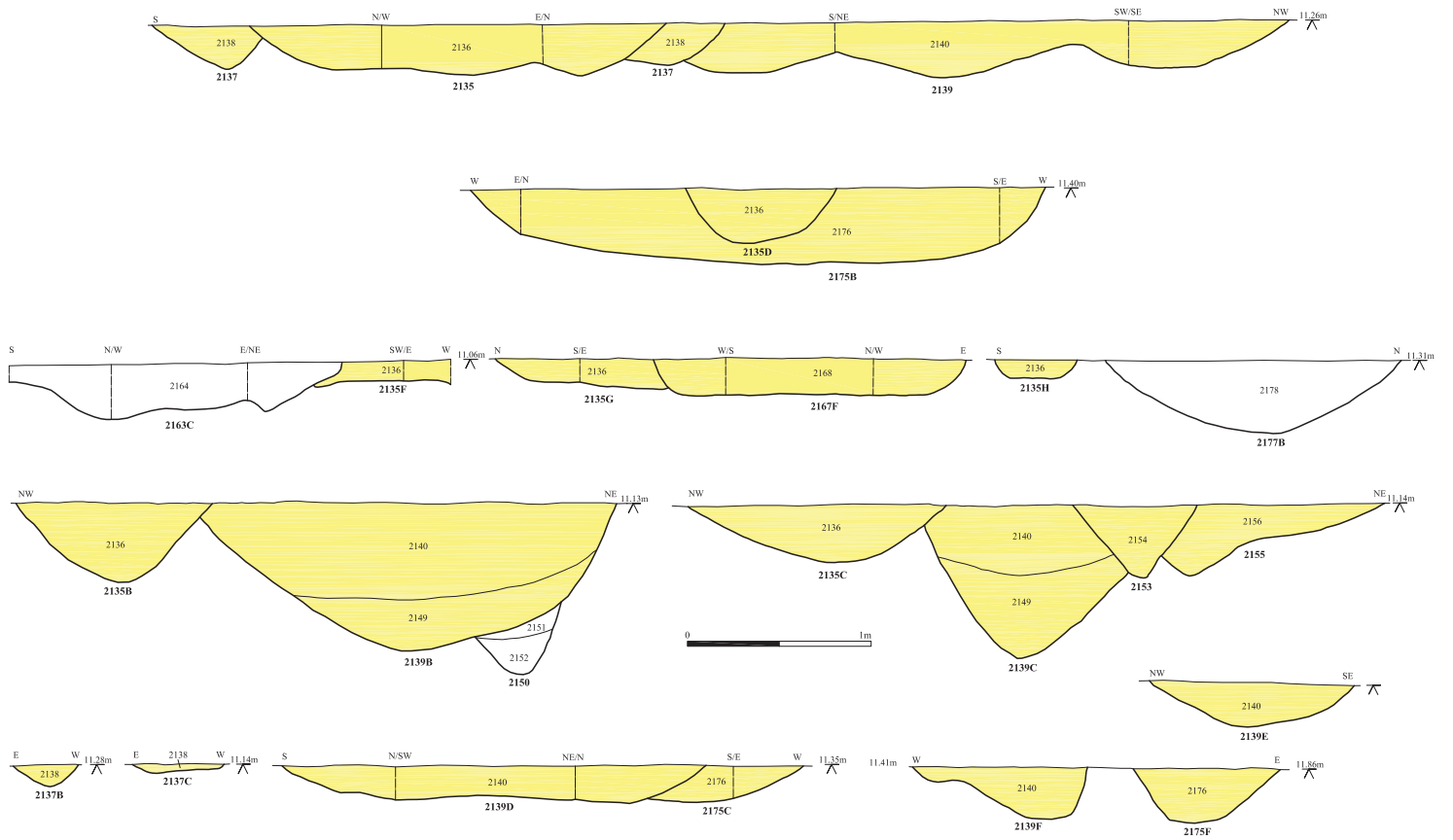
<i>Archaeological Solutions Ltd</i>
<b>Fig. 18 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



Phase 2: Saxo-Norman to High Medieval

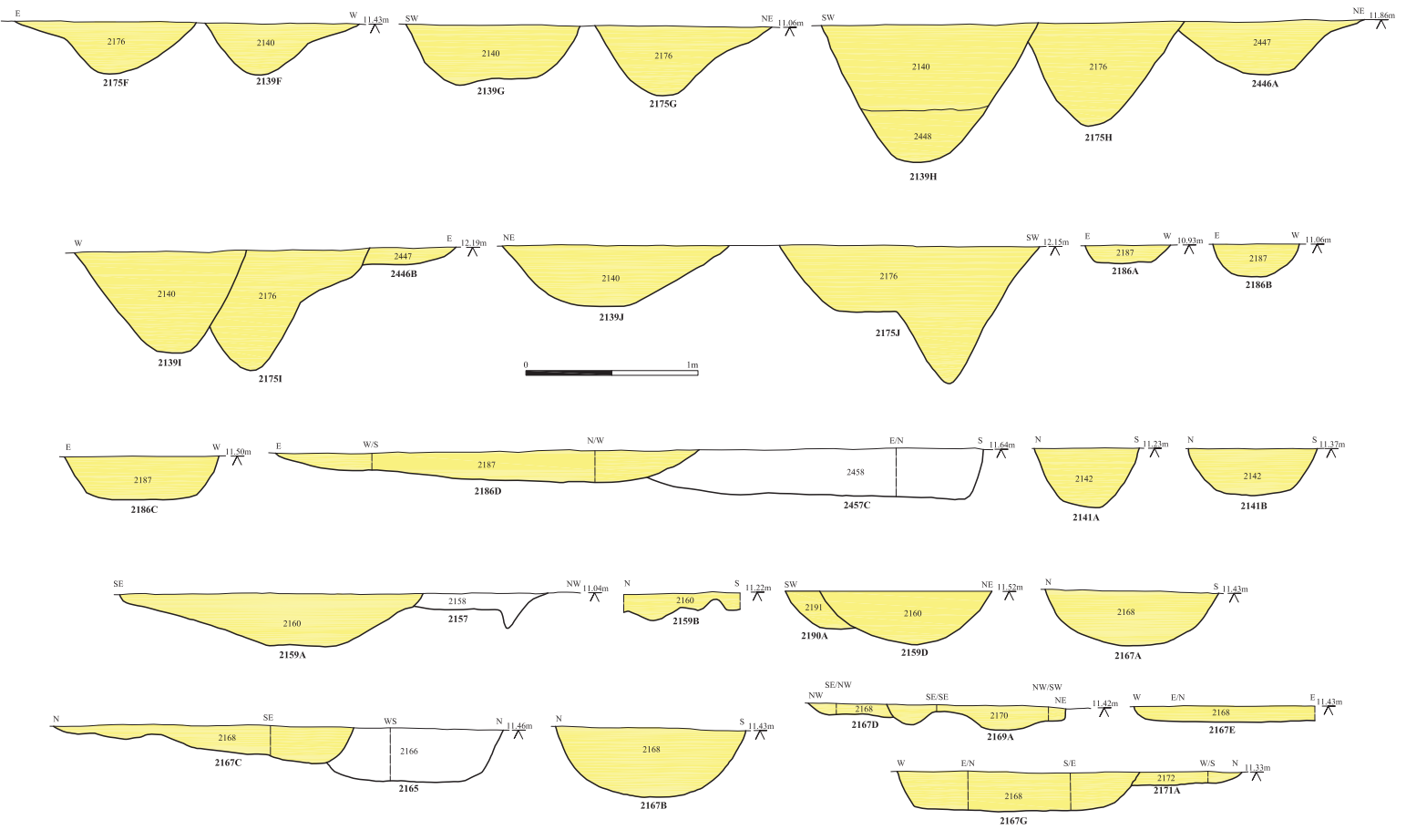
<i>Archaeological Solutions Ltd</i>
<b>Fig. 19 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)





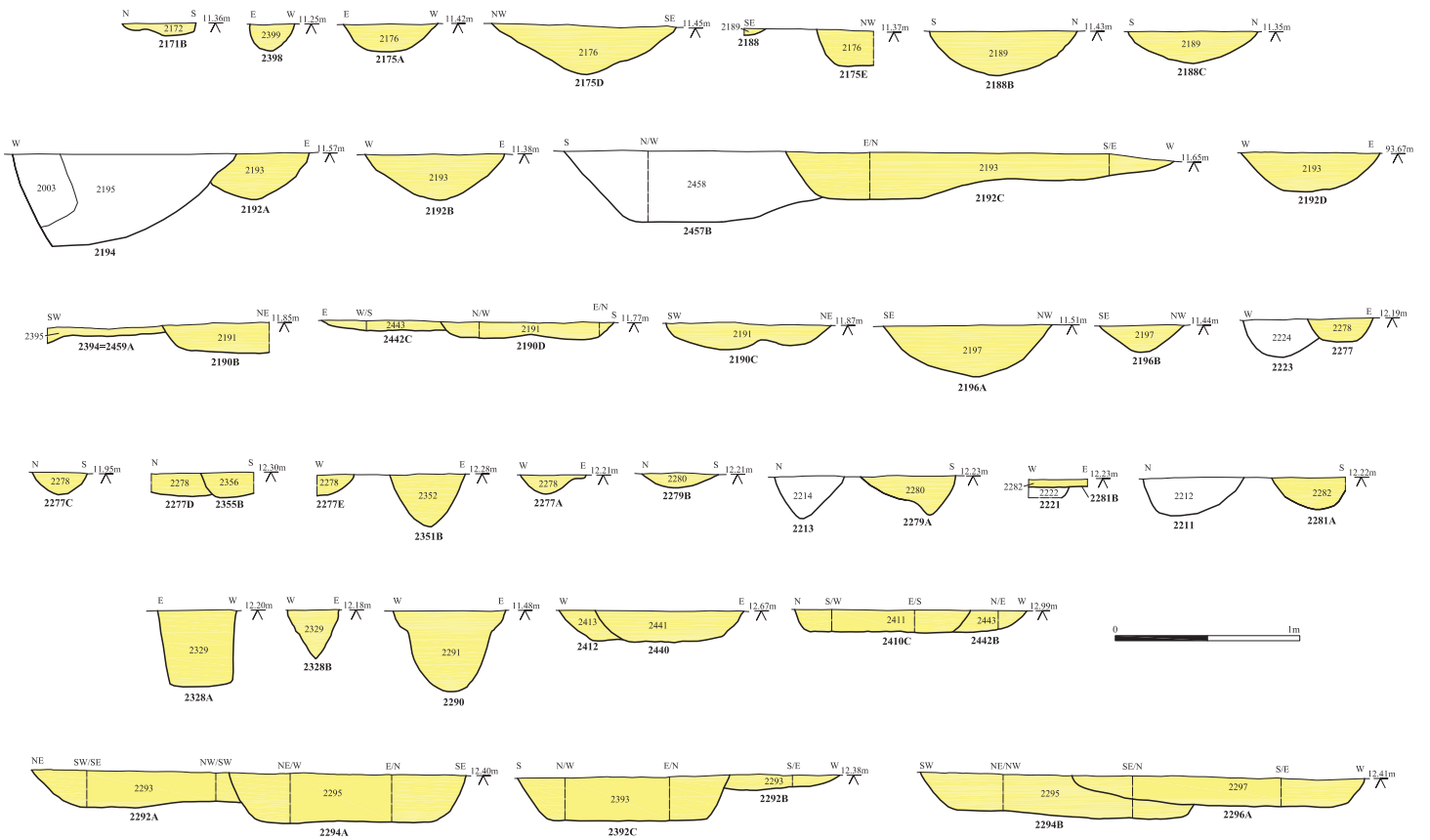
Phase 2: Saxo-Norman to High Medieval

<i>Archaeological Solutions Ltd</i>
<b>Fig. 21 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



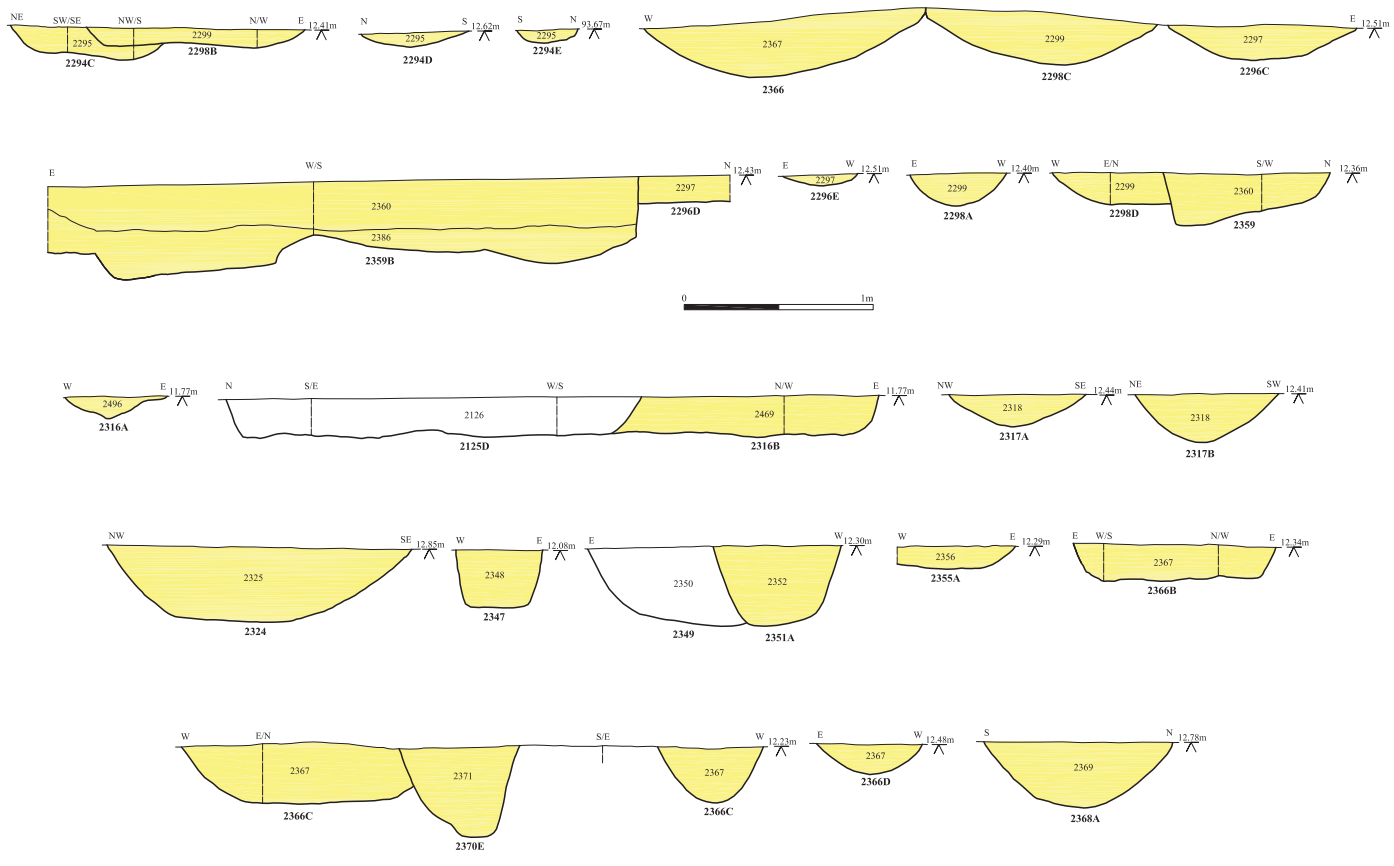
Phase 2: Saxo-Norman to High Medieval

<i>Archaeological Solutions Ltd</i>
<b>Fig. 22 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



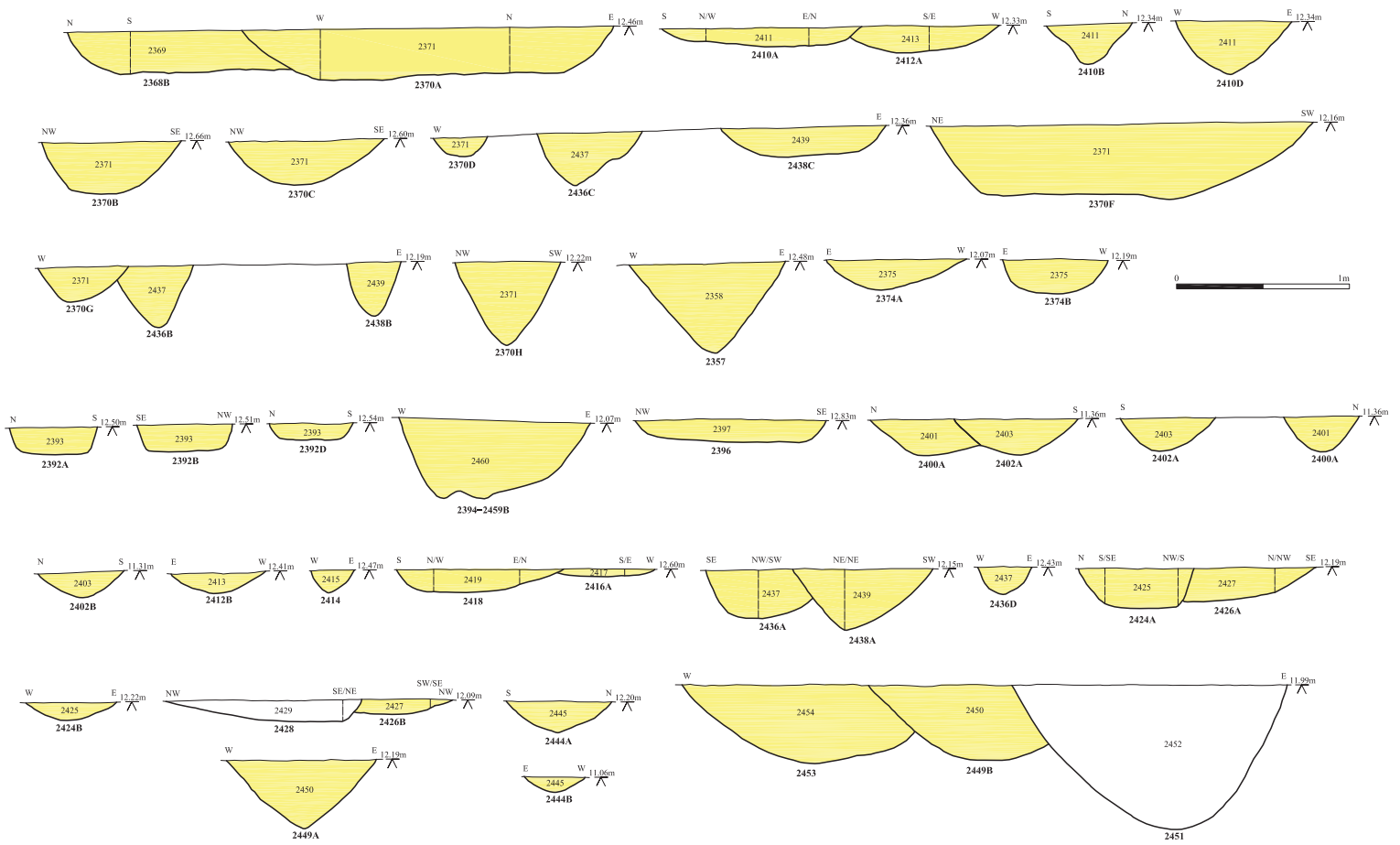
Phase 2: Saxo-Norman to High Medieval

Archaeological Solutions Ltd  
**Fig. 23 Sections by phase**  
 Scale 1:20 at A3  
 South Bradwell, Norfolk (P4837)



Phase 2: Saxo-Norman to High Medieval

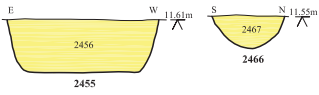
<i>Archaeological Solutions Ltd</i>
<b>Fig. 24 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



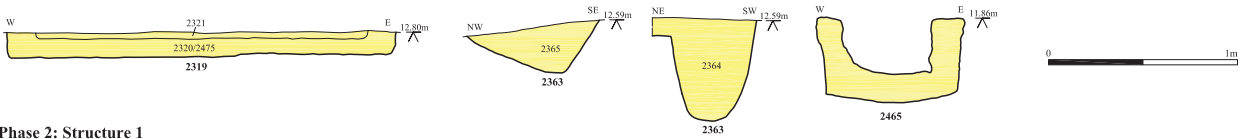
Phase 2: Saxo-Norman to High Medieval

<i>Archaeological Solutions Ltd</i>
<b>Fig. 25 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)

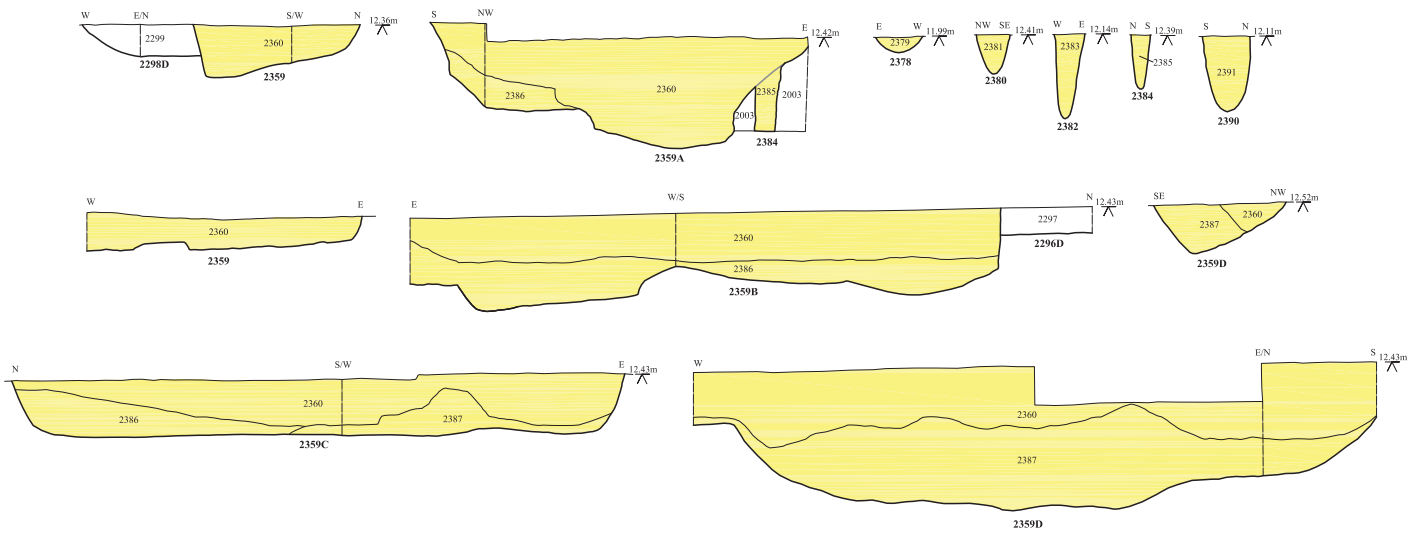




**Phase 2: Kiln 1**



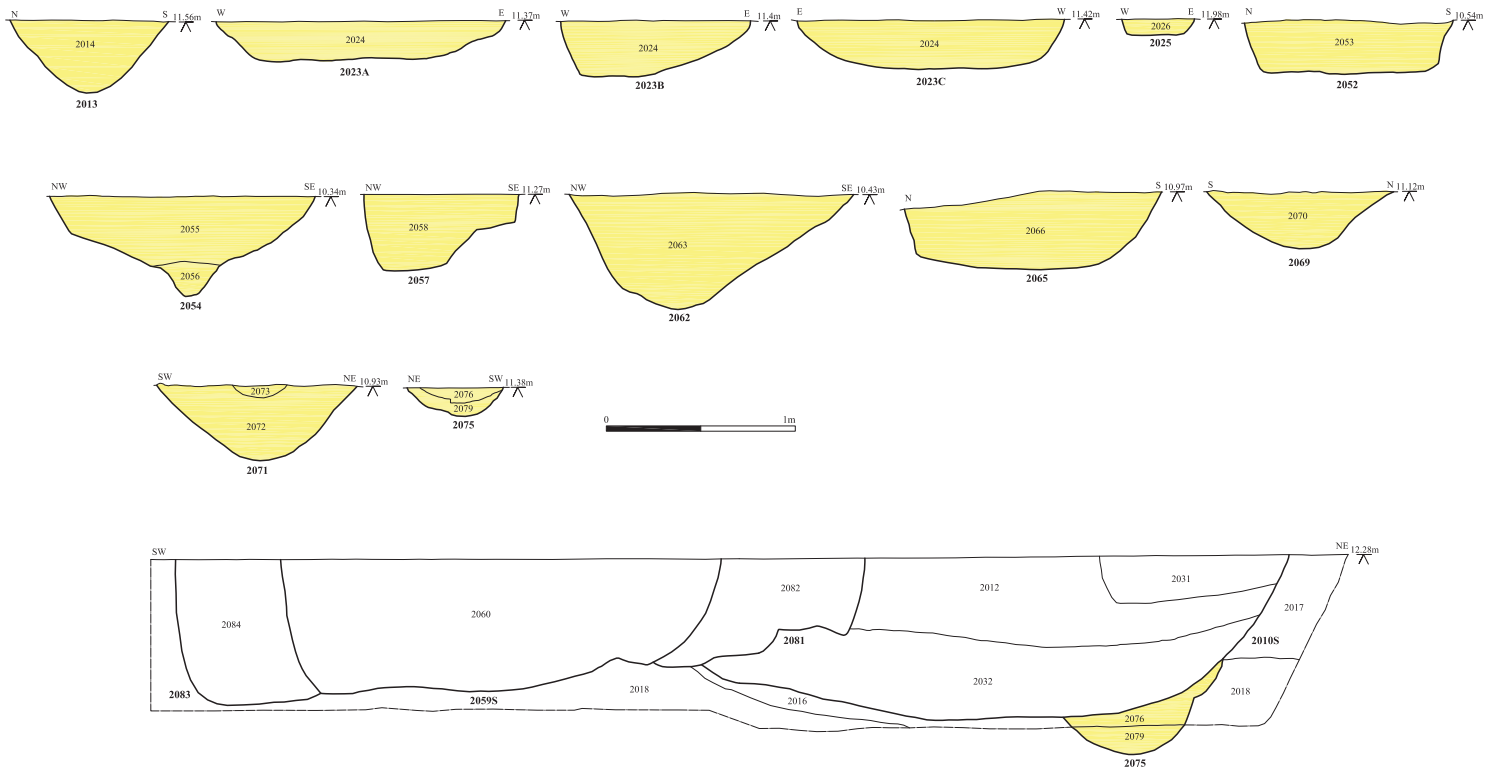
**Phase 2: Structure 1**



Phase 2: Saxo-Norman to High Medieval

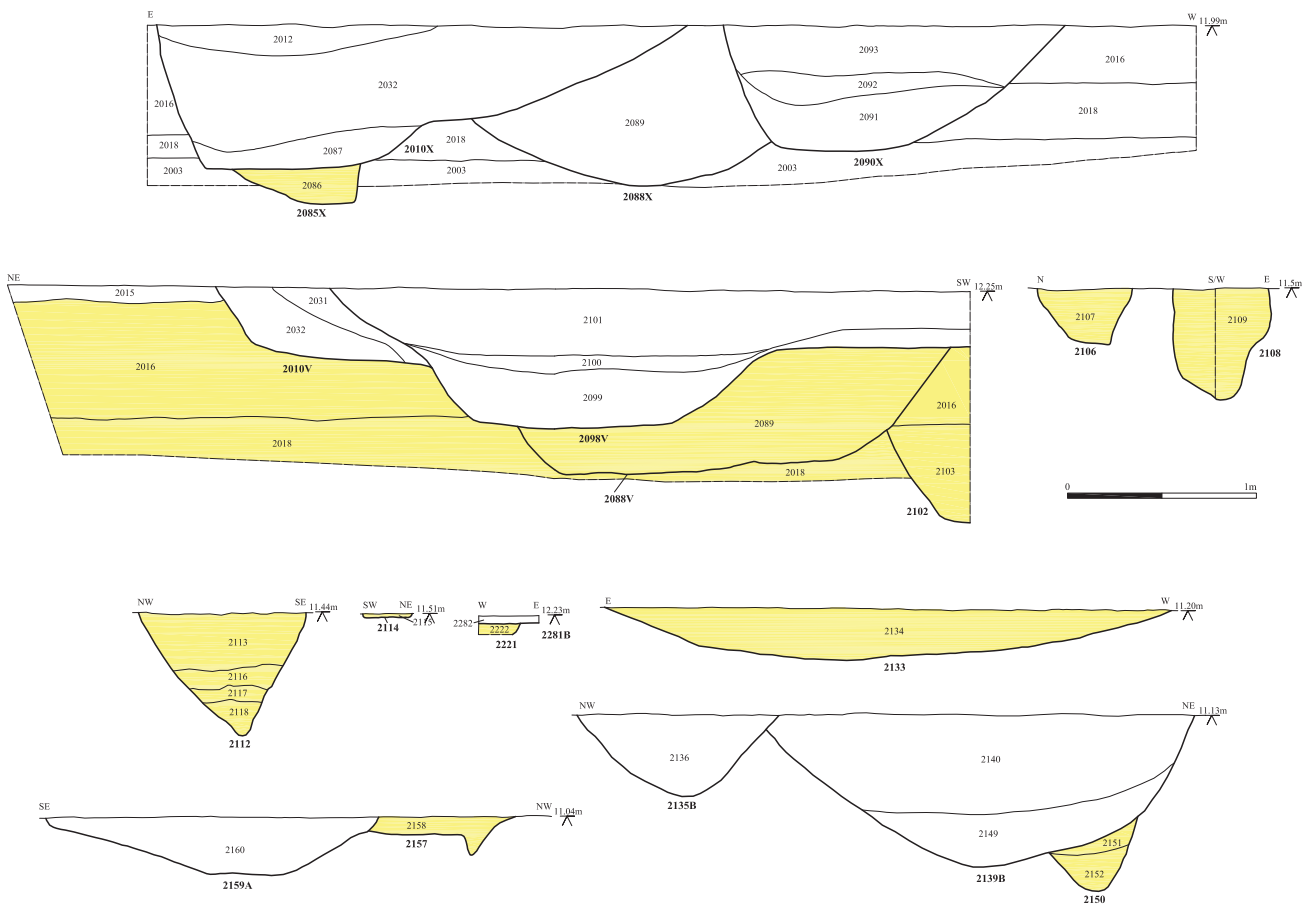
<i>Archaeological Solutions Ltd</i>
<b>Fig. 26 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)

**Phase 2: Pits and Postholes**



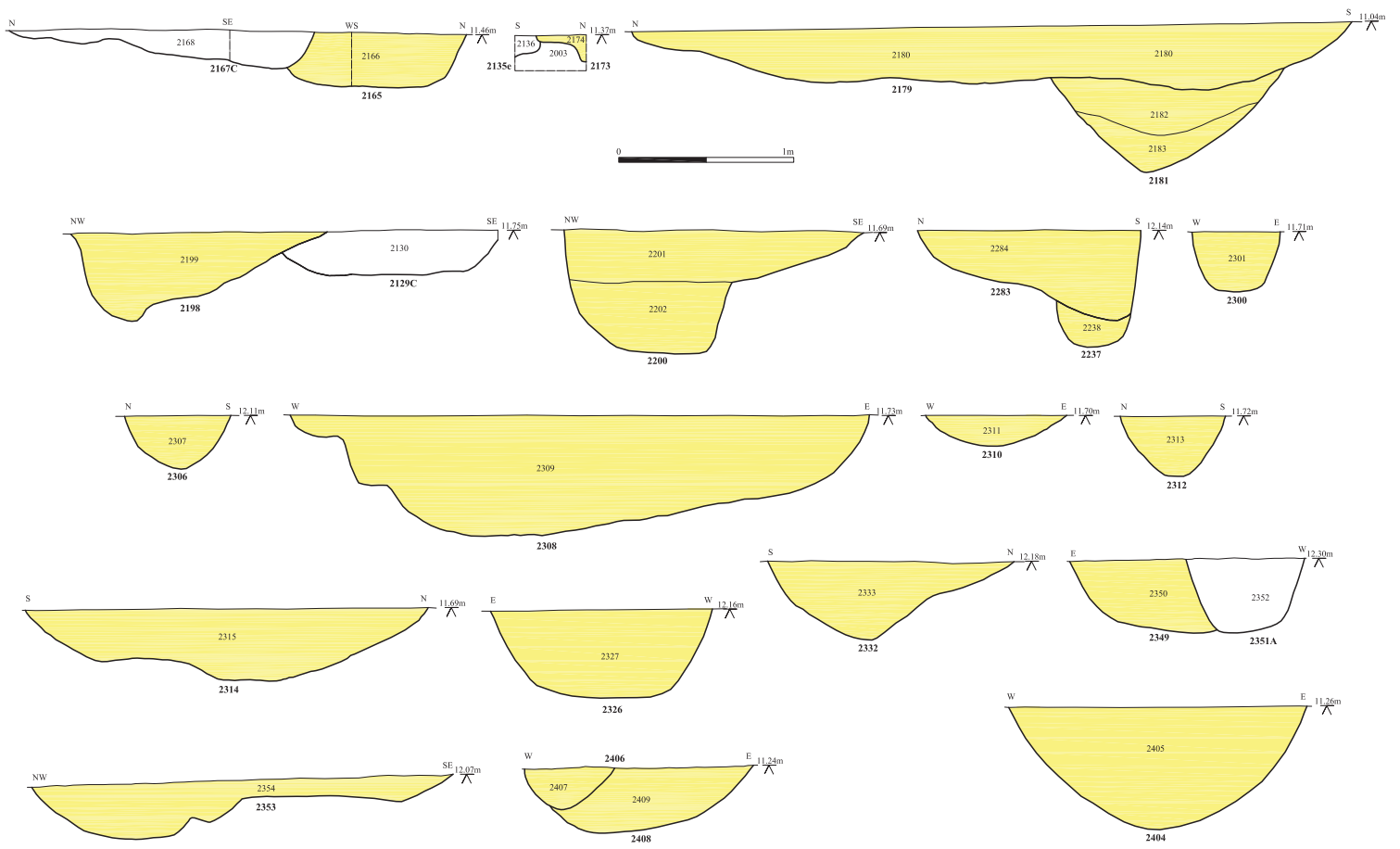
Phase 2: Saxo-Norman to High Medieval

<i>Archaeological Solutions Ltd</i>
<b>Fig. 27 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



Phase 2: Saxo-Norman to High Medieval

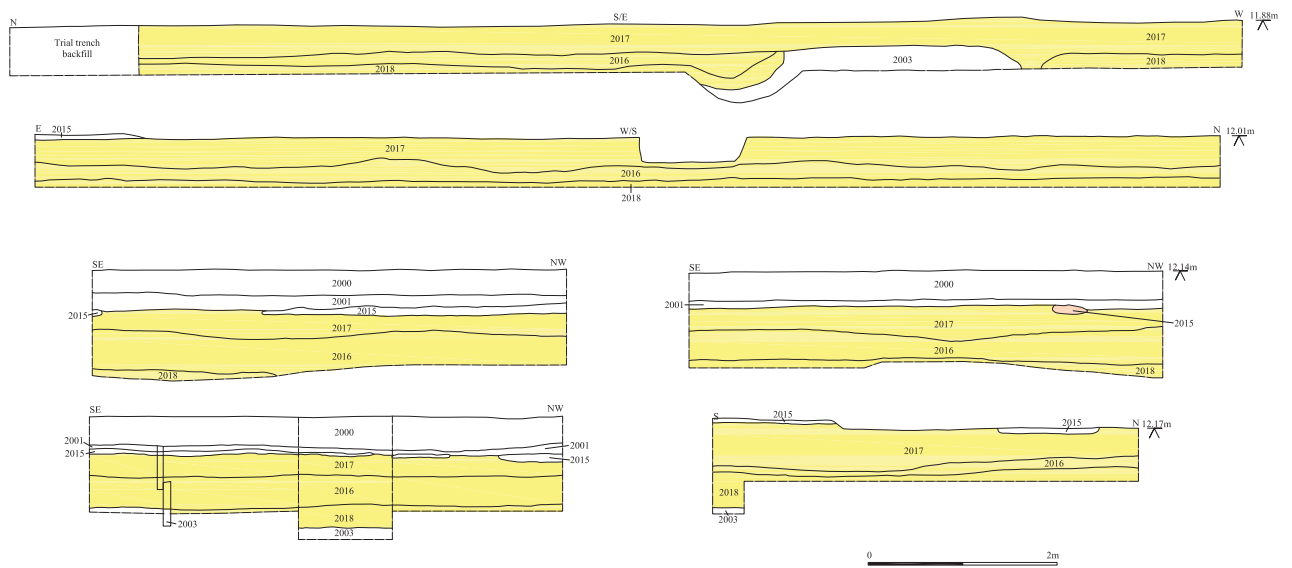
<i>Archaeological Solutions Ltd</i>
<b>Fig. 28 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



Phase 2: Saxo-Norman to High Medieval

Archaeological Solutions Ltd  
**Fig. 29 Sections by phase**  
 Scale 1:20 at A3  
 South Bradwell, Norfolk (P4837)

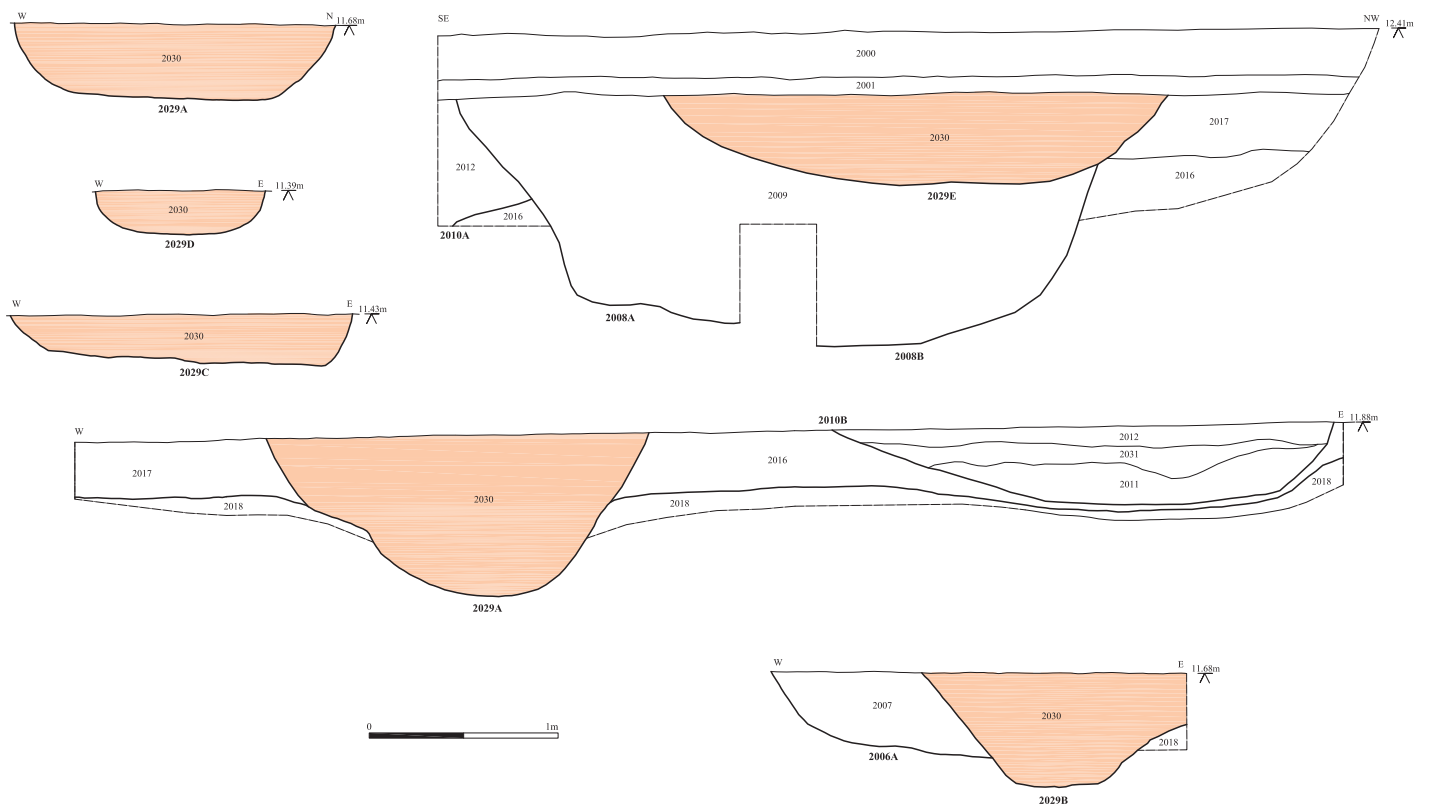
Phase 2: Buried soils



Phase 2: Saxo-Norman to High Medieval

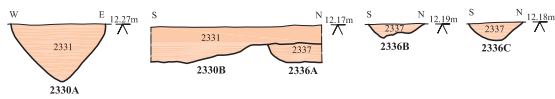
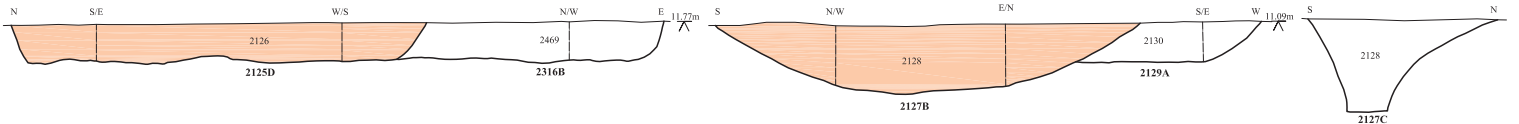
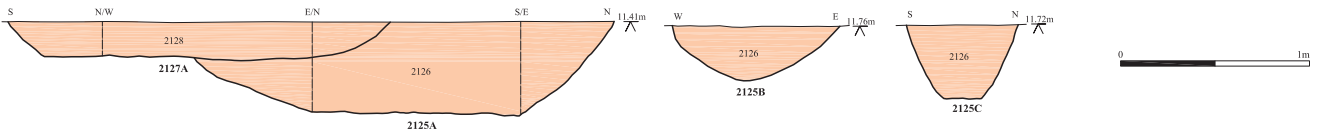
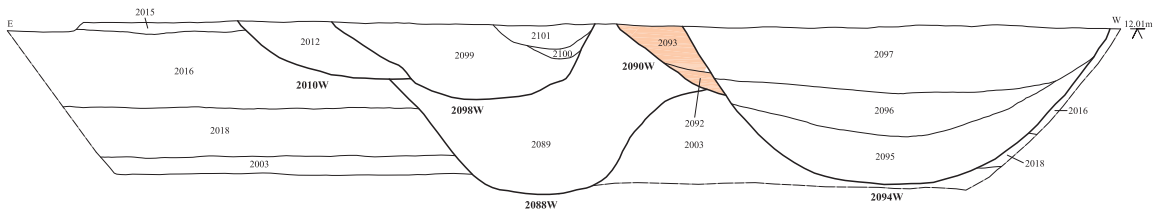
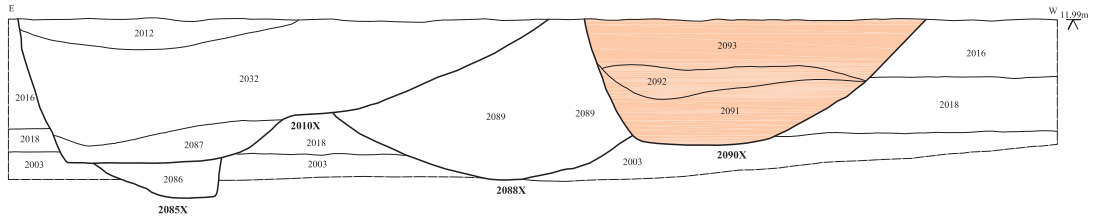
<i>Archaeological Solutions Ltd</i>
<b>Fig. 30 Sections by phase</b>
Scale 1:40 at A3
South Bradwell, Norfolk (P4837)

**Phase 3: Ditches**



Phase 3: High Medieval to Post-medieval

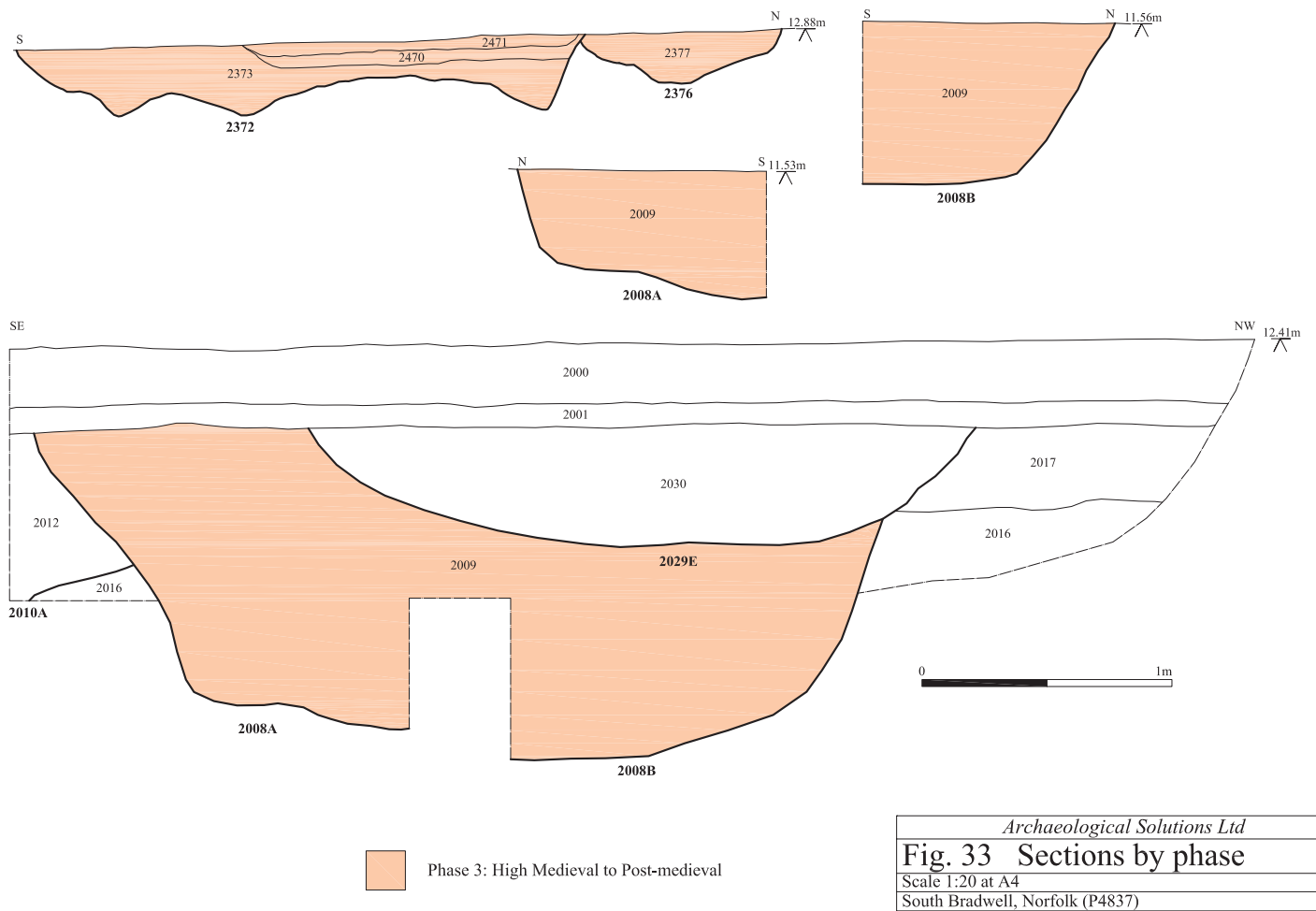
<i>Archaeological Solutions Ltd</i>
<b>Fig. 31 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



Phase 3: High Medieval to Post-medieval

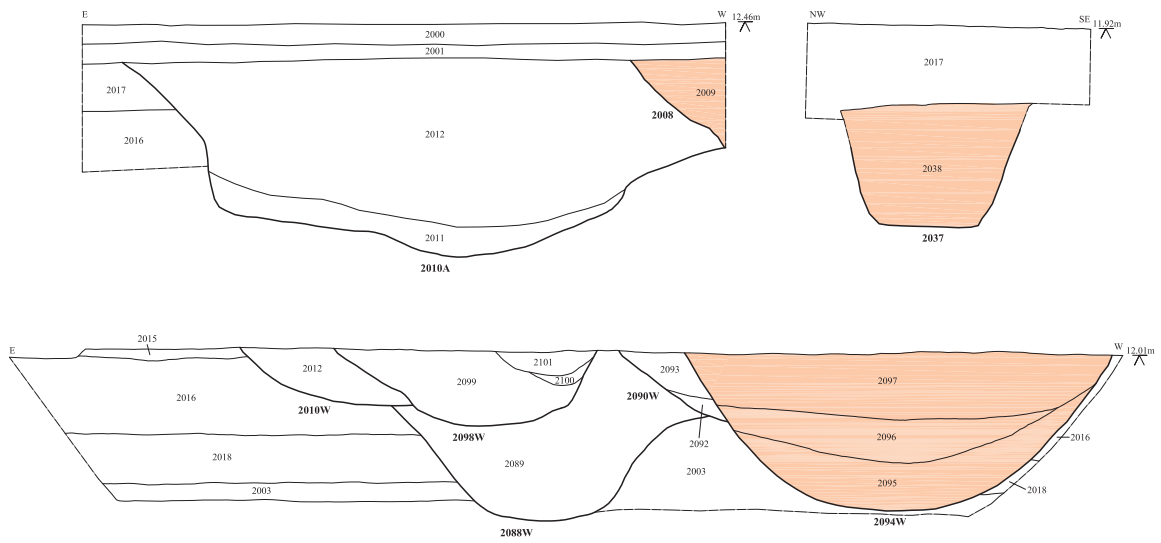
<i>Archaeological Solutions Ltd</i>
<b>Fig. 32 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)

**Phase 3: Kiln 2**

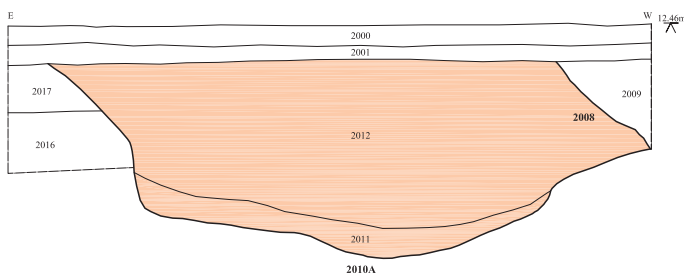




**Phase 3: Pits**

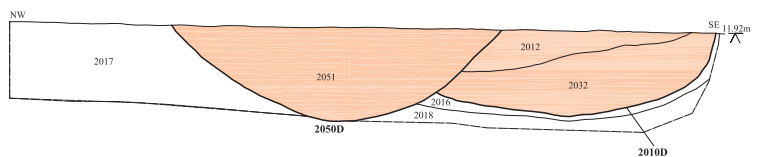
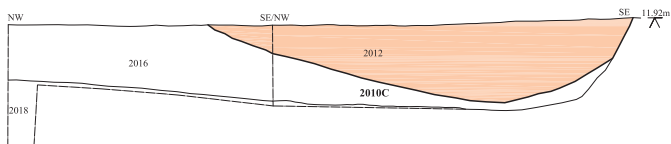
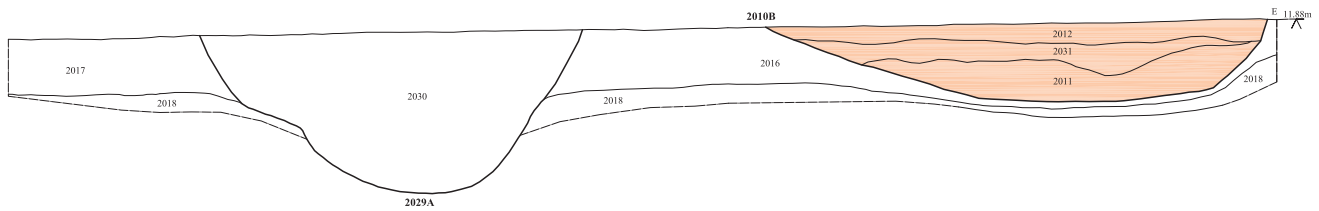
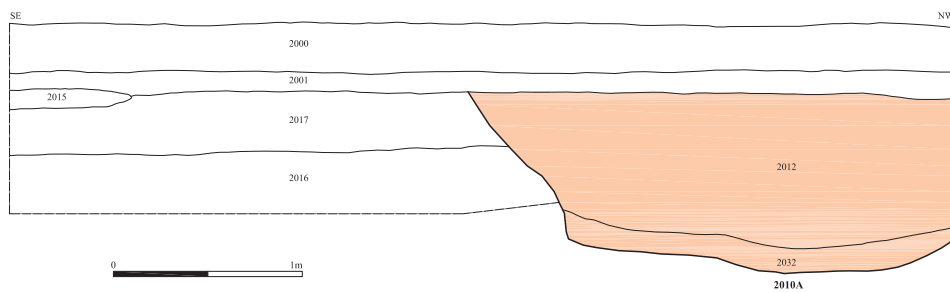


**Phase 3: Windmill**



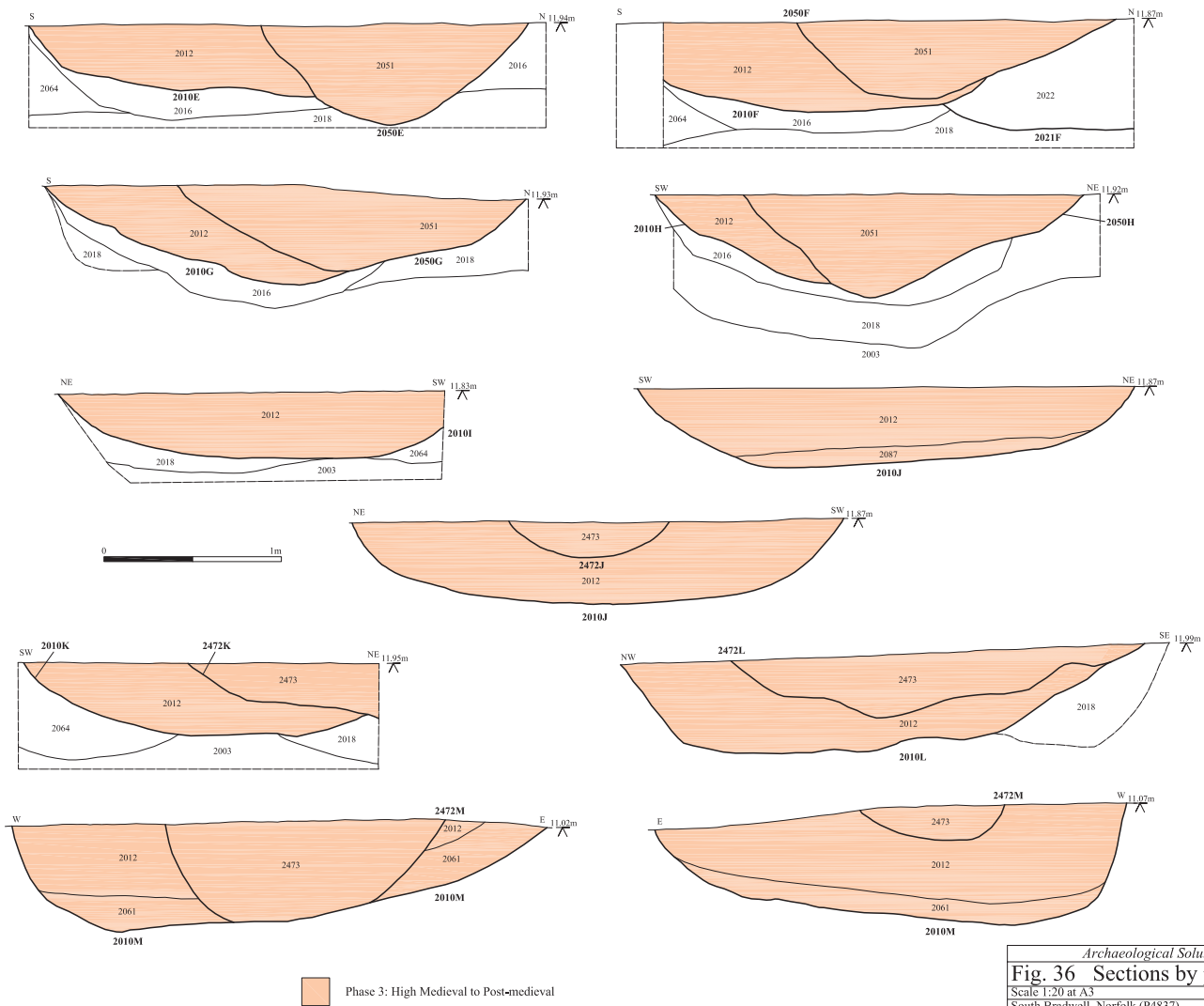
Phase 3: High Medieval to Post-medieval

<i>Archaeological Solutions Ltd</i>
<b>Fig. 34 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)

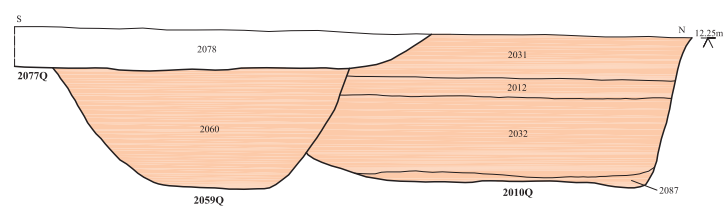
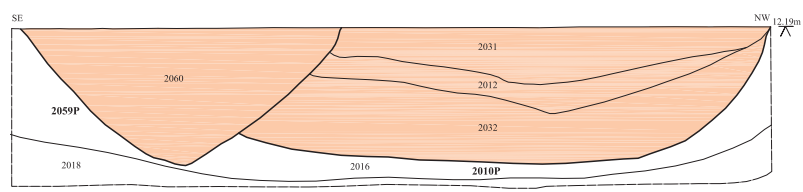
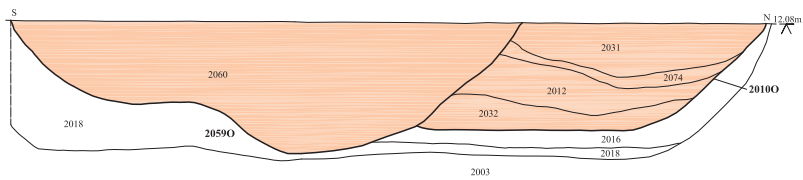
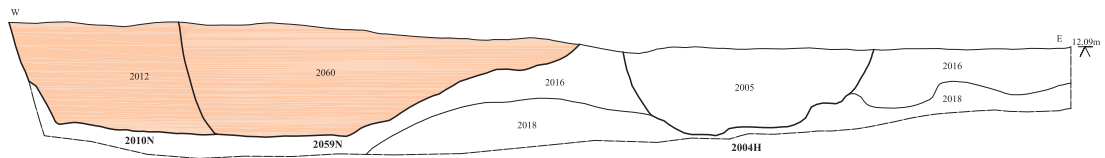


 Phase 3: High Medieval to Post-medieval

<i>Archaeological Solutions Ltd</i>
<b>Fig. 35 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)

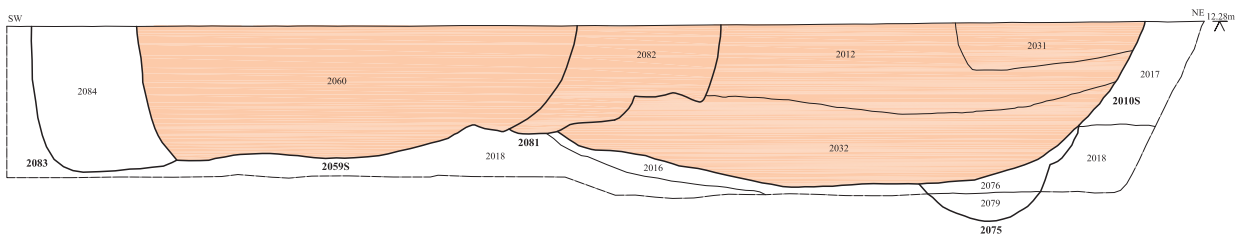
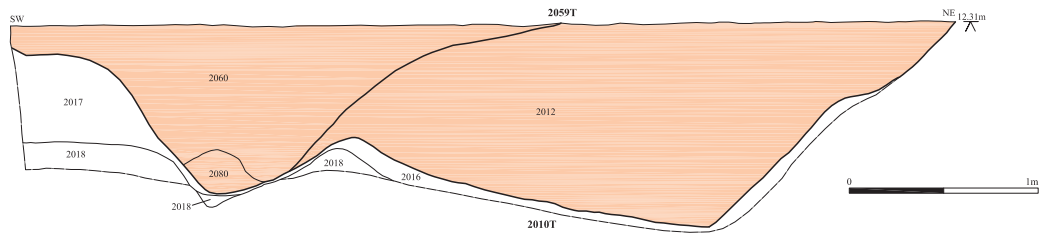
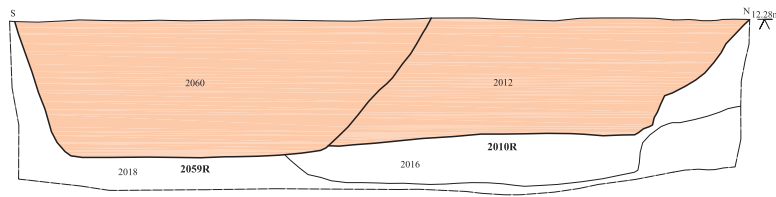


Archaeological Solutions Ltd  
**Fig. 36 Sections by phase**  
 Scale 1:20 at A3  
 South Bradwell, Norfolk (P4837)



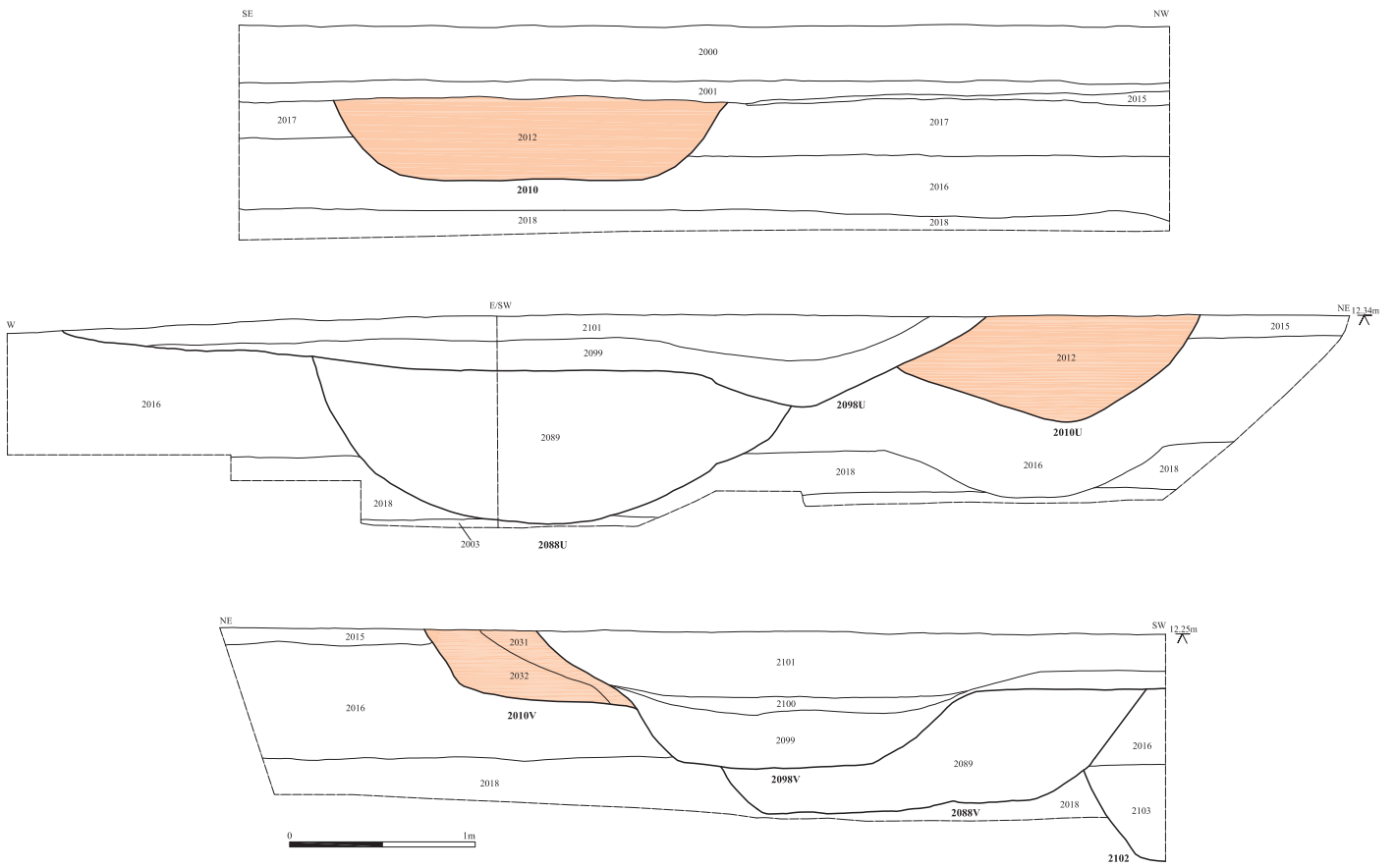
 Phase 3: High Medieval to Post-medieval

<i>Archaeological Solutions Ltd</i>
<b>Fig. 37 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



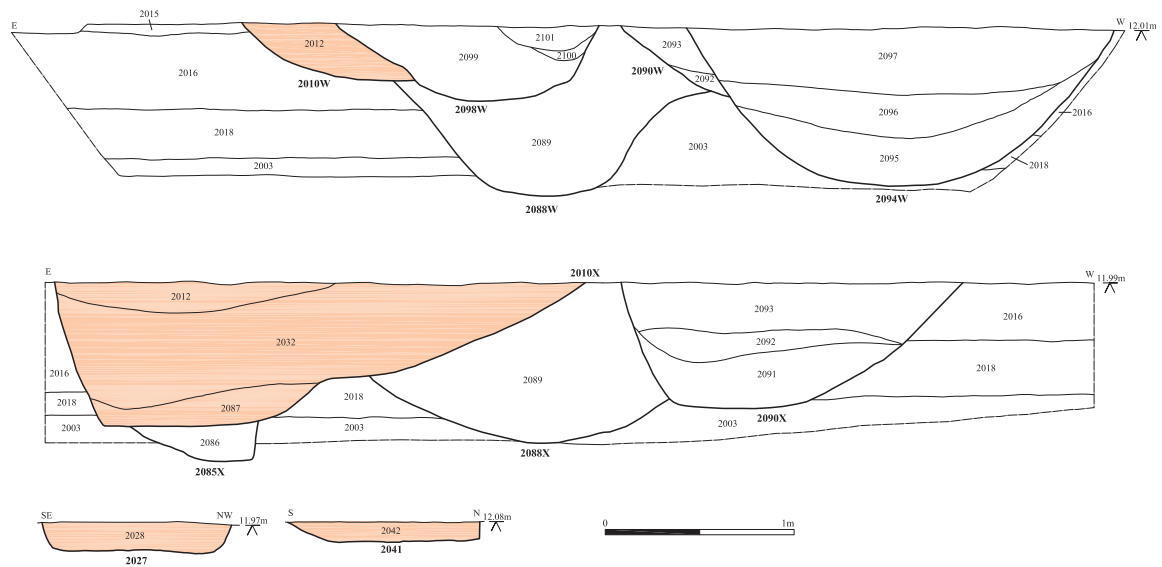
Phase 3: High Medieval to Post-medieval

<i>Archaeological Solutions Ltd</i>
<b>Fig. 38 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



Phase 3: High Medieval to Post-medieval

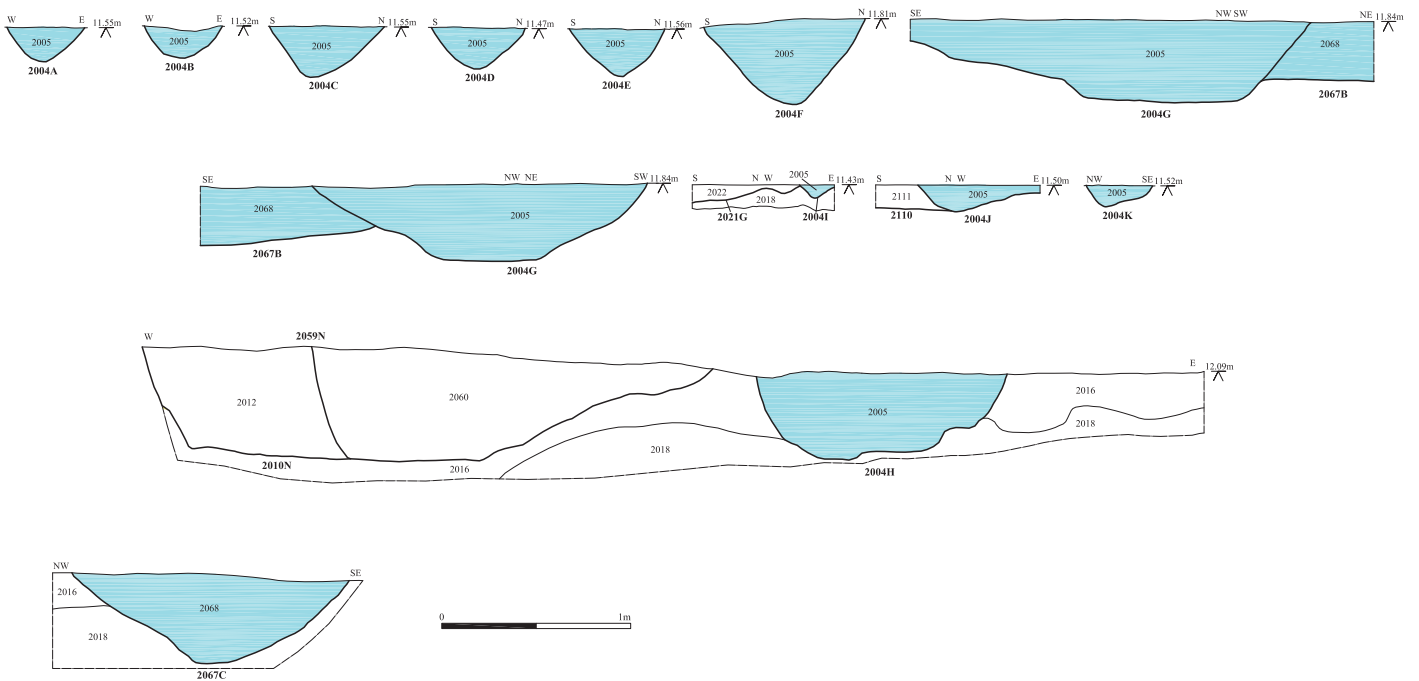
<i>Archaeological Solutions Ltd</i>
<b>Fig. 39 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



Phase 3: High Medieval to Post-medieval

<i>Archaeological Solutions Ltd</i>
<b>Fig. 40 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)

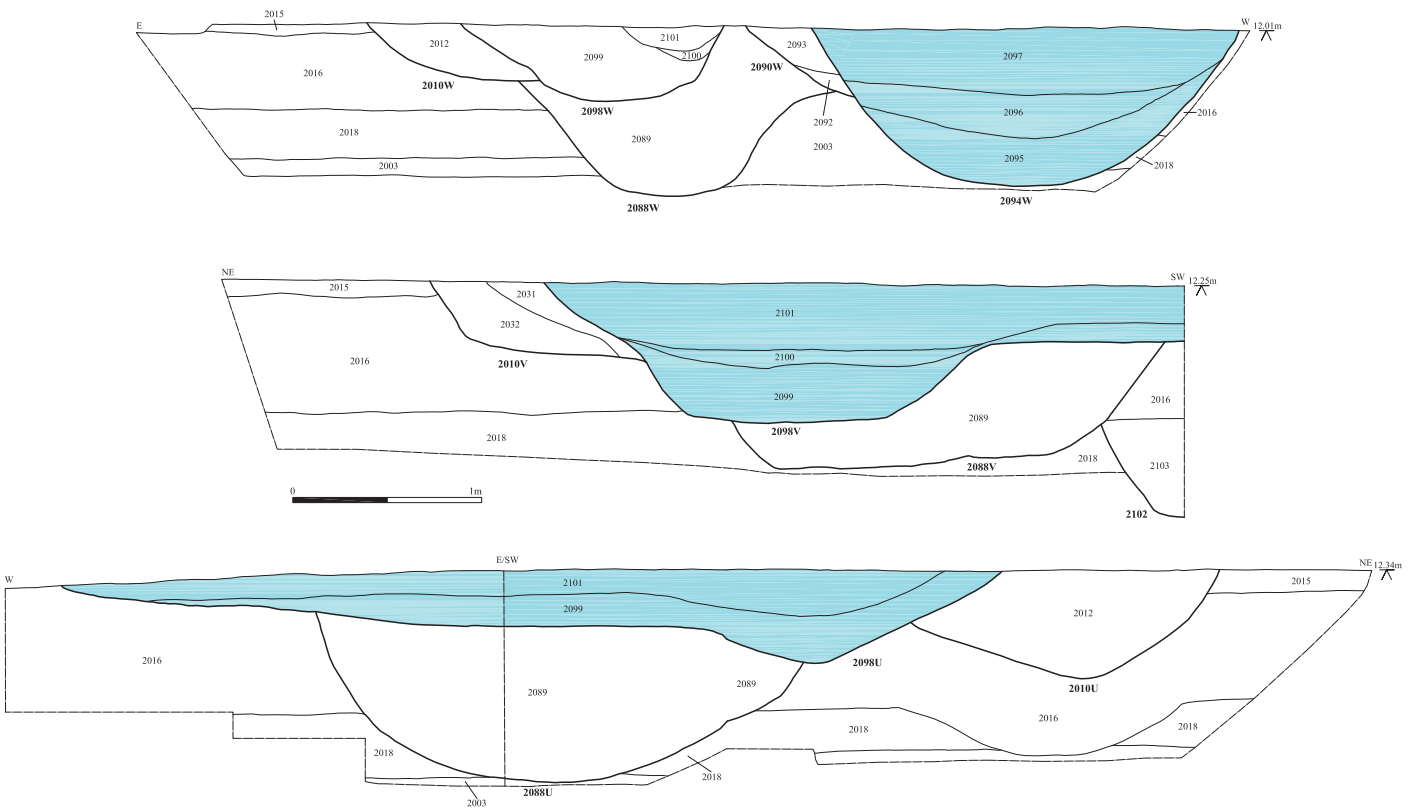
**Phase 4 features**



Phase 4: Early Modern/ Modern

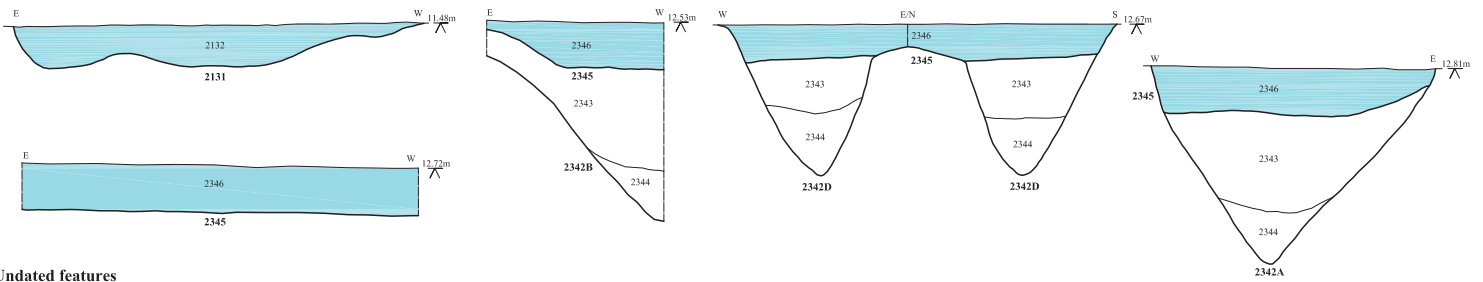
<i>Archaeological Solutions Ltd</i>
<b>Fig. 41 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



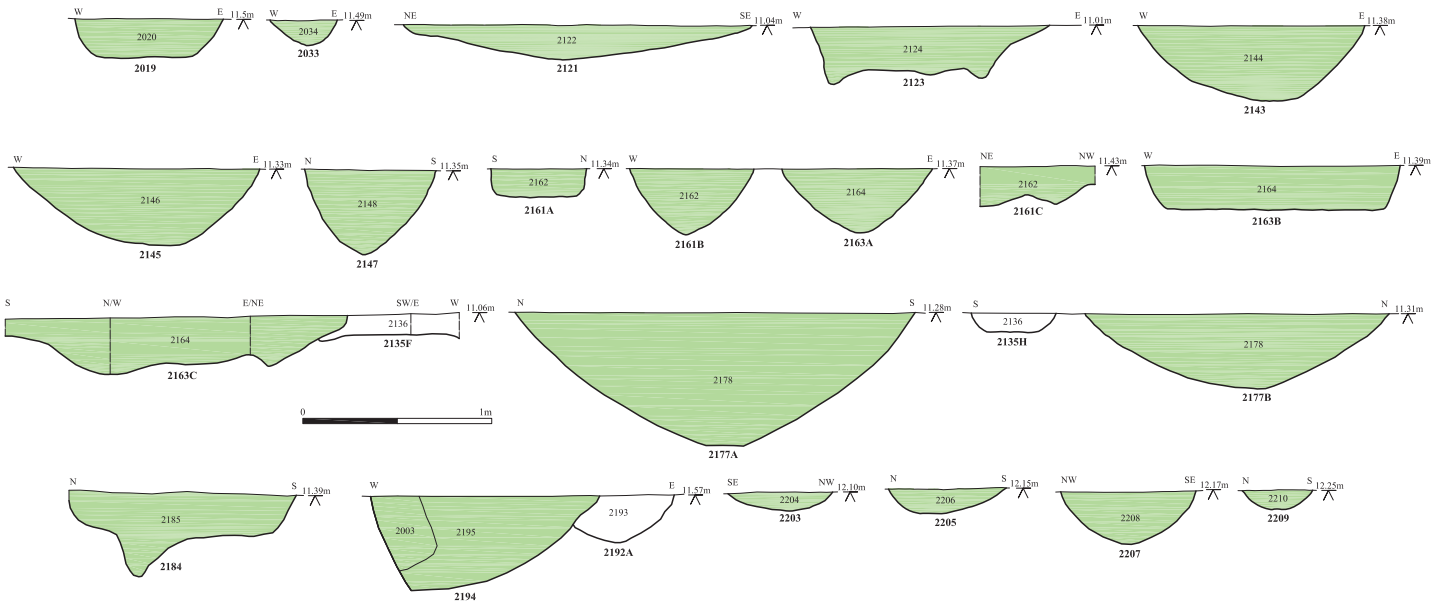


Phase 4: Early Modern/ Modern

<i>Archaeological Solutions Ltd</i>
<b>Fig. 42 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)

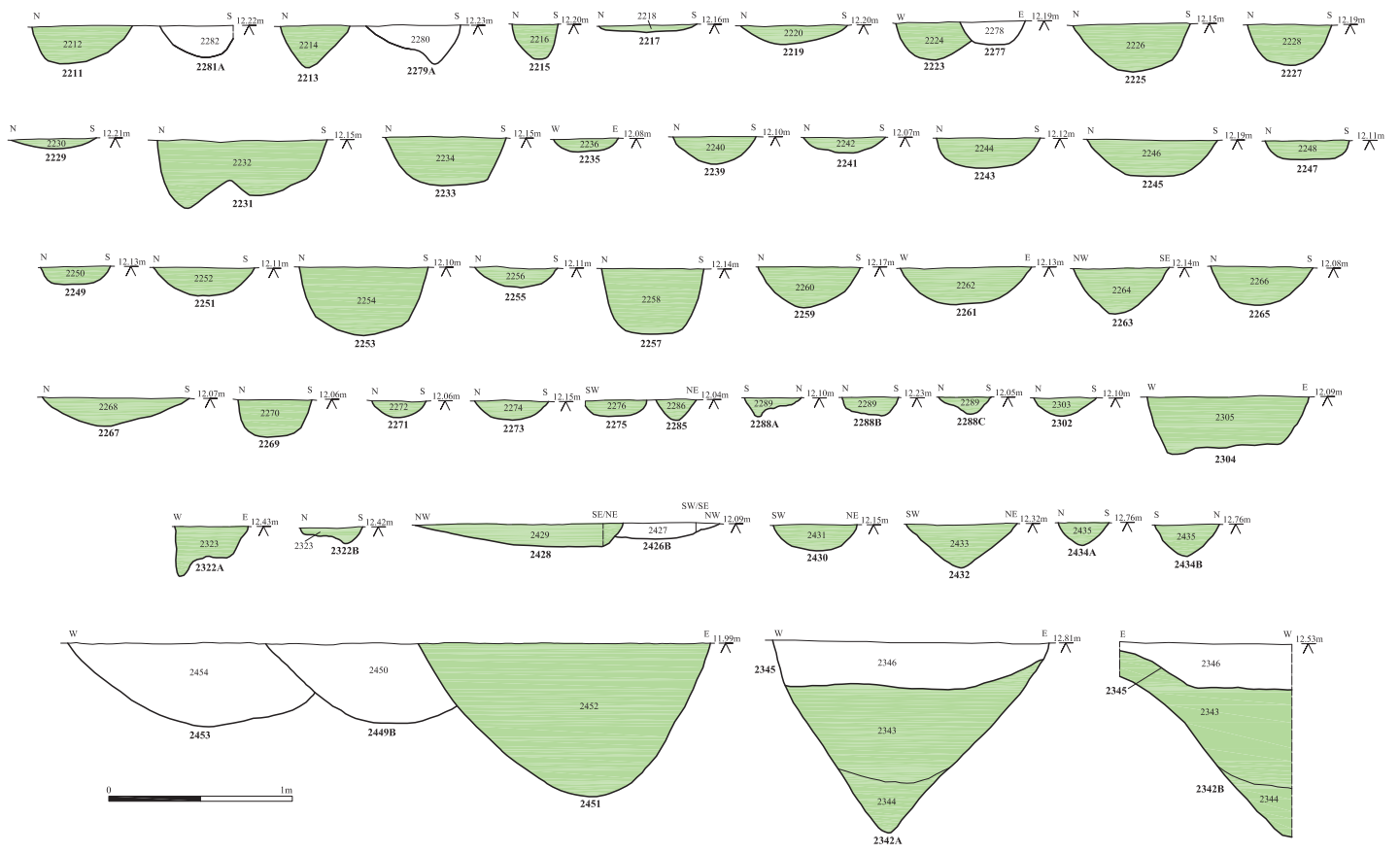


Undated features

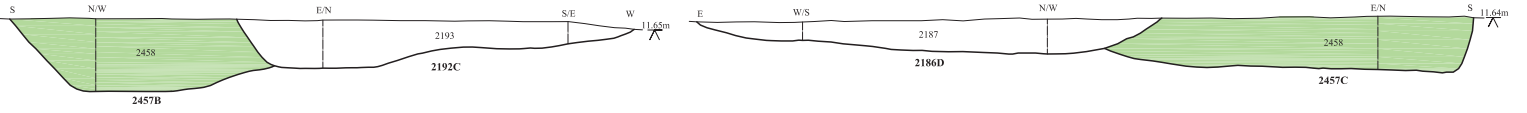
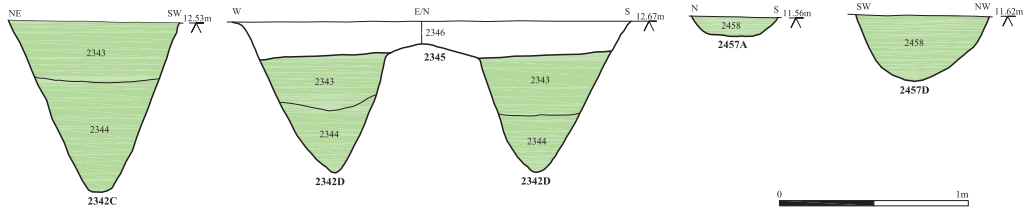


Phase 4: Early Modern/ Modern  
 Undated

<i>Archaeological Solutions Ltd</i>
<b>Fig. 43 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)

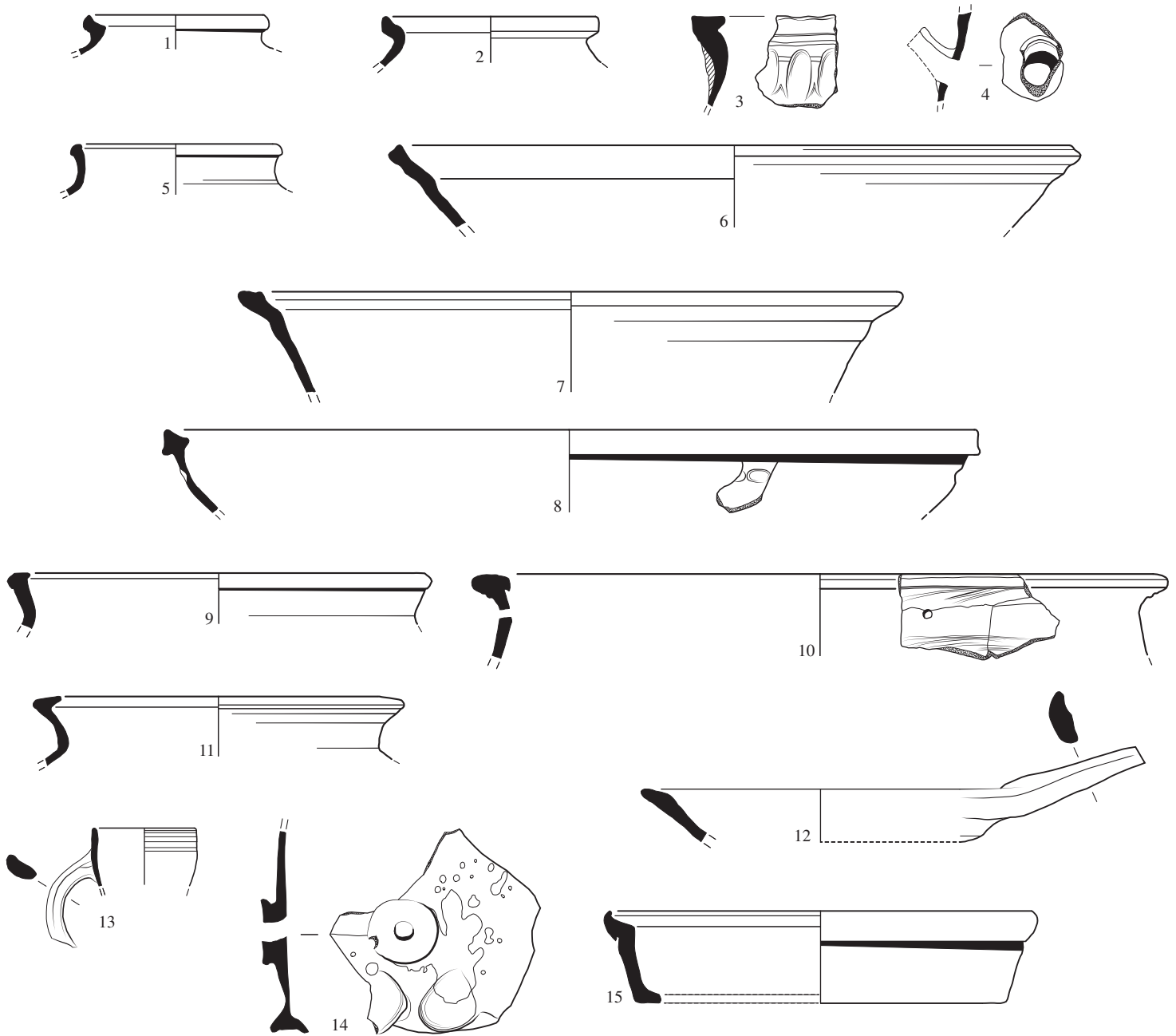


Archaeological Solutions Ltd  
**Fig. 44 Sections by phase**  
 Scale 1:20 at A3  
 South Bradwell, Norfolk (P4837)



Undated

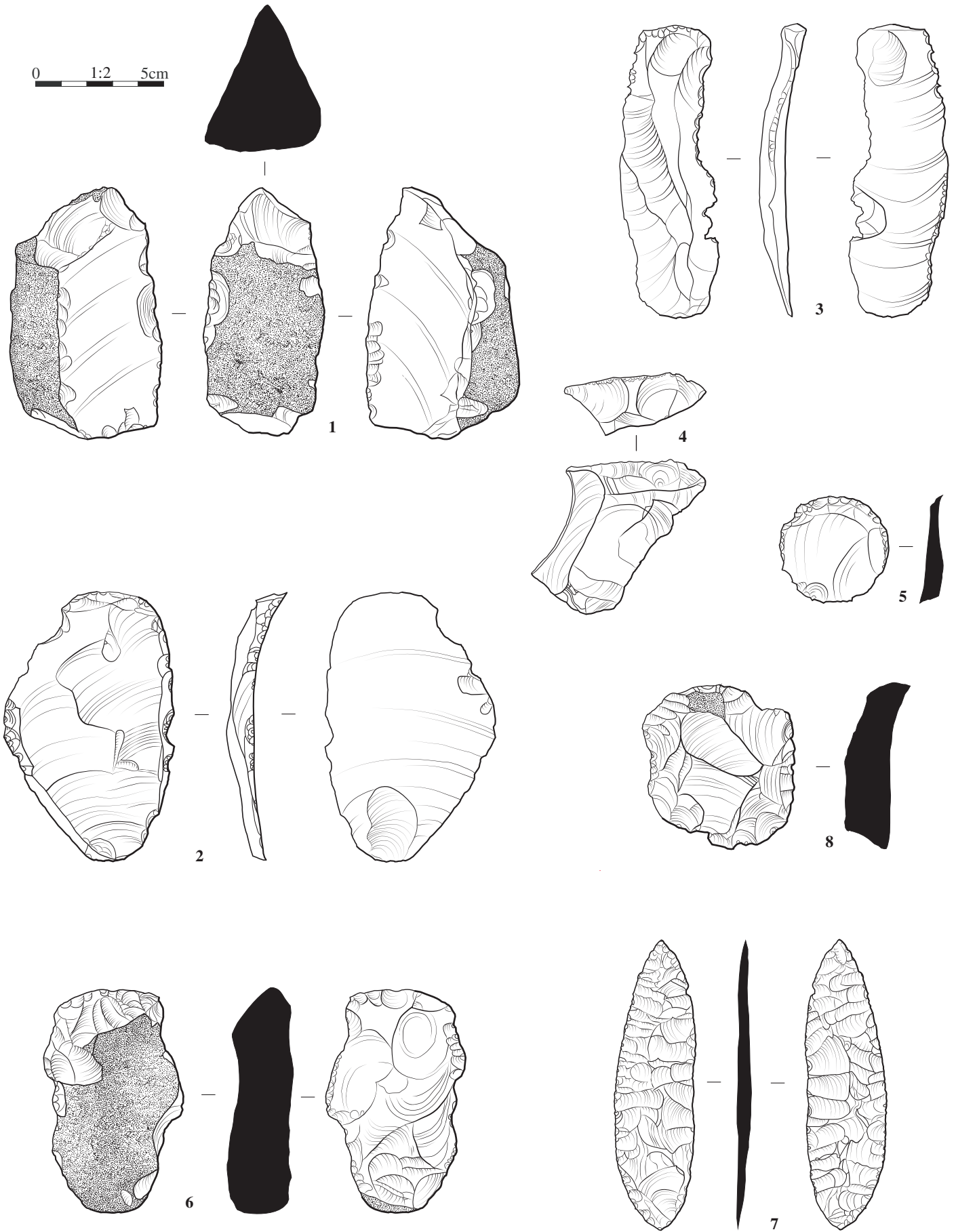
<i>Archaeological Solutions Ltd</i>
<b>Fig. 45 Sections by phase</b>
Scale 1:20 at A3
South Bradwell, Norfolk (P4837)



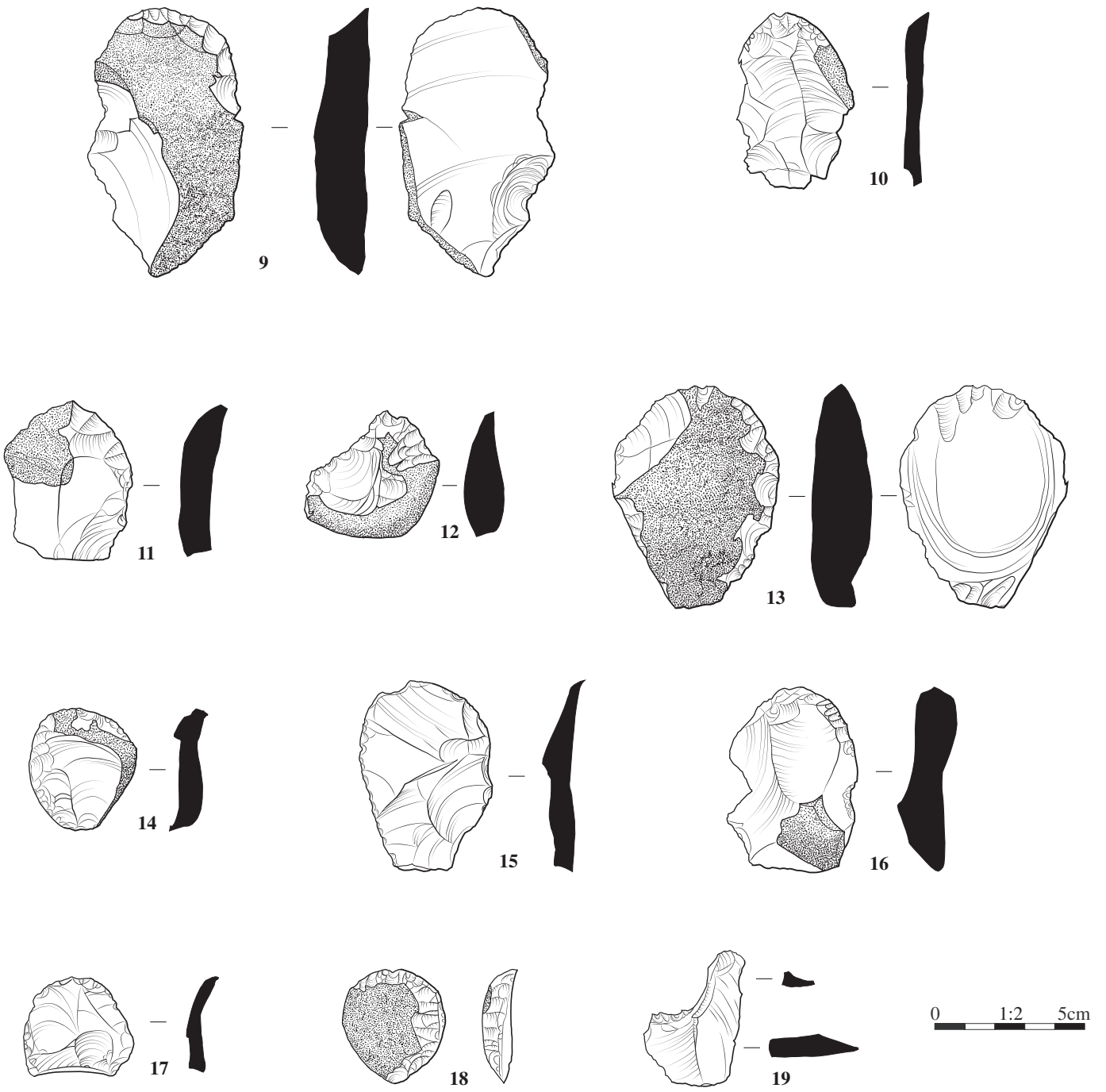
0 15cm

<i>Archaeological Solutions Ltd</i>
<b>Fig. 46 Pottery illustrations</b>
Scale 1:4 at A4
South Bradwell, Norfolk (P4837)

0 1:2 5cm



Archaeological Solutions Ltd  
**Fig. 47a Flint illustrations**  
As scale bar  
South Bradwell, Norfolk (P4837)



<i>Archaeological Solutions Ltd</i>
<b>Fig. 47b Flint illustrations</b>
Scale as scale bar
South Bradwell, Norfolk (P4837)