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LIMES COTTAGE AND ADJOINING LAND, KEDINGTON, SUFFOLK

ARCHAEOLOGICAL TRIAL TRENCH EVALUATION

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NGR: TL 706 470	Report No: 4552
District: St Edmundsbury	Site Code: KDG 047
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Between the 15th and 22nd of April 2014, Archaeological Solutions Ltd carried out an archaeological trial trench evaluation at Limes Cottage and adjoining land, Kedington, Suffolk (NGR TL 706 470). The evaluation was undertaken in support of a planning application for the construction of housing at the site and was required by St Edmundsbury Borough Council, based on advice from Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT). Trial trenching was preceded by a geophysical survey. *There was only a partial correlation between geophysical anomalies and encountered archaeological features, with ditches/ gullies recorded in Trenches 2 and 3. Features were encountered in all trenches but were more numerous in the north-eastern site quadrant. The features were varied, comprising a ditch, gullies, pits and postholes/ stakeholes. The datable pottery is consistently mid to late Iron Age in character. Sherds generally occurred in small numbers (1-2), although Ditch F1017 (Trench 2) contained 22 sherds (124g). Animal bone was found in association with the pottery and a struck flint was present in Ditch F1017 (Trench 2). The environmental evidence suggests that the archaeological features were peripheral to domestic occupation.*		
Project dates (fieldwork)	*15-22 April 2014*		
Previous work (Y/N/?)	*Y*	Future work	*TBC*
P. number	*5725*	Site code	*KDG 047*
Type of project	*Archaeological Trial Trench Evaluation*		
Site status	*-*		
Current land use	*Greenfield*		
Planned development	*Housing*		
Main features (+dates)	*Mid to late Iron Age: ditch; pits* *Undated: gullies; pit; posthole; stakehole*		
Significant finds (+dates)	*Mid to late Iron Age: pottery*		
Project location			
County/ District/ Parish	*Suffolk*	*St Edmundsbury*	*Kedington*
HER/ SMR for area	*Suffolk Historic Environment Record*		
Post code (if known)	*-*		
Area of site	*c. 1.7ha*		
NGR	*TL 706 470*		
Height AOD (min/max)	*c. 65-70m*		
Project creators			
Brief issued by	*Suffolk County Council Archaeological Service Conservation Team (Matt Brudenell)*		
Project supervisor/s (PO)	*Jim Fairclough*		
Funded by			
Full title	*Limes Cottage and Adjoining Land, Kedington, Suffolk. Archaeological Trial Trench Evaluation*		
Authors	*Fairclough, J. (Mustchin, ARR (Editor))*		
Report no.	*4552*		
Date (of report)	*23 April 2014 (Revised 16/05/2014)*		

LIMES COTTAGE AND ADJOINING LAND, KEDINGTON, SUFFOLK

ARCHAEOLOGICAL TRIAL TRENCH EVALUATION

SUMMARY

Between the 15th and 22nd of April 2014, Archaeological Solutions Ltd carried out an archaeological trial trench evaluation at Limes Cottage and adjoining land, Kedington, Suffolk (NGR TL 706 470). The evaluation was undertaken in support of a planning application for the construction of housing at the site and was required by St Edmundsbury Borough Council, based on advice from Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT). Trial trenching was preceded by a geophysical survey.

The site is located in an area of archaeological importance, recorded on the Suffolk Historic Environment Record (HER), in a topographic location in the Stour Valley that would have been favourable for early occupation. A find spot of Saxon pottery lies 50m away (HER KDG 011), and the medieval parish church lies 150m away to the west (HER KDG 003). Here, Roman and Saxon remains have also been recorded, including a hypocaust indicative of a high status Roman occupation site. Cropmarks to the north west indicate a potential Neolithic monument (HER KDG 017), and an evaluation to the north east recorded pits, postholes and ditches (HER KDG 042).

There was only a partial correlation between geophysical anomalies and encountered archaeological features, with ditches/ gullies recorded in Trenches 2 and 3. Features were encountered in all trenches but were more numerous in the north-eastern site quadrant. The features were varied, comprising a ditch, gullies, pits and postholes/ stakeholes. The datable pottery is consistently mid to late Iron Age in character. Sherds generally occurred in small numbers (1-2), although Ditch F1017 (Trench 2) contained 22 sherds (124g). Animal bone was found in association with the pottery and a struck flint was present in Ditch F1017 (Trench 2). The environmental evidence suggests that the archaeological features were peripheral to domestic occupation.

1 INTRODUCTION

1.1 *Between the 15th and 22nd of April 2014,* Archaeological Solutions Ltd (AS) carried out an archaeological trial trench evaluation in support of a planning application for the construction of housing at Limes Cottage and adjoining land, Kedington, Suffolk (NGR TL 706 470; Figs. 1-2). The evaluation was required by St Edmundsbury Borough Council, based on advice from Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT).

1.2 The archaeological evaluation was carried out in accordance with a brief issued by Suffolk County Council Archaeological Service Conservation Team (dated 21 March 2014 (Matt Brudenell)), and a specification compiled by AS (dated 31 March 2014). The evaluation adhered to the Institute for Archaeologists' *Code of Conduct* (revised 2008), and the procedures described in the IfA *Standard and*

Guidance for Evaluations (revised 2008) and *Standards for Field Archaeology in the East of England* (Gurney 2003).

1.3 The evaluation was preceded by a geophysical survey (Appendix 4). This report presents the results of the trial trenching.

1.4 The principal objectives of the evaluation were:

- to establish whether any archaeological deposit exists in the area, with particular regard to any which are of sufficient importance to merit preservation *in situ;*
- to identify the date, approximate form and purpose of any archaeological deposit within the application area, together with its likely extent, localised depth and quality of preservation;
- to evaluate the likely impact of past land uses, and the possible presence of masking colluvial/alluvial deposits, along with the potential for the survival of environmental evidence;
- to provide sufficient information to construct an archaeological conservation strategy dealing with preservation, the recording of archaeological deposits, working practices, timetables and orders of cost.

Planning Policy Context

1.5 The National Planning Policy Framework (NPPF 2012) states that those parts of the historic environment that have significance because of their historic, archaeological, architectural or artistic interest are heritage assets. The NPPF aims to deliver sustainable development by ensuring that policies and decisions that concern the historic environment recognise that heritage assets are a non-renewable resource, take account of the wider social, cultural, economic and environmental benefits of heritage conservation, and recognise that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. The NPPF requires applications to describe the significance of any heritage asset, including its setting that may be affected in proportion to the asset's importance and the potential impact of the proposal.

1.4 The NPPF aims to conserve England's heritage assets in a manner appropriate to their significance, with substantial harm to designated heritage assets (i.e. listed buildings, scheduled monuments) only permitted in exceptional circumstances when the public benefit of a proposal outweighs the conservation of the asset. The effect of proposals on non-designated heritage assets must be balanced against the scale of loss and significance of the asset, but non-designated heritage assets of demonstrably equivalent significance may be considered subject to the same policies as those that are designated. The NPPF states that opportunities to capture evidence from the historic environment, to record and advance the understanding of heritage assets and to make this publicly available is a requirement of development management. This opportunity should be taken in a

manner proportionate to the significance of a heritage asset and to impact of the proposal, particularly where a heritage asset is to be lost.

2 DESCRIPTION OF THE SITE

2.1 The site lies in an area of archaeological potential on the northern side of Dash End land and east of Hall Road, Kedington. It is largely greenfield and extends to some 1.7ha (DPs 1-2).

3 TOPOGRAPHY, GEOLOGY AND SOILS

3.1 The site is located in the Stour Valley on a gentle, east-facing slope (at *c.* 65-70m AOD) some 200m west of the river. The local soils comprise those of the Hanslope Association, characterised as slowly permeable calcareous clayey soils (SSEW 1983). These overlie chalky till above Upper Cretaceous chalk.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 The Stour river valley was a favourable location for early occupation and a relatively large number of prehistoric sites are known largely due to field walking and excavation carried out in the locality. The earliest finds are two Palaeolithic handaxes recovered 130m to the south-west of the site on the edge of the river flood plain (KDG 005), and west of Hall Farm, approximately 550m to the north-west (KDG 006).

4.2 A Scheduled Monument site is located approximately 550m to the north-west comprising an interrupted ditch system sometimes referred to as 'causewayed enclosures' which cut off a riverside promontory. These enclosures are typically Neolithic in date, however over 2,000 struck flints recovered in close proximity contained Mesolithic, Neolithic and Bronze Age stone implements, and so it is possible the earthwork was re-used in the later period (KDG 006). A Neolithic polished axe was found on the gravel bank of the Stour 300m south-west of the site (KDG 002). Cropmarks of two parallel ditches located 300m north-west of the site with a terminal at one end have been suggested as remains of a Neolithic cursus. However, they are also partly on post-medieval field boundaries and so are probably of that date (KDG 017). An archaeological evaluation during pipe-line construction centred on 260m north of the site identified several features of possible Bronze Age date (KDG 037). A late Bronze Age/early Iron Age pit cluster was located 900m to the north-west (KDG 044), and prehistoric features including a possible post-hole structure were excavated at a location centred on 480m south-east of the site (KDG 038).

4.3 An archaeological excavation in the grounds of Risbridge Home centred on 500m west of the site identified Iron Age and Romano-British settlement. These included two ditches containing late Iron Age and Belgic pottery, and ten Romano-British ditches containing associated finds, along with a 1st century brooch from a post-medieval feature (KDG 019). Roman remains were also identified beneath the

church nave and south aisle 130m to the west of the site, including a hypocaust system and mosaic indicative of a high status building (KDG 003). Another area of late Iron Age and Romano-British settlement was identified 950m to the north of the site (KDG 043).

4.4 Middle Saxon pottery was found in the topsoil of a garden at Dash End some 70m south of the site (KDG 014). A Saxon stone cross was also found at the parish church to the west (KDG 003). The Grade I listed Church of St Peter and St Paul located 130m west of the site, dates mainly from the 15th century, but contains elements dating from the 12th and 14th centuries (KDG 003). The site of Kedington Hall is located 140m to the north-west, a medieval dry moat is still visible and large quantities of medieval pottery and ceramic building material have been reported from there following ploughing (KDG 001). The house was the family seat of the Bernadisters and was demolished in 1790. Excavations along the pipeline route centred on 560m north-west of the development site identified medieval features including ditches and a cobbled surface (KDG 045). Field walking centred on approximately 180-200m to the north-east, recovered finds of medieval and prehistoric pottery (KDG 042).

4.5 A post-medieval watermill and leat was located 260m to the west on the bank of the Stour (KDG 026), and early maps show several windmills around Kedington (KDG 007, 024, 025, 027), along with a brewery (KDG 031). A brick kiln/works was located on the south side of the village (KDG 022). Risbridge Home that was located 500m or so to the west of the site was the Risbridge Union Workhouse built in 1856 for 654 inmates, because the workhouse at Haverhill was declared too small.(KDG 030).

5 PREVIOUS INVESTIGATION

5.1 A geophysical survey recorded linear anomalies of possible archaeological origin (Stratascan 2014).

6 METHODOLOGY

6.1 Three trial trenches, measuring 32m x 2m, were excavated using a tracked 360° mechanical excavator fitted with a toothless ditching bucket. The trench positions targeted anomalies identified by the geophysical survey (Fig. 2; Appendix 4).

6.2 Undifferentiated overburden was removed mechanically, under close archaeological supervision. Thereafter, all investigation was undertaken by hand. Exposed surfaces were cleaned as appropriate and examined for archaeological features and finds. Deposits were recorded using *pro forma* recording sheets, drawn to scale and photographed. Excavated spoil was checked for finds and the trenches were scanned by metal detector.

7 DESCRIPTION OF RESULTS

Individual trench descriptions are presented below.

Trench 1 (Figs. 2-3; DP 3)

Sample section 1A: *0.00m = 69.09m AOD*		
0.00m–0.31m	L1000	Topsoil. Dark grey brown clayey silt with occasional CBM and chalk flecks.
0.31 – 0.82m	L1001	Subsoil. Mid grey brown, silty clay with occasional angular flint.
0.82m +	L1002	Natural. Light orange grey, clay with occasional flint and chalk flecks.

Sample section 1B: *0.00m = 68.56m AOD*		
0.00 – 0.42m	L1000	Topsoil. As above.
0.42 – 0.59m	L1001	Subsoil. As above.
0.59m +	L1002	Natural. As above.

Description: Trench 1 contained Pits F1005, F1007 and F1009, and Gully F1003. Pits F1005 and F1009 contained mid – late Iron Age pottery, and the other features were undated.

Gully F1003 was linear (2.00+ x 0.20 x 0.14m), orientated NE/SW. It had moderately sloping sides and a flattish base. Its fill, L1004, was a firm, mid greyish brown, silty clay with occasional angular chalk. It contained animal bone (58g). F1003 cut Pit F1005.

Pit F1005 was sub-circular (0.60+ x 0.64 x 0.18m). It had moderately sloping sides and a concave base. Its fill, L1006, was a compact, pale grayish brown, clayey silt with occasional small flint. It contained mid – late Iron Age pottery (2g). F1005 was cut by Gully F1003.

Pit F1007 was sub-circular (0.80 x 0.22+ x 0.20m). It had moderately sloping sides and a flattish base. Its fill, L1008, was a compact, dark grey, clayey silt. It contained no finds.

Pit F1009 was sub-circular (0.70 x 0.35+ x 0.15m). It had moderately sloping sides and a concave base. Its fill, L1010, was a compact, mid grey brown, clayey silt. It contained animal bone (129g) and mid – late Iron Age pottery (3g).

Trench 2 (Figs. 2-3; DP 8)

Sample section 2A: *0.00m = 68.08m AOD*		
0.00m–0.32m	L1000	Topsoil. As above Tr.1.
0.32 – 0.66m	L1001	Subsoil. As above Tr.1.
0.66m +	L1002	Natural. As above Tr.1.

Sample section 2B: *0.00m = 67.79m AOD*		
0.00m–0.21m	L1000	Topsoil. As above Tr.1.
0.21 – 0.52m	L1001	Subsoil. As above Tr.1.
0.52m +	L1002	Natural. As above Tr.1.

Description: Trench 2 contained Stakehole F1011, Posthole F1013 and Ditch F1017. The latter contained mid – late Iron Age pottery.

Stakehole F1011 was sub-circular (0.20 x 0.15 x 0.07m). It had moderately sloping sides and a narrow base. Its fill, L1012, was a compact, dark grey brown, clayey silt with occasional angular flint. It contained no finds.

Posthole F1013 was sub-circular (0.30 x 0.25 x 0.12m). It had steep sides and a flattish base. Its fill, L1014, was a compact, dark brown, clayey silt with occasional small angular flint. It contained animal bone (5g).

Ditch F1017 was linear (2.00+ x 2.58 x 0.95m), orientated N/S. It had moderately sloping sides and a concave base. Its upper fill, L1018, was a firm, dark greyish brown, silty clay with occasional angular flint. It contained mid – late Iron Age pottery (63g). Its basal fill, L1019, was a firm, pale greyish brown, silty clay with frequent rounded chalk and angular flint. It contained mid – late Iron Age pottery (61g), animal bone (18g), burnt stone (28g), fired clay (12g) and struck flint (2g).

Trench 3 (Figs. 2-3; DP12)

Sample section 3A: *0.00m = 66.94m AOD*		
0.00m–0.29m	L1000	Topsoil. As above Tr.1.
0.29 – 0.52m	L1001	Subsoil. As above Tr.1.
0.52m+	L1002	Natural. As above Tr.1.

Sample section 3B: *0.00m = 66.77m AOD*		
0.00m–0.33m	L1000	Topsoil. As above Tr.1.
0.33 – 0.69m	L1001	Subsoil. As above Tr.1.
0.69m +	L1002	Natural. As above Tr.1.

Description: Trench 3 contained undated Gully F1015.

Gully F1015 was linear (>2.00+ x 0.60 x 0.50m), orientated NE/SW. It had moderately sloping sides and a concave base. Its fill, L1016, was a firm, dark greyish brown, silty clay. It contained no finds.

8 CONFIDENCE RATING

8.1 It is not felt that any factors inhibited the recognition of archaeological features of finds.

9 DEPOSIT MODEL

9.1 The stratigraphy was consistent across the site: Topsoil L1000 overlay Subsoil L1001, which overlay the natural (L1002).

9.2 The uppermost layer across the site was Topsoil L1000, a dark grey brown clayey silt with occasional CBM and chalk flecks. It varied between 0.21m and 0.42m in depth. L1000 sealed Subsoil L1001, a mid grey brown, silty clay with occasional angular flint seen at a depth between 0.17m and 0.51m below the ground surface. The natural (L1002) was a light orange grey, clay with occasional flint and chalk flecks (0.52 – 0.82m deep).

10 DISCUSSION

10.1 The recorded features are tabulated:

Trench	Feature	Description	Spot Date
1	F1003	Gully	
	F1005	Pit	Mid to late Iron Age
	F1007	Pit	
	F1009	Pit	Mid to late Iron Age
2	F1011	Stakehole	
	F1013	Posthole	
	F1017	Ditch	Mid to late Iron Age
3	F1015	Gully	

10.2 There was only a partial correlation between geophysical anomalies and encountered archaeological features, with ditches/ gullies recorded in Trenches 2 and 3. Substantial mid to late Iron Age Ditch F1017 (Trench 2) was not detected by the geophysical survey. It would appear, therefore, that the geophysical survey did not provide a reliable guide to the likely location and density of archaeological features across the development area.

10.3 All three trail trenches contained archaeological features, though features were more prolific in the north-eastern quadrant of the site. The features were varied, comprising a ditch, gullies, pits and postholes/ stakeholes.

10.4 The datable pottery is consistently mid to late Iron Age in character. Sherds generally occurred in small numbers (1-2), although Ditch F1017 (Trench 2) contained 22 sherds (124g). Animal bone was found in association with the pottery and a struck flint was found in Ditch F1017 (Trench 2). The environmental evidence suggests that the archaeological features were peripheral to domestic occupation (Environmental Report below).

Research potential

10.5 The site is located in an area of archaeological importance, recorded on the Suffolk Historic Environment Record (HER), in a topographic location in the Stour Valley that would have been favourable for early occupation. A find spot of Saxon

pottery lies 50m away (HER KDG 011), and the medieval parish church lies 150m to the west (HER KDG 003). Here, Roman and Saxon remains have also been recorded, including a hypocaust indicative of a high status Roman building(s). Cropmarks to the north-west indicate a potential Neolithic monument (HER KDG 017), and an evaluation to the north east recorded pits, postholes and ditches (HER KDG 042).

10.6 Iron Age settlement has previously been identified during an archaeological excavation in the grounds of Risbridge Home, 500m to the west of the site, and at a location 950m to the north (KDG 043). The dateable mid to late Iron Age features recorded at this site demonstrate further activity of this date in the area and may indicate a focus of Iron Age population. There is, therefore, a potential here for the interrelationships between these areas of Iron Age activity to be further studied and the overall character of the Iron Age occupation of this part of Suffolk. Such a study has the potential to provide information relating to settlement distribution and density, the interrelationship of these areas of Iron Age activity between each other and the surrounding landscape and its inherent geology, topography and resources (Medlycott 2011, 31). This may, in turn, lead on to identification of information relating to research subjects, identified by Medlycott (2011) as being of importance for the Iron Age in the East Anglian region, such as social organisation, demography, regional differences and tribal polities.

10.7 The finds recovered during the evaluation, and any from further work that might be conducted, have the potential to contribute to finds studies (Medlycott 2011, 32) and to identify trade links, levels of wealth and, possibly, to provide information regarding industrial practices and manufacturing, either in the immediate area or the wider region (Medlycott 2011, 31). Any palaeoenvironmental or faunal analysis carried out as part of any further work has the potential to provide information relating to the local/ regional agrarian economy (Medlycott 2011, 31).

10.8 It should be noted that, in this instance, forerunning geophysical survey did not prove a reliable guide to the likely location and density of archaeological features. Based on the findings of the trial trench evaluation – which identified features of archaeological interest – it can be concluded that there is high potential for further below ground remains to be identified by any future works.

11 DEPOSITION OF THE ARCHIVE

11.1 Archive records, with an inventory, will be deposited at Suffolk County Store. The archive will be quantified, ordered, indexed, cross-referenced and checked for internal consistency. In addition to the overall site summary, it will be necessary to produce a summary of the artefactual and ecofactual data.

ACKNOWLEDGEMENTS

Archaeological Solutions Ltd (AS) is grateful to Matt Kennington of KLH Architects for commissioning the project.

AS would also like to acknowledge the input and advice of the Suffolk County Council Archaeological Service Conservation Team, in particular Dr Matt Brudenell.

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APPENDIX 1 CONCORDANCE OF FINDS

Feature	Context	Trench	Description	Spot Date	Pottery	CBM (g)	A.Bone (g)	Other
1001			Subsoil	M-LIA	(1) 8g			
1003	1004	1	Fill of Gully				58	
1005	1006	1	Fill of Pit	M-LIA	(2) 2g			
1009	1010	1	Fill of Pit	M-LIA	(1) 3g		129	
1013	1014	2	Fill of Posthole				5	
1017	1018	2	Upper Fill of Ditch	M-LIA	(18) 63g			
	1019		Basal Fill of Ditch	M-LIA	(4) 61g		18	B. Stone - 28g F. Clay - 12g Str. Flint (1) - 2g

APPENDIX 2 SPECIALIST REPORTS

The Pottery
Andrew Peachey

The trial trench evaluation recovered a total of 28 sherds (149g) of prehistoric pottery in a moderately fragmented and abraded condition. Diagnostic material is limited to a single rim sherd, but combined with the fabric types present, the pottery is consistent with middle to late Iron Age assemblages from the region.

The bulk of the pottery, in total 24 sherds (136g) was recovered from two fills of Ditch F1017 (L1018 & L1019), with further isolated small sherds contained in Pits F1005, F1009 and Subsoil L1001.

Three handmade, bonfire fired fabrics were present (Table 1) in the assemblage, each typically very dark grey-brown to black, although occasional red-orange sherds were also present. Fabric Q1 contained inclusions of moderately-sorted quartz (0.1-0.fmm) with occasional flint (<2.5mm); fabric F1 moderately-sorted sparse-common calcined flint (0.5-3mm); and fabric C1 moderately-sorted sparse-common rounded chalk (0.5-3mm). These fabrics are consistent with those recorded in middle to late Iron Age Phases 1 and 2 at West Stow, probably dating between the 3rd and 1st centuries BC (West 1990, 59-60).

Fabric type	Sherd Count	Weight (g)
Q1	19	94
F1	5	41
C1	4	14
Total	*28*	*149*

Table 1: Quantification of fabric types

Diagnostic sherds are limited to the rim of a single jar contained in Ditch F1017 (L1019). The jar has a plain upright rim above a high rounded shoulder, typical of middle to late Iron Age jars in the region, and comparable to examples at West Stow (i.e. West 1990: figs.46.78 & 47.102)

Reference

West, S. 1990, *West Stow: The Prehistoric and Romano-British Occupations*. East Anglian Archaeology 48

The Struck Flint
Andrew Peachey

The trial trench evaluation recovered a single struck flint flake (2g) from Ditch F1017 (L1019) in a slightly patinated, sharp condition. The flake comprises debitage with blade-like proportions and parallel dorsal scars; consistent with the technology of the earlier Neolithic period, though this remains a tentative conclusion.

The Animal Bone
Dr Julia E.M. Cussans

A total of 13 bone fragments were recovered from trial trench excavations at Kedington. These came from four separate deposits, L1004 (Gully F1003), L1010 (Pit F1009), L1014 (Posthole F1013) and L1019 (Ditch F1017). Preservation was generally poor with very little material being identified to species; much of the bone was fairly heavily abraded and fresh breaks were common. Two bones were identified as belonging to cattle a metatarsal fragment and an unworn lower first or second molar tooth. All other bones could only be identified as belonging to large (cattle or horse sized) mammal. No butchery, pathology or other points of interest were noted.

The Environmental Samples
Dr John Summers

Introduction

Three bulk soil samples for environmental archaeological assessment were taken and processed during trial excavations at Limes Cottage, Kedington. The sampled deposits were spot dated to the middle to late Iron Age. This report presents the results from the assessment of the bulk sample light fractions and discusses the significance and potential of any remains identified.

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 scanned under a low power stereomicroscope (x10-x30 magnification). Botanical and molluscan remains were identified and recorded using a semi-quantitative scale (X = present; XX = common; XXX = abundant). Reference literature (Cappers *et al.* 2006; Jacomet 2006; Kerney and Cameron 1979; Kerney 1999) and a reference collection of modern seeds was consulted where necessary. Potential contaminants, such as modern roots, seeds and invertebrate fauna were also recorded in order to gain an insight into possible disturbance of the deposits.

Results

The assessment data from the bulk sample light fractions are presented in Table 2.

<u>Plant macrofossils</u>

No carbonised plant macrofossils were present in the three bulk sample light fractions that were assessed. A small number of charcoal fragments were recorded in L1018 but the density was insufficient for any detailed assessment.

Terrestrial molluscs

Mollusc shells were present in L1018 and L1019. Most were grassland taxa, such as *Trichis hispida* group, *Vallonia* sp. and *Vertigo* sp. A single specimen of *Potamopyrgus antipodarum* was also recorded in L1018, which is common in flowing water, including brackish ditches (Kerney 1999). This taxon probably indicates standing water in the base of ditch F1017.

Contaminants

Modern rootlets and occasional seeds were present in the samples but their concentration suggests limited contamination or biological disturbance of the deposits.

Conclusions and statement of potential

Plant macrofossils were absent from the three sampled deposits. Based on the present evidence, it would appear that the sampled features were peripheral to domestic occupation and were not receiving debris from daily crop processing or food preparation activities.

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Site code	Sample number	Context	Feature	Description	Spot date	Volume (litres)	% processed	Cereals			Non-cereal taxa		Charcoal		Molluscs		Contaminants				
								Cereal grains	Cereal chaff	Notes	Seeds	Notes	Charcoal>2mm	Notes	Molluscs	Notes	Roots	Molluscs	Modern seeds	Insects	Earthworm capsules
KDG047	3	1010	1009	Fill of Pit	M-LIA	10	50%	-	-	-	-	-	-	-	-	-	X	-	-	-	-
KDG047	4	1018	1017	Fill of Ditch	M-LIA	20	50%	-	-	-	-	-	X	-	XX	*Potamopyrgus antipodarum*, *Trichia hispida* group, *Vallonia* sp., *Vertigo* sp.	XX	-	X	-	-
KDG047	5	1019	1017	Fill of Ditch	M-LIA	20	50%	-	-	-	-	-	-	-	XX	Helicidae, *Vallonia* sp.	XX	-	-	-	-

Table 2: Results from the assessment of bulk sample light fractions from Limes Cottage, Kedington

APPENDIX 3 SPECIFICATION

LIMES COTTAGE AND ADJOINING LAND, KEDINGTON, SUFFOLK

WRITTEN SCHEME OF INVESTIGATION FOR AN ARCHAEOLOGICAL EVALUATION

31st March 2014

LIMES COTTAGE AND ADJOINING LAND, KEDINGTON, SUFFOLK

ARCHAEOLOGICAL EVALUATION

1 INTRODUCTION

1.1 This specification has been prepared in response to a brief & specification issued by Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT, Matthew Brudenell, dated 21st March 2014). It provides for an archaeological evaluation in advance of the proposed construction of a new residential development on Limes Cottage and adjoining Land, Kedington, Suffolk (NGR TL 706 470). The evaluation is required by St Edmundsbury Borough Council, on advice from SCC AS-CT.

1.2 It is understood that the programme of archaeological investigation should comprise an archaeological field evaluation, to comply with the planning requirement of the local planning authority (on advice from SCC AS-CT).

2 COMPLIANCE

2.1 The brief has been read and understood. If AS carried out the evaluation, AS would comply with SCC AS-CT's requirements.

3 SITE & DEVELOPMENT DESCRIPTION ARCHAEOLOGICAL BACKGROUND

3.1 The site lies in an area of archaeological potential on the northern side of Dash End land and east of Hall Road, Kedington. It is largely greenfield and extends to some 1.7ha.

3.2 It is proposed to construct new residential development on the site.

3.3 The site is located in an area of archaeological importance, recorded on the Suffolk Historic Environment Record (HER), in a topographic location in the Stour Valley that would have been favourable for early occupation. A find spot of Saxon pottery lies 50m away (HER KDG 011), and the medieval parish church lies 150m away to the west (HER KDG 003). Here, Roman and Saxon remains have also been recorded, including a hypocaust indicative of a high status Roman occupation site. Cropmarks to the north west indicate a potential Neolithic monument (HER KDG 017), and an evaluation to the north east recorded pits, postholes and ditches (HER KDG 042).

3.4 The County Historic Environment Record will be consulted in order to provide the historic background data.

4 BRIEF FOR THE ARCHAEOLOGICAL EVALUATION SPECIFICATION FOR A GEOPHYSICAL SURVEY AND TRIAL TRENCH EVALUATION GENERAL MANAGEMENT

4.1 The principal research objectives for the evaluation as a whole include:

- To establish whether any archaeological deposit exists in the area, with particular regard to any which are of sufficient importance to merit preservation *in situ.*

- To identify the date, approximate form and purpose of any archaeological deposit within the application area, together with its likely extent, localised depth and quality of preservation.

- To evaluate the likely impact of past land uses, and the possible presence of masking colluvial/alluvial deposits, along with the potential for the survival of environmental evidence.

- To provide sufficient information to construct an archaeological conservation strategy dealing with preservation, the recording of archaeological deposits, working practices, timetables and orders of cost.

4.2 Research Design

4.2.1 The research priorities for the region are set out in Glazebrook (1997) and Brown & Glazebrook (2000) and updated by Medlycott and Brown (2008) and Medlycott (2011).

4.2.2 The key issues for the Neolithic and Bronze Age (as set out by Brown & Murphy in Brown & Glazebrook 2000, 9-13) centre on the theme of the development of farming and the attendant development and integration of monuments, fields and settlements. Medlycott & Brown (2008) and Medlycott (2011, 13) suggest that future research on the Neolithic should include synthetic and regional studies for the region; an examination of the Mesolithic/Neolithic transition through radiocarbon dates; the establishment of a chronology for Neolithic ring-ditches; improved understanding of the chronological development of pottery; the excavation and study of cropmark complexes; greater understanding of burial practices; a study of the inter-relationships of settlements; greater use of scientific methods of dating and modelling of the environmental conditions during this period; targeted programmes of sedimentological, palynological and macrofossil analyses of sediment sequences in valley bottoms, lakes or the intertidal zone; and the human impact on the natural landscape during this period. The nature of Neolithic burial in the region and the pattern of burial practice, including the relationship between settlement sites and burial, require further research. Settlement sites themselves also form part of an important research subject as there is a requirement to identify if a consensus exists on the subject of non-permanent settlement in the Neolithic (Medlycott 2011, 13). Further work on understanding the effects of plough damage on Neolithic sites is considered to be an important research subject for the region (Medlycott 2011, 13).

4.2.3 Inter-relationships between settlements and greater understanding of patterns of burial practice are important areas of research for the Bronze Age (Medlycott & Brown 2008). Medlycott (2011, 21) identifies artefact studies as of particular importance for the study of the Bronze Age in the region; the typological identification of later Bronze Age pottery linked to close radiocarbon dating, the further study of Bronze Age flintworking and the significance of hoarding and other depositional practices are all identified as being key research subjects. Artefact studies can contribute to the refinement of chronologies for the period and to an assessment of the reasons behind the marked divide in research results between the northern and southern parts of the region, which are identified by Medlycott (2011, 21) as important research areas. Like the Neolithic, sedimentological, palynological and macrofossil analyses of sediment sequences are considered to be important areas of research as are the effects of colluviation and the possibility that colluvial deposits mask some significant sites (Medlycott 2011, 21).

4.2.4 Research topics for the Iron Age set out by Bryant (in Brown & Glazebrook 2000, 14-18) include further research into chronologies, precise dating and ceramic assemblages, further research into the development of the agrarian economy (particularly with regard to field systems), research into settlement chronology and dynamics, research into processes of economic and social change during the late Iron Age and Romano-British transition (particularly with regard to the development of Aylesford/Swarling and Roman culture, and also regional differences and tribal polities in the late Iron Age and further research into *oppida* and ritual sites), further analysis of development of social organisation and settlement form/function in the early and middle Iron Age, further research into artefact production and distribution and the Bronze Age/Iron Age transition. Medlycott & Brown (2008) and Medlycott (2011, 29-32) build on these themes, paying particular attention to chronological and spatial development and variation and adding subjects as the Bronze Age/Iron Age transition and manufacturing and industry.

4.2.5 Research topics for the Iron Age set out by Bryant (in Brown & Glazebrook 2000, 14-18) include further research into chronologies, precise dating and ceramic assemblages, further research into the development of the agrarian economy (particularly with regard to field systems), research into settlement chronology and dynamics, research into processes of economic and social change during the late Iron Age and Romano-British transition (particularly with regard to the development of Aylesford/Swarling and Roman culture, and also regional differences and tribal polities in the late Iron Age and further research into *oppida* and ritual sites), further analysis of development of social organisation and settlement form/function in the early and middle Iron Age, further research into artefact production and distribution and the Bronze Age/Iron Age transition. Medlycott & Brown (2008) and Medlycott (2011, 29-32) build on these themes, paying particular attention to chronological and spatial development and variation and adding subjects as the Bronze Age/Iron Age transition and manufacturing and industry.

4.2.6 Medlycott (2011, 47) identifies regional variation and tribal distinctions as underlying themes for research in the Roman period. Research topics for the Roman period previously set out by Going & Plouviez (in Brown & Glazebrook 2000, 19-22) include analysis of early and late Roman military developments, further analysis of large and small towns, evidence of food consumption and production, further

research into agricultural production, landscape research (in particular further evidence for potential woodland succession/regression and issues of relict landscapes, as well as further research into the road network and bridging points), further research into rural settlements and coastal issues. Medlycott (2011, 47-48) states that these research areas remain valid and presents updated consideration of them. To these themes Medlycott & Brown (2008) and Medlycott (2011, 47-48) add rural settlements and landscapes, the process of Romanisation in the region, the evidence for the Imperial Fen Estate, and the Roman/Saxon transition.

4.2.7 Wade (in Brown & Glazebrook 2000, 23-26) identifies research topics for the rural landscape in the Saxon and medieval periods. These include examination of population during this period (distribution and density, as well as physical structure), settlement (characterisation of form and function, creation and testing of settlement diversity models), specialisation and surplus agricultural production, assessment of craft production, detailed study of changes in land use and the impact of colonists (such as Saxons, Danes and Normans) as well as the impact of the major institutions such as the Church.

4.2.8 Medlycott (2011, 57) states that he study of the Anglo-Saxon period still requires further cooperation between historians and archaeologists. Important research issues for this period comprise: the Roman/Anglo-Saxon transitional period; settlement distribution, which suffers from problems associated with the identification of Saxon settlement sites; population modelling and demographics, which has the potential to be advanced by modern scientific methods; differences within the region in terms of settlement type and economic practice and subjects related to this such as links with the continent, trading practices and cultural influences; rural landscapes and settlements, including detailed study of the changes and developments in such settlements over time and the influence of Saxon landscape organisation and settlements on these issues in the medieval period; towns and their relationships with their hinterland; infrastructure, including river management, the identification of ports and harbours and the role of existing infrastructure in shaping the Saxon period landscape; the economy, based on palaeoenvironmental studies; ritual and religion; the effect of the Danish occupation; and artefact studies (Medlycott 2011, 57-59).

4.2.9 The issues identified by Ayers (in Brown & Glazebrook, 2000) and Wade (in Brown & Glazebrook, 2000) remain valid research subjects (Medlycott 2011, 70) for the medieval period. The study of landscapes is dominated by issues such as water management and land reclamation for large parts of the region, the economic development of the landscape and the region's potential to reveal information regarding field systems, enclosures, roads and trackways. Linked to the study of the landscape are research issues such as the built environment and infrastructure; the main communication routes through the region need to be identified and synthesis needs to be carried out regarding the significance, economic and social importance of historic buildings in the region (Medlycott 2011, 70-71). Also considered to be important research subjects for the medieval period are rural settlements, towns, industry and the production and processing of food and demographic studies (Medlycott 2011, 70-71).

4.2.10 The principal research issues for the site will be to identify and characterise any activity associated with the know local prehistoric, Roman and Saxon find spots, and/or to identify any remains of other periods on this large, mainly greenfield site.

References

Brown, N & Glazebrook, J (eds), 2000, *Research and Archaeology: A Framework for the Eastern Counties. 2. Research Agenda and Strategy*, East Anglian Archaeology Occasional Papers 8

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Medlycott, M & Brown, N, 2008, *Revised East Anglian Archaeological Research Frameworks,* www.eaareports/algaoee

Medlycott, M. (ed.) 2011, *Research and Archaeology revisited: a revised framework for the East of England*, ALGAO East of England Region, East Anglian Archaeology Occasional Papers 24

5 SPECIFICATION
TRENCHED EVALUATION

5.1 Details of Senior Project Staff

5.1.1 AS has developed a professional and well-qualified team who have undertaken numerous archaeological projects (both desk-based and field evaluations) on all types of developments, including commercial, residential, road schemes and golf courses. AS is a Registered Organisation of the IfA.

5.1.2 Profiles of key project staff are provided (Appendix B).

A Method Statement is presented
Trial Trench Evaluation Appendix A

5.1.3 The evaluation will conform with the guidelines set down in the brief and the Institute for Archaeologists *Standard and Guidance for Archaeological Evaluations (revised 2008)* and *Standard and Guidance for Historic Environment Desk-Based Assessments (revised 2012)* and English Heritage *Geophysical Survey in Archaeological Evaluation* (2008). It will also adhere to the document *Standards for Field Archaeology in the East of England* (Gurney 2003) and the requirements of the SCC document *Requirements for a Trenched Evaluation* 2011 Ver. 1.3 and *Requirements for a Geophysical Survey* 2011 Ver 1.1.

5.1.4 The brief requires a programme of geophysical survey followed by trial trenching. The initial geophysical survey will be carried out by Stratascan. It will comprise a detailed magnetometer survey conducted on a regular grid pattern, to include a sampling interval of 1m x 0.25m.

5.1.5 Following the geophysical survey a trial trench evaluation will be undertaken.

5.1.6 The SCC AS-CT brief requires a programme of archaeological trial trenching, and stipulates that either:

- *A 1% sample of the site, to comprise c.95 linear metres of trenching at 1.8m width, should be excavated across the area of proposed development. A trench plan to allow for 3 trenches, each 32m x 1.8m, is therefore proposed.*

- *A 5% sample of the site, to comprise c.380 linear metres of trenching at 1.8m width (4%), should be excavated across the area of proposed development, with a further 1% (95 linear metres of trenching at 1.8m width) held in reserve to clarify any remains. A trench plan to allow for an initial 13 trenches, each 30 x 1.8m, is therefore proposed.*

AS have been asked to proceed with the initial 1% sample, following the geophysical survey, with the remaining 4% to be undertaken as required by condition on any subsequent approval.

A trench plan will be supplied to SCC AS-CT following the preliminary results of the geophysical survey, in order to target any anomalies revealed by the survey. AS is happy to review the scale/location of the trenches following comment from the client and/or SCC AS-CT. The proposed trench plan will be reviewed with SCC AS-CT in the light of the results of the geophysical survey, in order that any revealed anomalies and 'blank' areas are targeted by the trenching.

5.1.7 The environmental strategy will adhere to the guidelines issued by English Heritage (*Environmental Archaeology; A guide to the theory and practice of methods, from sampling and recovery to post-excavation,* Centre for Archaeology Guidelines, 2011). An environmentalist will be invited to visit the site if remains of interest are found. Dr Rob Scaife will be the Environmental Coordinator for the project. The specialist will make his/her results known to Helen Chappell who co-ordinates environmental archaeology in the region on behalf of English Heritage. It will be particularly important on this project to identify any palaeoenvironmental remains and to identify any waterlogged remains present on the site.

5.1.8 Estimate of time and resources required for each phase, to complete the trial trenching, project archive and the production of an evaluation report.
Trial Excavation
Processing, Cataloguing and Conservation of Finds
Preparation of Report and Archive *c.*15-20 Days

Staff on site: a Project Officer and Site Assistant/s (as necessary)

5.1.9 In advance of the field work AS will liaise with the County HER to fulfil their requirements for the long term deposition of the project archive. These will encompass: their collection policy, and their financial and technical requirements for long term storage. The resources include provision for the long term-deposition of the project archive.

5.1.10 Details of staff and specialist contractors are provided (Appendix B). The project will be managed by Claire Halpin MIFA /Jon Murray MIFA.

5.1.11 AS is a member of FAME formerly the Standing Conference of Archaeological Unit Managers (SCAUM) and operates under the `Health & Safety in Field Archaeology Manual'. A risk assessment and management strategy will be completed prior to the start of works on site.

5.1.12 AS is a member of the Council for British Archaeology and is insured under their policy for members.

6 SERVICES

6.1 The client is to advise AS of the position of any services which traverse the site.

7 SECURITY

7.1 Throughout all site works care will be taken to maintain all existing security arrangements, and to minimise disruption.

8 REINSTATEMENT

8.1 No provision has been made for reinstatement, excepting simple backfilling.

9 REPORT REQUIREMENTS

9.1 The report will include (as a minimum):

a) the archaeological background
b) a consideration of the aims and methods adopted in the course of the recording
c) a detailed account of the nature, location, extent, date, significance and quality of any archaeological evidence recorded.
d) Excavation methodology and detailed results including a suitable conclusion and discussion
e) plans and sections of any recorded features and deposits
f) discussion and interpretation of the evidence. An assessment of the projects significance in a regional and local context and appendices.
g) All specialist reports or assessments
h) A concise non-technical summary of the project results
i) A HER summary sheet
j) An OASIS summary sheet

9.2 Draft hard and digital PDF copies of the report will be submitted to SCC AS-CT for approval. If any revisions are required, final hard and digital PDF copies will be supplied to SCC AS-CT for deposition with the HER

9.3 The project details will be submitted to the OASIS database, and the online summary form will be appended to the project report.

9.4 A summary report will be submitted suitable for inclusion in the annual roundups of *Proceedings of the Suffolk Institute of Archaeology and History*, dependent on the results of the project.

10 ARCHIVE

10.1 The requirements for archive storage will be agreed with the County HER.

10.2 The archive will be deposited within six months of the conclusion of the fieldwork. It will be prepared in accordance with the UK Institute for Conservation's *Conservation Guideline No.2* and according to the document *Deposition of Archaeological Archives in Suffolk* (SCC AS Conservation Team, 2010). A unique event number will be obtained from the County HER Officer.

10.3 The full archive of finds and records will be made secure at all stages of the project, both on and off site. Arrangements will be made at the earliest opportunity for the archive to be accessed into the collections of Suffolk HER; with the landowner's permission in the case of any finds. It is acknowledged that it is the responsibility of the field investigation organisation to make these arrangements with the landowner and HER. The archive will be adequately catalogued, labelled and packaged for transfer and storage in accordance with the guidelines set out in the United Kingdom Institute for Conservation's *Conservation Guidelines No.2* and the other relevant reference documents.

10.4 Archive records, with inventory, are to be deposited, as well as any donated finds from the site, at the county HER and in accordance with their requirements. The archive will be quantified, ordered, indexed, cross-referenced and checked for internal consistency. In addition to the overall site summary, it will be necessary to produce a summary of the artefactual and ecofactual data. A unique accession number will be obtained from the HER.

APPENDIX A
METHOD STATEMENT

Method Statement for the recording of archaeological remains

The archaeological evaluation will be conducted in accordance with the project brief, and the code of the Institute of Field Archaeologists.

1 Mechanical Excavation

1.1 A mechanical excavator fitted with a wide toothless bucket will be used to remove the topsoil/overburden. The machine will be powerful enough for a clean job of work and be able to mound spoil neatly, at a safe distance from the trench edges.

1.2 The mechanical stripping will be controlled, and the mechanical excavator will only operate under the full-time supervision of an experienced archaeologist.

2 Site Location Plan

2.1 On conclusion of the mechanical excavation, a 'site location plan', based on the current Ordnance Survey 1:1250 map and indicating site north, will be prepared. This will be supplemented by an 'area plan' at 1:200 (or 1:100) which will show the location of the area(s) investigated in relationship to the development area, OS grid and site grid.

3 Manual Cleaning & Base Planning of Archaeological Features

3.1 Exposed areas will be hand-cleaned to define archaeological features sufficient to produce a base plan.

4 Full Excavation

Excavation of Stratified Sequences

The trenches will be excavated according to phase, from the most recent to the earliest, and the phasing of features will be distinguished by their stratigraphic relationships, fills and finds.

Deep features e.g. quarry holes, may incorporate stratified deposits which will be excavated by hand-dug sections and recorded.

Excavation of Buildings

Building remains are likely to comprise stakeholes, postholes and slots/ gullies, masonry foundations and low masonry walls. Associated features may be present e.g. hearths.

The features comprising buildings will be excavated fully and in plan/phase, to a level sufficient for the requirements of an evaluation.

Full Excavation

Industrial remains and intrinsically interesting features e.g hearths, burials will clearly merit full excavation, though will be excavated sufficient to characterise such deposits within the context of an evaluation. Discrete features associated with possible structures and/or settlement will be fully excavated, again sufficient to characterise them for the purposes of an evaluation.

Ditches

The ditches will be excavated in segments up to 2m long, and the segments will be placed to provide adequate coverage of the ditches, establish their relationships and obtain samples and finds.

5 Written Record

5.1 All archaeological deposits and artefacts encountered during the course of the excavation will be fully recorded on the appropriate context, finds and sample forms.

5.2 The site will be recorded using AS's excavation manual which is directly comparable to those used by other professional archaeological organisations, including English Heritage's own Central Archaeological Service.

6 Photographic Record

6.1 An adequate photographic record of the investigations will be made. It will include black and white prints and colour transparencies (on 35mm) illustrating in both detail and general context the principal features and finds discovered. It will also include 'working and promotional shots' to illustrate more generally the nature of the archaeological operations. The black and white negatives and contacts will be filed, and the colour transparencies will be mounted using appropriate cases. All photographs will be listed and indexed.

7 Drawn Record

7.1 A record of the full extent, in plan, of all archaeological deposits encountered will be drawn on A1 permatrace. The plans will be related to the site, or OS, grid and be drawn at a scale of 1:50 or 1:20, as appropriate. In addition where appropriate, e.g. recording an inhumation, additional plans at 1:10 will be produced. The sections of all archaeological contexts will be drawn at a scale of 1:10 or, where appropriate, 1:20. The OD height of all principal strata and features will be calculated and indicated on the appropriate plans and sections.

8 Recovery of Finds

GENERAL

The principal aim is to ensure that adequate provision is made for the recovery of finds from all archaeological deposits.

The Small Finds, e.g. complete pots or metalwork, from all excavations will be 3-dimensionally recorded.

A metal detector will be used to enhance finds recovery. The metal detector survey will be conducted on conclusion of the topsoil stripping, and thereafter during the course of the excavation. The spoil tips will also be surveyed. Regular metal detector surveys of the excavation area and spoil tips will reduce the loss of finds to unscrupulous users of metal detectors (treasure hunters). All non-archaeological staff working on the site should be informed that the use of metal detectors is forbidden.

WORKED FLINT

When flint knapping debris is encountered large-scale bulk samples will be taken for sieving.

POTTERY

It is important that the excavators are aware of the importance of pottery studies and therefore the recovery of good ceramic assemblages.

The pottery assemblages are likely to provide important evidence to be able to date the structural history and development of the site.

The most important assemblages will come from `sealed' deposits which are representative of the nature of the occupation at various dates, and indicate a range of pottery types and forms available at different periods.

'Primary' deposits are those which contain sherds contemporary with the soil fill and in simple terms this often means large sherds with unabraded edges. The sherds have usually been deposited shortly after being broken and have remained undisturbed. Such sherds are more reliable in indicating a more precise date at which the feature was 'in use'. Conversely, 'secondary' deposits are those which often have small, heavily abraded sherds lacking obvious conjoins. The sherds are derived from earlier deposits.

HUMAN BONE

Any human remains present would not normally be excavated at the stage of an evaluation, but would be protected and preserved in situ, on advice from SCC AS-CT. Should human remains be discovered and be required to be removed, the coroner will be informed and a licence from the Ministry of Justice sought immediately; both the client and the monitoring officer will also be informed. Any excavation of human remains at the stage of an evaluation would only be carried out following advice from SCC AS-CT. Excavators would be made aware, and comply with, provisions of Section 25 of the Burial Act of 1857 and pay due attention to the requirements of Health & Safety.

ANIMAL BONE

Animal bone is one of the principal indicators of diet. As with pottery the excavators will be alert to the distinction of primary and secondary deposits. It will also be important that the bone assemblages are derived from dateable contexts.

ENVIRONMENTAL SAMPLING

The sampling will adhere to the guidelines prepared by Drs Peter Murphy and Patricia Wiltshire, and the specialist will make his/her results known to Helen Chappell who co-ordinates environmental archaeology in the region on behalf of English Heritage. The project will also accord with the recent guidelines of the English Heritage document *Environmental Archaeology, a guide to the theory and practice of methods, from sampling and recovery to post-excavation*, Centre for Archaeology Guidelines 2011.

Provision will be made for the sampling of appropriate materials for specialist and/ or scientific analysis (e.g. radiocarbon dating, environmental analysis). The location of samples will be 3-dimensionally recorded and they will also be shown on an appropriate plan. AS has its own environmental sampling equipment (including a pump and transformer) and, if practical, provision will be made to process the soil samples during the fieldwork stage of the project.

If waterlogged remains are found advice on sampling will be obtained on site from Dr Rob Scaife. Dr Rob Scaife and AS will seek advice from the EH Regional Scientific Advisor if significant environmental remains are found.

The study of environmental archaeology seeks to understand the local and near-local environment of the site in relation to phases of human activity and as such is an important and integral part of any archaeological study.

Environmental remains, both faunal and botanical, along with pedological and sedimentological analyses may be used to understand the environment and the impact of human activity.

There may be a potential for the recovery of a range of environmental remains (ecofacts) from which data pertaining to past environments, land use and agricultural economy should be forthcoming.

Sampling strategies on evaluations aim to determine the potential of the site for both biological remains (plants, small vertebrates) and small sized artefacts which would otherwise not be collected by hand. The number/range of samples taken will represent the range of feature types encountered, but with an aim of at least three samples from each feature type.

For plant remains, the samples taken at evaluation stage would aim to characterise:

- The range of preservation types (charred, mineral-replaced, waterlogged) and their quality
- Any differences in remains from dated/undated features
- Variation between different feature types/areas

To realise the potential of the environmental material encountered, a range of specialists from different disciplines is likely to be required. The ultimate goal will be the production of an interdisciplinary environmental study which can be of value to an understanding of, and integrated with, the archaeology.

Organic remains may allow study of the contemporary landscape (occupation/industrial/agricultural impact and land use) and also changes after the abandonment of the site.

The nature of the environmental evidence

Aspects of sampling and analysis may be divided into four broad categories; faunal remains, botanical remains, soils/sediments and radiocarbon dating measurements.

a) Faunal remains: These comprise bones of macro and microfauna, birds, molluscs and insects.

a.i) Bones: The study of the animal bone remains, in particular domestic mammals, domestic birds and marine fish will enhance understanding of the development of the settlement in terms of the local economy and also its wider influence through trade. The study of the small animal bones will provide insight into the immediate habitat of any settlement.

The areas of study covered may include all of the domestic mammal and bird species, wild and harvested mammal, birds, marine and fresh water fish in addition to the small mammals, non-harvest birds, reptiles and amphibia.

Domestic mammalian stock, domestic birds and harvest fish

The domestic animal bone will provide insight into the different phases of development of any occupation and how the population dealt with the everyday aspect of managing and utilising all aspects of the animal resource.

Small animal bones

Archaeological excavation has a wide role in understanding humans' effect on the countryside, the modifications to which have in turn affected and continue to affect their own existence. Small animals provide information about changing habitats and thereby about human impact on the local environment.

a.ii) Molluscs: Freshwater and terrestrial molluscs may be present in ditch and pit contexts which are encountered. Sampling and examination of molluscan assemblages if found will provide information on the local site environment including environment of deposition.

a.iii) Insects: If suitable waterlogged contexts (pit, pond and ditch fills) are encountered (which can potentially be expected to be encountered on the project), sampling and assessment will be carried out in conjunction with the analysis of waterlogged plant remains (primarily seeds) and molluscs. Insect data may provide

information on local site environment (cleanliness etc.) as well as proxies for climate and vegetation communities.

b) Botanical remains: Sampling for seeds, wood, pollen and seeds are the essential elements which will be considered. The former are most likely to be charred but possibly also waterlogged should any wells/ponds be encountered.

b.i) Pollen analysis: Sampling and analysis of the primary fills and any stabilisation horizons in ditch and pit contexts which may provide information on the immediate vegetation environment including aspects of agriculture, food and subsistence. These data will be integrated with seed analysis.

b.ii) Seeds: It is anticipated that evidence of cultivated crops, crop processing debris and associated weed floras will be present in ditches and pits. If waterlogged features/sediments are encountered (for example, wells/ponds) these will be sampled in relation to other environmental elements where appropriate (particularly pollen, molluscs and possibly insects).

c) Soils and Sediments: Characterisation of the range of sediments, soils and the archaeological deposits are regarded as crucial to and an integral part of all other aspects of environmental sampling. This is to afford primary information on the nature and possible origins of the material sampled. It is anticipated that a range of 'on-site' descriptions will be made and subsequent detailed description and analysis of the principal monolith and bulk samples obtained for other aspects of the environmental investigation. Where considered necessary, laboratory analyses such as loss on ignition and particle size may also be undertaken. A geoarchaeologist will be invited to visit the site as necessary to advise on sampling.

d) Radiocarbon dating: Archaeological/ artifactual dating may be possible for most of the contexts examined, but radiocarbon dating should not be ruled out

Sampling strategies

Provision will be made by the environmental co-ordinator that suitable material for analysis will be obtained. Samples will be obtained which as far as possible will meet the requirements of the assessment and any subsequent analysis.

a) Soil and Sediments: Samples taken will be examined in detail in the laboratory. An overall assessment of potential will be carried out. Analysis of particle size and loss on ignition, if required would be undertaken as part of full analysis if assessment demonstrates that such studies would be of value.

b) Pollen Analysis: Contexts which require sampling may include stabilisation horizons and the primary fills of the pits and ditches, and possibly organic well/pond fills. It is anticipated that in some cases this will be carried out in conjunction with sampling for other environmental elements, such as plant macrofossils, where these are also felt to be of potential.

c) Plant Macrofossils: Principal contexts will be sampled directly from the excavation for seeds and associated plant remains. It is anticipated that primarily

charred remains will be recovered, although provision for any waterlogged sequences will also be made (see below). Sampling for the former will, where possible (that is, avoiding contamination) comprise samples of an average of 40-60 litres which will be floated in the AS facilities for extraction of charred plant remains. Both the flot and residues will be kept for assessment of potential and stored for any subsequent detailed analysis. The residues will also be examined for artifactual remains and also for any faunal remains present (cf. molluscs). Where pit, ditch, well or pond sediments are found to contain waterlogged sediments, principal contexts will be sampled for seeds and insect remains. Standard 5 litre+ samples will be taken which may be sub-sampled in the laboratory for seed remains if the material is found to be especially rich. The full sample will provide sufficient material for insect assessment and analysis.

d) Bones: Predicting exactly how much of what will be yielded by the excavation is clearly very difficult prior to excavation and it is proposed that in order to efficiently target animal bone recovery there should be a system of direct feedback from the archaeozoologist to the site staff during the excavation, allowing fine tuning of the excavation strategy to concentrate on the recovery of animal bones from features which have the highest potential. This will also allow the faunal remains to materially add to the interpretation as the excavation proceeds. Liaison with other environmental specialists will need to take place in order to produce a complete interdisciplinary study during this phase of activity. In addition, this feedback will aid effective targeting of the post-excavation analysis.

e) Insects: If contexts having potential for insect preservation are found, samples will be taken in conjunction with waterlogged plant macrofossils. Samples of 5 litres will suffice for analysis and will be sampled adjacent to waterlogged seed samples and pollen; or where insufficient context material is available provision will be made for exchange of material between specialists.

f) Molluscs: Terrestrial and freshwater molluscs. Samples will be taken from a column from suitable ditches. Pits may be sampled, based on the advice of the Environmental Consultant and / or English Heritage Regional Advisor. Provision will also be made for molluscs obtained from other sampling aspects (seeds) to be examined and/or kept for future requirements.

g) Archiving: Environmental remains obtained should be stored in conditions appropriate for analysis in the short to medium term, that is giving the ability for full analysis at a later date without any degradation of samples being analysed. The results will be maintained as an archive at AS and supplied to the EH regional co-ordinator as requested.

Waterlogged Deposits/ Remains

Should waterlogged deposits (such as wells/deep ditches) be encountered, provision has been made for controlled hand excavation and sampling. Dr Rob Scaife will visit to advise of sampling as required, and AS will take monolith samples as necessary for the recovery of palaeoenvironmental information and dating evidence.

Scientific/ Absolute Dating

- Samples will be obtained for potential scientific/absolute dating as appropriate (eg Carbon-14).

Provision will be made for the sampling of appropriate materials for specialist and/or scientific analysis (e.g. radiocarbon dating, environmental analysis). The location of samples will be 3-dimensionally recorded and they will also be shown on an appropriate plan. AS has its own environmental sampling equipment (including a pump and transformer) and, if practical, provision will be made to process the soil samples during the fieldwork stage of the project.

If waterlogged remains are found they will be sampled by Dr Rob Scaife. Dr Rob Scaife and AS will seek advice from the EH Regional Scientific Advisor (Helen Chappell) if significant environmental remains are found.

FINDS PROCESSING

The project director will have overall responsibility for the finds and will liaise with AS's own finds personnel and the relevant specialists. A person with particular responsibility for finds on site will be appointed for the excavation. The person will ensure that the finds are properly labelled and packaged on site for transportation to AS's field base. The finds processing will take place in tandem with the excavations and will be under the supervision of AS's Finds Officer.

The finds processing will entail first aid conservation, cleaning (if appropriate), marking (if appropriate), categorising, bagging, labelling, boxing and basic cataloguing (the compilation of a Small Finds Catalogue and quantification of bulk finds) i.e. such that the finds are ready to be made available to the specialists. The Finds Officer, having been advised by the Project Officer and relevant specialists, will select material for conservation. AS's Finds Officer, in conjunction with the Project Officer, will arrange for the specialists to view the finds for the purpose of report writing.

APPENDIX B
ARCHAEOLOGICAL SOLUTIONS LIMITED: PROFILES OF STAFF & SPECIALISTS

DIRECTOR **Claire Halpin BA MIfA**

Qualifications: Archaeology & History BA Hons (1974-77).
Oxford University Dept for External Studies In-Service Course (1979-1980).
Member of Institute of Archaeologists since 1985: IFA Council member (1989-1993)
Experience: Claire has 25 years' experience in field archaeology, working with the Oxford Archaeological Unit and English Heritage's Central Excavation Unit (now the Centre for Archaeology). She has directed several major excavations (e.g. Barrow Hills, Oxfordshire, and Irthlingborough Barrow Cemetery, Northants), and is the author of many excavation reports e.g. St Ebbe's, Oxford: *Oxoniensia* 49 (1984) and 54 (1989). Claire moved into the senior management of field archaeological projects with Hertfordshire Archaeological Trust (HAT) in 1990, and she was appointed Manager of HAT in 1996. From the mid 90s HAT has enlarged its staff complement and extended its range of skills. In July 2003 HAT was wound up and Archaeological Solutions was formed. The latter maintains the same staff complement and services as before. AS undertakes the full range of archaeological services nationwide.

DIRECTOR **Tom McDonald MIfA**

Qualifications: Member of the IfA
Experience: Tom has twenty years' experience in field archaeology, working for the North-Eastern Archaeological Unit (1984-1985), Buckinghamshire County Museum (1985), English Heritage (Stanwick Roman villa (1985-87) and Irthlingborough barrow excavations, Northamptonshire (1987)), and the Museum of London on the Royal Mint excavations (1986-7)., and as a Senior Archaeologist with the latter (1987-Dec 1990). Tom joined HAT at the start of 1991, directing several major multi-period excavations, including excavations in advance of the A41 Kings Langley and Berkhamsted bypasses, the A414 Cole Green bypass, and a substantial residential development at Thorley, Bishop's Stortford. He is the author of many excavation reports, exhibitions etc. Tom is AS's Health and Safety Officer and is responsible for site management, IT and CAD. He specialises in prehistoric and urban archaeology, and is a Lithics Specialist.

OFFICE MANAGER **Rose Flowers**

Experience: Rose has a very wide range of book-keeping skills developed over many years of employment with a range of companies, principally Rosier Distribution Ltd, Harlow (now part of Securicor) where she managed eight accounts staff. She has a good working knowledge of both accounting software and Microsoft Office.

OFFICE ADMINISTRATOR **Sarah Powell**

Experience: Sarah is an experienced and efficient administrative assistant with more than ten years experience of working in a variety of office environments. She is IT literate and proficient in the use of Microsoft Word, particularly Microsoft Excel. She has completed NVQ 2 & 3 in Administration and Office Skills. She recently attended and completed a course in Microsoft Excel – Advanced Level.

SENIOR PROJECTS MANAGER **Jon Murray BA MIfA**

Qualifications: History with Landscape Archaeology BA Hons (1985-1988).

Experience: Jon has been employed by HAT (now AS) continually since 1989, attaining the position of Senior Projects Manager. Jon has conducted numerous archaeological investigations in a variety of situations, dealing with remains from all periods, throughout London and the South East, East Anglia, the South and Midlands. He is fluent in the execution of (and now project-manages) desk-based assessments/EIAs, historic building surveys (for instance the recording of the Royal Gunpowder Mills at Waltham Abbey prior to its rebirth as a visitor facility), earthwork and landscape surveys, all types of evaluations/excavations (urban and rural) and environmental archaeological investigation (working closely with Dr Rob Scaife), preparing many hundreds of archaeological reports dating back to 1992. Jon has also prepared numerous publications; in particular the nationally-important Saxon site at Gamlingay, Cambridgeshire (*Anglo-Saxon Studies in Archaeology & History*). Other projects published include Dean's Yard, Westminster (*Medieval Archaeology*), Brackley (*Northamptonshire Archaeology*), and a medieval cemetery in Haverhill he excavated in 1997 (*Proceedings of the Suffolk Institute of Archaeology).* Jon is a member of the senior management team, principally preparing specifications/tenders, co-ordinating and managing the field teams. He also has extensive experience in preparing and supporting applications for Scheduled Monument Consent/Listed Building Consent

PROJECTS MANAGER
(FIELD & ARCHIVES) **Martin Brook BA**

Qualifications: University of Leicester BA (Hons) Archaeology (2003 -2006)

Experience: Martin worked on archaeological excavations throughout his university career in and around Leicester including two seasons excavating a medieval abbey kitchen at Abbey Park, Leicester with ULAS. He specialised in Iron Age funeral traditions and grave goods for his 3rd year dissertation advancing his skills in museum research, database use and academic correspondence. He joined AS in September 2006 as an excavator involved in projects such as Earsham Bronze Age Barrow and cremation site. From May 2007, Martin has moved across to the Post-Excavation team to become Assistant Archives Officer, and thereafter Martin has returned to fieldwork as a Supervisor before being promoted to project management in 2009

PROJECT OFFICER **Zbigniew Pozorski MA**

Qualifications: University of Wroclaw, Poland, Archaeology (1995-2000, MA 2003)

Experience: Zbigniew has archaeological experience dating from 1995 when as a student he joined an academic group of excavators. He was involved in numerous archaeological projects throughout the Lower Silesia region in southwest Poland and a number of projects in old town of Wroclaw. During his university years he specialized in medieval urban archaeology. He had his own research project working on an early/high medieval stronghold in Pietrzykow. He was a member of a University team which located and excavated an unknown high medieval castle in Wierzbna, Poland. Zbigniew has worked for archaeological contractors in Poland on several projects as a supervisor where he gained experience in all types of evaluations and excavations in urban and rural areas. Recently he worked in Ireland where he completed two large long-term projects for Headland Archaeology Ltd. He joined AS in January 2008 as a Project Officer.

Zbigniew is qualified in the Construction Skills Certification Scheme (CSCS) and is a qualified in First Aid at Work (St Johns Ambulance).

SUPERVISOR **Gareth Barlow MSc**

Qualifications: University of Sheffield, MSc Environmental Archaeology & Palaeoeconomy (2002-2003)
King Alfred's College, Winchester, Archaeology BA (Hons) (1999-2002)

Experience: Gareth worked on a number of excavations in Cambridgeshire before pursuing his degree studies, and worked on many archaeological projects across the UK during his university days. Gareth joined AS in 2003 and has worked on numerous archaeological projects throughout the South East and East Anglia with AS. Gareth was promoted to Supervisor in the Summer 2007.

Gareth is qualified in the Construction Skills Certification Scheme (CSCS) and is a qualified in First Aid at Work (St Johns Ambulance).

SUPERVISOR **Stephen Quinn BSc**

Stephen Quinn joined AS as a Site Assistant 2009, and in 2012 was promoted to the role of Supervisor. After graduating in Archaeology and Palaeoecology at Queens University Belfast, he worked for several commercial archaeology units including on Neolithic settlement and burial sites and a Bronze Age henge monument in Northern Ireland; early industrial pottery productions sites in Glasgow, and urban Roman excavation in Lincoln. In 2012 Stephen has been heading AS' excavation of a Roman fenland settlement site at Soham, Cambridgeshire.
Steve is qualified in the Construction Skills Certification Scheme (CSCS) and is a qualified in First Aid at Work (St Johns Ambulance).

SUPERVISOR **Kamil Orzechowski BA, MA**

Kamil Orzechowski joined AS in 2012, as an experienced field archaeologist after spending five years in various commercial archaeology units working on large-scale construction projects including railways and pipelines. Before becoming a field archaeologist, Kamil graduated from the Institute of Ethnology and Cultural Anthropology, Adam Mickiewicz University, Poznan, Poland.

Kamil is qualified in the Construction Skills Certification Scheme (CSCS).

SUPERVISOR **Samuel Egan BSc**

Samuel Egan joined AS in 2012 as an experienced field archaeologist after working on a range of excavations in Northamptonshire including a large-scale road project, community projects, evaluation and excavation projects, and geophysical syrveys. Samuel graduated from Bournemouth University with two degrees: Fdsc Field Archaeology and BSc (hons.) Field Archaeology.

Samuel is qualified in the Construction Skills Certification Scheme (CSCS) and is a qualified in First Aid at Work (Red Cross).

SUPERVISOR **Laszlo Lichtenstein MA, MSc, PhD**

Laszlo Lichtenstein joined AS in 2012 as a Supervisor, highly experienced in a range of archaeological project management, field archaeology and archaeozoology. Laszlo has extensive experience spanning Hungary, and later Northamptonshire, including directing evaluation and excavation projects; managing project set-up including written schemes of investigation, desk-based assessments and geophysical survey; and post-excavation analysis. Laszlo completed his academic studies at University of Szegad, Hungary, including his PhD on geophysical and archaeological investigations of late Bronze Age to

early Iron Age settlements in south-east Hungary, and has published numerous articles on his areas of research.

Laszlo is qualified in the Construction Skills Certification Scheme (CSCS) and is a qualified in First Aid at Work.

PROJECT OFFICER
(DESK-BASED ASSESSMENTS) Kate Higgs MA (Oxon)

Qualifications: University of Oxford, St Hilda's College
Archaeology & Anthropology MA (Oxon) (2001-2004)

Experience: Kate has archaeological experience dating from 1999, having taken part in clearance, surveying and recording of stone circles in the Penwith area of Cornwall. During the same period, she also assisted in compiling a database of archaeological and anthropological artefacts from Papua New Guinea, which were held in Scottish museums. Kate has varied archaeological experience from her years at Oxford University, including participating in excavations at a Roman amphitheatre and an early church at Marcham/ Frilford in Oxfordshire, with the Bamburgh Castle Research Project in Northumberland, which also entailed the excavation of human remains at a Saxon cemetery, and also excavating, recording and drawing a Neolithic chambered tomb at Prissé, France. Kate has also worked in the environmental laboratory at the Museum of Natural History in Oxford, and as a finds processor for Oxford's Institute of Archaeology. Since joining AS in November 2004, Kate has researched and authored a variety of reports, concentrating on desk-based assessments in advance of archaeological work and historic building recording.

ASSISTANT PROJECTS MANAGER Andrew Newton MPhil PIFA
(POST-EXCAVATION)

Qualifications: University of Bradford, MPhil (2002-04)
University of Bradford, BSc (Hons) Archaeology (1998-2002)
University of Bradford, Dip Professional Archaeological Studies (2002)

Experience: Andrew has carried out geophysical surveys for GeoQuest Associates on sites throughout the UK and has worked as a site assistant with BUFAU. During 2001 he worked as a researcher for the Yorkshire Dales Hunter-Gatherer Research Project, a University of Bradford and Michigan State University joint research programme, and has carried out voluntary work with the curatorial staff at Beamish Museum in County Durham. Andrew is a member of the Society of Antiquaries of Newcastle-upon-Tyne and a Practitioner Member of the Institute for Archaeologists. Since joining AS in early Summer 2005, as a Project Officer writing desk-based assessments, Andrew has gained considerable experience in post-excavation work. His principal role with AS is conducting post-excavation research and authoring site reports for publication. Significant post-excavation projects Andrew has been responsible for include the Ingham Quarry Extension, Fornham St. Genevieve, Suffolk – a site with large Iron Age pit clusters arranged around a possible wetland area; the late Bronze Age to early Iron Age enclosure and early Saxon cremation cemetery at the Chalet Site, Heybridge, Essex; and, Church Street, St Neots, Cambridgeshire, an excavation which identified the continuation of the Saxon settlement previously investigated by Peter Addyman in the 1960s. Andrew also writes and co-ordinates Environmental Impact Assessments and has worked on a variety of such projects across southern and eastern England. In addition to his research responsibilities Andrew undertakes outreach and publicity work and carries out some fieldwork.

PROJECT OFFICER
(POST-EXCAVATION) Antony Mustchin BSc MSc DipPAS

Qualifications: University of Bradford BSc (Hons) Bioarchaeology (1999-2003)
University of Bradford MSc Biological Archaeology (2004-2005)
University of Bradford Diploma in Professional Archaeological Studies (2003)

Experience: Antony has 12 years' experience in field archaeology, gained during his higher education and in the professional sector. Commercially in the UK, Antony has worked for Archaeology South East (2003), York Archaeological Trust (2004) and Special Archaeological Services (2003). He has also undertaken a six-month professional placement as Assistant SMR Officer/ Development Control Officer with Kent County Council (2001-2002). Antony is part-way through writing up a PhD on Viking Age demographics, a long-term academic interest that has led to his gaining considerable research excavation experience across the North Atlantic. He has worked for projects and organisations including the Old Scatness & Jarlshof Environs Project, Shetland (2000-2003), the Viking Unst Project, Shetland (2006-2007), the Heart of the Atlantic Project/ Føroya Fornminnissavn, Faroe Islands (2006-2008) and City University New York/ National Museum of Denmark/ Greenland National Museum and Archives, Greenland (2006 & 2010). Shortly before Joining Archaeological Solutions in November 2011, Antony spent three years working for the Independent Commission for the Location of Victims Remains, assisting in the search for and forensic recovery of "the remains of victims of paramilitary violence ("The Disappeared") who were murdered and buried in secret arising from the conflict in Northern Ireland". Antony has a broad experience of fieldwork and post-excavation practice including specialist (archaeofauna), teaching, supervisory and directing-level posts.

POTTERY, LITHICS AND
CBM RESEARCHER Andrew Peachey BA MIfA

Qualifications: University of Reading BA Hons, Archaeology and History (1998-2001)

Experience: Andrew joined AS (formerly HAT) in 2002 as a pottery researcher, and rapidly expanded into researching CBM and lithics. Andrew specialises in prehistoric and Roman pottery and has worked on numerous substantial assemblages, principally from across East Anglia but also from southern England. Recent projects have included a Neolithic site at Coxford, Norfolk, an early Bronze Age domestic site at Shropham, Norfolk, late Bronze Age material from Panshanger, Hertfordshire, middle Iron Age pit clusters at Ingham, Suffolk and an Iron Age and early Roman riverside site at Dernford, Cambridgshire. Andrew has worked on important Roman kiln assemblages, including a Nar Valley ware production site at East Winch Norfolk, a face-pot producing kiln at Hadham, Hertfordshire and is currently researching early Roman Horningsea ware kilns at Waterbeach, Cambridgeshire. Andrew is an enthusiastic member of the Study Group for Roman Pottery, and also undertakes pottery and lithics analysis as an 'external' specialist for a range of archaeological units and local societies in the south of England.

POTTERY RESEARCHER Peter Thompson MA

Qualifications: University of Bristol BA (Hons), Archaeology (1995-1998)
University of Bristol MA; Landscape Archaeology (1998-1999)

Experience: As a student, Peter participated in a number of projects, including the excavation of a Cistercian monastery cemetery in Gascony and surveying an Iron Age promontory hillfort in Somerset. Peter has two years excavation experience with the Bath Archaeological Trust and Bristol and Region Archaeological Services which includes working on a medieval manor house and a post-medieval glass furnace site of national importance. Peter joined HAT (now AS) in 2002 to specialise in Iron Age, Saxon and Medieval pottery research and has also produced desk-based assessments. Pottery reports include an early Iron pit assemblage and three complete Early Anglo-Saxon accessory vessels from a cemetery in Dartford, Kent.

PROJECT OFFICER
(OSTEOARCHAEOLOGY) Julia Cussans PhD

Qualifications: University of Bradford, PhD (2002-2010)
University of Bradford, BSc (Hons) Bioarchaeology (1997-2001)
University of Bradford, Dip. Professional Archaeological Studies (2001)

Experience: Julia has c. 12 years of archaeozoological experience. Whilst undertaking her part time PhD she also worked as a specialist on a variety of projects in northern Britain including Old Scatness (Shetland), Broxmouth Iron Age Hillfort and Binchester Roman Fort. Additionally Julia has extensive field experience and has held lead roles in excavations in Shetland and the Faroe Islands including, Old Scatness, a large multi-period settlement centred on an Iron Age Broch; the Viking Unst Project, an examination of Viking and Norse houses on Britain's most northerly isle; the Laggan Tormore Pipeline (Firths Voe), a Neolithic house site in Shetland; the Heart of the Atlantic Project, an examination of Viking settlement in the Faroes and Við Kirkjugarð, an early Viking site on Sanday, Faroe Islands. Early on in her career Julia also excavated at Sedgeford, Norfolk as part of SHARP and in Pompeii, Italy as part of the Anglo-American Project in Pompeii. Since joining AS in October 2011 Julia has worked on animal bone assemblages from Beck Row, a Roman villa site at Mildenhall, Suffolk and Sawtry, an Iron Age, fen edge site in Cambridgeshire. Julia is a full and active member of the International Council for Archaeozoology, the Professional Zooarchaeology Group and the Association for Environmental Archaeology.

ENVIRONMENTAL ARCHAEOLOGIST Dr John Summers

Qualifications: 2006-2010: PhD "The Architecture of Food" (University of Bradford)
2005-2006: MSc Biological Archaeology (University of Bradford)
2001-2005: BSc Hons. Bioarchaeology (University of Bradford)

Experience: John is an archaeobotanist with a primary specialism in the analysis of carbonised plant macrofossils and charcoal. Prior to joining Archaeological Solutions, John worked primarily in Atlantic Scotland. His research interests involve using archaeobotanical data in combination with other archaeological and palaeoeconomic information to address cultural and economic research questions. John has made contributions to a number of large research projects in Atlantic Scotland, including the Old Scatness and Jarlshof Environs Project (University of Bradford), the Viking Unst Project (University of Bradford) and publication work for Bornais Mound 1 and Mound 2 (Cardiff University). He has also worked with plant remains from Thruxton Roman Villa, Hampshire, as part of the Danebury Roman Environs Project (Oxford University/ English Heritage). John's role at AS is to analyse and report on assemblages of plant macro-remains from environmental samples and provide support and advice regarding environmental sampling regimes and sample processing. John is a member of the Association for Environmental Archaeology.

SENIOR GRAPHICS OFFICER Kathren Henry

Experience: Kathren has twenty-five years experience in archaeology, working as a planning supervisor on sites from prehistoric to late medieval date, including urban sites in London and rural sites in France/Italy, working for the Greater Manchester Archaeological Unit, Passmore Edwards Museum, DGLA and Central Excavation Unit of English Heritage (at Stanwick and Irthlingborough, Northamptonshire). She has worked with AS (formerly HAT) since 1992, becoming Senior Graphics Officer. Kathren is AS's principal photographer, specializing in historic building survey, and she manages AS's photographic equipment and dark room. She is in charge of AS's Graphics Department, managing computerised artwork and report production. Kathren is also the principal historic building surveyor/illustrator, producing on-site and off-site plans, elevations and sections.

HISTORIC BUILDING RECORDING **Tansy Collins BSc**

Qualifications: University of Sheffield, Archaeological Sciences BSc (Hons) (1999-2002)

Experience: Tansy's archaeological experience has been gained on diverse sites throughout England, Ireland, Scotland and Wales. Tansy joined AS in 2004 where she developed skills in graphics, backed by her grasp of archaeological interpretation and on-site experience, to produce hand drawn illustrations of pottery, and digital illustrations using a variety of packages such as AutoCAD, Corel Draw and Adobe Illustrator. She joined the historic buildings team in 2005 in order to carry out both drawn and photographic surveys of historic buildings before combining these skills with authoring historic building reports in 2006. Since then Tansy has authored numerous such reports for a wide range of building types; from vernacular to domestic architecture, both timber-framed and brick built with date ranges varying from the medieval period to the 20th century. These projects include a number of regionally and nationally significant buildings, for example a previously unrecognised medieval aisled barn belonging to a small group of nationally important agricultural buildings, one of the earliest surviving domestic timber-framed houses in Hertfordshire, and a Cambridgeshire house retaining formerly hidden 17th century decorative paint schemes. Larger projects include The King Edward VII Sanatorium in Sussex, RAF Bentley Priory in London as well as the Grade I Listed Balls Park mansion in Hertfordshire.

HISTORIC BUILDING RECORDING **Lisa Smith BA**

Qualifications: University of York, BA Archaeology (1998-2001)

Experience: Lisa has nine years archaeological experience undertaken mainly in the north of England previously working as a senior site assistant for Field Archaeology Specialists in York on both rural and urban sites as well as Castle Sinclair Girnigoe and Tarbat in Scotland. Prior to working for FAS Lisa was involved in various excavation projects for Oxford Archaeology North and Archaeological Services, University of Durham. Lisa joined AS as a supervisor in January 2008 and in November 2009 transferred to historic building recording and has since worked on a variety of buildings dating from the medieval period onwards, working closely with external consultant Dr Lee Prosser.

GRAPHICS OFFICER **Rosanna Price BSc**

Qualifications: University of Kent, Medical Anthropology BSc (Hons) (2005-2008)

Experience: Rosanna's interests have always revolved around art and human history, and she has combined these throughout her work and education. During her degree she specialised in Osteoarchaeology and Palaeopathology, and personally instigated the University's photographic database of human remains. This experience gained her the post of Osteoarchaeologist at Kent Osteological Research and Analysis in early 2009, where she worked on a number of human bone collections including the Thanet Earth Skeletons. In January 2010 she joined AS as a Finds and Archives assistant, and by the summer had achieved a new role as graphics officer. In her current position Rosanna uses a range of computer programmes, such as AutoCAD, Adobe Illustrator and CorelDraw to produce digital figures and finds illustrations. These accompany a wide range of archaeological reports, from desk-based assessments and interim reports through to publication standard.

GRAPHICS OFFICER **Charlotte Davies MPhil**

Qualifications: University of Exeter, Archaeology BA (Hons) (2004-2007)
Surrey Institute of Art & Design, BTEC Foundation Diploma in Art & Design (2003-2004)
University of Cambridge, Archaeology (Heritage & Museum Studies) MPhil (2010-2011)

Experience: Charlotte has always had a passionate interest in art and archaeology, and has combined these interests in her higher education. Charlotte worked on archaeological excavations in South Dakota, USA, before joining AS in 2007 as part of the graphics team. Charlotte's role within AS comprises the production of a wide range of high quality figures and illustrations for reports, from desk-based assessments and interim reports through to publication. Charlotte became a member of the Association of Archaeological Illustrators and Surveyors in 2009 (this subsequently became incorporated into the Institute for Archaeologists), and in 2010 undertook a masters degree in archaeology at the University of Cambridge.

FINDS AND ARCHIVE ASSISTA **Adam Leigh**

Experience: Adam joined AS in January 2012. In his time with the company he has helped process hundreds of finds from a variety of sites going on to concord them. Adam has helped prepare a large number of sites for deposition with museums making sure that the finds are prepared in strict accordance with the guidelines and requirements laid out by the receiving museum.

ASSISTANT ARCHIVES OFFICER **Karen Cleary**

Experience: Karen started her administrative career as Youth Training Administrator for a training company (TSMA Ltd) in 1993, where she provided administrative support for NVQ Assessors' of trainees and apprentices on the youth training scheme and in work placements they'd helped set up. Amongst her administrative duties she was principally in charge of preparing the Training Credits Claims and sending off for government funding. She gained NVQ's Level's 2 and 3 in Administration whilst working in this role. Karen started out with AS as Office Assistant in February 2009 and within a few months was promoted to Archives Assistant. Principally her role involves the preparation of Archaeological archives for long term deposition with museums. She has developed a good understanding of the preparation process and follows each individual museum's guidelines closely. She has a good working knowledge of Microsoft Office and is competent with *FileZilla*- Digital File Transfer software and *Fastsum*-Checksum Creation software.

ARCHAEOLOGICAL SOLUTIONS: PRINCIPAL SPECIALISTS

GEOPHYSICAL SURVEYS	Stratascan Ltd
AIR PHOTOGRAPHIC ASSESSMENTS	Air Photo Services
PHOTOGRAPHIC SURVEYS	Ms K Henry
PREHISTORIC POTTERY	Mr A Peachey
ROMAN POTTERY	Mr A Peachey
SAXON & MEDIEVAL POTTERY	Mr P Thompson
POST-MEDIEVAL POTTERY	Mr P Thompson
FLINT	Mr A Peachey
GLASS	H Cool
COINS	British Museum, Dept of Coins & Medals
METALWORK & LEATHER	Ms Q Mould, Ms N Crummy
SLAG	Ms J Cowgill
ANIMAL BONE	Dr J Cussans
HUMAN BONE:	Ms J Curl
ENVIRONMENTAL CO-ORDINATOR	Dr R Scaife
POLLEN AND SEEDS:	Dr R Scaife
CHARCOAL/WOOD	Dr J Summers
SOIL MICROMORPHOLOGY	Dr R MacPhail, Dr C French
CARBON-14 DATING:	English Heritage Ancient Monuments Laboratory (for advice).
CONSERVATION	University of Leicester

APPENDIX 4 GEOPHYSICAL SURVEY REPORT

GEOPHYSICAL SURVEY REPORT

STRATASCAN™

SUMO Survey Services
SUMO Group Member

Project name:

Site of Limes Cottage, Kedington, Suffolk

Client:

Archaeological Solutions Ltd

April 2014

Job ref:
J6694

Report author:
Thomas Richardson MSc AIFA

GEOPHYSICAL SURVEY REPORT

Project name:
Site of Limes Cottage, Kedington, Suffolk
Client:
Archaeological Solutions Ltd

Job ref:
J6694

Techniques:
Detailed magnetic survey – Gradiometry

Survey date:
3rd April 2014

Site centred at:
TL 707 470

Post code:
CB9 7QS

Field team:
Robert Knight BSc (Hons),
Tom Worthington BSc

Project manager:
Simon Haddrell BEng(Hons) AMBCS PIFA

Report written By:
Thomas Richardson MSc AIFA

CAD illustrations by:
Thomas Richardson MSc AIFA

Checked by:
David Elks MSc AIFA

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1 SUMMARY OF RESULTS

A detailed gradiometry survey was conducted over approximately 1.3 hectares of grassland. The survey did not identify any probable archaeology. Three possible archaeological features have been identified; however it is not possible to determine their origin with any degree of confidence. The remaining anomalies are of modern origin relating to former structures, an underground service, an area of scattered magnetic debris, ferrous objects and fencing.

2 INTRODUCTION

2.1 Background synopsis

Stratascan were commissioned to undertake a geophysical survey of an area outlined for development. This survey forms part of an archaeological investigation being undertaken by Archaeological Solutions Ltd.

2.2 Site location

The site is located in Kedington, Suffolk at OS ref. TL 707 470.

2.3 Description of site

The survey area is approximately 1.3 hectares of grassland. The survey area is generally flat with a number of small obstructions caused by trees and over grown vegetation at the field boundaries.

2.4 Geology and soils

The underlying geology is Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation and Culver Chalk Formation - Chalk (British Geological Survey website). The drift geology is Head – Clay, Silt, Sand and Gravel (British Geological Survey website).

The overlying soils are known as Hanslope which are typical calcareous pelosols. These consist of calcareous clayey soils, some non-calcareous clayey soils (Soil Survey of England and Wales, Sheet 4 Eastern England).

2.5 Site history and archaeological potential

Extract from 'Brief for a Geophysical Survey and Trenched Archaeological Evaluation at Limes Cottage and Adjoining Land, Kedington' (Suffolk County Council 2014):

This site lies in an area of archaeological interest, as recorded by information held in the County Historic Environment Record (HER). It is located in the Stour Valley in a topographic position that was favourable for early occupation of all periods. It is within 50m of a find spot of Saxon pottery (HER no. KDG 011) and c. 150 east of the medieval church, where Roman and

Saxon remains have also bee found (KDG 003), including a mosaic and hypocaust. Cropmarks of a possible Neolithic monument have been recorded to the northwest (KD 017) and scattered pits, postholes and ditches in an evaluation to the northeast (KDG 042).

2.6 Survey objectives

The objective of the survey was to locate any features of possible archaeological origin in order that they may be assessed prior to development.

2.7 Survey methods

This report and all fieldwork have been conducted in accordance with both the English Heritage guidelines outlined in the document: *Geophysical Survey in Archaeological Field Evaluation, 2008* and with the Institute for Archaeologists document *Standard and Guidance for Archaeological Geophysical Survey.*

Detailed magnetic survey (gradiometry) was used as an efficient and effective method of locating archaeological anomalies. More information regarding this technique is included in Appendix A.

2.8 Processing, presentation and interpretation of results

2.8.1 Processing

Processing is performed using specialist software. This can emphasise various aspects contained within the data but which are often not easily seen in the raw data. Basic processing of the magnetic data involves 'flattening' the background levels with respect to adjacent traverses and adjacent grids. Once the basic processing has flattened the background it is then possible to carry out further processing which may include low pass filtering to reduce 'noise' in the data and hence emphasise the archaeological or man-made anomalies.

The following schedule shows the basic processing carried out on all minimally processed gradiometer data used in this report:

1. *Destripe* (Removes striping effects caused by zero-point discrepancies between different sensors and walking directions)
2. *Destagger* (Removes zigzag effects caused by inconsistent walking speeds on sloping, uneven or overgrown terrain)

2.8.2 Presentation of results and interpretation

The presentation of the data for each site involves a print-out of the minimally processed data both as a greyscale plot and a colour plot showing extreme magnetic values. Magnetic anomalies have been identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing for the site.

3 RESULTS

The detailed magnetic gradiometer survey conducted at Kedington has identified a number of anomalies that have been characterised as being of a *possible* archaeological origin.

The difference between *probable* and *possible* archaeological origin is a confidence rating. Features identified within the dataset that form recognisable archaeological patterns or seem to be related to a deliberate historical act have been interpreted as being of a probable archaeological origin.

Features of possible archaeological origin tend to be more amorphous anomalies which may have similar magnetic attributes in terms of strength or polarity but are difficult to classify as being archaeological or natural.

The following list of numbered anomalies refers to numerical labels on the interpretation plots.

3.1 Probable Archaeology

No probable archaeology has been identified within the survey area.

3.2 Possible Archaeology

1 Three positive linear anomalies in the east of the site. These are indicative of former cut features and may be of archaeological or agricultural origin.

3.3 Other Anomalies

2 A high amplitude rectilinear anomaly with associated magnetic disturbance. This is related to a former structure present on available mapping in 1959.

3 Two high amplitude linear anomalies. These anomalies are of unknown origin, but are likely to be of modern origin.

4 A high amplitude bipolar linear anomaly. This is indicative of an underground service.

5 An area of scattered magnetic debris in the north east of the site. This is likely to be of modern origin.

6 Areas of magnetic disturbance are the result of substantial nearby ferrous metal objects such as fences and underground services. These effects can mask weaker archaeological anomalies, but on this site have not affected a significant proportion of the area.

7 A number of magnetic 'spikes' (strong focussed values with associated antipolar response) indicate ferrous metal objects. These are likely to be modern rubbish.

4 CONCLUSION

The survey at Kedington has not identified any probable archaeology. Three linear anomalies may be of archaeological origin; however it is not possible to determine their origin with any degree of confidence, and they could equally be related to agricultural activity. The remaining anomalies are of modern origin relating to former structures, an underground service, an area of scattered magnetic debris, ferrous objects and fencing.

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APPENDIX A – METHODOLOGY & SURVEY EQUIPMENT

Grid locations

The location of the survey grids has been plotted together with the referencing information. Grids were set out using a Leica 705auto Total Station and referenced to suitable topographic features around the perimeter of the site or a Leica Smart Rover RTK GPS.

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. A SmartNet RTK GPS uses Ordnance Survey's network of over 100 fixed base stations to give an accuracy of around 0.01m.

Survey equipment and gradiometer configuration

Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.2 nanoTeslas (nT) in an overall field strength of 48,000nT, can be accurately detected using an appropriate instrument.

The mapping of the anomaly in a systematic manner will allow an estimate of the type of material present beneath the surface. Strong magnetic anomalies will be generated by buried iron-based objects or by kilns or hearths. More subtle anomalies such as pits and ditches can be seen if they contain more humic material which is normally rich in magnetic iron oxides when compared with the subsoil.

To illustrate this point, the cutting and subsequent silting or backfilling of a ditch may result in a larger volume of weakly magnetic material being accumulated in the trench compared to the undisturbed subsoil. A weak magnetic anomaly should therefore appear in plan along the line of the ditch.

The magnetic survey was carried out using a dual sensor Grad601-2 Magnetic Gradiometer manufactured by Bartington Instruments Ltd. The instrument consists of two fluxgates very accurately aligned to nullify the effects of the Earth's magnetic field. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background. The Grad601-2 consists of two high stability fluxgate gradiometers suspended on a single frame. Each gradiometer has a 1m separation between the sensing elements so enhancing the response to weak anomalies.

Sampling interval

Readings were taken at 0.25m centres along traverses 1m apart. This equates to 3600 sampling points in a full 30m x 30m grid.

Depth of scan and resolution

The Grad 601-2 has a typical depth of penetration of 0.5m to 1.0m, though strongly magnetic objects may be visible at greater depths. The collection of data at 0.25m centres provides an optimum methodology for the task balancing cost and time with resolution.

Data capture

The readings are logged consecutively into the data logger which in turn is daily down- loaded into a portable computer whilst on site. At the end of each site survey, data is transferred to the office for processing and presentation.

APPENDIX B – BASIC PRINCIPLES OF MAGNETIC SURVEY

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns and material such as brick and tile may be magnetised through the same process.

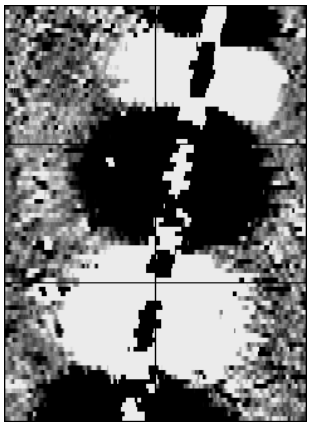
Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

Magnetic survey is carried out using a fluxgate gradiometer which is a passive instrument consisting of two sensors mounted vertically 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field whilst the lower sensor measures the same field but is also more affected by any localised buried field. The difference between the two sensors will relate to the strength of a magnetic field created by a buried feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

Factors affecting the magnetic survey may include soil type, local geology, previous human activity, disturbance from modern services etc.

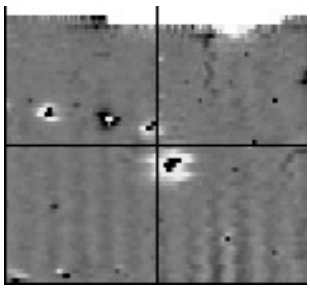
APPENDIX C – GLOSSARY OF MAGNETIC ANOMALIES

Bipolar



A bipolar anomaly is one that is composed of both a positive response and a negative response. It can be made up of any number of positive responses and negative responses. For example a pipeline consisting of alternating positive and negative anomalies is said to be bipolar. See also dipolar which has only one area of each polarity. The interpretation of the anomaly will depend on the magnitude of the magnetic field strength. A weak response may be caused by a clay field drain while a strong response will probably be caused by a metallic service.

Dipolar

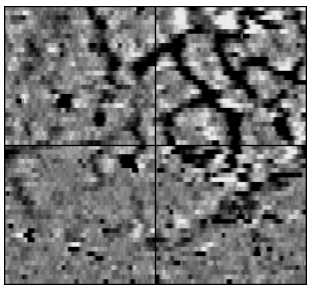


This consists of a single positive anomaly with an associated negative response. There should be no separation between the two polarities of response. These responses will be created by a single feature. The interpretation of the anomaly will depend on the magnitude of the magnetic measurements. A very strong anomaly is likely to be caused by a ferrous object.

Positive anomaly with associated negative response

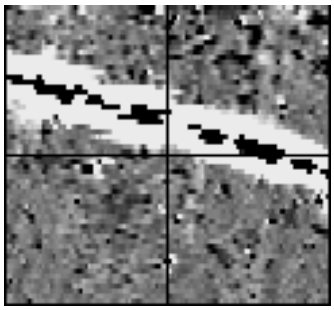
See bipolar and dipolar.

Positive linear



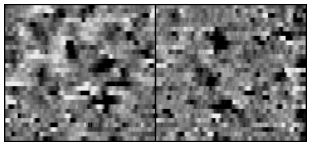
A linear response which is entirely positive in polarity. These are usually related to in-filled cut features where the fill material is magnetically enhanced compared to the surrounding matrix. They can be caused by ditches of an archaeological origin, but also former field boundaries, ploughing activity and some may even have a natural origin.

Positive linear anomaly with associated negative response



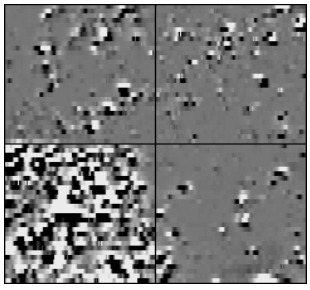
A positive linear anomaly which has a negative anomaly located adjacently. This will be caused by a single feature. In the example shown this is likely to be a single length of wire/cable probably relating to a modern service. Magnetically weaker responses may relate to earthwork style features and field boundaries.

Positive point/area



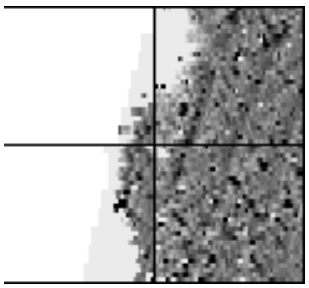
These are generally spatially small responses, perhaps covering just 3 or 4 reading nodes. They are entirely positive in polarity. Similar to positive linear anomalies they are generally caused by in-filled cut features. These include pits of an archaeological origin, possible tree bowls or other naturally occurring depressions in the ground.

Magnetic debris



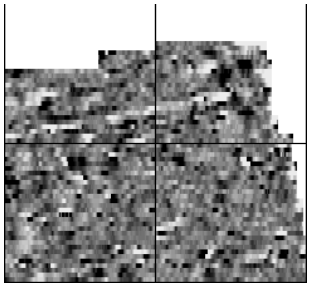
Magnetic debris consists of numerous dipolar responses spread over an area. If the amplitude of response is low (+/-3nT) then the origin is likely to represent general ground disturbance with no clear cause, it may be related to something as simple as an area of dug or mixed earth. A stronger anomaly (+/-250nT) is more indicative of a spread of ferrous debris. Moderately strong anomalies may be the result of a spread of thermoremanent material such as bricks or ash.

Magnetic disturbance



Magnetic disturbance is high amplitude and can be composed of either a bipolar anomaly, or a single polarity response. It is essentially associated with magnetic interference from modern ferrous structures such as fencing, vehicles or buildings, and as a result is commonly found around the perimeter of a site near to boundary fences.

Negative linear

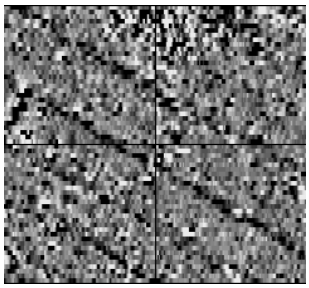


A linear response which is entirely negative in polarity. These are generally caused by earthen banks where material with a lower magnetic magnitude relative to the background top soil is built up. See also ploughing activity.

Negative point/area

Opposite to positive point anomalies these responses may be caused by raised areas or earthen banks. These could be of an archaeological origin or may have a natural origin.

Ploughing activity



Ploughing activity can often be visualised by a series of parallel linear anomalies. These can be of either positive polarity or negative polarity depending on site specifics. It can be difficult to distinguish between ancient ploughing and more modern ploughing. Clues such as the separation of each linear, straightness, strength of response and cross cutting relationships can be used to aid this, although none of these can be guaranteed to differentiate between different phases of activity.

Polarity

Term used to describe the measurement of the magnetic response. An anomaly can have a positive polarity (values above 0nT) and/or a negative polarity (values below 0nT).

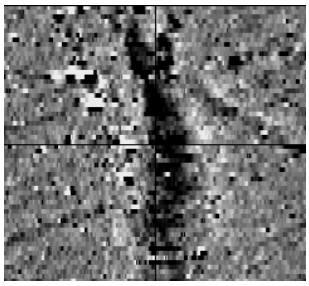
Strength of response

The amplitude of a magnetic response is an important factor in assigning an interpretation to a particular anomaly. For example a positive anomaly covering a 10m^2 area may have values up to around 3000nT, in which case it is likely to be caused by modern magnetic interference. However, the same size and shaped anomaly but with values up to only 4nT may have a natural origin. Colour plots are used to show the amplitude of response.

Thermoremanent response

A feature which has been subject to heat may result in it acquiring a magnetic field. This can be anything up to approximately +/-100 nT in value. These features include clay fired drains, brick, bonfires, kilns, hearths and even pottery. If the heat application has occurred in situ (e.g. a kiln) then the response is likely to be bipolar compared to if the heated objects have been disturbed and moved relative to each other, in which case they are more likely to take an irregular form and may display a debris style response (e.g. ash).

Weak background variations



Weakly magnetic wide scale variations within the data can sometimes be seen within sites. These usually have no specific structure but can often appear curvy and sinuous in form. They are likely to be the result of natural features, such as soil creep, dried up (or seasonal) streams. They can also be caused by changes in the underlying geology or soil type which may contain unpredictable distributions of magnetic minerals, and are usually apparent in several locations across a site.

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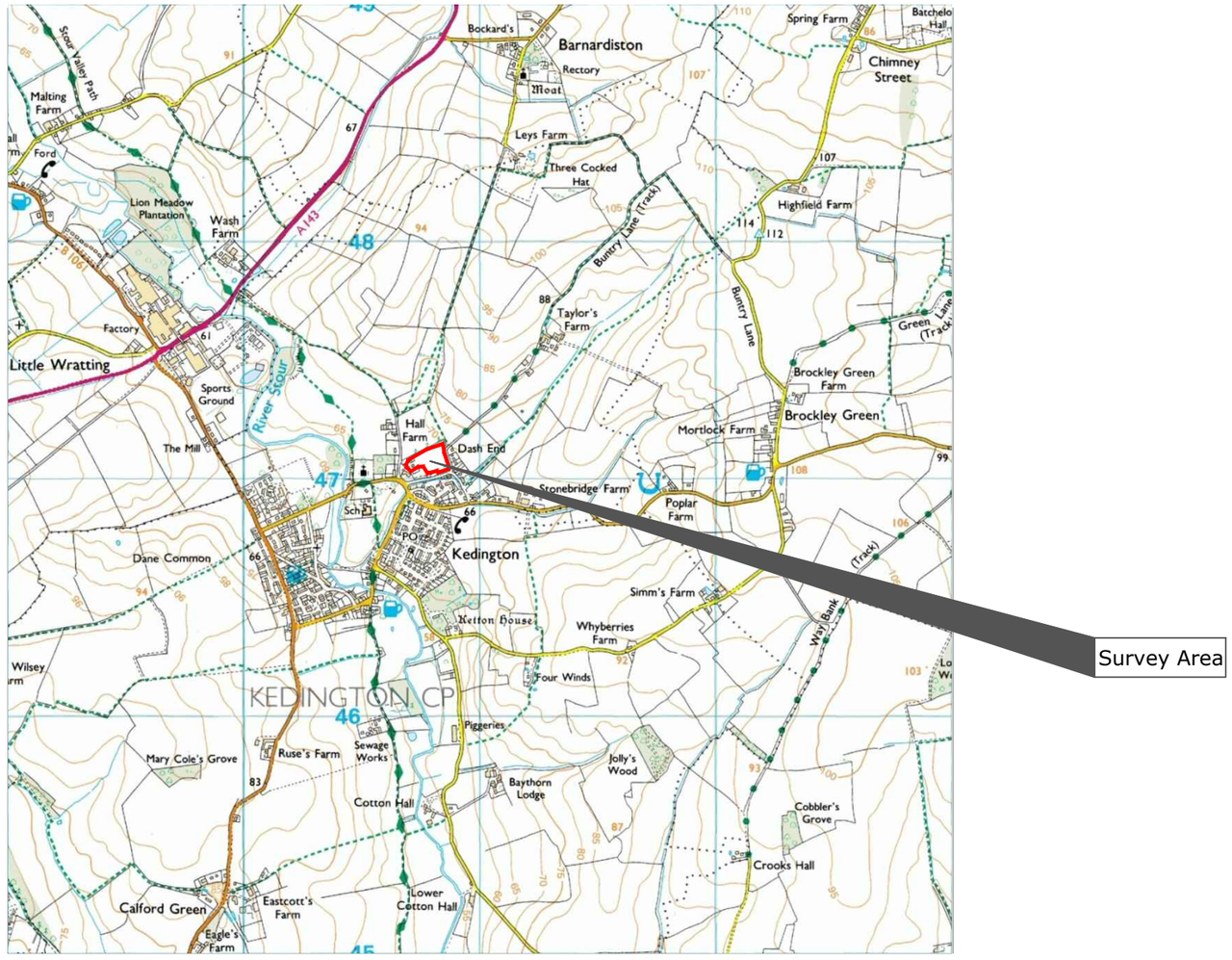

N

Amendments

Issue No.	Date	Description
-	-	-
-	-	-

Site centred on NGR TL 707 470

Client
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Project Title Job No. J6694
SITE OF LIMES COTTAGE, KEDINGTON, SUFFOLK

Subject
LOCATION PLAN OF SURVEY AREA

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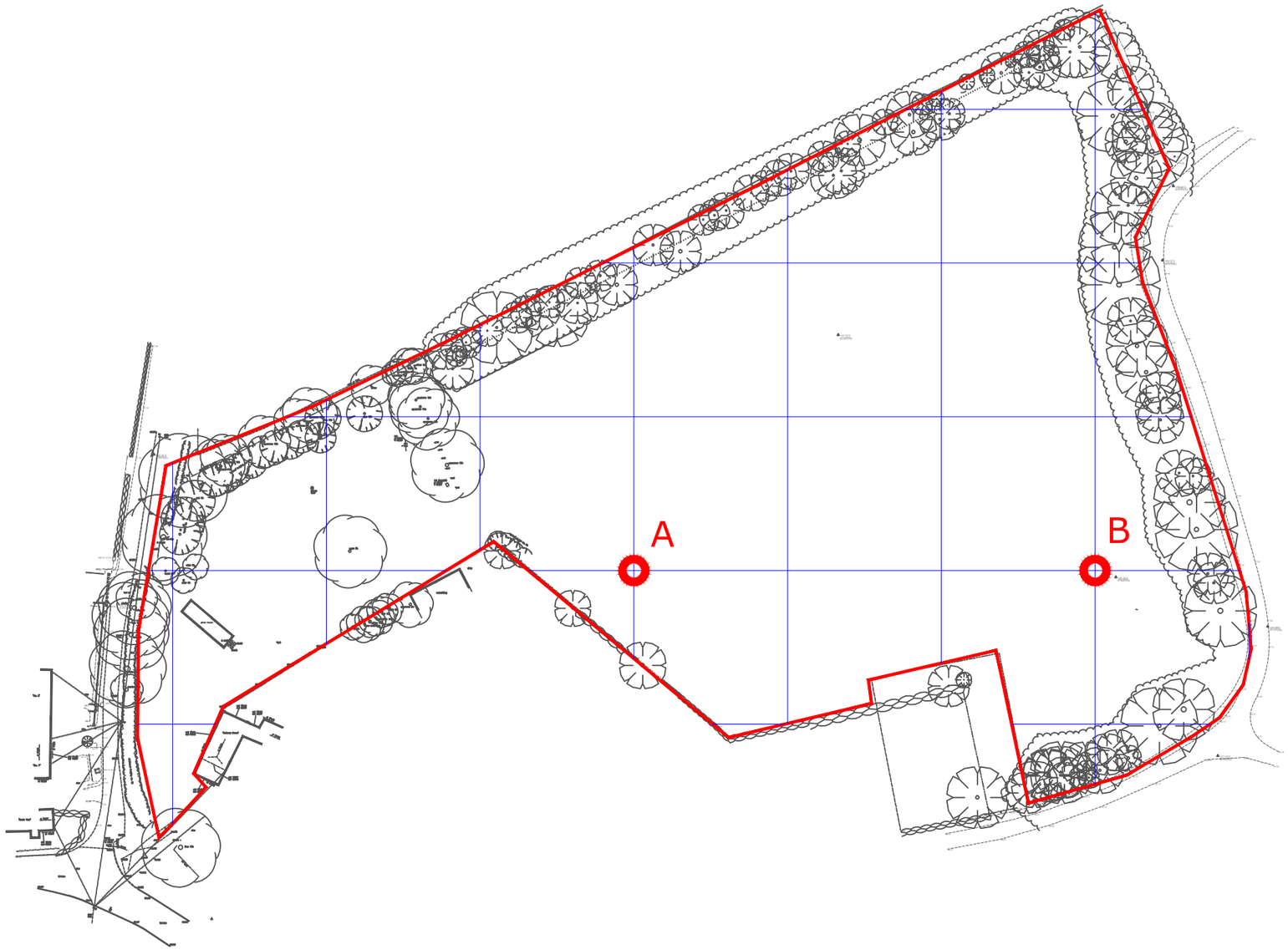
Scale 1:25000 0m 500 1000m

Plot	Checked by	Issue No.
A3	DGE	01
Survey date	Drawn by	Figure No.
APR 14	TR	01



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

OS GRID REFERENCES

A	570756.03, 247059.79
B	570846.03, 247059.79

Client
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Project Title
SITE OF LIMES COTTAGE, KEDINGTON, SUFFOLK

Job No. J6694

Subject
LOCATION OF SURVEY GRIDS AND REFERENCING

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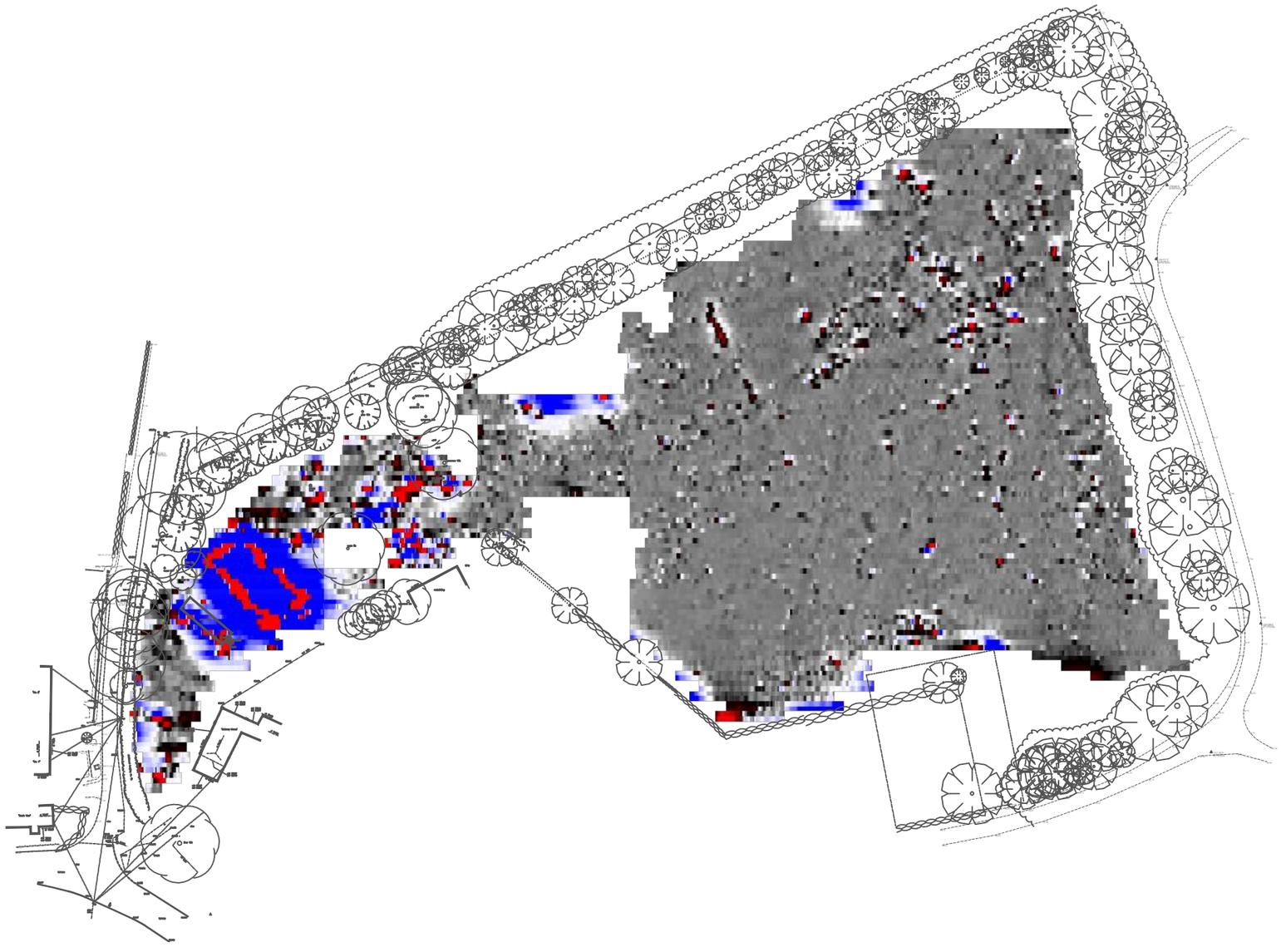
Survey date	Drawn by	Figure No.
APR 14	TR	02



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +100nT (red)
Minimum -100nT (blue)

+100nT
+10nT
-10nT
-100nT

Client

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Project Title — Job No. J6694

SITE OF LIMES COTTAGE, KEDINGTON, SUFFOLK

Subject

COLOUR PLOT OF GRADIOMETER DATA SHOWING EXTREME VALUES

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Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	DGE	01
Survey date	Drawn by	Figure No.
APR 14	TR	03

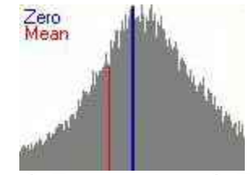
N

Amendments

Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)



Client
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Project Title
SITE OF LIMES COTTAGE, KEDINGTON, SUFFOLK

Job No. J6694

Subject
PLOT OF MINIMALLY PROCESSED GRADIOMETER DATA

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Scale 1:1000

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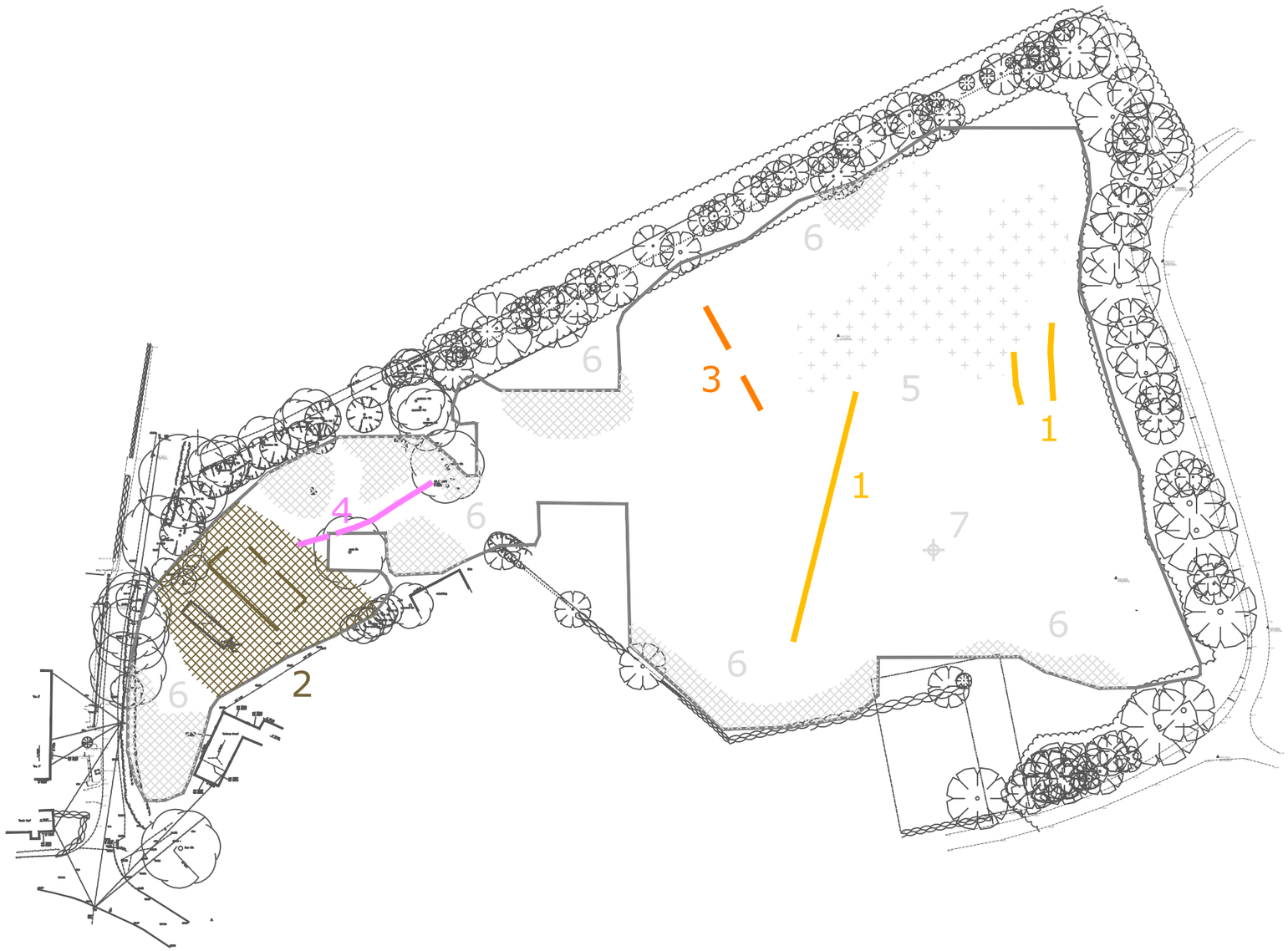
Survey date	Drawn by	Figure No.
APR 14	TR	04



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

PROBABLE ARCHAEOLOGY

- Positive anomaly / weak positive anomaly - probable cut feature of archaeological origin
- Negative anomaly / weak negative anomaly - probable bank or earthwork of archaeological origin
- Widely spaced curving parallel linear anomalies - probably related to ridge-and-furrow

POSSIBLE ARCHAEOLOGY

- Positive anomaly / weak positive anomaly - possible cut feature of archaeological origin
- Negative anomaly / weak negative anomaly - possible bank or earthwork of archaeological origin

OTHER ANOMALIES

- Closely spaced parallel linear anomalies - probably related to agricultural activity such as ploughing
- Linear anomaly - probably related to pipe, cable or other modern service
- Linear anomaly - possibly related to land drain
- Anomaly of unknown origin - likely modern
- Magnetic disturbance associated structures present on available mapping post-1900
- Magnetic disturbance associated with nearby metal object such as service or field boundary
- Strong magnetic debris - possible disturbed or made ground
- Scattered magnetic debris
- Area of amorphous magnetic variation - probable natural (e.g. geological or pedological) origin
- Magnetic spike - probable ferrous object

Client
ARCHAEOLOGICAL SOLUTIONS LTD

Project Title — Job No. J6694
SITE OF LIMES COTTAGE, KEDINGTON, SUFFOLK

Subject
ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES

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Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	DGE	01
Survey date	Drawn by	Figure No.
APR 14	TR	05

APPENDIX 5 OASIS DATA COLLECTION FORM

OASIS DATA COLLECTION FORM: England

Printable version

OASIS ID: archaeol7-177094

Project details

Project name	LIMES COTTAGE AND ADJOINING LAND, KEDINGTON, SUFFOLK
Short description of the project	In April 2014 Archaeological Solutions Ltd (AS) carried out an archaeological trial trench evaluation in support of a planning application for the construction of housing at Limes Cottage and adjoining land, Kedington, Suffolk (NGR TL 706 470). The evaluation was required by St Edmundsbury Borough Council and based on advice from Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT). There was a broad correlation of the archaeological features with the geophysical anomalies with ditches recorded in Trenches 2 and 3. Each trench contained archaeological features with the larger number being in the north-eastern quadrant of the site. The features were varied comprising a ditch, gullies, pits, a post hole and a stakehole. The dating evidence is consistently mid - late Iron Age. The pottery sherds generally occurred in small numbers (1 - 2 sherds), but Ditch F1017 (Trench 2) contained 22 sherds of pottery. Animal bone was found in association with the pottery. A struck flint was found in Ditch F1017 (Trench 2). The environmental evidence suggests that the archaeological features were peripheral to domestic occupation.
Project dates	Start: 01-03-2014 End: 31-03-2014
Previous/future work	Yes / Not known
Any associated project reference codes	P5725 - Contracting Unit No.
Any associated project reference codes	KDG 047 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Other 15 - Other
Monument type	DITCHES, PITS, POST HOLE, STAKEHOLE None
Significant Finds	POTTERY Middle Iron Age
Methods & techniques	"Sample Trenches","Targeted Trenches"
Development type	Rural residential
Prompt	Planning condition
Position in the planning process	Pre-application

Project location

Country	England
Site location	SUFFOLK ST EDMUNDSBURY KEDINGTON LIMES COTTAGE AND ADJOINING LAND, KEDINGTON, SUFFOLK
Study area	1.70 Hectares
Site coordinates	TL 706 470 52.0945427899 0.490733995259 52 05 40 N 000 29 26 E Point

Project creators

Name of Organisation	Archaeological Solutions Ltd
Project brief originator	Suffolk County Council Archaeological Service Conservation Team
Project design originator	Jon Murray
Project director/manager	Jon Murray
Project supervisor	Jim Fairclough

Project archives

Physical Archive recipient	Suffolk County Archaeological Store
Physical Contents	"Ceramics"
Digital Archive recipient	Suffolk County Archaeological Store
Digital Contents	"Survey"
Digital Media available	"Images raster / digital photography","Survey","Text"
Paper Archive recipient	Suffolk County Archaeological Store
Paper Contents	"Survey"
Paper Media available	"Drawing","Photograph","Plan","Report","Survey "

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Limes Cottage and Adjoining Land, Kedington, Suffolk
Author(s)/Editor(s)	Fairclough, J
Other bibliographic details	Archaeological Solutions Report No. 4552
Date	2014
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OASIS:

Please e-mail English Heritage for OASIS help and advice

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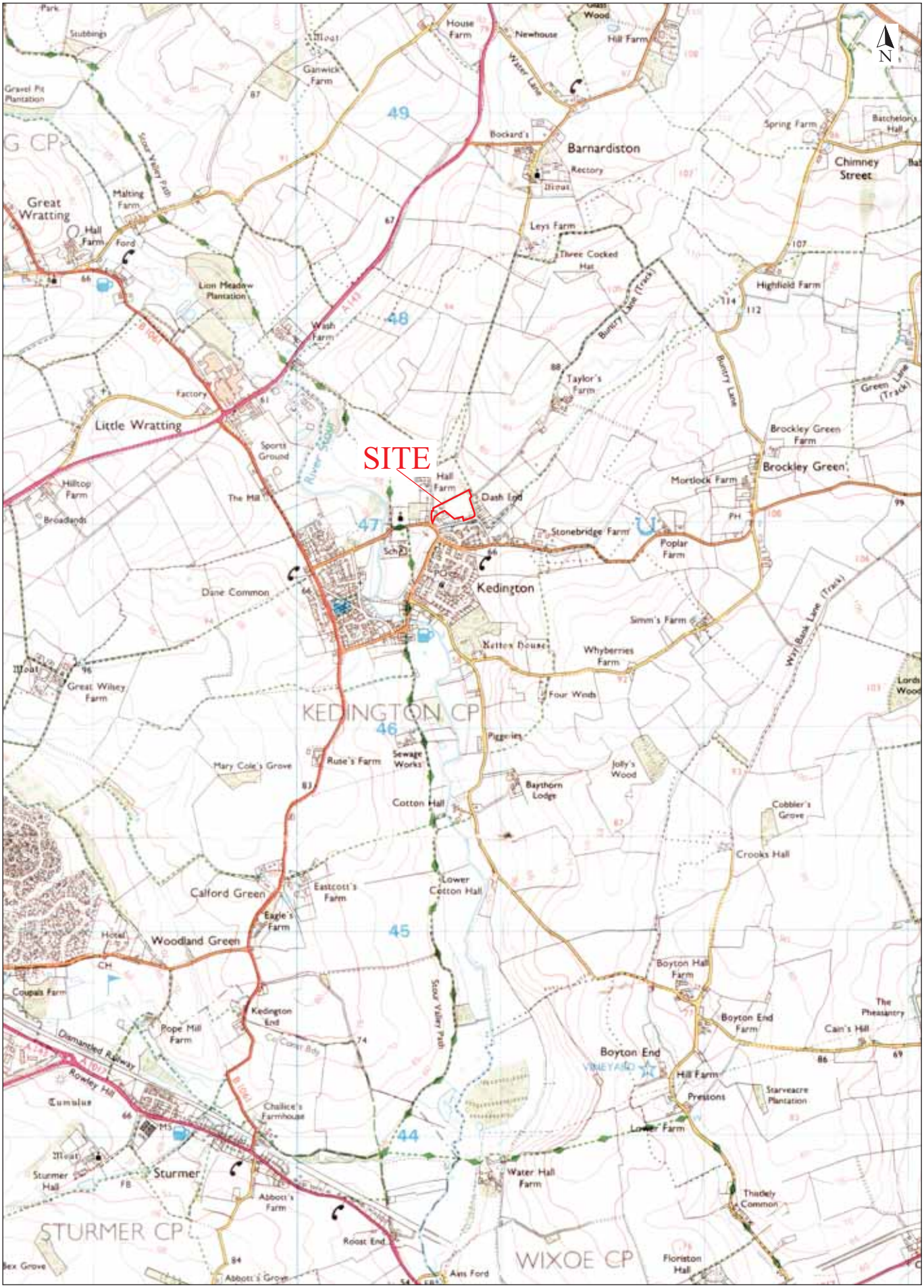

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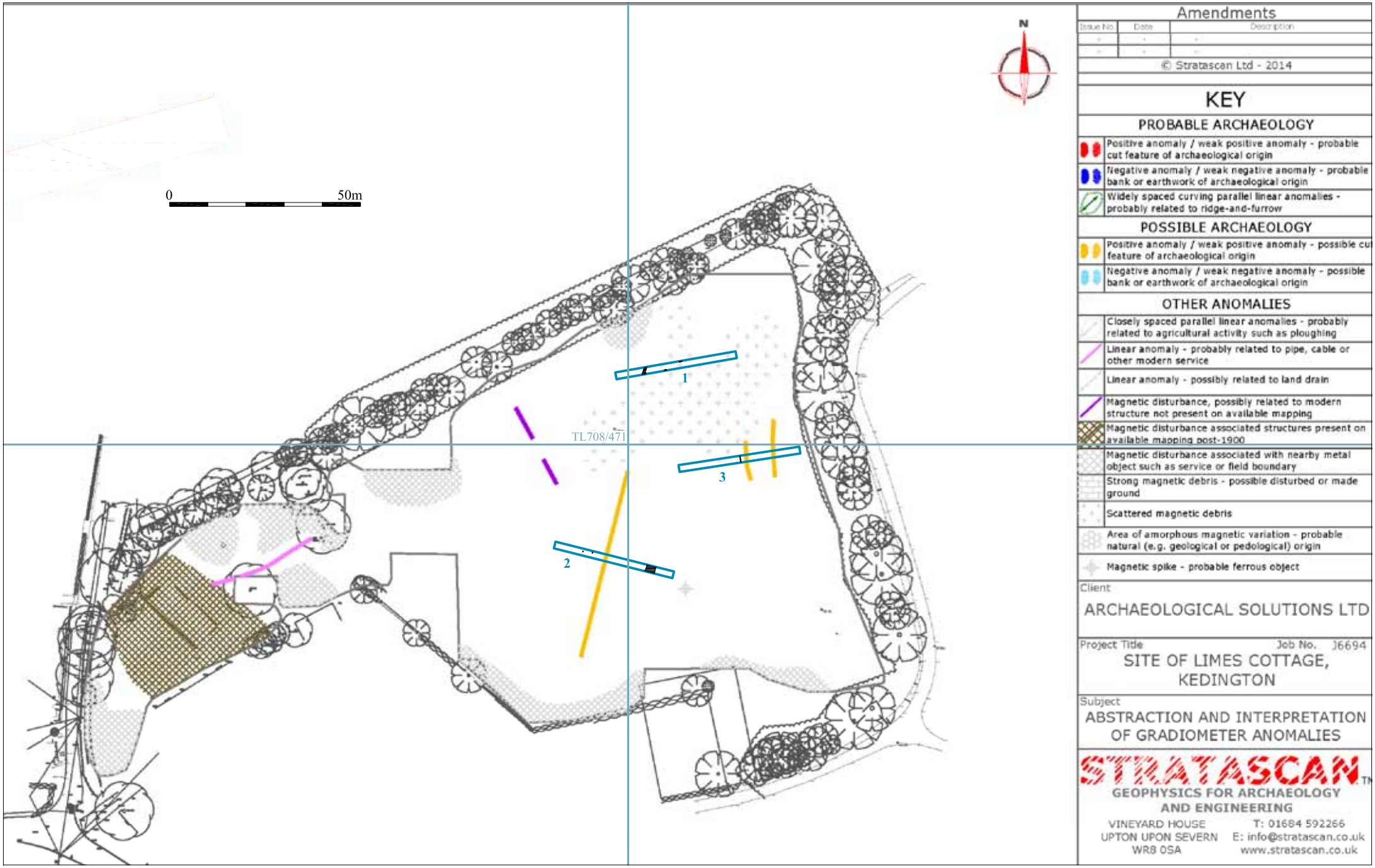
Fig. 1 Site location plan

Scale 1:25,000 at A4



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

PROBABLE ARCHAEOLOGY

- Positive anomaly / weak positive anomaly - probable cut feature of archaeological origin
- Negative anomaly / weak negative anomaly - probable bank or earthwork of archaeological origin
- Widely spaced curving parallel linear anomalies - probably related to ridge-and-furrow

POSSIBLE ARCHAEOLOGY

- Positive anomaly / weak positive anomaly - possible cut feature of archaeological origin
- Negative anomaly / weak negative anomaly - possible bank or earthwork of archaeological origin

OTHER ANOMALIES

- Closely spaced parallel linear anomalies - probably related to agricultural activity such as ploughing
- Linear anomaly - probably related to pipe, cable or other modern service
- Linear anomaly - possibly related to land drain
- Magnetic disturbance, possibly related to modern structure not present on available mapping
- Magnetic disturbance associated structures present on available mapping post-1900
- Magnetic disturbance associated with nearby metal object such as service or field boundary
- Strong magnetic debris - possible disturbed or made ground
- Scattered magnetic debris
- Area of amorphous magnetic variation - probable natural (e.g. geological or pedological) origin
- Magnetic spike - probable ferrous object

Client
ARCHAEOLOGICAL SOLUTIONS LTD

Project Title — Job No. J6694
SITE OF LIMES COTTAGE, KEDINGTON

Subject
ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES

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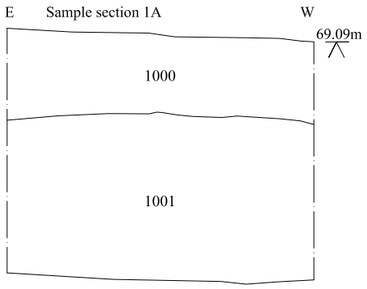
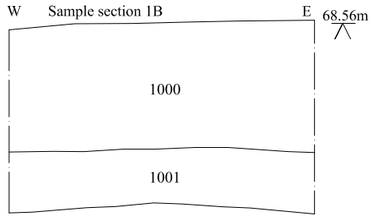
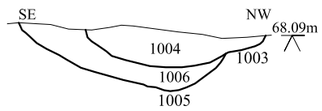
Fig. 2 Detailed site location plan

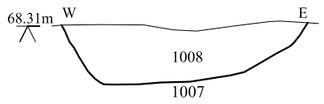
Scale 1:1250 at A4

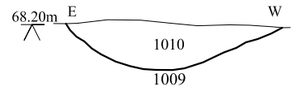
Trench 1



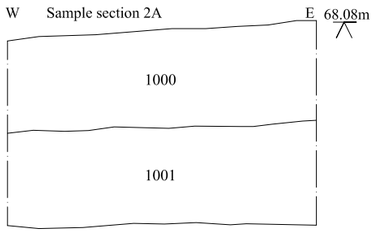


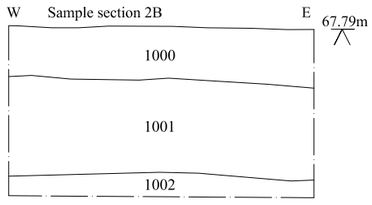


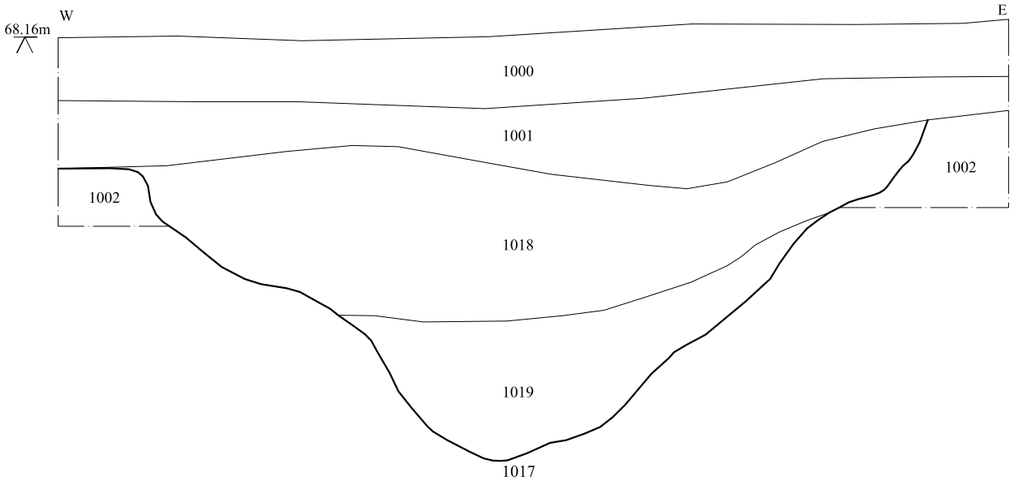


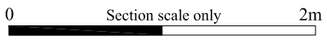


Trench 2

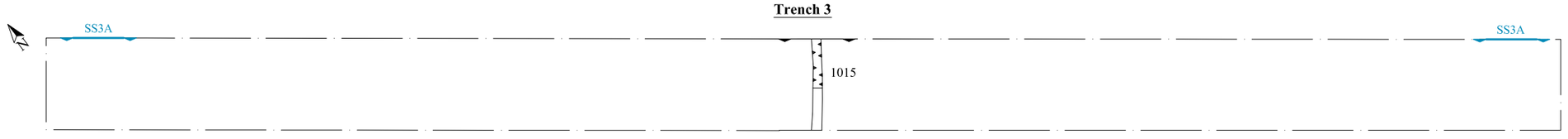


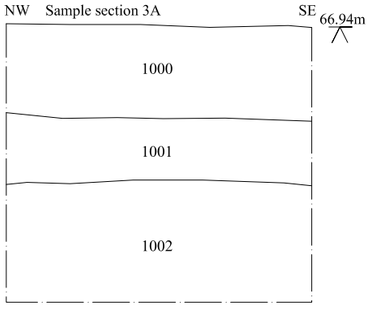


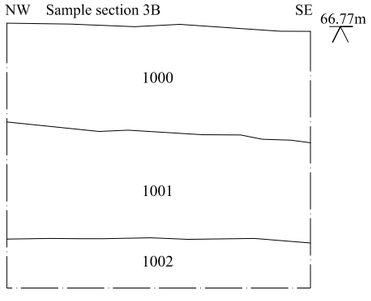


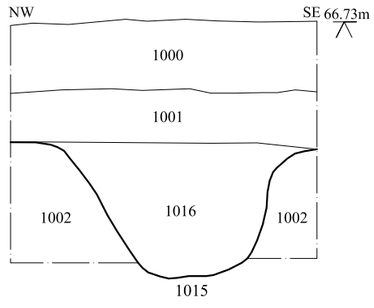


Trench 3









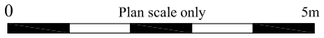


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Fig. 3 Trench plans and sections

Scale 1:100 and 1:20 at A3