ARCHAEOLOGICAL SOLUTIONS LTD

PHASES 2 & 3, CHILTON LEYS, STOWMARKET, SUFFOLK

GEOPHYSICAL SURVEY

Authors: Andrew Chaplin Dr David Bescoby Dr John Summers	
NGR: TM 0318 5950	Report No: 5099
District: Mid Suffolk	Site Code: ONS012
Approved: Claire Halpin MCIfA Signed:	Project No: 5227
	Date: 22nd April 2016 Revised 23/05/2016

Event No: ESF24016

Archaeological Solutions is an independent archaeological contractor providing the services which satisfy all archaeological requirements of planning applications, including:

Desk-based assessments and environmental impact assessments
Historic building recording and appraisals
Trial trench evaluations
Geophysical surveys
Archaeological monitoring and recording
Archaeological excavations
Post excavation analysis
Promotion and outreach
Specialist analysis

ARCHAEOLOGICAL SOLUTIONS LTD

PI House, 23 Clifton Road, Shefford, Bedfordshire SG17 5AF
Tel 01462 850483

Unit 6, Brunel Business Court, Eastern Way,
Bury St Edmunds IP32 7AJ
Tel 01284 765210

e-mail info@ascontracts.co.uk
www.archaeologicalsolutions.co.uk

twitter.com/ArchaeologicalS

www.facebook.com/ArchaeologicalSolutions

CONTENTS

OASIS SUMMARY

Project details			
Project name	*Phases 2 & 3, Chilton Leys, Stowmarket, Suffolk*		
In March and April 2016, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on 29 hectares of land at Chilton Leys, Stowmarket, Suffolk (NGR TM 0318 5950). The survey was commissioned to inform and support a planning application for a proposed residential development. *The survey identified three probable enclosures of archaeological origin and a fourth possible enclosure in the north-east of the survey area. Four other positive linear anomalies were identified which may represent former boundaries and seven discrete anomalies were present that may represent infilled features and the remains of possible hearths/kilns of archaeological origin. A network of positive linear anomalies crossed the site and are consistent with historical boundaries and track ways drawn on the first edition Ordnance Survey map. Other responses resulted from natural geomorphological features and recent agricultural activity and disturbance.*			
Project dates (fieldwork)	*16th March - 6th April 2016*		
Previous work (Y/N/?)	*N*	Future work	*TBC*
P. number	*5227*	Site code	*ONS012*
Type of project	*Geophysical Survey*		
Site status	-		
Current land use	*Agricultural*		
Planned development	*Residential*		
Main features (+dates)	*Three probable enclosures of likely archaeological origin.* *One possible enclosure of archaeological origin.* *Four positive linear anomalies of probable archaeological origin.* *Seven discrete anomalies representing possible infilled cut features.* *Numerous linear anomalies which correspond with historical boundaries and trackways represented on the 1884 OS map.*		
Significant finds (+dates)	-		
Project location			
County/ District/ Parish	*Suffolk*	*Mid Suffolk*	*Haughley CP*
HER/ SMR for area	*Suffolk Historic Environment Record*		
Post code (if known)	-		
Area of site	*c.29ha*		
NGR	*TM 0318 5950*		
Height AOD (max/ min)	*c.46-55m AOD*		
Project creators			
Brief issued by	*Suffolk County Council Archaeological Service Conservation Team*		
Project supervisor/s	*Matthew Baker & Andrew Chaplin*		
Funded by	*Taylor Wimpey East Anglia Ltd*		
Full title	*Phases 2 & 3, Chilton Leys, Stowmarket, Suffolk: Geophysical Survey*		
Authors	*Chaplin, A., Bescoby, D. and Summers, J.R.*		
Report no.	*5099*		
Date (of report)	*April 2016 (Revised 23/05/2016)*		

PHASES 2 & 3, CHILTON LEYS, STOWMARKET, SUFFOLK

GEOPHYSICAL SURVEY

SUMMARY

In March and April 2016, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on 29 hectares of land at Chilton Leys, Stowmarket, Suffolk (NGR TM 0318 5950). The survey was commissioned to inform and support a planning application for a proposed residential development.

The survey identified three probable enclosures of archaeological origin and a fourth possible enclosure in the north-east of the survey area. Four other positive linear anomalies were identified which may represent former boundaries and seven discrete anomalies were present that may represent infilled features and the remains of possible hearths/kilns of archaeological origin. A network of positive linear anomalies crossed the site and are consistent with historical boundaries and track ways drawn on the first edition Ordnance Survey map. Other responses resulted from natural geomorphological features and recent agricultural activity and disturbance.

1 INTRODUCTION

1.1 In March and April 2016, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on 29 hectares of land at Chilton Leys, Suffolk (NGR TM 0318 5950). The survey was commissioned to inform and support a planning application for a proposed residential development, based on the advice of Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT).

1.2 The project was carried out in accordance with a brief issued by SCC AS-CT (28th January 2016), and a specification compiled by AS (revised 11th March 2016) and approved by SCC AS-CT. The geophysical survey was carried out in accordance with the Historic England document *Geophysical Survey in Archaeological Field Evaluation* (2008), and CIfA, *The use of Geophysical Techniques in Archaeological Evaluations* and *CIfA Standard and Guidance for Archaeological Geophysical Survey (2014).*

Objectives

1.3 The investigation of the site by geophysical survey was designed to determine the nature, extent and significance of sub-surface features in order to inform and target further trial trench evaluation of the site.

Planning policy context

1.4 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.

1.5 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 is located on the eastern edge of the town and comprises two large fields amounting to 29 hectares. It is bounded by agricultural land to the north, west and south, and by sports grounds to the east.

2.2 The site occupies an undulating topography between *c.* 46m and 55m AOD. The Rattlesden River follows a broadly NW-SE course approximately 550m to the south of the site and the River Gipping follows a NW-SE course approximately 1000m to the west. The two rivers converge at the southern margins of Stowmarket.

2.3 The site's soils are those of the Ashley Association, comprising 'fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging, associated with similar but wetter soils'. Some 'calcareous and non-calcareous slowly permeable clayey soils' are also likely to occur (Soil Survey of England and Wales 1983, 13).

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 Excavation of the Phase 1 site (HGH055) to the east of the present

survey area was undertaken in 2014/2015 by AS. In summary:

3.1 The site lies within an area of high archaeological potential, containing evidence of prehistoric, Romano-British and Anglo-Saxon activity. Of particular significance is a Romano-British Kiln and Anglo-Saxon cemetery previously recorded within the site. Fieldwork revealed six phases of activity dating between the late Neolithic/ late Bronze Age and the modern era. Features were recorded across the site and included evidence of both settlement and industrial activity. Of particular note were two Romano-British Pottery Kilns, two T-shaped corn driers, and a high-status Anglo-Saxon cemetery. Evidence of simple, Romano-British post-built structures and a medieval pottery kiln was also encountered.

3.2 The proximity of the Phase 1 excavations and the extent of the archaeological remains meant that the present site has the potential to contain further evidence of wider prehistoric, Roman and Anglo-Saxon settlement and activity.

4 METHOD OF WORK

Introduction

4.1 The magnetic survey was performed using a dual sensor Grad601-2 Magnetic gradiometer manufactured by Bartington instruments Ltd. The gradiometer measures small distortions in the earth's magnetic field caused by the presence of magnetically susceptible buried objects. The instrument is extremely sensitive and capable of detecting changes in magnetic field strength of the order of 0.1 nanoTesla (nT).

Survey Methodology

4.2 Grid squares measuring 30m x 30m were set out across the entirety of the survey area, forming a grid network – see **Fig. 3**. The exact spatial location of the survey grid was recorded using a Leica GS09 GPS smart rover. Geophysical data were collected systematically in a zig-zag pattern within each grid square along traverses spaced at 1 m apart. The gradiometers were configured to record measurements at 0.25m intervals along each traverse, giving a total of 3600 measurements per grid square.

4.3 The area surrounding a pond in the south of Field B and the overgrown margins of some areas of Field A could not be surveyed. However, the excluded area is small and is unlikely to impact the overall picture of geophysical anomalies in the survey area.

Data Processing

4.4 The remedial processing of the data can enhance anomalous responses caused by potential archaeological features and eliminate magnetic noise from natural/modern sources. Data processing also allows for

the correction of spatial errors introduced during the survey and inherent instrument heading errors. The survey data were processed using Terrasurveyor LITE software, where the following data processing routines were applied:

Destripe: Removal of striping effects from the raw data caused by discrepancies between different sensors and walking directions.

Destagger: Correction of the displacement of anomalies caused by alternate zig-zag traverses.

Clip: Clipping the data replaces all values outside a specified minimum and maximum with those values. This reduces the large dynamic range of the data, improving the visibility of weaker magnetic anomalies. The data were clipped to 1 standard deviation, resulting in the data in Field A being clipped to a range of -2.45nT and +2.56nT, and those in Field B to -1.55nT and +1.59nT.

Display and interpretation

4.5 The processed data are displayed as a greyscale magnetic map (**Figs. 10-15**) and the interpretation of anomalous magnetic responses undertaken manually with recourse to documented responses from subsequently excavated features along with reference to Suffolk HER and historic map data. A graphical interpretative plan of the site identifying potential archaeological features (**Fig. 16**) was then produced in AutoCAD LT2015.

5 RESULTS

5.1 The unprocessed data from the magnetic survey are shown in **Figs. 4-9**, displayed as an x-y trace plot indicating the overall range of magnetic values recorded within the study area. A greyscale plot of the processed data, following the application of the data processing methodology described in 4.4, is shown in **Figs. 10-15**. The processed data revealed numerous anomalies indicative of archaeological features, including enclosures of likely archaeological origin, as well as a network of post-medieval trackways and field boundaries, the most salient of which are plotted in (**Fig. 16**).

Archaeological Anomalies

5.2 The survey revealed numerous linear anomalies throughout the survey area, predominantly in Field A, with a concentration of activity in the north-eastern part of the site. The following numbered anomalies refer to numerical labels of the interpretation plot **(Fig. 16)**.

5.3 The survey revealed a pronounced positive sub-rectangular anomaly (**1**) forming a probable enclosure in the north-eastern area of the survey. Evidence of internal features is represented by multiple strong positive anomalies and a singular dipole on the most westerly boundary. Individual

linear elements forming the enclosure are broad, measuring approximately 6m in width, while the enclosure itself covered an area of 60m by 67m.

5.4 Immediately adjacent to enclosure (**1**) is a weaker, sub-rectangular positive anomaly with a weak, positive linear anomaly running north-west/south-east from the south-western corner (**2**). This probable enclosure is approximately 43m by 49m in width. No evidence of internal features was identified.

5.5 A further sub-rectangular, strongly positive anomaly (**3**) can be seen 14m south-west of probable enclosure (**2**). Internal features can be seen in the form of numerous linear anomalies; a sub-rectangular anomaly in the western corner, four parallel linears ranging from 14m to 29m in length, and a further positive signal in the south east corner of the enclosure. This probable enclosure is approximately 46m in width. All three of these postulated enclosures are truncated by positive linear anomalies representing post-medieval field boundaries and modern services (**15**).

5.6 To the north is a weakly positive anomaly forming a possible fourth enclosure (**4**), 45m in width. There are no internal features, but running perpendicular to (**4**) towards the north-east of the site is a strong, curvilinear positive response that gradually changes into a weak positive signal (**5**). A post-medieval field boundary (**15**) appears to truncate this response at its north-eastern end.

5.7 Immediately north of (**5**) are two perpendicular, weakly positive responses (**6**). The NE-SW oriented linear is 74m in length and adjoins a NW-SE oriented linear 118m in length. The orientation of these anomalies is different to that of the post-medieval boundaries, suggesting an earlier origin.

5.8 A strong positive linear anomaly oriented NE-SW with a small rectangular feature interrupting the centre can be seen towards the south west of Field A (**7**), running 37m in length. The form is unusual morphologically and its origin is uncertain. To the north east of (**7**) there is a weak, broad linear magnetic anomaly (**8**) which seems to run perpendicular (NW-SE) to the nearby post-medieval field boundary (**15**) and possibly represents the remnants of another field division, although no traces are apparent on the 1884 Ordnance Survey map (**Fig. 17**)

5.9 There were a series of amorphous positive readings within the survey of moderate amplitude, exemplified by (**9-11**) ranging from 7-18m in length. These may represent irregular infilled features and could be archaeological in origin.

5.10 A number of small discrete high amplitude anomalies with a characteristic ‘doughnut’ response were identified throughout the survey area (**12-14**), predominately in Field A, ranging from 6-9m in diameter. These are consistent with the type of response resulting from heated materials forming hearths or kilns. However, the amplitude of these responses may alternatively point to a ferrous origin.

Post-medieval field boundaries/ track ways

5.11 Numerous linear anomalies of varying amplitudes e.g. (**15**) were present across the site forming a regular network of divisions. Comparison with the 1884 Ordnance Survey map (**Fig. 17**) demonstrates that these correspond to a historical arrangement of field boundaries and track ways, which were subsequently removed due to changing agricultural technologies and expanding settlement around Stowmarket. Some of these extinct boundaries still form part of the modern land drainage system on the site (**Fig. 18**).

5.12 Two parallel linear positive anomalies (high amplitude) are visible running NE-SW though the centre of Field A (**15**) (truncating the aforementioned archaeological enclosures **1-3**) and adjoin an area of high modern magnetic disturbance (**21**). After this point the magnetic response, relating to the post-medieval footpath, is significantly weaker. These anomalies also represent the course of a water main (**Fig. 18**), connected to the metal stop valve cover which generated the magnetic disturbance (**21**). However, this service has clearly only generated a weak response in the data. Running parallel to this is a weakly positive linear anomaly (**16**) that cannot be attributed to any post-medieval boundary or path seen in **Fig. 17**. However, the alignment of the feature is consistent with that of the footpath to the north and it may have been part of the same system of land divisions, perhaps being removed prior to 1884.

Modern Subsurface Anomalies

5.13 The data have revealed a number of weakly positive and negative bipolar linear anomalies running parallel to one another with N-S orientations in Field A, consistently spaced *c.*26m apart from one another and as long as 375m (**17**). The regularity of the spacing suggests that they are likely to relate to modern land drainage. The same pattern of anomalies can be seen in the eastern corner of Field B. Here there are four probable land drains spaced consistently 14m apart (**18**), leading into a probable W-E oriented land drain, which runs parallel to the modern footpath (**22**) and post-medieval field boundary (**15**). There is an isolated bipolar linear anomaly in the southerly portion of Field B that also appears to be a modern subsurface feature (**19**). All of these correspond to modern drainage systems, as detailed in **Fig. 18**, which substantiates the interpretation of the geophysical data.

5.14 A number of close set parallel positive linear anomalies are visible in the data in the most southerly part of Field A (**20**). These anomalies are of varying amplitudes and the majority are broadly aligned E-W. However, at the edges of the survey area these anomalies appear to follow the limits of the field. These anomalies are suggestive of modern ploughing activity. Background levels of magnetic noise are also elevated within this portion of the survey, sharply demarcated by the post-medieval field boundary (**15**) and may also relate to later land use.

Modern Surface Anomalies

5.15 There are two significant modern surface anomalies present in the data set: a metal cover located in the centre of Field A (**21**), and a metalled footpath in Field B (**22**). Both can be seen in the photo index as Photograph 6 and 9, respectively. The metal cover is represented in the data as a very strong positive dipole (**21**) and the metalled footpath is a strong linear heterogeneous response (**22**).

Geology

5.16 Several geomorphological features were identified in the data; a broad "V-shaped" weakly magnetic anomaly indicative of a palaeochannel can be seen running NE-SW across the southern section of Field B (**23**). Another similar anomaly can be seen *c.*57m NE of (**23**), making it possible to hypothesize that it is an extension of the same fluvial feature (**25**). An isolated weak positive and negative anomaly *c.*50m in diameter (**24**) can probably be considered natural in origin, relating to an infilled hollow.

Magnetic disturbance

5.17 Throughout the survey area are numerous positive dipolar responses (**26**), most of which are probably not archaeologically significant, and represent modern ferrous material within the near subsurface.

5.18 There are several areas of magnetic disturbance within the data, namely around the peripheries of the survey area. There is strong magnetic disturbance on the western perimeter of Field B (**27**) which is the result of vehicle activity on the metalled road running parallel to the west of the site. This connects to an area of magnetic disturbance on the southern boundary of Field B (**28**) which is likely to be associated with houses adjacent to the site.

5.19 At the northern end of Field B is more magnetic disturbance (**32**, **33**), most likely relating to the modern footpath running E-W. Other areas of high magnetic disturbance adjacent to public footpaths are **29**, **30** and **34**.

5.20 There is a large area of disturbance on the eastern boundary of Field A resulting from a metal fence running along the boundary between the survey area and Chilton Fields Sports Ground to the east/south east (**31**, **35** respectively). Shepherd's farm (located to the most north easterly point of Field A) also appears to be associated with an area of magnetic disturbance (**36**).

6 CONCLUSIONS

6.1 The main areas of archaeological potential are located within Field A, most notably in the north-eastern part of the survey area. These are represented through positive linear anomalies of varying strengths. Three

probable enclosures can be inferred from the magnetic data (**1**, **2**, **3**) with the potential for a fourth (**4**) nearby. The overall extent of these enclosures has been truncated by post-medieval field boundaries and paths (**15**). Both **1** and **3** contain internal features. Remaining archaeological features are mainly positive linear anomalies or positive dipoles, e.g. (**12-14**), which may relate to surviving hearth or kiln structures. Apart from **(14)**, the survey provided little evidence of surviving archaeological remains in Field B.

6.2 Post-medieval field boundaries and paths that were identified during the survey (**15**) correlate well with historic maps (**Fig**. **17**), providing a confident conclusion to the origin of these magnetic anomalies. A number of these alignments also form part of the modern drainage network on the site (**Fig. 18**). There are numerous linear subsurface features detected as relatively weak bipolar anomalies (**17**, **18**, **19**) deemed to relate to a network of modern land drains and confirmed through reference to the drainage plan supplied by the farmer (**Fig. 18**). The most southerly area of Field A contains an area of considerable magnetic patterning compared to the rest of the survey area, most likely due to intense modern agricultural activity, mainly ploughing (**20**). Modern Surface anomalies were obvious before undertaking the survey, taking the form of a metalled footpath in Field B (**21**) and a metal cover located in the centre of Field A (**22**).

6.3 The broad, low amplitude positive and negative anomalies (**23**, **24**, **25**) most likely relate to the course of a palaeochannel.

6.4 Magnetic responses from surviving sub-surface features potentially of archaeological origin were strong and well defined, providing good levels of magnetic contrast with surrounding soils and underlying geology, demonstrating the site's suitability for magnetometer survey. Areas of magnetic disturbance were present (**27**, **36**) which may have obscured weaker magnetic anomalies, but because of their location on the periphery of the survey area this would have had a limited impact on the overall results.

6.5 There was some striping in the raw data, caused predominantly by the metal fence-line east of Field A, the occasional unevenness of the terrain and atmospheric conditions. These errors were easily compensated through basic data processing protocols and it is not considered that they have had an effect on the detection or recognition of geophysical anomalies.

ACKNOWLEDGEMENTS

Archaeological Solutions Limited would like to thank the client, Taylor Wimpey East Anglia Ltd for funding the project and for their assistance.

AS is pleased to acknowledge the advice and input of Dr Abby Antrobus of Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT)

BIBLIOGRAPHY

Historic England (English Heritage), 2008. *Geophysical Survey in Archaeological Field Evaluation*.

Chartered Institute For Archaeologists, 2014, *Standard and Guidance for Archaeological Geophysical Survey.* Available online at: http://www.archaeologists.net/sites/default/files/CIfAS&GGeophysics_1.pdf

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

APPENDIX 1 CARTOGRAPHIC SOURCES

Date	Description	Fig. No.	Scale	Location
1884	First Ed. Ordnance Survey map; sheet LVI. NW	17	6"	NRO

APPENDIX 2

PHASES 2 & 3, CHILTON LEYS, STOWMARKET, SUFFOLK

WRITTEN SCHEME OF INVESTIGATION FOR AN ARCHAEOLOGICAL EVALUATION

29th January 2016
Rev 11th March 2016

PHASES 2 & 3, CHILTON LEYS, STOWMARKET, SUFFOLK
ARCHAEOLOGICAL EVALUATION

1 INTRODUCTION

1.1 This specification has been prepared in response to a brief issued by Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT) (revised 28th January 2016). It provides for a geophysical survey and an archaeological trial trench evaluation to be carried out in advance of the determination of a hybrid planning application for residential development and an access road on Phase 2 and Phase 3 land at Chilton Leys, Stowmarket, Suffolk (NGR TM 032 596). The evaluation is required by Suffolk County Council and the LPA, based 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). This WSI for archaeological evaluation has been prepared for the approval of SCC AS-CT.

2 COMPLIANCE

2.1 If AS carried out the evaluation, AS would comply with SCC AS-CT's requirements.

3 SITE & DEVELOPMENT DESCRIPTION ARCHAEOLOGICAL BACKGROUND

3.1 It is proposed to construct a new residential development on Phase 2 & 3 land at Chilton Leys, Stowmarket. The site lies to the west opf the Phase 1 development area and A14. It extends to some 30.08ha, of which 29ha is required to be subject to evaluation (excluding an eastern area which has already been evaluated).

3.2 The site lies at c.41m AOD above the valley and floodplain of the river Lark which flows to the west.

3.3 An archaeological evaluation of the Phase 1 site was carried out in 2012 (HER HGH 052). In summary the fieldwalking/metal detecting/trial trench evaluation revealed:

A range of features of archaeological interest were uncovered, including prehistoric (Late Neolithic and Bronze Age), Roman and Anglo-Saxon material. Of less significance was a series of areas of modern features most likely associated with drainage and the construction of the A14.

The prehistoric material was focused in two main areas. The larger

concentration was a series of worked flints recovered from the bases of the trenches and within deposits focused around a hollow within the south-western arm of the site (trenches 41 and 47). This included a large assemblage of burnt flint, evidence for the blade and narrow flake-based soft hammer knapping, within deposits of either an alluvial or fluvial nature, and a similar assemblage found in two features underlying these deposits. Poorly preserved wood was also found within this material. It was sealed in places by modern deposits which were probably associated with the construction of the A14.

Further evidence of prehistoric occupation was located in the south-eastern corner of the site, in the vicinity of Trenches 51, 42 and 43. This included a pit containing a large assemblage of Late occupation to the north of these features in Trench 42. Finally, a small isolated pit containing Early Bronze Age material was located in the south-western arm of the site in Trench 11. The pottery was struck flint found within it appears to be a domestic assemblage, suggesting that further features are located in its vicinity.

Material initially believed to be Iron Age, but proving in fact to be very Early Roman, was located in Trench 25 in four small postholes in pairs either side of a truncated fire-pit. Although not certain, this is likely to represent a large double-posted structure forming a focus occupation.

The later Roman material was primarily located within two parts of the proposed development area. A pottery kiln intact from its perforated floor downwards was found in Trench 50, with its permanent kiln floor resting on what was probably a tongue support. The kiln has been tentatively dated to the mid 1st to early 2nd century. Adjacent to it was a group of clearly associated postholes, that presumably formed a structure designed to control air flow into the flue and perhaps to restrict light levels, which was necessary for temperature management.

A second area of Roman material was located at the northern end of the site. Trenches 14, 15 and 30 produced the most material of this date, with further ditches and other features occurring in the vicinity, including Trenches 16 and 17. This probably represents the edge of an area of occupation with pits, postholes and a watering hole or well.

One large, shallow like-pit feature was perhaps a sunken-featured building (SFB) of Early Saxon date. Early Saxon burials were located in Trenches 39 and 52, with possible burials in Trench 53. The burial in Trench 39 contained grave goods including a large sheet metal bowl or cauldron, a spearhead and a seax (a type of knife).

In between the areas mentioned lay various field systems of varying date.

3.4 Excavation of the Phase 1 site was undertaken in 2014/2015 by AS. In summary:

The site lies within an area of high archaeological potential, containing

evidence of prehistoric, Romano-British and Anglo-Saxon activity. Of particular significance is a Romano-British Kiln and Anglo-Saxon cemetery previously recorded within the current site.

Fieldwork revealed six phases of activity dating between the late Neolithic /late Bronze Age and the modern era. Features were recorded across the site and included evidence of both settlement and industrial activity. Of particular note were two Romano-British Pottery Kilns, two T-shaped corndriers, and a high-status Anglo-Saxon cemetery. Evidence of simple, Romano-British post-built structures and a medieval pottery kiln was also encountered.

3.5 The proposed works will cause significant ground disturbance that has the potential to damage any archaeological deposits that exist. The archaeological and historical background of the site will be discussed in the project report and the HER will be consulted to update.

4 BRIEF FOR THE ARCHAEOLOGICAL EVALUATION SPECIFICATION FOR TRIAL TRENCH EVALUATION GENERAL MANAGEMENT

4.1 The principal objectives for the evaluation 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 regional research frameworks are set out in Glazebrook (1997 and Brown & Glazebrook (2000) and updated by Medlycott and Brown (2008) and Medlycott (2011). 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).

4.2.2 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).

4.2.3 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.

4.2.4 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.

4.2.5 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).

4.2.6 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).

4.2.7 As set out above, the principal research objectives will be to identify any further evidence of the known prehistoric, Roman and Anglo-Saxon activity recorded in the Phase 1 area and which may continue into Phases 2 & 3, and for any associated palaeoenvironmental remains, as well as to characterise any as yet unknown remains from all periods which may be present.

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

Glazebrook, J (eds), 1997, *Research and Archaeology: A Framework for the Eastern Counties. 1. Resource Assessment,* East Anglian Archaeology Occasional Papers 3

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 CIfA.

5.1.2 Profiles of key project staff are provided (Appendix 3).

A Method Statement is presented
Geophysical Survey Appendix 1
Trial Trench Evaluation Appendix 2

5.1.3 The evaluation will conform with the guidelines set down in the brief and the Chartered Institute for Archaeologists *Standard and Guidance for Archaeological Evaluations (revised 2014) and Standard and Guidelines for Historic Environment Desk-based Assessment (revised 2014).* 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. The geophysical survey will conform with the guidelines set down in the Chartered Institute for Archaeologists *Standard and Guidance for Geophysical Survey* (revised 2014) and English Heritage (now Historic England) *Geophysical Survey in Archaeological Evaluation* (2008).

5.1.4 Geophysical survey

5.1.5 Information regarding the extent and significance of sub-surface features is required in order to target any further trial trenching that may

subsequently be required in association with the planning proposals for the site. A programme of geophysical survey will be undertaken in order to achieve this, and is to comprise a magnetometer survey conducted on a regular grid pattern, to include a sampling interval of 1m x 0.25m. The site is not suitable for fieldwalking survey at this stage.

5.1.6 The initial geophysical survey of the Phase 2 and 3 area will be carried out by AS (excluding the Phase 2 area that has been previously subject to evaluation trenching). It will comprise a detailed magnetometer survey conducted on a regular grid pattern, to include a sampling interval of 1m x 0.25m. No current constraints to survey are known. The method statement is attached (Appendix 1).

5.1.7 The results of the geophysical survey will be supplied to SCC AS-CT to inform the subsequent trial trench locations.

5.1.8 An initial programme of systematic metal detector survey will also be undertaken. This will target non-ferrous items and will be undertaken prior to trial trenching commencing and will achieve a 10% coverage of the ground surface by surveying along 10m wide linear transects laid out by Total Station/GPS. The transects will match the N-S axis of the following trial trenches, and the detecting sweep will be *c.*1m.

5.1.9 All metal finds will be collected, other than later 20th century items such as shotgun cartridges, which will be discarded on site. The artefacts will be plotted by Total Station/GPS so that they can be accurately located along the surveyed transects. AS owns metal detectors and staff are trained in their use, and the machines can detect ferrous and non-ferrous items.

5.1.10 SCC AS-CT will require a programme of archaeological trial trenching to cover the site of the proposed development. The trial trenching layout and scope will be agreed with SCC AS-CT following the geophysical survey and metal detecting. The trenches will target any geophysical anomalies and also 'blank' areas, and a proposed trench plan will be supplied to SCC AS-CT following the initial surveys. An initial 4% sample comprising 161 trenches each 40m x 1.8m is proposed, with a further 1% sample contingency (equal to 40 trenches each 40m x 1.8m) held to further define any remains identified. AS is happy to review the scale/location of the trenches following comment from the client and/or SCC AS-CT.

5.1.11 The environmental strategy will adhere to the guidelines issued by English Heritage (now Historic England) (*Environmental Archaeology; A guide to the theory and practice of methods, from sampling and recovery to post-excavation,* Centre for Archaeology Guidelines, 2011). An assessment of any palaeoenvironmental /geoarchaeological deposits in the floodplain will be undertaken. Dr Rob Scaife/Dr John Summers will be the Environmental Coordinator for the project. The specialist will make his/her results known to the regional science advisor who co-ordinates environmental archaeology in the region on behalf of Historic England. The assessment will aim to address the objectives in the brief (section 3.5). Sampling methodology in contained in

Appendix 2.

5.1.12 Estimate of time and resources required for each phase, to complete the trial trenching, project archive and the production of an evaluation report.

Geophysical Survey
Preparation of Report and Archive *c*.20 Days

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

5.1.13 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.

5.1.14 Details of staff and specialist contractors are provided (Appendix 3). The project will be managed by Claire Halpin MCIFA /Jon Murray MCIFA.

5.1.15 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.

5.1.16 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
A concise non-technical summary of the project results
i) A HER summary sheet / search number
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 1

GEOPHYSICAL SURVEY METHOD STATEMENT

STANDARDS & GUIDELINES

All site work and reporting will be carried out in accordance with English *Heritage Geophysical Survey in Archaeological Field Evaluation,* 2008, IfA Paper 6: *The use of Geophysical Techniques in Archaeological Evaluations* and *CIfA Standard and Guidance for Archaeological Geophysical Survey (revised 2014)*

GEOPHYSICAL METHOD

It is proposed to carry out a detailed magnetometer survey. Such a technique can detect a wide variety of structures including cut features, earthworks, pits, burnt structures such as kilns and hearths which may be associated with the anticipated remains.

DETAILED MAGNETIC SURVEY

Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.2 nanoTesla (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.

DATA COLLECTION

AS has a capacity for cart-based survey, which will be implemented in ground conditions are appropriate. Otherwise the survey will be conducted using hand held gradiometers on a 30m survey grid.

The detailed magnetic survey will be carried out using a Bartington Grad 601-2. The instrument consists of two fluxgates mounted 1m vertically apart, and 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.

Readings will be taken at 0.25m centres along traverses 1m apart. This equates to 3600 sampling points in a full 30m x 30m grid. Data collection requires a temporary grid to be established across the survey area using wooden pegs at 30m intervals. The grid will be laid out using hand tapes based on traditional survey methods. The location and the baseline and grids will be recorded using GPS survey equipment. On a large grid, the accuracy of the grid will be checked and adjusted using GPS survey equipment. If a cart-based system is used, it has a built in GPS receiver that will track the cart's progress and enable the display of transects on a plan. The survey and basemap will be tied together through GPS survey of the site boundaries and survey baseline.

The Grad 601-2 has a typical depth of penetration of 0.5m to 1.0m. This would be increased if strongly magnetic objects have been buried in the site. The collection of data at 0.25m centres provides an appropriate methodology balancing cost and time with resolution.

One grid will be selected and surveyed twice each day to demonstrate the repeatability of the technique. A reasonable time delay will be left before the re-survey.

The data will be stored onto a hard drive within the control unit for later transferral to a PC for processing and analysis.

PROCESSING, ANALYSIS, PRESENTATION AND INTERPRETATION OF THE DATA

Processing of the data will be carried out using specialist software, *Terrasurveyor* and in-house 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. 'Despiking' is also performed to remove the anomalies resulting from small iron objects often found on agricultural land. 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 presentation of the data for the survey will be a print-out of the raw data both as grey scale and colour plots of extreme values, together with a grey scale plot of the processed data. Magnetic anomalies will be identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing for the site.

The presentation of the data for the survey will be a print-out of the raw data both as grey scale and colour plots of extreme values (magnetic data only) together with a grey scale plot of the processed data. Anomalies will be identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing for the site.

REPORTING & ARCHIVE

The report for the survey will comprise a written section describing the background to the survey, the methodologies used and a discussion of the results. The text will be illustrated using plots of the results using CAD to overlay the results and interpretations over the base mapping. The format for these drawings will either be A3 or A1 depending on the size and configuration of the survey areas. The report will describe processing information and the figures wil show scale/key (for nT/m). Three paper copies will be supplied and one digital copy.

The archive for the geophysical survey will be prepared for deposition to a suitable digital repository (see archive guidelines Section 10 above).

The OASIS database will be completed.

APPENDIX 2
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 Chartered Institute for 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 stake holes, post holes 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. Otherwise discrete features (eg pits) will be half-sectioned.

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. Digital images will also be taken (Nikon Coolpix L29 16.1 megapixel cameras). 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. All animal bone will be collected.

ENVIRONMENTAL SAMPLING

The sampling will adhere to the guidelines prepared by English Heritage (now Historic England), and the specialist will make his/her results known to the regional science advisor who co-ordinates environmental archaeology in the region on behalf of Historic England. The project will also accord with the guidelines of the English Heritage (now Historic England) 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 John Summers. Dr Rob Scaife/Dr Summers and AS will seek advice from the HE 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 Historic England 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 HE 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/Dr John Summers will visit to advise on 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 John Summers. Dr Rob Scaife and AS will seek advice from the HE Regional Scientific Advisor 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 3
ARCHAEOLOGICAL SOLUTIONS LIMITED: PROFILES OF STAFF & SPECIALISTS

DIRECTOR
Claire Halpin BA MCIfA

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 MCIfA

Qualifications: Member of the CIfA
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 MCIfA

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

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
Julie Walker BSc MA PCIfA

Qualifications: Queens University Belfast: BSc Archaeology (2007-2010)
University of Southampton: MA Osteoarchaeology (2010-2011)
Experience: Julie is a member of the Institute for Archaeologists (PIfA grade) and the British Association for Biological Anthropology and Osteoarchaeology. Professionally, Julie has worked for organisations including Albion Archaeology (2014) and Oxford Archaeology East (2014). Julie has a thorough knowledge and experience of archaeological fieldwork and post-excavation practice. Julie's personal research interests include congenital and developmental defects in the Romano-British and Anglo-Saxon periods and she has made several conference presentations on this subject.

SUPERVISOR
Matthew Baker BA MA

Qualifications: Cardiff University: BA Archaeology (2008-2011)
Cardiff University: MA Archaeology (2012-2013)
Experience: Since concluding his higher education, Matthew has worked for a number of archaeological projects and organisations including GeoArch (Cardiff), the Damerham Archaeology Project and Cambridge University. He has a gained a varied experience of archaeological fieldwork and post-excavation practice including geophysical survey/ interpretation and isotopic analysis.

SUPERVISOR
Kerrie Bull BSc

Qualifications: University of Reading: BSc Archaeology (2008-2011)
Experience: During her undergraduate degree at the University of Reading Kerrie worked on the Lyminge Archaeological Project (2008), the Silchester 'Town Life' Project (2009) and the Ecology of Crusading Research Programme (2011). Through her academic and professional career, Kerrie has gained good experience of archaeological fieldwork and post-excavation techniques.

SUPERVISOR
Thomas Muir BA MSc
Qualifications: University of Edinburgh: BA Archaeology (2007-2011)
University of Edinburgh: MSc Mediterranean Archaeology (2011-2012)
Experience: Thomas is an affiliate member of the Institute for Archaeologists. Throughout his higher education, Thomas volunteered on research excavations at sites including Port Sec Sud, Bourges (France; 2008), the Hill of Barra (the Hillforts of Strathdon Project; 2010) and Prastio Mesorotsos, Cyprus (2010-2012). In 2013 Thomas returned to Prastio Mesorotsos – a research project run by the Cyprus American Archaeological Institute – in a supervisory capacity. Professionally, Thomas has worked for CFA Archaeology (2013) and thereafter AS Ltd. Through his academic and professional career, Thomas has gained a broad working knowledge of archaeological fieldwork and post-excavation techniques including environmental sampling, on-site recording and digital archiving.

SUPERVISOR
Vincent Monahan BA

Qualifications: University College Dublin: BA Archaeology (2007-2012)
Experience: Professionally, Vincent has worked for various archaeological groups and projects including the Stonehenge Riverside Project (Site Assistant/ Supervisor; 2008), University College Dublin Archaeological Society (Auditor; 2009-2010) and the Castanheiro do Vento Research Project (Site Assistant/ Supervisor; 2009-2010 (seasonal)). Vincent has gained good experience of archaeological fieldwork including excavation, various sampling techniques and on-site recording. He also gained experience of museum-grade curatorial practice during his undergraduate degree.

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 (POST-EXCAVATION)
Andrew Newton MPhil PCIFA

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 over 14 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's academic interests have led to his gaining considerable research excavation experience across the North Atlantic region. 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 Føroys 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 MCIfA

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)
Dr Julia Cussans

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 over 14 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 agricultural 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 over 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.

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	David Bescoby Dr John Summers
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 S Anderson
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:	Historic England Ancient Monuments Laboratory (for advice).
CONSERVATION	University of Leicester

APPENDIX 3 OASIS DATA COLLECTION FORM

OASIS DATA COLLECTION FORM: England

List of Projects | Manage Projects | Search Projects | New project | Change your details | HER coverage | Change country | Log out

PHASES 2 and 3, CHILTON LEYS, STOWMARKET, SUFFOLK - GEOPHYSICAL SURVEY - Archaeological Solutions Ltd

OASIS ID - archaeol7-253364

Versions

View	Version	Completed by	Email	Date
View 1	1	Jennifer O'Toole	info@ascontracts.co.uk	31 May 2016

Completed sections in current version

Details	Location	Creators	Archive	Publications
No	No	No	No	0/0

Validated sections in current version

Details	Location	Creators	Archive	Publications
No	No	No	No	0/0

File submission and form progress

Grey literature report submitted?	No	Grey literature report filename/s	
Boundary file submitted?	No	Boundary filename	
HER signed off?		NMR signed off?	

Grey literature | Upload images | Upload boundary file | Update project entry | Printable version

Email Suffolk HER about this OASIS record

OASIS:

Please e-mail Historic England for OASIS help and advice
 Created by Jo Gilham and Jen Mitcham, email Last modified Wednesday 16 December 2015
Cite only: http://www.oasis.ac.uk/form/formctl.cfm?oid=archaeol7-253364 for this page

PHOTOGRAPHIC INDEX

1
Field A facing west

2
Field A facing south

3
Field A facing south

4
Field A looking south, showing wire fence on eastern boundary

5
Northernmost end of Field A facing south

6
Metal cover located in central area of Field A

7
Field B facing north

8
Field B facing south

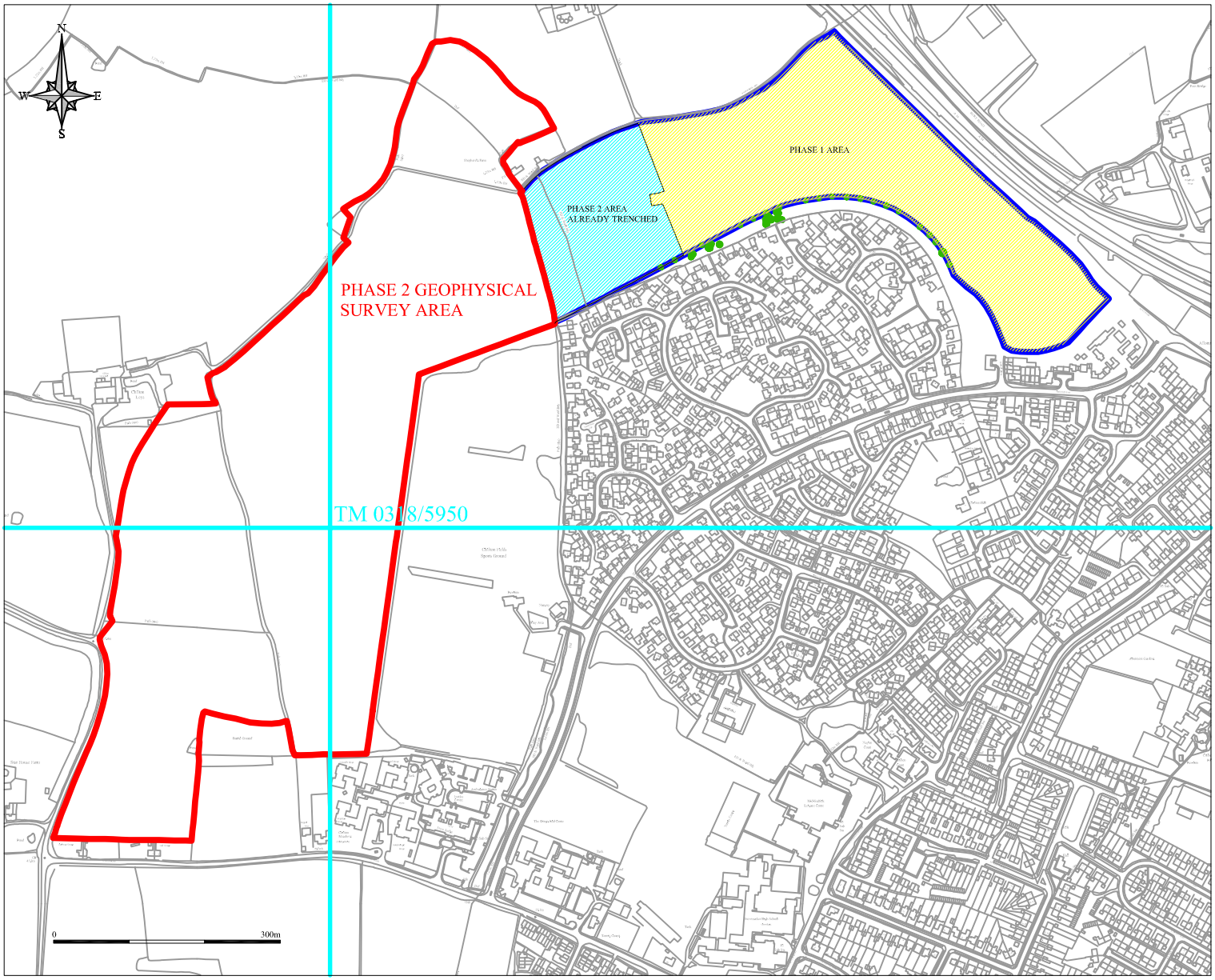
9
Modern trackway in Field B, facing east

Archaeological Solutions Ltd

Fig. 1 Site location plan

Scale 1:25,000 at A4

Chilton Leys, Stowmarket, Suffolk (P5227)



Archaeological Solutions Ltd

Fig. 2 Detailed site location plan

Scale 1:8000 at A3

Chilton Leys, Stowmarket (P5227)

Point co-ordinates	
A	603361.81, 260007.04
B	603205.87, 259756.09
C	603156.42, 259399.50
D	602972.49, 259571.00
E	602944.71, 259212.08

FIELD A

FIELD B

A

B

C

D

E

Shepherd's Farm

Chilton Leys

Chilton Fields Sports Ground

Burial Ground

Chilton Meadows (Nursing Home)

The Kingsfield Centre

Ambulance Station

Icanho Centre

Pavilion

Nursery

Play Area

Tank

Pond

Path (um)

ED & Ward Bdy

1.22m RH

51.4m

0 150m

Archaeological Solutions Ltd

Fig. 3 Survey grid

Scale 1:3000 at A3

Chilton Leys, Stowmarket (P5227)

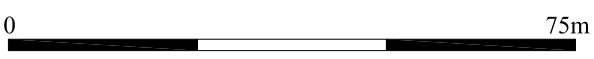
N
W
E
S
100nT
Fig. 5
Fig. 6
Fig. 7
Fig. 8
Fig. 9
FIELD A
FIELD B
0
150m
Archaeological Solutions Ltd
Fig. 4 X-Y trace plot of gradiometer data
Scale 1:3000 at A3
Chilton Leys, Stowmarket (P5227)

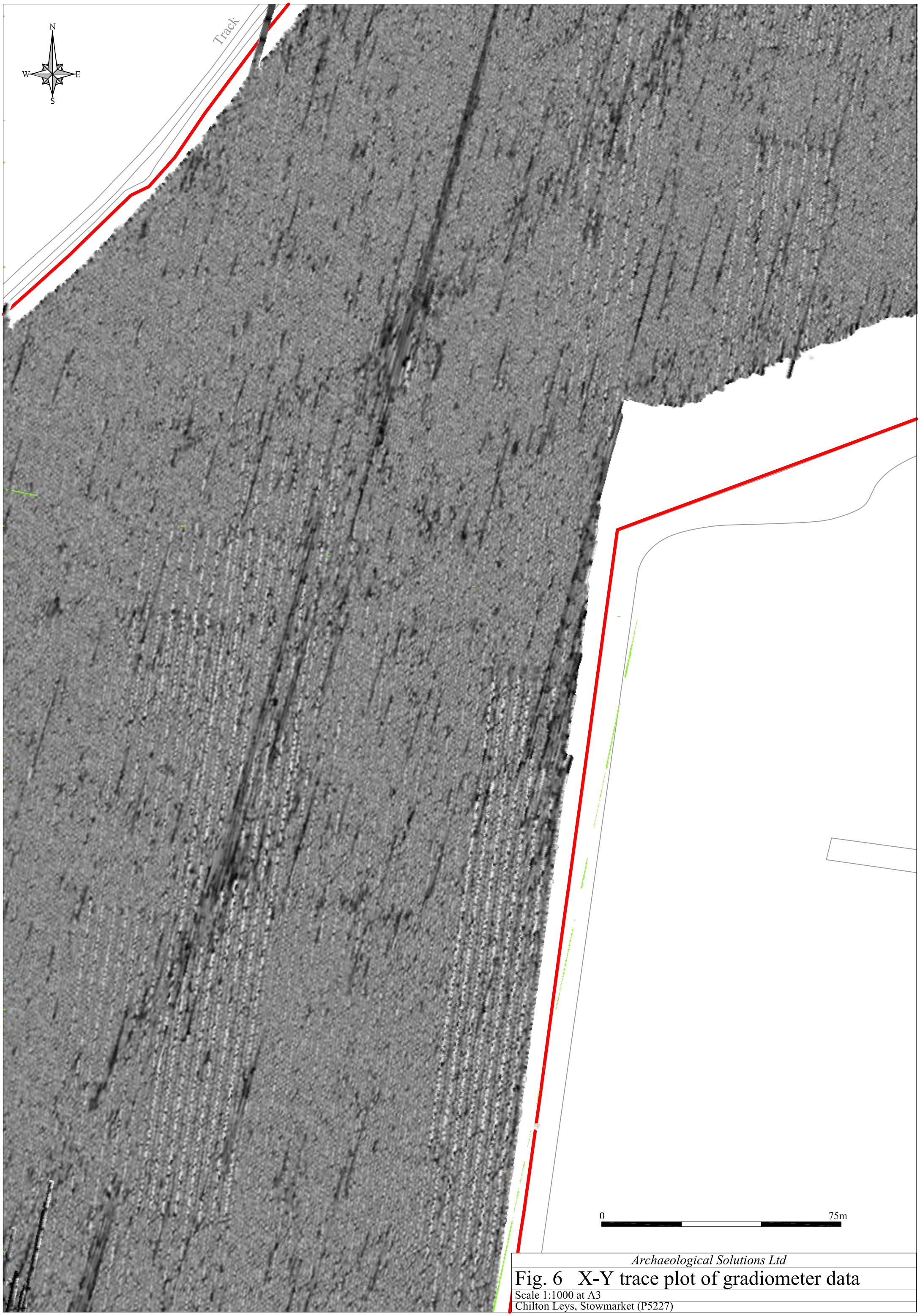
Archaeological Solutions Ltd

Fig. 5 X-Y trace plot of gradiometer data

Scale 1:1000 at A3

Chilton Leys, Stowmarket (P5227)





Archaeological Solutions Ltd

Fig. 6 X-Y trace plot of gradiometer data

Scale 1:1000 at A3

Chilton Leys, Stowmarket (P5227)

N

W E

S

0 75m

Constable House

Archaeological Solutions Ltd

Fig. 7 X-Y trace plot of gradiometer data

Scale 1:1000 at A3

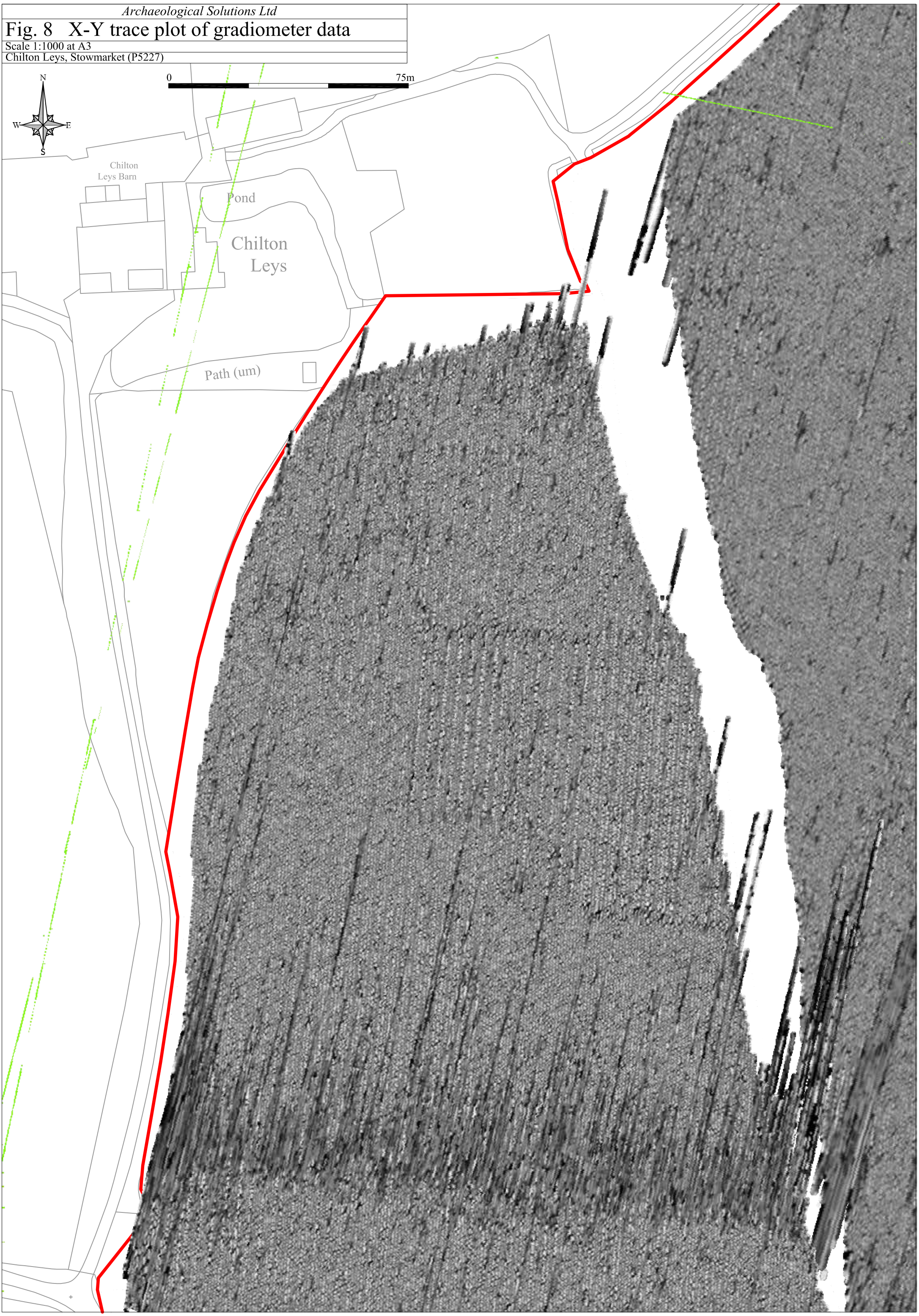
Chilton Leys, Stowmarket (P5227)

Archaeological Solutions Ltd

Fig. 8 X-Y trace plot of gradiometer data

Scale 1:1000 at A3

Chilton Leys, Stowmarket (P5227)



Archaeological Solutions Ltd

Fig. 9 X-Y trace plot of gradiometer data

Scale 1:1000 at A3

Chilton Leys, Stowmarket (P5227)

Plotting parameters (Field A)
Maximum +2.56nT (Black)
Minimum -2.45nT (White)
Plotting parameters (Field B)
Maximum +1.59nT (Black)
Minimum -1.55nT (White)

Fig. 11

FIELD A

Fig. 12

Fig. 14

Fig. 13

FIELD B

Fig. 15

0 150m

Archaeological Solutions Ltd

Fig. 10 Minimally processed gradiometer data

Scale 1:3000 at A3

Chilton Leys, Stowmarket (P5227)

Archaeological Solutions Ltd

Fig. 11 Minimally processed gradiometer data

Scale 1:1000 at A3

Chilton Leys, Stowmarket (P5227)

0 75m

Plotting parameters (Field A)
Maximum +2.56nT (Black)
Minimum -2.45nT (White)
Plotting parameters (Field B)
Maximum +1.59nT (Black)
Minimum -1.55nT (White)

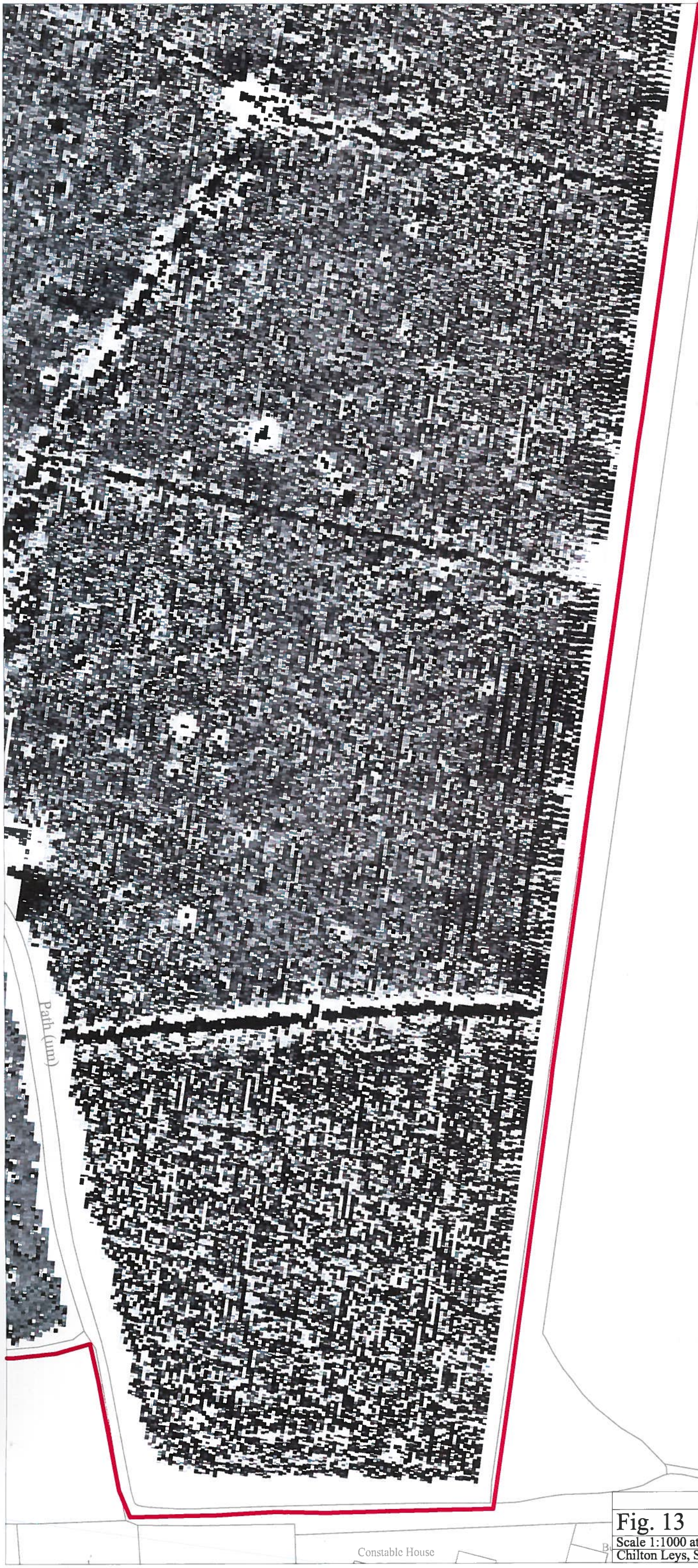
Plotting parameters (Field A)
Maximum +2.56nT (Black)
Minimum -2.45nT (White)
Plotting parameters (Field B)
Maximum +1.59nT (Black)
Minimum -1.55nT (White)

Archaeological Solutions Ltd

Fig. 12 Minimally processed gradiometer data

Scale 1:1000 at A3

Chilton Leys, Stowmarket (P5227)



Plotting parameters (Field A)
Maximum +2.56nT (Black)
Minimum -2.45nT (White)
Plotting parameters (Field B)
Maximum +1.59nT (Black)
Minimum -1.55nT (White)

N
W E
S

0 75m

Archaeological Solutions Ltd

Fig. 13 Minimally processed gradiometer data

Scale 1:1000 at A3

Chilton Leys, Stowmarket (P5227)

Archaeological Solutions Ltd

Fig. 14 Minimally processed gradiometer data

Scale 1:1000 at A3

Chilton Leys, Stowmarket (P5227)

Plotting parameters (Field A)
Maximum +2.56nT (Black)
Minimum -2.45nT (White)
Plotting parameters (Field B)
Maximum +1.59nT (Black)
Minimum -1.55nT (White)

0 75m

N W E S

Pond

Chilton Leys

Path (um)

51.

Plotting parameters (Field A)
Maximum +2.56nT (Black)
Minimum -2.45nT (White)
Plotting parameters (Field B)
Maximum +1.59nT (Black)
Minimum -1.55nT (White)

Archaeological Solutions Ltd

Fig. 15 Minimally processed gradiometer data

Scale 1:1000 at A3

Chilton Leys, Stowmarket (P5227)

FIELD A

FIELD B

Chilton Leys

Chilton Fields Sports Ground

Chilton Meadows (Nursing Home)

Shepherd's Farm

Burial Ground

Star House Farm

Pond

Track

Path (um)

ED & Ward Bdy

1.22m RH

Pavilion

Nursery

Play Area

Ambulance Station

Icanho Centre

Stow Lodge

Gainsborough House

Munnings House

Constable House

Beech House

Tank

Oak Cottage

Starhouse Cottage

GP 45.8m

0 150m

KEY

ARCHAEOLOGY

- Positive anomaly, probable cut feature of archaeological origin
- Post-medieval field boundaries and track ways

OTHER ANOMALIES

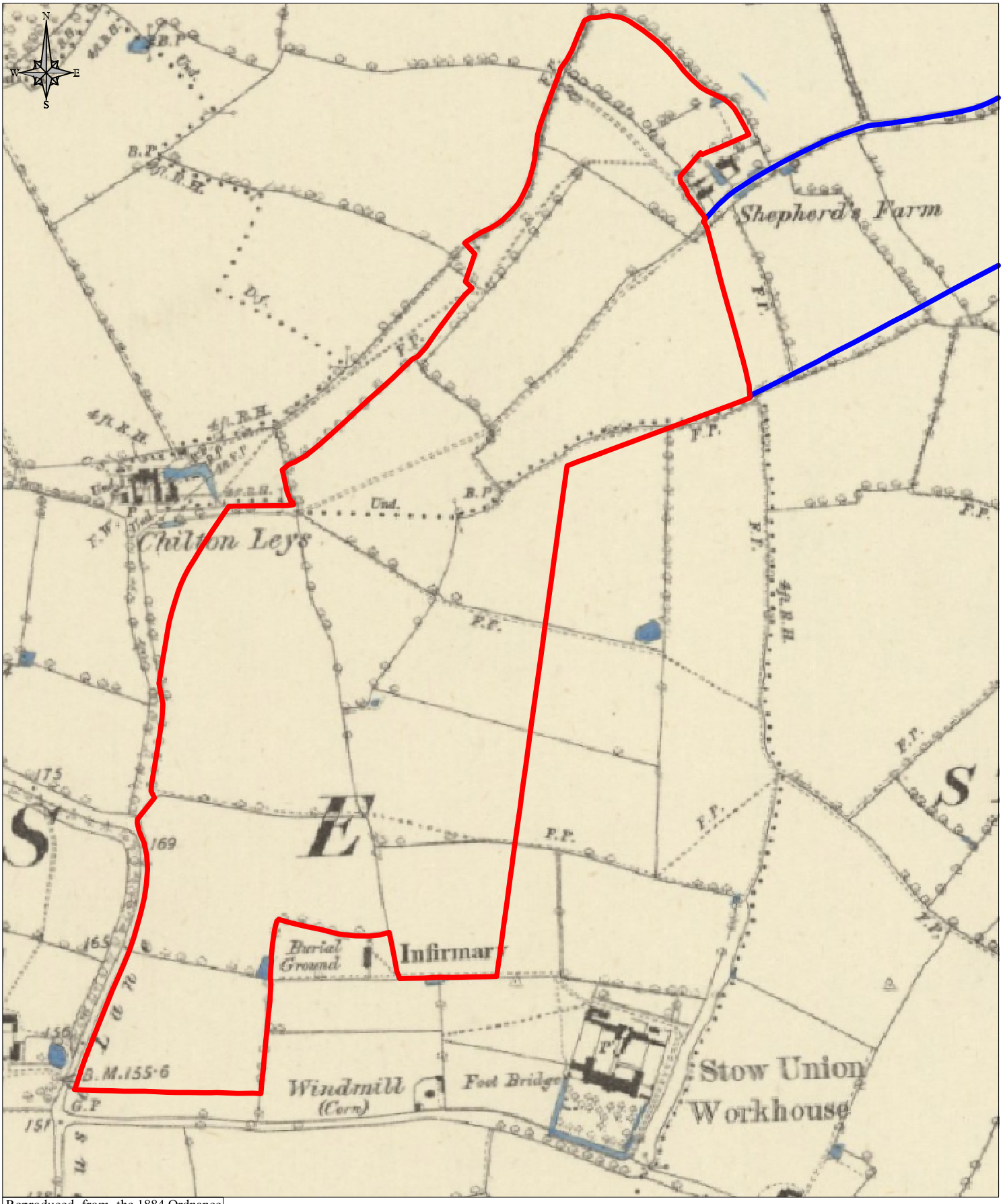
- Geological features
- Linear anomaly- possible land drain and modern ploughing
- Modern surface features
- Area of magnetic disturbance/ interference
- Dipolar anomaly/ magnetic spike

Archaeological Solutions Ltd

Fig. 16 Interpretation plot

Scale 1:3000 at A3

Chilton Leys, Stowmarket (P5227)



Archaeological Solutions Ltd

Fig. 17 OS Map 1884

Scale 1:5000 at A4

Chilton Leys, Stowmarket (P5227)

0 250m

Archaeological Solutions Ltd

Fig. 18 Drainage plan

Scale 1:4000 at A4

Chilton Leys, Stowmarket (P5227)