ARCHAEOLOGICAL EVALUATION REPORT

New Sports Hall, Hartismere High School, Eye
EYE 084

A REPORT ON THE ARCHAEOLOGICAL EVALUATION, 2007
(Planning app. no. 0307/07)

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SCCAS Report No. 2008/26

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List of Contributors

All Suffolk C.C. Archaeological Service unless otherwise stated.

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Acknowledgements

This project was funded by Education Dept, Suffolk County Council. and was monitored by Jess Tipper (Suffolk County Council Archaeological Service, Conservation Team).

The fieldwork was carried out by John Craven, Suffolk County Council Archaeological Service, Field Team.

The post-excavation was managed by Richenda Goffin. Finds processing and the producing of site plans and sections was carried out by Gemma Adams, and the specialist finds reports by Richenda Goffin. The production of digital site plans was carried out by John Duffy and Fiona Gamble.

Summary

Excavation of test pits on the site of a new sports hall at Hartismere High School, Eye, identified Early Anglo-Saxon features, a continuation of the settlement activity seen at the EYE 083 excavation immediately to the south.

HER information

Planning application no.	0307/07
Date of fieldwork:	5th and 13th July 2007
Grid Reference:	TM 13807404
Funding body:	Education Dept, Suffolk County Council.
Oasis reference	Suffolkc1-28388

1. Introduction

An archaeological evaluation was carried out in advance of the construction of a new sports hall upon part of the Hartismere High School playing field on the western edge of Eye (Fig. 1). The work was carried out to a Brief and Specification issued by Jess Tipper (Suffolk County Council Archaeological Service, Conservation Team – Appendix 1) to fulfil a planning condition on application 0307/07. The work was funded by the developer, Education Dept, Suffolk County Council.

The site, an area of 5500 sqm lay in the south-east corner of the school playing field which at this point was level ground, c.39m OD, overlooking the valley of a tributary of the River Dove which lay 200m to the south. Immediately to the south the playing field boundary follows the former line of the Mellis-Eye railway, which at this point is shown on the 3rd Edition Ordnance survey of 1926 (Fig. 2) as lying in a cutting. The modern boundary hedge now lies on a sharp slope, with the field to the south being c.2m lower, an effect probably caused both by the railway cutting and the modern landscaping that created the level playing field above the natural slope.

The site lay in an area of high archaeological importance, as recorded in the County Historic Environment Record and was of particular interest as it lay immediately to the north of the large archaeological excavation, EYE 083, that was being carried in advance of the expansion of the playing field. This multi-period site contained four Bronze Age cremations and an undated, but probably Bronze Age, crouched inhumation, two possible Iron Age roundhouses and pits and a substantial phase of Early Anglo-Saxon occupation with nineteen sunken featured buildings, two posthole structures and a range of other features and finds material (Caruth in prep). Other recorded sites and findspots indicative of further occupation in the vicinity include Neolithic flints, EYE 005, 150m to the west, a possible early Anglo-Saxon cemetery, YAX 016, 500m to the west, an Anglo-Saxon brooch, EYE 051, 350m to the west and an early Anglo-Saxon brooch, EYE 053, 180m to the north (Fig. 1).

An archaeological evaluation was therefore required to assess the archaeological potential of the site. A primary aim was to establish the depth of the natural subsoil surface or any archaeological deposits below the heavily landscaped modern ground level, and to establish whether open area excavation of the site would be required prior to its development.

A geophysical survey of the playing field was also commissioned as part of the overall archaeological program of work at EYE 083 and 084 and expected future development, and is included here as Appendix 2.

2. Methodology

The entire site was initially stripped of 0.4m of topsoil, which left topsoil *in situ* to the north, and uncovered a layer of mid brown sand/silt through the centre and a deposit of modern material to the south. Four test pits were subsequently excavated by a machine equipped with a ditching bucket under the supervision of an archaeologist to the top of the archaeological levels or natural subsoil.

Where possible trenches were then cleaned, and features excavated, by hand. The site was recorded using a single context continuous numbering system. The test pits were planned using a Total Station Theodolite. Feature sections and a plan of Test Pit 04 were drawn by hand at a scale of 1:20. Digital photographs are included in the site archive. Bulk finds have been washed, marked and quantified. Inked copies of section and drawings have also been made.

An OASIS form has been completed for the project (reference no. suffolkc1-28388) and a digital copy of the report submitted for inclusion on the Archaeology Data Service database (http://ads.ahds.ac.uk/catalogue/library/greylit).

The site archive is kept in the main store of Suffolk County Council Archaeological Service at Bury St Edmunds under HER No. EYE 084.

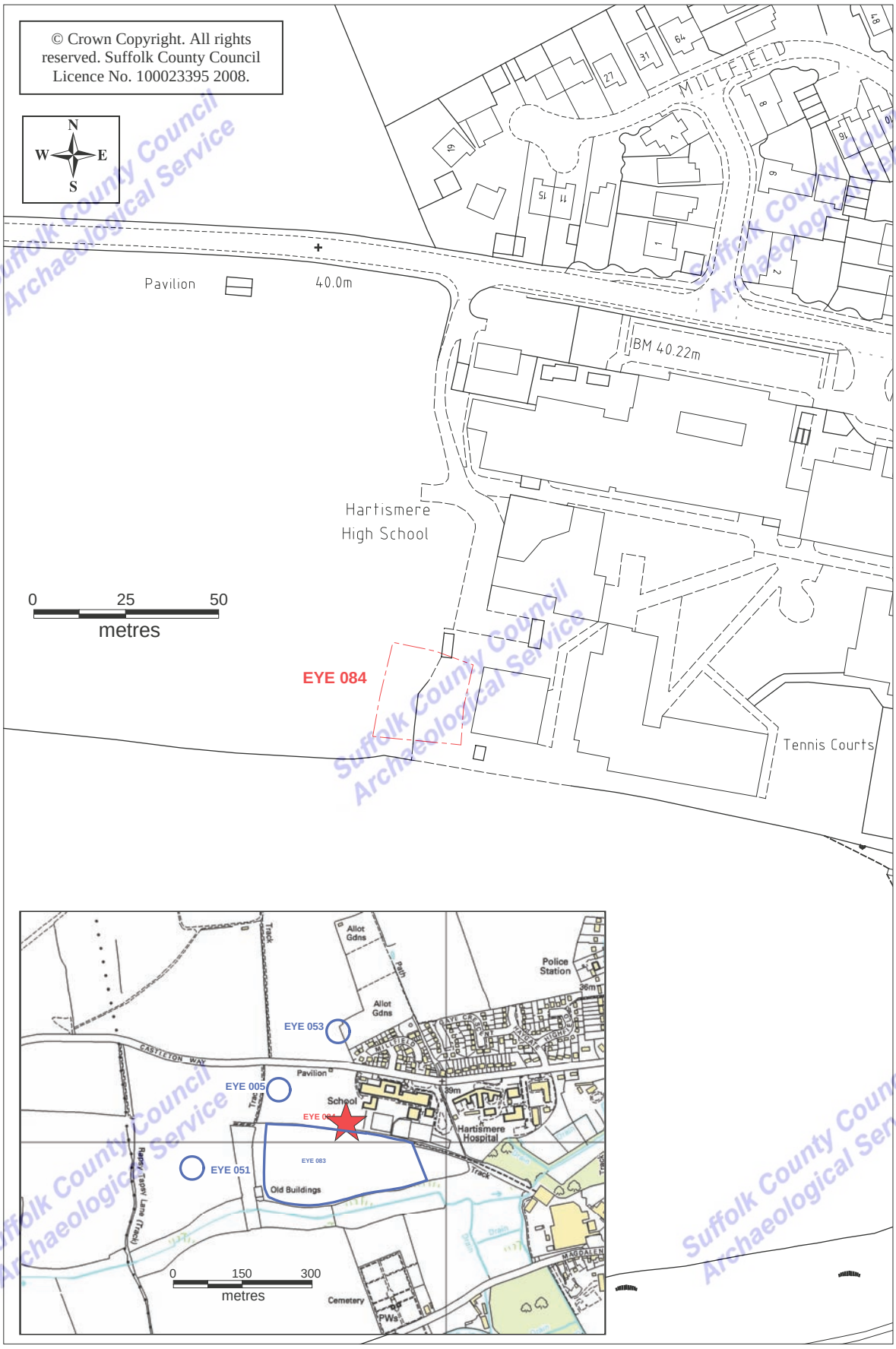

Figure 1. Site location plan

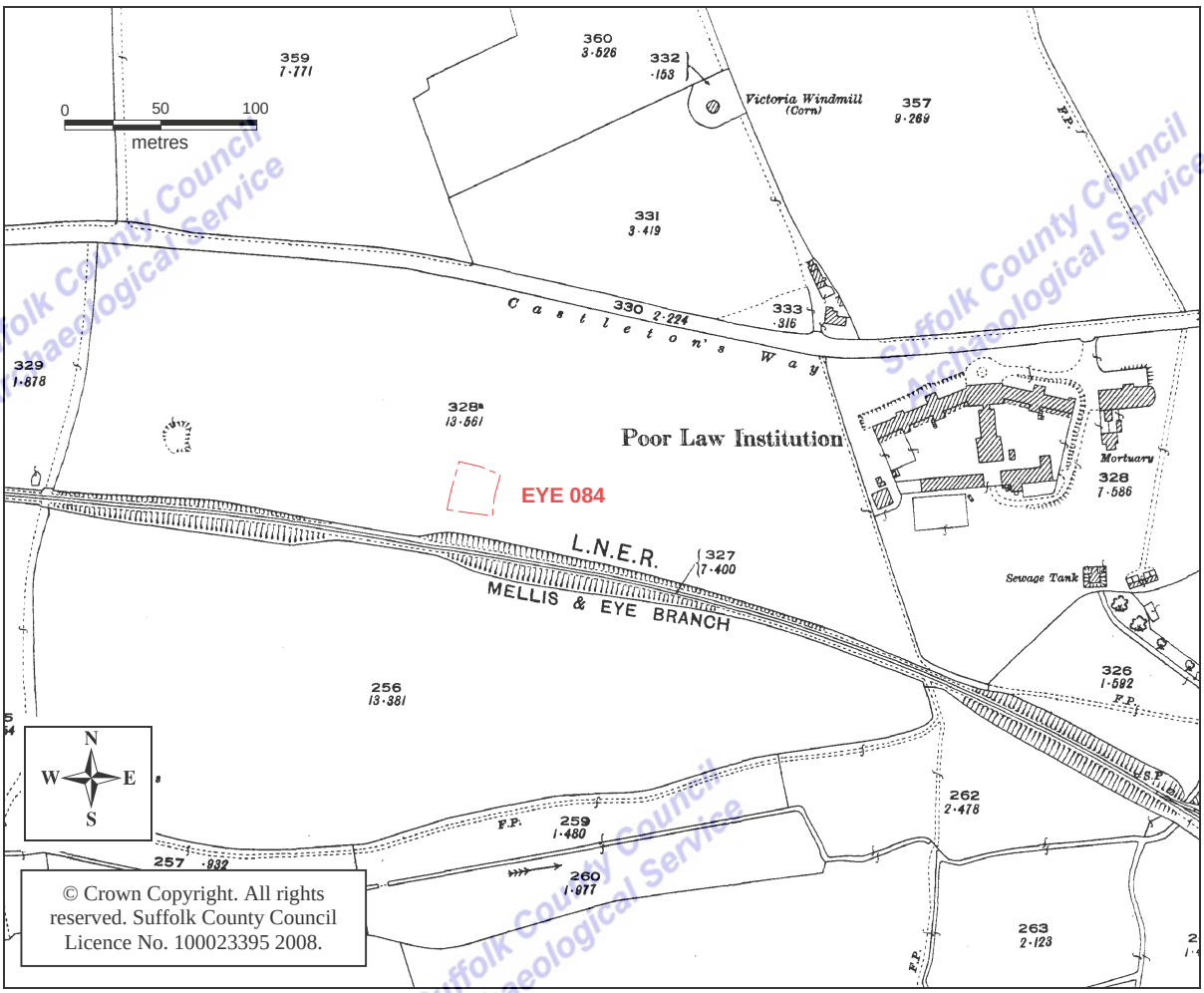

Figure 2. Site on 3rd Edition Ordnance Survey, 1926

3. Results

(Figs. 3 and 4)

Test Pit 01 – 2m x 1.8m

After the initial 0.4m topsoil strip a further 1.6m of modern deposits and rubbish was removed, with the natural subsoil seen at a depth of 2m below modern ground level. A probable feature, 0006, infilled with a mid grey/brown silt/clay was seen cutting the natural subsoil in the southern half. This could not be investigated due to the depth and unstable sides of the test pit.

Test Pit 02 – 2.m x 2.8m

This test pit was excavated through 0.5m of topsoil, of which 0.4m had been removed in the initial site strip, and a 0.3m thick layer of colluvial mid brown sand/silt. The natural clay subsoil was seen at a depth of 0.8m below modern ground level. No archaeological features or deposits were present.

Test Pit 03 – 2m x 1.6m

This test pit was excavated through 0.6m of topsoil, of which 0.4m had been removed in the initial site strip, and a 0.55m thick layer of colluvial mid brown sand/silt. The natural clay subsoil was seen at a depth of 1.15m below modern ground level. No archaeological features or deposits were present.

Test Pit 04 – 2m x 1.9m

This test pit was excavated through a 0.7m thick layer of homogenous mid brown clay/silt colluvium, which had been exposed following the 0.4m topsoil site strip. The upper 0.1m of underlying feature fills was then truncated by machining until the natural subsoil was seen in two areas at a depth of 1.2m below modern ground-level.

0001 was a shallow feature or spread occupying half of the trench and cutting ditch 0004. Measuring c.0.25m deep, with 0.1m having been removed by machine, it was preserved below the colluvial layer and so had not been affected by the railway line or landscaping of the playing field. The feature, a possible pit or sunken featured building, had an irregular base and sides, with a primary fill, 0003, of mid/dark brown clay silt on the eastern side. Above this, and infilling the bulk of the feature, was 0002, a dark grey/brown clay/silt with frequent charcoal flecks from which animal bone and a single sherd of early Anglo-Saxon pottery was recovered. No bulk environmental samples of either fill were taken due to the fact that only a limited part of the feature was exposed.

0004 was an undated possible shallow ditch with an indistinct cut, measuring 1.2m wide and c. 0.1m deep, with a fill of mid/dark brown clay silt, 0005.

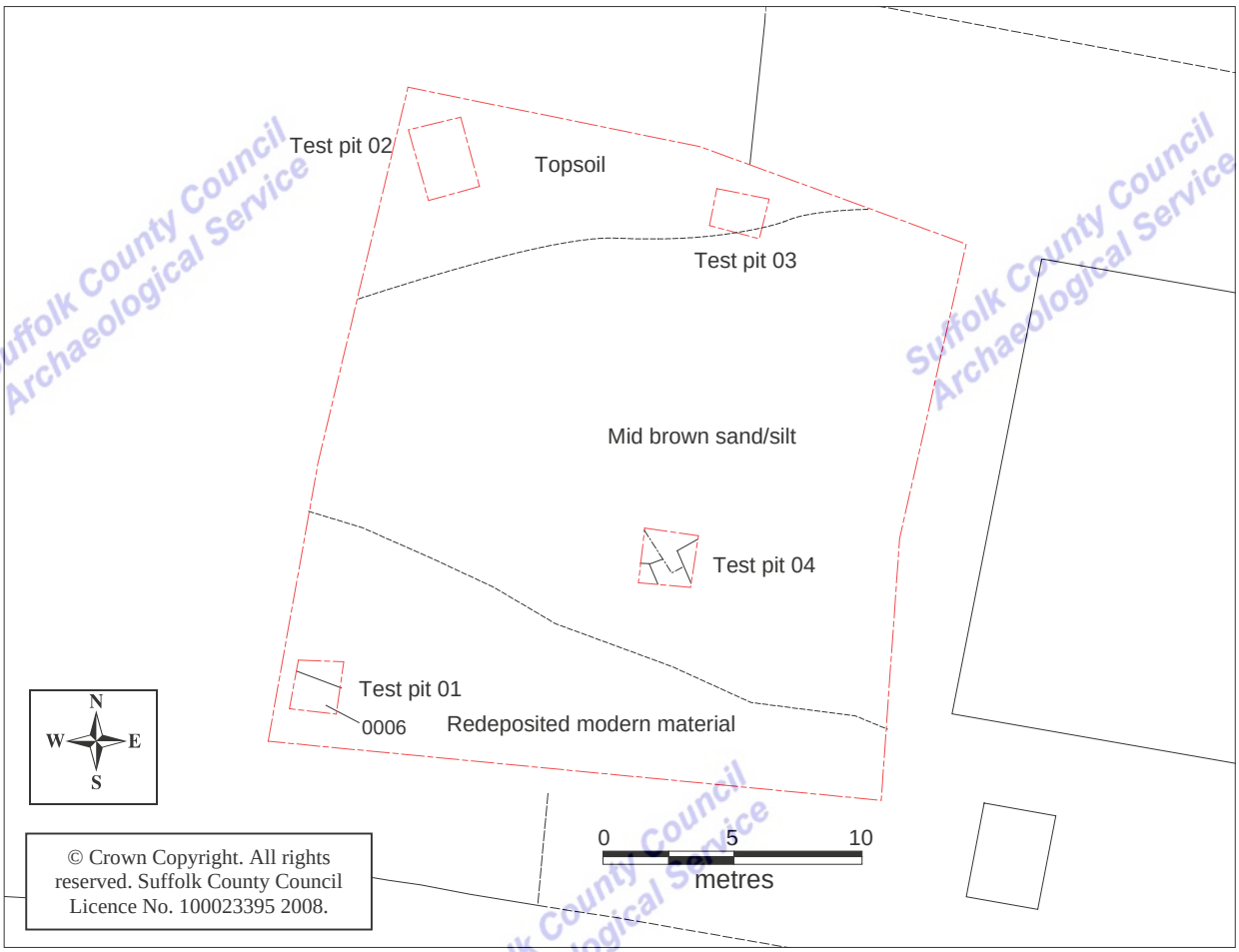

Figure 3. Site plan

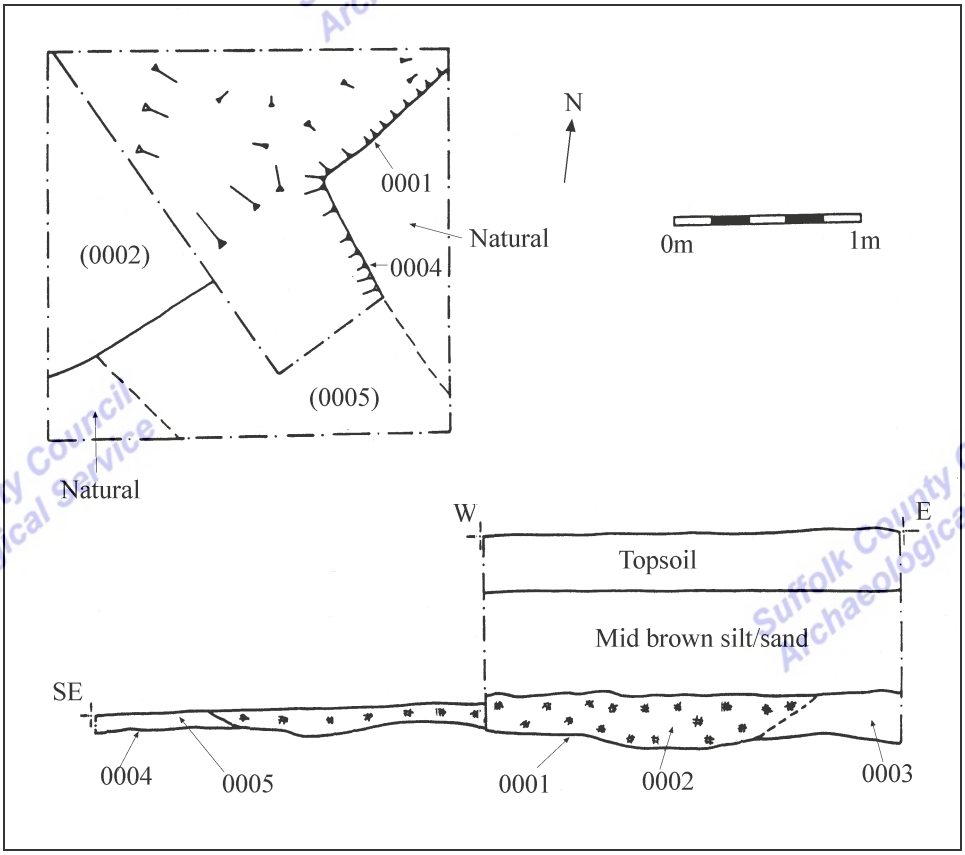

Figure 4. Test pit 04 plan and section

4. The Finds

Richenda Goffin

4.1. Introduction

Finds were collected from a single context, as shown in the table below.

OP	Pottery		Fired clay		Animal bone		Spotdate
	No.	Wt/g	No.	Wt/g	No.	Wt/g	
0002	1	20	1	8	38	556	Early Saxon
Total	1	20	1	8	38	556	

Table 1. Finds quantities

4.2. Pottery

A single fragment of Early Anglo-Saxon pottery was recovered from the fill 0002 of a possible pit (0.020kg). It is a hand-made body sherd with a medium-coarse fabric containing granitic and micaceous inclusions.

4.3. Fired clay

A small fragment of fired clay from the same feature may be of the same date. It is made of a fine sandy matrix with sparse flint inclusions up to 4mm in length. It may be the remains of a loomweight, or a piece of daub.

4.4. Animal bone

A number of fragments of animal bone including the metacarpus and radius of cattle were collected from the monitoring (38 frags @ 0.556kg).

4.5. Discussion

The small quantity of finds recovered from the monitoring are evidence of Early Anglo-Saxon activity, adjacent to the much larger Saxon site on the playing field development (EYE 083).

5. Discussion

The varying depth of the subsoil surface in the four test pits is due to the site's location on the natural south facing slope, now obscured by the landscaped playing field. Immediately to the south of the site, the ground level drops sharply onto the adjoining field which itself continues to slope down to the south. Part of this drop, and the modern deposits in Test Pit 04, may be due to landscaping caused by the construction of the former railway cutting but it is clear that the south-east part of the playing field was built up from the natural slope to a level surface. The test pits showed that the subsoil and archaeological levels continued to rise to the north, from a depth of 2m in Trench 01 to 0.8m in Trench 02. The natural slope eventually rises to a level plateau across the centre and northern parts of the playing field.

Test Pits 04, and possibly 01, demonstrated the presence of archaeological deposits relating to Early Saxon activity, extending north-west from the EYE 083 excavation, c.20m into the existing playing field.

6. Conclusion and Recommendations

Evidence of Early Saxon activity was seen to be present within the footprint of the proposed sports hall, sealed at a depth of c.1m+. These deposits were seen to be unaffected by the topsoil strip but were still vulnerable to disturbance from footing trenches. Due to the depth of the archaeological deposits, open area excavation was thought to be impractical and so a recommendation was made at the time of fieldwork for a program of archaeological monitoring of the development's groundworks. However, the sports hall has been constructed with no such mitigation program in place.

The subsoil surface was seen to continue its rise to the north from the adjacent field and it is likely, across the centre and northern areas of the playing field, that archaeological deposits may be at a more typical depth of 0.4m-0.5m. The planning application includes areas of car parking spaces to the north of the new sports hall which may have an impact on such shallower archaeological deposits or leave an insufficient protective buffer layer in place. Further archaeological works is recommended in these areas, initially by evaluation trenching to assess the presence and depth of any archaeological deposits, to establish whether further excavation or monitoring may be required.

J.A.Craven
Project Officer
Field Team, Suffolk County Council Archaeological Service
March 2008

References

Caruth, J., in prep, EYE 083 Land to the south of Hartismere High School. SCCAS.

Disclaimer

Any opinions expressed in this report about the need for further archaeological work are those of the Field Projects Division alone. The need for further work will be determined by the Local Planning Authority and its archaeological advisors when a planning application is registered. Suffolk County Council's archaeological contracting service cannot accept responsibility for inconvenience caused to clients should the Planning Authority take a different view to that expressed in the report.

Appendix 1:

SUFFOLK COUNTY COUNCIL
ARCHAEOLOGICAL SERVICE - CONSERVATION TEAM

Brief and Specification for an Archaeological Excavation

SPORTS DEVELOPMENT, HARTISMERE HIGH SCHOOL, CASTLETON WAY, EYE

Although this document is fundamental to the work of the specialist archaeological contractor the developer should be aware that certain of its requirements are likely to impinge upon the working practices of a general building contractor and may have financial implications

1. The nature of the development and archaeological requirements

1.1 Planning consent (application 0307/07) has been granted for the construction of a new multi-purpose sports hall and two new areas of car-parking on land at Hartismere High School, Castleton Road, Eye (TM 137 739), with a PPG 16, paragraph 30 condition requiring an acceptable programme of archaeological work being carried out.

1.2 This application lies in an area of high archaeological importance recorded in the County Sites and Monuments Record. It is situated to the east of an early Anglo-Saxon cemetery (YAX 016), and also possibly indicated by the find spot of a brooch (EYE 051). There is also the find spot of an early Anglo-Saxon brooch to the north (EYE 053). Further evidence of early medieval occupation is indicated by find spots of early Anglo-Saxon brooches and a silver sceat on the opposite side of the valley, immediately to the south of the application area. In addition, there is a known prehistoric finds scatter immediately to the west (EYE 005). There is high potential for encountering occupation deposits at this location. The proposed works would cause significant ground disturbance that has potential to damage any archaeological deposit that exists.

1.3 The significant archaeologically damaging activity in this proposal are the groundworks (site strip and footing trenches) associated with the construction of the new sports hall (Phases 1 and 2), located on the south-west corner of the school complex, and associated carp-parking, in both the south-west (55 spaces) and south-east (33 spaces) of the complex, an area of *c*. 2,889m^2 in total.

1.4 In order to comply with the planning condition, Suffolk County Council (Property) has requested a brief and specification for the archaeological recording of archaeological deposits that will be affected by development. An outline specification, which defines certain minimum criteria, is set out below.

2. Brief for Archaeological Investigation

2.1 An archaeological excavation, as specified in Section 3, is to be carried out prior to development. All areas in which groundworks are to take place must be subject to prior archaeological investigation.

2.2 The excavation objective will be to provide a record of all archaeological deposits which would otherwise be damaged or removed by development, including services and landscaping permitted by the consent. Adequate time is to be allowed for archaeological recording of archaeological deposits during excavation.

2.3 The academic objective will centre upon the potential for this site to produce, in particular, evidence for prehistoric and Anglo-Saxon occupation, in the form of finds and features.

2.4 This project will be carried through in a manner broadly consistent with English Heritage's *Management of Archaeological Projects,* 1991 (*MAP2*). Excavation is to be followed by the preparation of a full archive, and an assessment of potential for analysis. Analysis and final report preparation will follow assessment and will be the subject of a further brief and updated project design.

2.5 In accordance with the standards and guidance produced by the Institute of Field Archaeologists this brief should not be considered sufficient to enable the total execution of the project. A Project Design or Written Scheme of Investigation (PD/WSI) based upon this brief and the accompanying outline specification of minimum requirements, is an essential requirement. This must be submitted by the developers, or their agent, to the Conservation Team of the Archaeological Service of Suffolk County Council (Shire Hall, Bury St Edmunds IP33 2AR; telephone/fax: 01284 352443) for approval. The work must not commence until this office has approved both the archaeological contractor as suitable to undertake the work, and the PD/WSI as satisfactory. The PD/WSI will *provide the basis for measurable standards* and will be used to establish whether the requirements of the planning condition will be adequately met; an important aspect of the PD/WSI will be an assessment of the project in relation to the Regional Research Framework (*East Anglian Archaeology* Occasional Papers 3, 1997, 'Research and Archaeology: A Framework for the Eastern Counties, 1. resource assessment', and 8, 2000, 'Research and Archaeology: A Framework for the Eastern Counties, 2. research agenda and strategy').

2.6 Before any archaeological site work can commence it is the responsibility of the developer to provide the archaeological contractor with either the contaminated land report for the site or a written statement that there is no contamination. The developer should be aware that investigative sampling to test for contamination is likely to have an impact on any archaeological deposit which exists; proposals for sampling should be discussed with the Conservation Team of the Archaeological Service of SCC (SCCAS/CT) before execution.

2.7 The responsibility for identifying any restraints on field-work (e.g. Scheduled Monument status, Listed Building status, public utilities or other services, tree preservation orders, SSSIs, wildlife sites &c.) rests with the commissioning body and its archaeological contractor. The existence and content of the archaeological brief does not over-ride such restraints or imply that the target area is freely available.

2.8 All arrangements for the excavation of the site, the timing of the work, access to the site, the definition of the precise area of landholding and area for proposed development are to be defined and negotiated with the commissioning body.

2.9 The developer or his archaeologist will give SCCAS/CT ten working days notice of the commencement of ground works on the site, in order that the work of the archaeological contractor may be monitored. The method and form of development will also be monitored to ensure that it conforms to previously agreed locations and techniques upon which this brief is based.

3. Specification for the Archaeological Excavation ***(See also Section 4)***

The excavation methodology is to be agreed in detail before the project commences, certain minimum criteria will be required:

3.1 The topsoil should be examined for archaeological material by non-ferrous metal-detector survey before mechanical stripping.

3.2 Topsoil and subsoil deposits must be removed to the top of the first archaeological level by an appropriate machine with a back-acting arm fitted with a toothless bucket. All

machine excavation is to be under the direct control and supervision of an archaeologist.

3.3 If the machine stripping is to be undertaken by the main contractor, all machinery must keep off the stripped areas until they have been fully excavated and recorded, in accordance with this specification. Full construction work must not begin until excavation has been completed and formally confirmed by SCCAS/CT.

3.4 The top of the first archaeological deposit may be cleared by machine, but must then be cleaned off by hand. There is a presumption that excavation of all archaeological deposits will be done by hand unless it can be shown there will not be a loss of evidence by using a machine. The decision as to the proper method of further excavation will be made by the senior project archaeologist with regard to the nature of the deposit.

3.5 All features which are, or could be interpreted as, structural must be fully excavated. Post-holes and pits must be examined in section and then fully excavated. Fabricated surfaces within the excavation area (e.g. yards and floors) must be fully exposed and cleaned. Any variation from this process can only be made by agreement with SCCAS/CT, and must be confirmed in writing.

3.6 All other features must be sufficiently examined to establish, where possible, their date and function. For guidance:

a) A minimum of 50% of the fills of the general features is be excavated.

b) Between 10% and 20% of the fills of substantial linear features (ditches, etc) are to be excavated, the samples must be representative of the available length of the feature and must take into account any variations in the shape or fill of the feature and any concentrations of artefacts.

Any variation from this process can only be made by agreement [if necessary on site] with a member of SCCAS/CT, and must be confirmed in writing.

3.7 Collect and prepare environmental bulk samples (for flotation and analysis by an environmental specialist). The fills of all archaeological features should be bulk sampled for palaeoenvironmental remains and assessed by an appropriate specialist. The Project Design must provide details of a comprehensive sampling strategy for retrieving and processing biological remains (for palaeoenvironmental and palaeoeconomic investigations and also for absolute dating), and samples of sediments and/or soils (for micromorphological and other pedological/sedimentological analyses. All samples should be retained until their potential has been assessed. Advice on the appropriateness of the proposed strategies will be sought from J. Heathcote, English Heritage Regional Adviser in Archaeological Science (East of England). A guide to sampling archaeological deposits (Murphy, P.L. and Wiltshire, P.E.J., 1994, *A guide to sampling archaeological deposits for environmental analysis*) is available for viewing from SCCAS.

3.8 A finds recovery policy is to be agreed before the project commences. It should be addressed by the Project Design. Sieving of occupation levels and building fills will be expected.

3.9 Use of a metal detector will form an essential part of finds recovery. Metal detector searches must take place at all stages of the excavation by an experienced metal detector user.

3.10 All finds will be collected and processed. No discard policy will be considered until the whole body of finds has been evaluated.

3.11 All ceramic, bone and stone artefacts to be cleaned and processed concurrently with the excavation to allow immediate evaluation and input into decision making.

3.12 Metal artefacts must be stored and managed on site in accordance with *UK Institute of Conservators Guidelines* and evaluated for significant dating and cultural implications before despatch to a conservation laboratory within 4 weeks of excavation.

3.13 Human remains are to be treated at all stages with care and respect, and are to be dealt with in accordance with the law. They must be recorded *in situ* and subsequently lifted, packed and marked to standards compatible with those described in the Institute of Field Archaeologists' *Technical Paper 13: Excavation and post-excavation treatment of Cremated and Inhumed Human Remains*, by McKinley & Roberts. Proposals for the final disposition of remains following study and analysis will be required in the Project Design.

3.14 Plans of the archaeological features on the site should normally be drawn at 1:20 or 1:50, depending on the complexity of the data to be recorded. Sections should be drawn at 1:10 or 1:20 again depending on the complexity to be recorded. All levels should relate to Ordnance Datum. Any variations from this must be agreed with SCCAS/CT.

3.15 A photographic record of the work is to be made, consisting of both monochrome photographs and colour transparencies/high resolution digital images.

3.16 Excavation record keeping is to be consistent with the requirements Suffolk County Council's Sites and Monuments Record and compatible with its archive. Methods must be agreed with SCCAS/CT.

4. General Management

4.1 A timetable for all stages of the project must be agreed before the first stage of work commences.

4.2 Monitoring of the archaeological work will be undertaken by SCCAS/CT. Where projects require more than a total of two man-days on site monitoring and two man-days post-excavation monitoring, an 'at-cost' charge will be made for monitoring (currently at a daily rate of £150, but to be fixed at the time that the project takes place), provision should be made for this in all costings. [A decision on the monitoring required will be made by SCCAS/CT on submission of the accepted Project Design.]

4.3 The composition of the project staff must be detailed and agreed (this is to include any subcontractors). For the site director and other staff likely to have a major responsibility for the post-excavation processing of this site there must be a statement of their responsibilities for post-excavation work on other archaeological sites.

4.4 It is the archaeological contractor's responsibility to ensure that adequate resources are available to fulfill the Brief.

4.5 A general Health and Safety Policy must be provided, with detailed risk assessment and management strategy for this particular site.

4.6 The Project Design must include proposed security measures to protect the site and both excavated and unexcavated finds from vandalism and theft.

4.7 Provision for the reinstatement of the ground and filling of dangerous holes must be detailed in the Project Design.

4.8 No initial survey to detect public utility or other services has taken place. The responsibility for this rests with the archaeological contractor.

4.9 The Institute of Field Archaeologists' *Standard and Guidance for Archaeological Desk-based Assessments* and for *Field Evaluations* should be used for additional guidance in the execution of the project and in drawing up the report.

5. Archive Requirements

5.1 Within four weeks of the end of field-work a timetable for post-excavation work must be produced. Following this a written statement of progress on post-excavation work whether archive, assessment, analysis or final report writing will be required at three monthly intervals.

5.2 An archive of all records and finds is to be prepared consistent with the principle of English Heritage's *Management of Archaeological Projects*, 1991 (*MAP2*), particularly Appendix 3. However, the detail of the archive is to be fuller than that implied in *MAP2* Appendix 3.2.1. The archive is to be sufficiently detailed to allow comprehension and further interpretation of the site should the project not proceed to detailed analysis and final report preparation. It must be adequate to perform the function of a final archive for lodgement in the County SMR or museum.

5.3 The project manager must consult the SMR Officer to obtain an event number for the work. This number will be unique for each project or site and must be clearly marked on any documentation relating to the work.

5.4 The project manager should consult the County SMR officer regarding the requirements for the deposition of the archive (conservation, ordering, organisation, labelling, marking and storage) of excavated material and the archive.

5.5 A clear statement of the form, intended content, and standards of the archive is to be submitted for approval as an essential requirement of the Project Design.

5.6 The site archive quoted at *MAP2* Appendix 3, must satisfy the standard set by the "Guideline for the preparation of site archives and assessments of all finds other than fired clay vessels" of the Roman Finds Group and the Finds Research Group AD700-1700 (1993).

5.7 Pottery should be recorded and archived to a standard comparable with 6.3 above, i.e. *The Study of Later Prehistoric Pottery: General Policies and Guidelines for Analysis and Publication,* Prehistoric Ceramics Research Group Occ Paper 1 (1991, rev 1997), the *Guidelines for the archiving of Roman Pottery*, Study Group Roman Pottery (ed M G Darling 1994) and the *Guidelines of the Medieval Pottery Group* (in draft).

5.8 All coins must be identified and listed as a minimum archive requirement.

5.9 The data recording methods and conventions used must be consistent with, and approved by, the County Sites and Monuments Record. All record drawings of excavated evidence are to be presented in drawn up form, with overall site plans. All records must be on an archivally stable and suitable base.

5.10 A complete copy of the site record archive must be deposited with the County Sites and Monuments Record within 12 months of the completion of fieldwork. It will then become publicly accessible.

5.11 Finds must be appropriately conserved and stored in accordance with UK Institute Conservators Guidelines.

5.12 Every effort must be made to get the agreement of the landowner/developer to the deposition of the finds with the County SMR or a museum in Suffolk which satisfies Museum and Galleries Commission requirements, as an indissoluble part of the full site archive. If this is not achievable for all or parts of the finds archive then provision must be made for additional recording (e.g. photography, illustration, analysis) as appropriate. If the County SMR is the repository for finds there will be a charge made for storage, and it is presumed that this will also be true for storage of the archive in a museum.

5.13 Where appropriate, a digital vector trench plan should be included with the report, which must be compatible with MapInfo GIS software, for integration in the County Sites and Monuments Record. AutoCAD files should be also exported and saved into a format that can be can be imported into MapInfo (for example, as a Drawing Interchange File or .dxf) or already transferred to .TAB files.

5.14 Where positive conclusions are drawn from a project, a summary report in the established format, suitable for inclusion in the annual 'Archaeology in Suffolk' section of the Proceedings of the Suffolk Institute for Archaeology journal, must be prepared and included in the project report, or submitted to SCCAS/CT by the end of the calendar year in which the evaluation work takes place, whichever is the sooner.

5.15 At the start of work (immediately before fieldwork commences) an OASIS online record http://ads.ahds.ac.uk/project/oasis/ must be initiated and key fields completed on Details, Location and Creators forms.

5.16 All parts of the OASIS online form must be completed for submission to the SMR. This should include an uploaded .pdf version of the entire report (a paper copy should also be included with the archive).

6. Report Requirements

6.1 A report on the fieldwork and archive must be provided consistent with the principle of *MAP2*, particularly Appendix 4. The report must be integrated with the archive.

6.2 The objective account of the archaeological evidence must be clearly distinguished from its archaeological interpretation.

6.3 An important element of the report will be a description of the methodology.

6.4 Reports on specific areas of specialist study must include sufficient detail to permit assessment of potential for analysis, including tabulation of data by context, and must include non-technical summaries.

6.5 Provision should be made to assess the potential of scientific dating techniques for establishing the date range of significant artefact or ecofact assemblages, features or structures.

6.6 The results should be related to the relevant known archaeological information held in the county SMR.

6.7 The report will give an opinion as to the potential and necessity for further analysis of the excavation data beyond the archive stage, and the suggested requirement for publication; it will refer to the Regional Research Framework (see above, 2.5). Further analysis will not be embarked upon until the primary fieldwork results are assessed and the need for further work is established. Analysis and publication can be neither developed in detail or costed in detail until this brief and specification is satisfied, however, the developer should be aware that there may be a responsibility to provide a publication of the results of the programme of work.

6.8 The assessment report must be presented within six months of the completion of fieldwork unless other arrangements are negotiated with the project sponsor and SCCAS/CT.

6.9 The involvement of SCCAS/CT should be acknowledged in any report or publication generated by this project.

Specification by: Dr Jess Tipper

Suffolk County Council
Archaeological Service Conservation Team
Environment and Transport Department
Shire Hall
Bury St Edmunds
Suffolk IP33 2AR Tel: 01284 352197

Date: 17 April 2007 Reference: / SportsDev_HartismereHighSchool-Eye2007

This brief and specification remains valid for 12 months from the above date. If work is not carried out in full within that time this document will lapse; the authority should be notified and a revised brief and specification may be issued.

If the work defined by this brief forms a part of a programme of archaeological work required by a Planning Condition, the results must be considered by the Conservation Team of the Archaeological Service of Suffolk County Council, who have the responsibility for advising the appropriate Planning Authority.

Geophysical Survey of

LAND AT HARTISMERE HIGH SCHOOL, EYE

For Suffolk County Council Archaeological Service

Helen Woodhouse

L-P:ARCHÆOLOGY

Geophysical Survey of

LAND AT HARTISMERE HIGH SCHOOL, EYE

Client:	Suffolk County Council Archaeological Service
Local Authority:	Mid-Suffolk District Council
NGR:	TM 13705, 74105
Author(s):	H. Woodhouse
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Abstract

This report presents the results of a geophysical survey carried out on land to the west of Hartismere High School in Eye, Suffolk. The work was undertaken on behalf of Suffolk County Council Archaeological Service, in conjunction with their intensive investigation of the site prior to further development. The survey was undertaken with the aim of determining the archaeological potential of the school playing field in advance of further investigation in this area of the site. This report specifies the methodology employed together with a discussion and interpretation of the results. The survey was successful in identifying a series of geophysical anomalies although it was not possible to conclusively interpret them as archaeological.

1. Introduction and Scope of Study

1.1. This geophysical survey report has been prepared by Helen Woodhouse of L - P : Archaeology, the report was commissioned by Suffolk County Council Archaeological Service.

1.2. The report considers an area of land to the west of the town of Eye and to the west of Hartismere High School (FIGURE 1 & 2). The survey was commissioned prior to the application of any more invasive investigative techniques.

1.2.1. This report comprises an examination of the geophysical survey results and seeks to address the following issue:

- To assess the potential archaeology in the surveyed area and hence provide information to assist the decision making process as regards further investigation at the site.

2. Geology and Topography

2.1. GEOLOGY

2.1.1. The site is located within mid Suffolk in an area predominantly comprising a heavy boulder clay overlying a bed of Cretaceous chalk with gravel terraces along the river valleys.

2.1.2. Good results have been recorded by the surveyor on sites with similar geological backgrounds in other areas of Suffolk. Previous geophysical survey in another area of the same site has also produced valuable results (WOODHOUSE 2007).

2.2. TOPOGRAPHY

2.2.1. The market town of Eye sits on an unusual island of high land in mid Suffolk, formed by the meadows of the River Dove to the east and a stream from Yaxley to the north.

2.2.2. The site comprises a roughly rectangular plot of land c. 2.6 hectares in size, the majority of which is relatively flat but which slopes down towards the western third of the site where the ground level is significantly lower and thus more comparable with that in the excavated area to the south.

3. Archaeological and Historical Background

TIMESCALES USED IN THIS REPORT:

PERIOD	FROM	TO
PREHISTORIC		
PALAEOLITHIC	450,000	12,000 BC
MESOLITHIC	12,000	4,000 BC
NEOLITHIC	4,000	1,800 BC
BRONZE AGE	1,800	600 BC
IRON AGE	600	43 AD
HISTORIC		
ROMAN	43	410 AD
EARLY MEDIEVAL	410	1066 AD
MEDIEVAL	1066	1485 AD
POST MEDIEVAL	1485	PRESENT

3.1. The site does not contain any Scheduled Monuments or Listed buildings.

3.2. It is not the aim of this report to present a complete history of the Eye area from the earliest times. Rather, the aim is to summarise the periods of archaeological activity with which the local area is associated. Further information can be obtained from WESSEX 1999.

3.3. PREHISTORIC

3.3.1. Indications of Palaeolithic, Mesolithic, Neolithic and Bronze Age activity have been found in and around Eye. (E.G. SMEDLEY & OWLES 1959:163; OWENS & SMEDLEY 1968:192)

3.4. BRONZE AGE

3.4.1. Conversations with the Suffolk County Council Archaeological Service excavation team suggest that the continuing excavation to the south of the survey area has unearthed evidence relating to Bronze Age activity.

3.5. IRON AGE AND ROMANO-BRITISH

3.5.1. Conversations with the Suffolk County Council Archaeological Service excavation team suggest that the continuing excavation to the south of the survey area has unearthed evidence of activity dating to the Iron Age in the upper plateaued area of the excavated site.

3.5.2. The earliest evidence relating to a fixed settlement at Eye dates to the Roman period (MOORE ET AL 1988).

3.6. EARLY MEDIEVAL

3.6.1. Conversations with the Suffolk County Council Archaeological Service excavation team suggest that the continuing excavation to the south of the survey area has unearthed evidence of activity dating to the Saxon period.

3.6.2. A large Anglo-Saxon Cremation cemetery dating to the 6th Century AD is located near the Waterloo Plantation to the north east of Eye[1].

3.7. MEDIEVAL

3.7.1. The Norman conquest in 1066 began a period of the growth of Eye as an urbanised centre since it coincided with the construction of a castle and foundation of a market by a local wealthy landowner. (SCARFE 1972: 152)

3.8. POST-MEDIEVAL

3.8.1. The site lies immediately to the north of the route of the Mellis and Eye railway line and this was responsible for the southern boundary to the site, which now exists as a field boundary separating the survey area from the area currently undergoing excavation.

3.8.2. The evidence therefore points to a multi period site in the vicinity of the survey area.

1 HTTP://ADS.AHDS.AC.UK/CATALOGUE/SEARCH/FR.CFM?RCN=NMR_NATINV-38904

4. Site Conditions

4.1. SITE CONDITIONS

4.1.1. The site as a whole was laid to turf which presented no difficulties for the conduction of the survey, but several other factors placed severe restrictions upon the area available for study.

4.1.2. The site was bounded to the east and in the south eastern corner by tall metal fences to restrict access to the site from the main school grounds next to which several vehicles were parked. In addition a series of portakabins had been installed in the south eastern corner in order to facilitate the day to day workings of the concurrent excavation. Next to the area fenced off for vehicles and portakabins was another area separated for sports activities. The proximity of these 2 areas made it impractical to begin the survey in this region of the site before the western limit of the sports court. This accounts for the blank area in this portion of the site.

4.1.3. The remaining area included several constructions associated with the use of the field for sporting facilities. These included static goalposts cemented into the ground and long jumps and account for the isolated blank areas within the survey results. Unfortunately one of the goalposts was associated with a large gravelled area in the lower portion of the site where it was hoped more significant anomalies might be identified which could potentially be related to features in the excavated area to the south

Plate 1 - View overlooking the area to be surveyed facing west

5. Methodology

5.1. The decision to use magnetometry on the site was based on its efficiency as a survey technique suitable for detecting buried remains of materials derived from human occupation with distinctly different magnetic susceptibility to the geological background, and in particular those which have been subjected to heating or burning processes such as the firing of clay for brick or ceramic goods (GAFFNEY ET AL 1991:6; DAVID 1995:9). The results of this method are, however, severely restricted in areas of modern disturbance and by the presence of ferrous material (GEOSCAN RESEARCH 1996; SCOLLAR ET AL 1990:362).

5.2. Magnetometry has not proven to be consistently successful in obtaining good data from comparable sites on similar geological backgrounds (DAVID 1995:10) due to the often poor response over the boulder clay, but the technique has been used successfully in the local area by the surveyor who was confident of its suitability in this context and promising results had previously been obtained in another area of the same site (WOODHOUSE 2007) .

5.3. Although a number of alternative geophysical survey techniques could have been applied to the site (APPENDIX 3) magnetometry represents the best compromise between speed and quality of data retrieval.

5.4. The magnetometry survey was undertaken using a Bartington Grad 601-2 dual sensor vertical component fluxgate gradiometer. This equipment allowed the survey to be conducted extremely rapidly both in the open areas and around any obstructions. Readings were taken at 0.25m intervals along traverses of 1m spacing. This enabled a reasonably high density of data to be collected whilst not impairing the speed of the survey.

5.5. The geophysical survey grid based on 30m x 30m grids was set out prior to the initiation of the survey with a Leica TCR805 total station. In the absence of any information suggesting that such an orientation would be unsuitable for any potential archaeological features in the current survey area, the survey grid was set out as a continuation of that utilised in the previous survey area to the south.

6. Results & Interpretation

6.1. The overall response of the survey area to magnetometry was good with the visible archaeological features showing distinctly against the geological background. The disturbance due to the sports installations on the field initially masked these features due to the incorporation of a series of very high readings but the the data nonetheless was collected to a very satisfactory standard.

6.2. The magnetometry data were processed in Geoplot 3.01t as a single composite utilising a series of statistical processes in order to clarify the results (FIGURE 3 & 4). The results were processed in such a way as to enhance the potential archaeological anomalies against the geological background.

6.3. The graphical plots were geo-referenced using AutoCAD Civil 3D 2008. From this set of geophysical data an interpretation plan was drawn (FIGURE 5) which shows the discernible anomalies present across the survey area. This interpretative plan forms the basis of the discussion of the results presented below.

6.4. The distribution of the geophysical anomalies is far denser in the lower, western part of the playing field probably due to the decreased depth of deposit over any potential archaeological features.

6.5. A series of dipolar anomalies [**1-11**] are distributed across the survey area. Small dipolar anomalies which occur in only one traverse of the results are most commonly associated with small ferrous material in the topsoil and these can be removed from the results during processing by removing small spikes within the data. Anomalies [**1-11**] are significantly larger than this but the very high level of the readings recorded at the centre of anomalies [**4**], [**5**], [**6**], [**8**] and [**9**] suggest that subsurface metal objects may be the origin of these anomalies. Anomaly [**9**] may be associated with the goal post installation to the west which prevented further readings being taken in this area. Anomaly [**7**] is difficult to interpret due to its location right on the edge of the survey area but it may result from an underground pipe or from proximity to the metal fence at the edge of the survey area. The remaining dipolar anomalies may be interpreted as resulting from modern disturbance or ferrous material beneath the surface, but they may also relate to fired material in features such as kilns or hearths.

6.6. In addition there are a similar number of negative anomalies [**19-29**] which are also distributed across the survey area and are relatively small by comparison. Isolated negative responses such as these usually correspond to the subsurface presence of features of low magnetic susceptibility such as sedimentary rocks or voids.

6.7. The most numerous type of anomaly in the results from the survey are positive anomalies. These were too numerous to number individually so only those worthy of specific comment or interpretative discussion have been numbered on the interpretative diagram. The results include many more such features than are plotted on the interpretative diagram which can be seen as a series of similar more ephemeral features across the survey area. These can be brought out more clearly with harsher processing but it was found both that the distinction between individual features became increasingly blurred and that elements of the larger features were lost.

6.7.1. The majority of the positive anomalies on the site are circular or oval maculae registering across 2-4 traverses of the survey. These are particularly frequent towards the base of the western facing slope and in the lower region at the western end of the survey area. Isolated positive anomalies such as these can usually be interpreted as pits. When the readings suggest a particularly intensive response this may correspond to hearths, ovens or kilns. However it is also possible for these anomalies to result from naturally occurring features, so they are best interpreted within the context of supporting information.

6.7.2. There does not appear to be any obvious patterning amongst these isolated positive responses except for the series of anomalies [**14**] in the south eastern corner of the survey area. These anomalies are not particularly distinct but may be related to one another and to the other positive anomaly which they surround.

6.7.3. Three other positive anomalies [**13**, **17** & **18**] are significantly larger than the rest. Anomaly [**13**] is difficult to interpret since it was only partially covered by the survey area, but its diameter in excess of 7m makes it worthy of comment. Anomalies [**17** & **18**] are oval maculae with maximum diameters in excess of 3m. These may be larger pits or other sunken features, though

beyond this they cannot be interpreted conclusively without contextual information.

6.7.4. Three larger areas of high positive gradient [**12**, **15** & **16**] can be interpreted as disturbance caused by the location of permanent goalposts and therefore discounted for archaeological analysis.

6.7.5. A single weak positive curvilinear feature [**30**] is located in the area of the western facing slope.

6.8. The area of the most intensive magnetic response lies under the western facing slope towards the southern limit of the survey area. The results in this region contain 2 adjacent areas of very intensive readings comprising rapid strong fluctuations in the magnetic response, a characteristic often associated with burnt material or industrial waste. The most disturbed area [**33**] is the larger of the two and lies to the west. Analysis of the results and in particular consultation of the dot density plot indicate the possible location of an underlying rectilinear anomaly [**32**] orientated north west – south east and measuring c. 17m x c. 8m. To the east lies another rectilinear anomaly [**31**] which is orientated south west – north east and measures c. 14m x c. 9.5m. These two features are relatively similar in size and their orientation with respect to one another suggest that they may be related. It is possible that these anomalies correspond to building remains, but the level of overlying disturbance makes them difficult to interpret or determine a possible date of origin without contextual information. No buildings appear on any historic maps from the 19th or early 20th Century but what appears to be a pit or quarried feature is present on the County Series 1:10560 1st revision 1888-1914 onwards with a track or path leading to it from the south east corner of the field, and also on the 1:25000 2nd revision 1906-1939. This feature on the maps corresponds exactly with the location of anomaly [**32**] and if the underlying feature has been dug out and backfilled this might well account for the considerable level of disturbance exhibited in this area. The lack of excavation over anomaly [**31**] would also explain why both features are not similarly disturbed.

7. Conclusions & Discussion

7.1. The results demonstrate a higher proportion of potentially archaeological features in the most western third of the survey area where the depth of deposit is considerably decreased.

7.2. The survey methodology was shown to have a good response over the identifiable archaeological features in the lower western region even given the disturbance caused by modern constructions within the survey area.

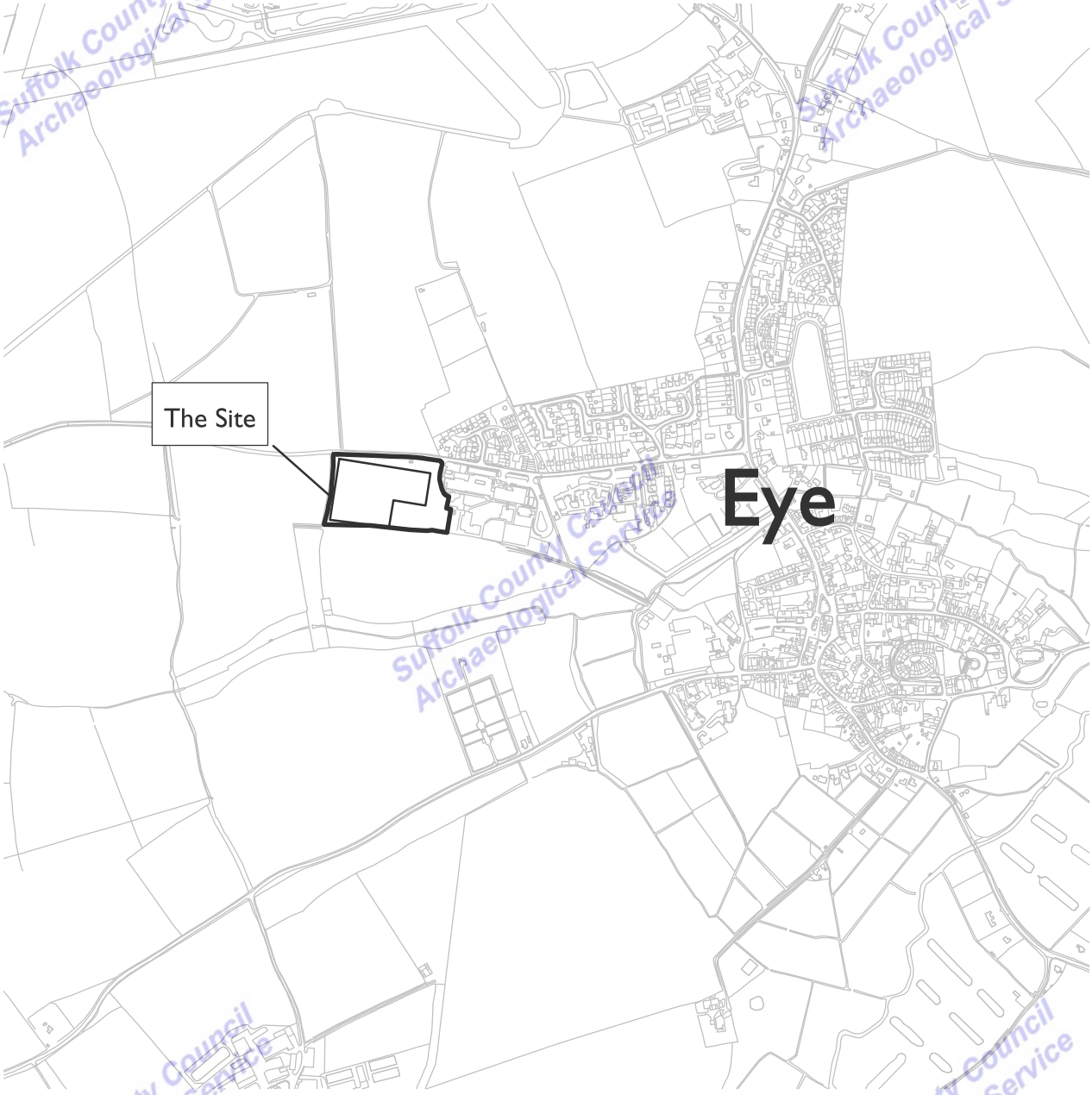
7.3. The surveyor would suggest that anomalies [**31**] and [**32**] deserve further desk-based investigation for their interpretation given the close correlation with the feature shown on the historic maps consulted.

8. Statement of Indemnity

8.1. Whilst every effort has been made to ensure that interpretation of the survey presents an accurate indication of the nature of sub-surface remains, any conclusions derived from the results form an entirely subjective assessment of the data and the importance attributed to certain features is a product of the judgement of the surveyors. Geophysical survey facilitates the collection of data relating to variations in the form and nature of the soil. This may only reveal certain archaeological features, and may not record all the material present.

FIGURES

FIGURE 1 // Site Location



0 750 m

N

PROJECT // 0593E- Eye, Suffolk

DESCRIPTION // Site Location - General

DOC REF: LP0593E-GSR-v2.0

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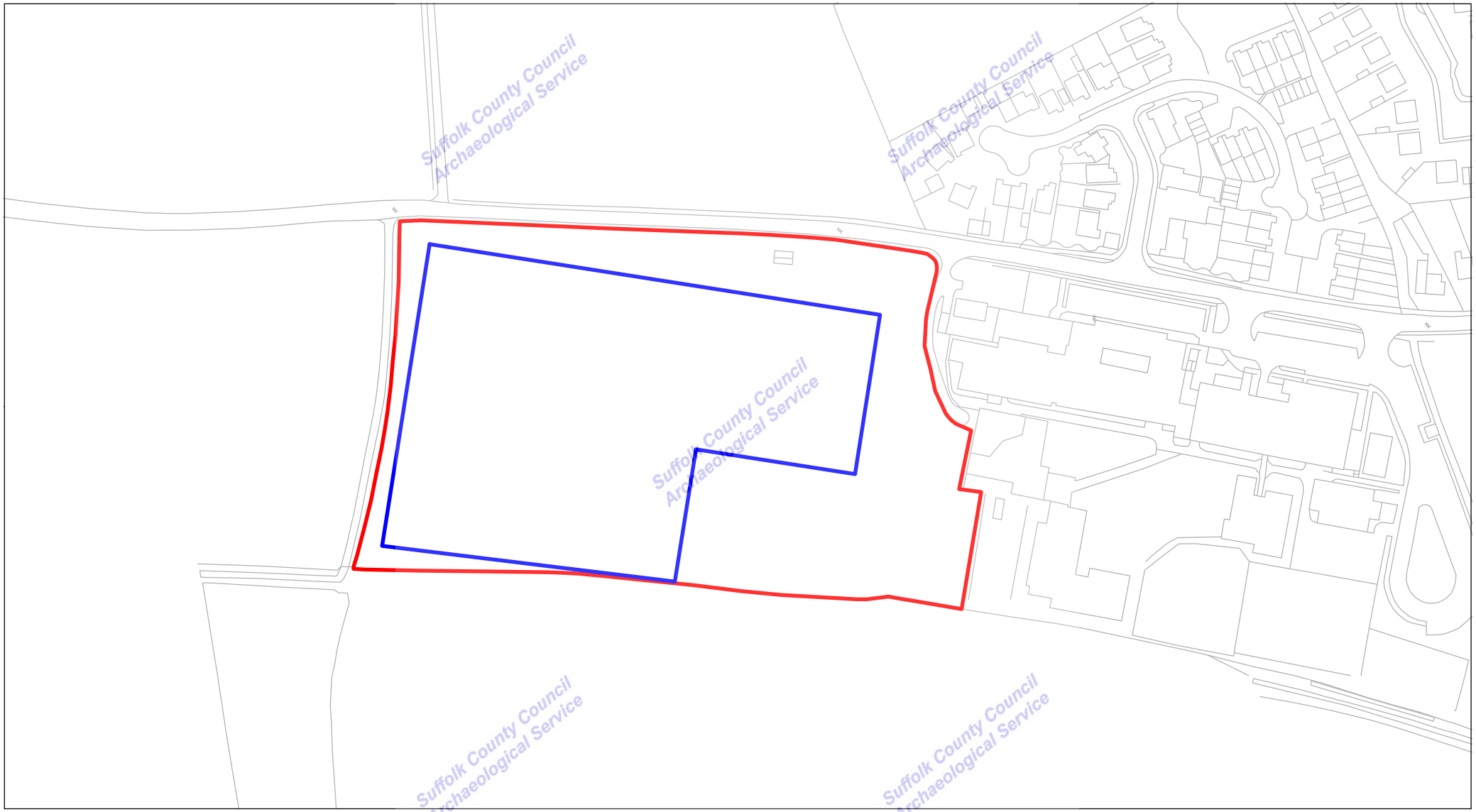
FIGURE 2 // Site Location



PROJECT // 0593E- Eye, Suffolk

DESCRIPTION // Site Location - Detailed

DOC REF: LP0593E-GSR-v2.0

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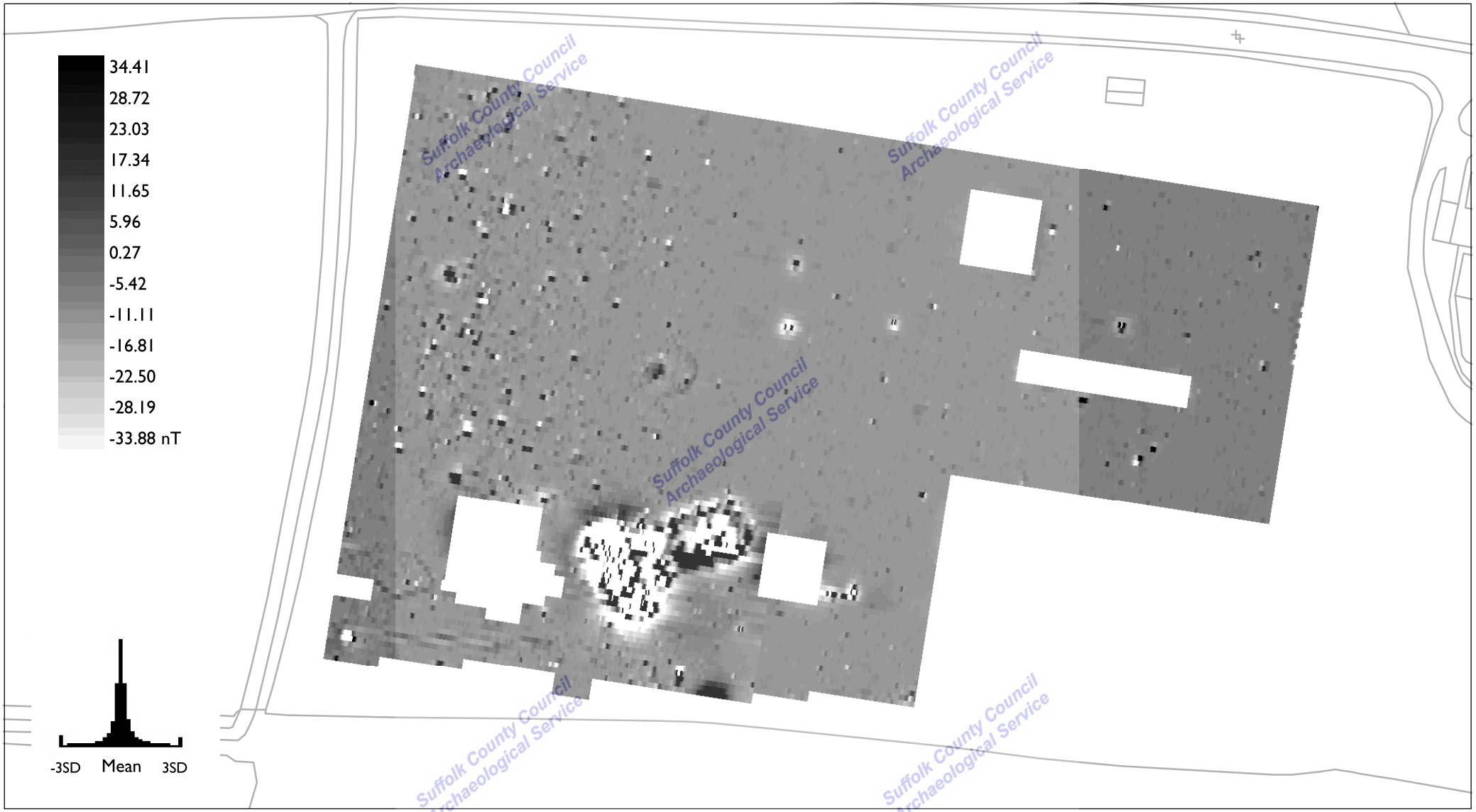
FIGURE 3 // Unprocessed Results



PROJECT // 0593E- Eye, Suffolk

DESCRIPTION // Greyscale Plot of Unprocessed Geophysical Survey Results

DOC REF: LP0593E-GSR-v2.0

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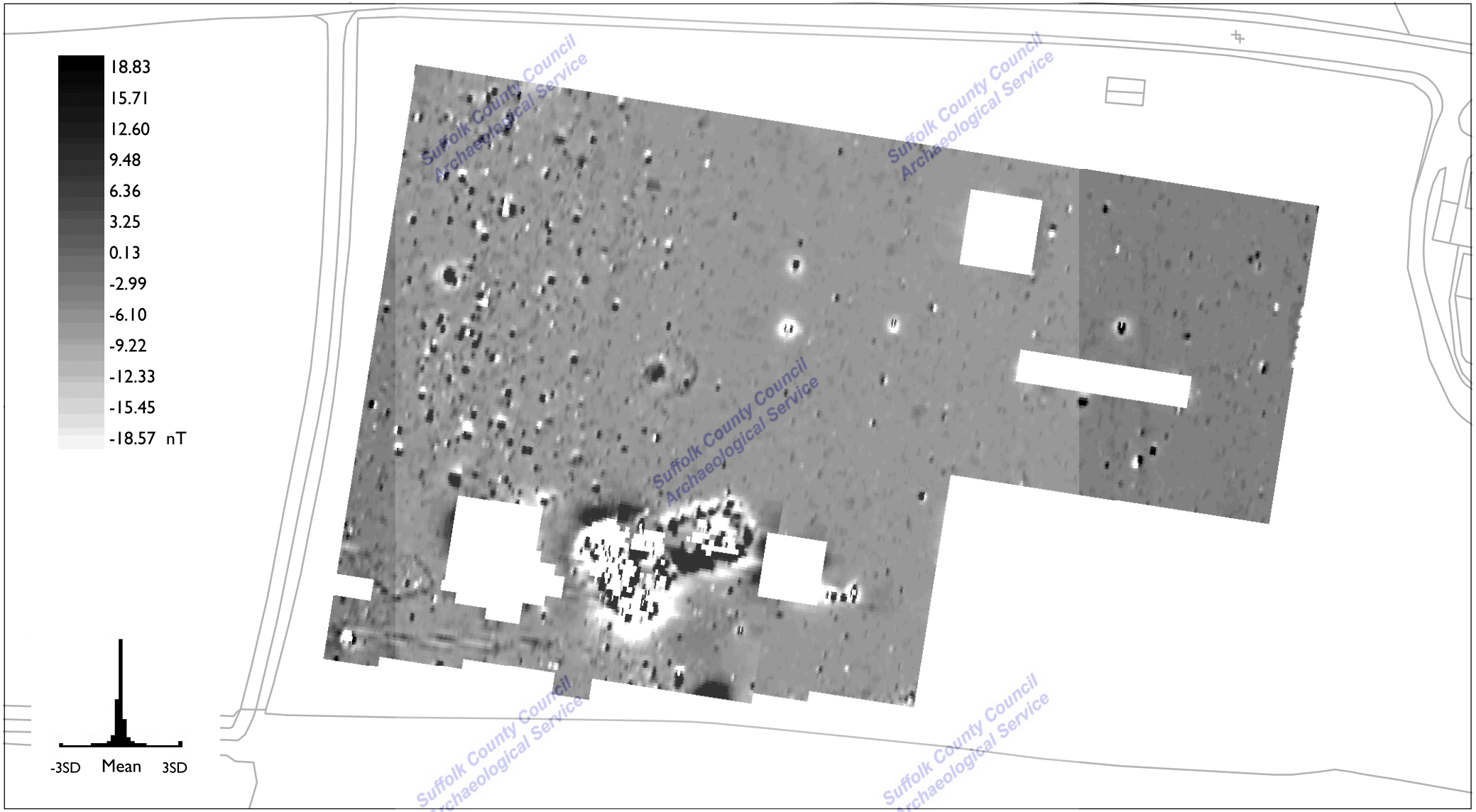
FIGURE 4 // Processed Results



PROJECT // 0593E- Eye, Suffolk

DESCRIPTION // Greyscale Plot of Processed Geophysical Survey Results

DOC REF: LP0593E-GSR-v2.0

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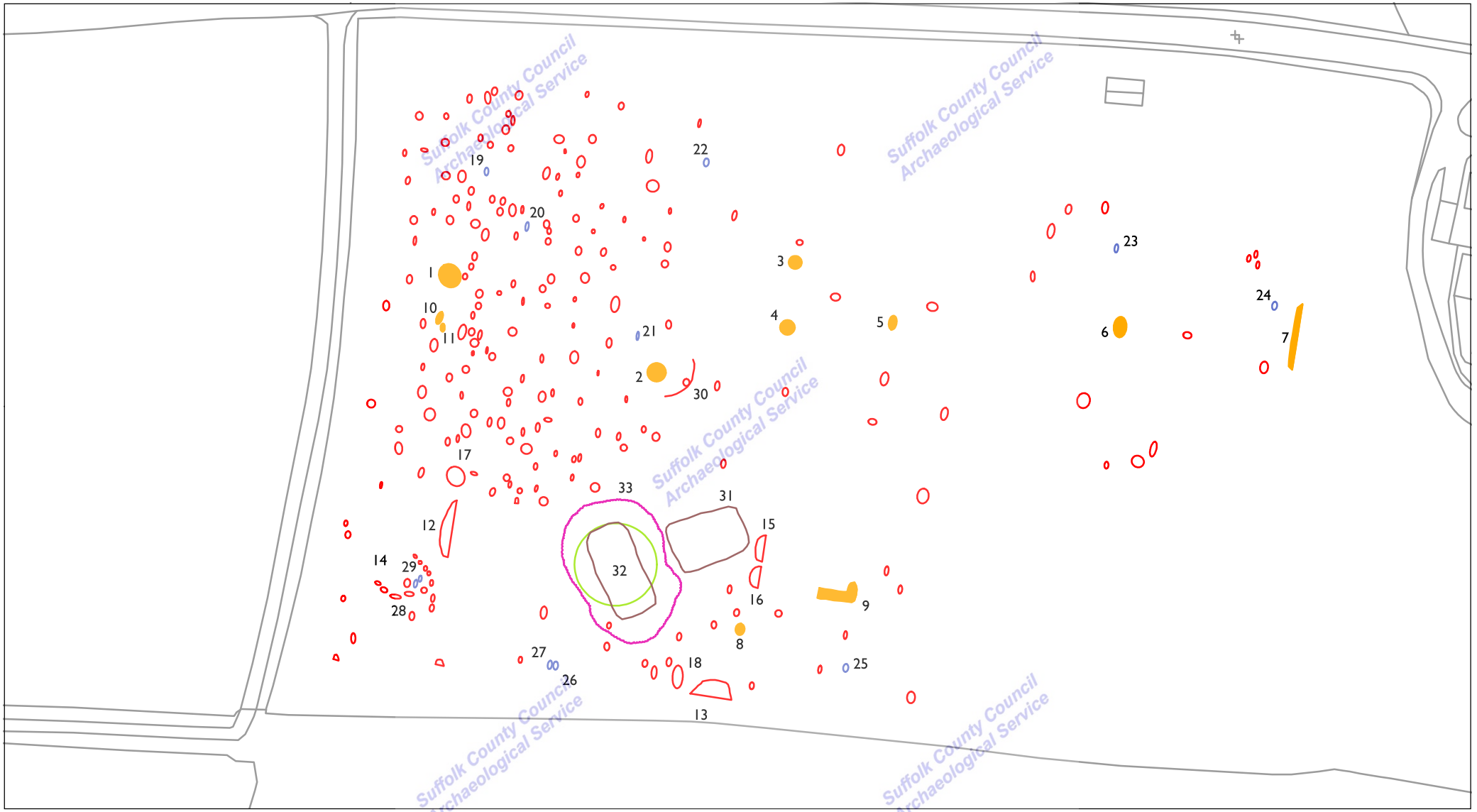
FIGURE 5 // Interpretation



PROJECT // 0593E- Eye, Suffolk

DESCRIPTION // Interpretative Diagram of Geophysical Survey Anomalies

DOC REF: LP0593E-GSR-v2.0

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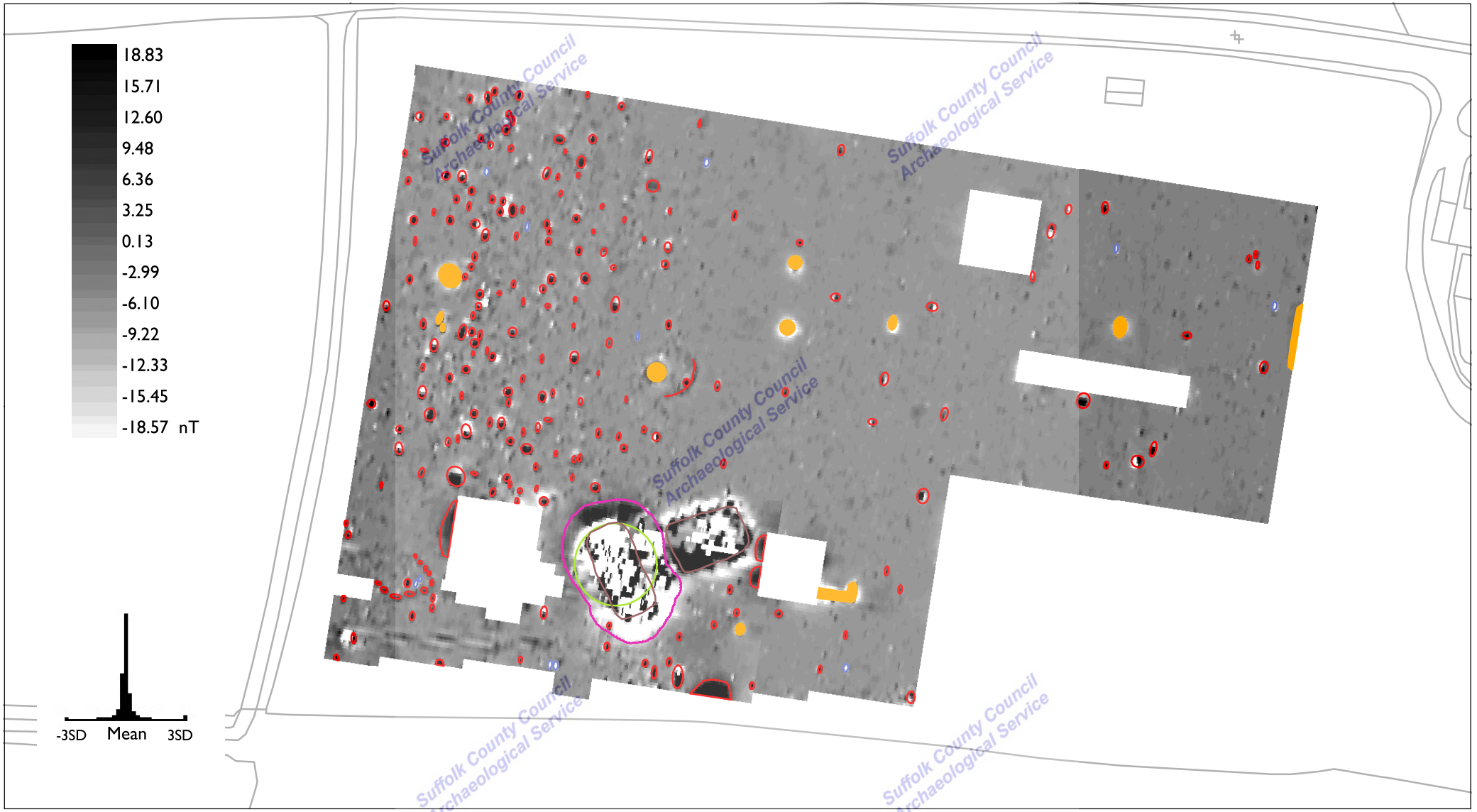
FIGURE 6 // Interpretation & Processed Results



PROJECT // 0593E- Eye, Suffolk

DESCRIPTION // Interpretative Diagram of Geophysical Survey Anomalies Superimposed upon Greyscale Plot of Geophysical Survey Results

DOC REF: LP0593E-GSR-v2.0

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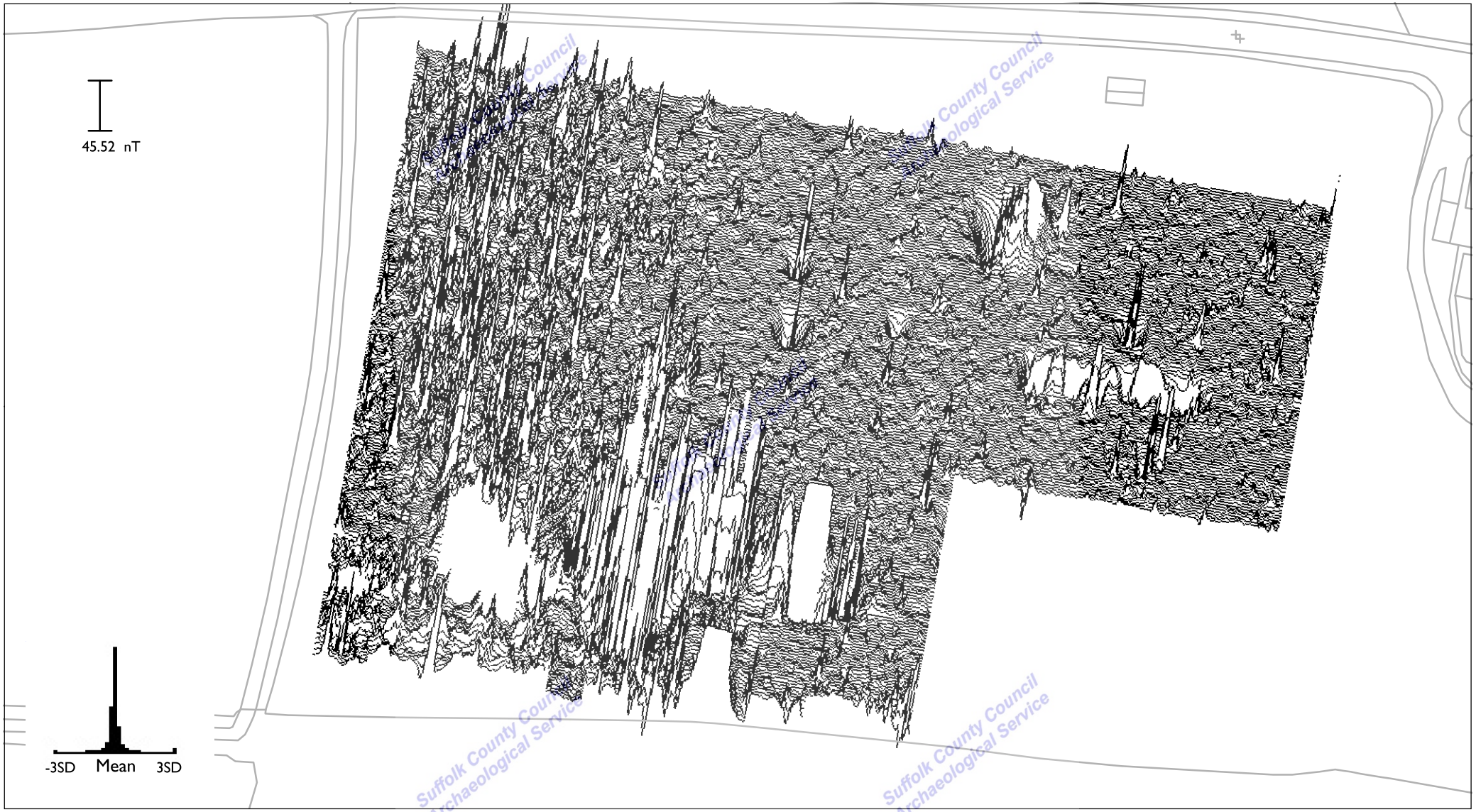
FIGURE 7 // Processed Results



PROJECT // 0593E- Eye, Suffolk

DESCRIPTION // Trace Plot of Processed Geophysical Survey Results

DOC REF: LP0593E-GSR-v2.0

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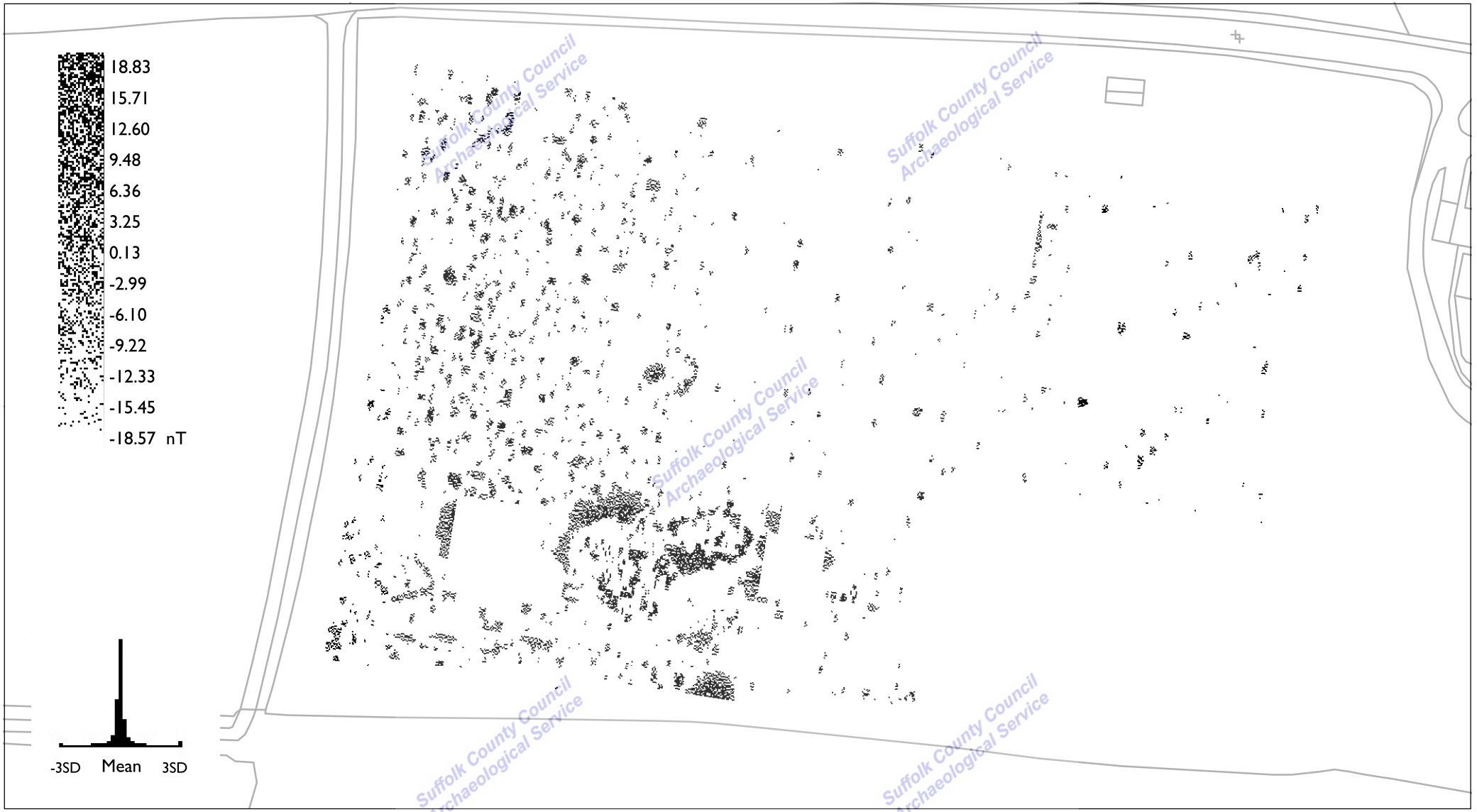
FIGURE 8 // Processed Results



PROJECT // 0593E- Eye, Suffolk

DESCRIPTION // Dot Density Plot of Processed Geophysical Survey Results

DOC REF: LP0593E-GSR-v2.0

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SOURCES CONSULTED

APPENDIX 1

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OASIS FORM

APPENDIX 2

OASIS DATA COLLECTION FORM: England

Printable version

OASIS ID: lparchae1-34473

Project details

Project name	Land at Hartismere High School, Eye Part II
Short description of the project	A geophysical survey in advance of excavation by Suffolk County Council Archaeological Service.
Project dates	Start: 01-08-2007 End: 31-08-2007
Previous/future work	Yes / Not known
Any associated project reference codes	lparchae1-27923 - OASIS form ID
Type of project	Field evaluation
Current Land use	Other 14 - Recreational usage
Methods & techniques	'Geophysical Survey'
Development type	Not recorded
Prompt	Direction from Local Planning Authority - PPG16
Position in the planning process	Not known / Not recorded
Solid geology	CHALK (INCLUDING RED CHALK)
Drift geology	BOULDER CLAY AND MORAINIC DRIFT
Techniques	Magnetometry

Project location

Country	England
Site location	SUFFOLK MID SUFFOLK EYE Hartismere High School
Study area	9.00 Hectares
Site coordinates	TM 13850 73900 52.3209600979 1.138248601980 52 19 15 N 001 08 17 E Point

Project creators

Name of Organisation	L - P : Archaeology
Project brief originator	Contractor (design and execute)
Project design originator	L - P : Archaeology
Project director/manager	Stuart Eve
Project supervisor	Helen Woodhouse
Type of sponsor/funding body	County Council

Project archives

Physical Archive Exists?	No
Digital Archive recipient	Suffolk County Council Archaeology Service
Digital Contents	'Survey'
Digital Media available	'Geophysics'
Paper Archive recipient	Suffolk County Council Archaeology Service
Paper Contents	'Survey'
Paper Media available	'Report','Survey '

Entered by	Stuart Ece (stuarteve@lparchaeology.com)
Entered on	21 November 2007

OASIS:

Please e-mail English Heritage for OASIS help and advice

SUMMARY OF GEOPHYSICAL PROSPECTION METHODS

APPENDIX 3

The following presents a summary of two geophysical prospection methods which are available to the archaeologist in determining the extent and nature of sub-surface structures and remains. Details of survey methodology are dealt with elsewhere (GEOSCAN RESEARCH 1996) and so will not be discussed here.

Resistivity Survey

Resistivity survey is based on the ability of sub-surface materials to conduct an electrical current passed through them. Differences in the structural and chemical make-up of soils affect the degree of resistance to an electrical current (CLARK 1990, 27).

The technique involves the passing of an electrical current through a pair of probes into the earth in order to measure variations in resistance over the survey area. Resistance is measured in ohms (Ω), whereas resistivity, the resistance in a given volume of earth, is measured in ohm-metres (Ωm).

Four probes are generally utilised for electrical profiling (GAFFNEY ET AL. 1991, 2), two mobile and two remote probes. Resistivity survey can be undertaken using a number of different probe arrays; twin probe, Wenner, Double-Dipole, Schlumberger and Square arrays.

Twin Electrode Configuration

This array represents the most popular configuration used in British archaeology (CLARK 1990; GAFFNEY ET AL. 1991, 2), usually undertaken with a 0.5m separation between mobile probes. The twin probe array configuration utilises two probes on a mobile frame, with two remote probes located at least 30 times the distance between the mobile probes away from the mobile frame.

Alterations can be made to suit different conditions. A number of factors may affect the interpretation of twin probe survey results, including the nature and depth of structures, soil type, terrain and localised climatic conditions. The response to non-archaeological features may lead to a misinterpretation of the results, or the masking of archaeological anomalies. A twin probe array of 0.5m will rarely recognise features below a depth of 0.75m (GAFFNEY ET AL 1991). More substantial features may register up to a depth of 1m.

With twin probe arrays of between 0.25m and 2m, procedures are similar to those for the 0.5m twin probe array. Although changes in the moisture content of the soil, as well as variations in temperature, can affect the form of anomalies present in resistivity survey results, in general, higher resistance features are interpreted as structures which have a limited moisture content, for example walls, mounds, voids, rubble filled pits, and paved or cobbled areas. Lower resistance anomalies usually represent buried ditches, foundation trenches, pits and gullies.

Multiplex Resistivity

Modification of a standard resistivity array through the use of multiplexing hardware enables a series of readings to be taken at each point in each traverse of the survey. The basic principles of the survey are identical to standard two probe resistivity survey however the multiplexing hardware enables the resitivity kit to be used for a number of additional applications. Firstly although perhaps least commonly it is possible to carry out basic resistance tomography with a series of probes placed along a fixed traverse. Although this method of prospection is often used in geological surveys it's applicability to archaeological geophysics is limited. More common within archaeological geophysics is to use the multiplexer to enable a series of different readings to be taken at varying probe separations at each point in a survey grid. This effectively allows a series of resistance plots to be derived at different depths depending on the probe separations employed. Whilst this technique does not provide a true sectional picture of the archaeological deposits surveyed it does have the advantage of being able to see under anomalies in the upper layers potentially allowing a sequence to be established, or for overlaying anomalies to be defined as individual entities.

Magnetic Survey

Magnetic prospection of soils is based on the measurement of differences in the magnitude of the earth's magnetic field at points over a specific area. The iron content of a soil provides the principal basis for its magnetic properties. Presence of magnetite, maghaematite and haematite iron oxides all affect the magnetic properties of soils.

Although variations in the earth's magnetic field which are associated with archaeological

features are weak, especially considering the overall strength of the magnetic field of around 48,000 nano-tesla (nT), they can be detected using specific instruments (Gaffney et al. 1991).

Of the various types of magnetometer available to the archaeologist; Fluxgate gradiometers are the most widely utilised instruments in British archaeological geophysics[2].

Fluxgate Gradiometer

Fluxgate instruments are based around a highly permeable nickel iron alloy core (SCOLLAR ET AL. 1990, 456), which is magnetised by the earth's magnetic field, together with an alternating field applied via a primary winding. Due to the fluxgate's directional method of functioning, a single fluxgate cannot be utilised on its own, as it cannot be held at a constant angle to the earth's magnetic field. Gradiometers therefore have two fluxgates positioned vertically to one another on a rigid staff. This reduces the effects of instrument orientation on readings.

Fluxgate gradiometers are usually sensitive to 0.1nT depending on the instrument. The depth of the features which can be located is dependent upon the sensor spacing of the individual instrument and usually varies between 0.5m and 1.5m below the surface of the ground.

Archaeological features such as brick walls, hearths, kilns and disturbed building material will be represented in the results, as well as more ephemeral changes in soil, allowing location of foundation trenches, pits and ditches. The results are however extremely dependent upon the geology of the particular area, and whether the archaeological remains are derived from the same materials.

2 *Other examples: Proton magnetometer; Alkali vapour magnetometers (also known as caesium magnetometers or optically pumped magnetometers)*