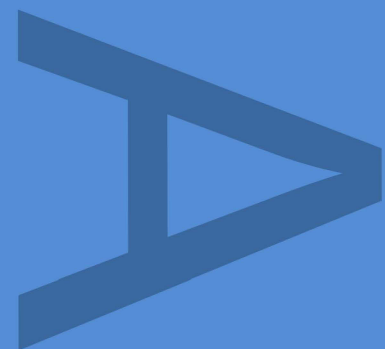
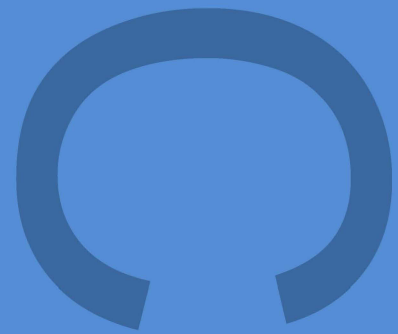


**Land at Thomas Gainsborough
School, Head Lane, Great
Cornard, Suffolk:**

**An Archaeological Trial Trench
Evaluation**

May 2014



**PRE-CONSTRUCT ARCHAEOLOGY
R11723**

Land at Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk:

An Archaeological Trial Trench Evaluation

Local Planning Authority: Babergh District Council

Planning Reference: B/14/00227/FUL

Central National Grid Reference: TL 889 398

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Written and researched by: Matthew Lees
Pre-Construct Archaeology Ltd

Project Manager: Mark Hinman

Commissioning Client: Kier Construction

Contractor: Pre-Construct Archaeology Ltd
Central Office
The Granary
Rectory Farm
Brewery Road
Pampisford
Cambridgeshire
CB22 3EN

Tel: 01223 845522

Fax: 01223 845522

E-mail: mhinman@pre-construct.com

Website: www.pre-construct.com

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ABSTRACT

This report describes the results of an eleven trench archaeological evaluation carried out by Pre-Construct Archaeology on land at Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk CO10 0JS (TL 889 398). The archaeological work was commissioned by Kier Construction in response to a planning condition attached to the proposed development of new school buildings and associated groundworks to the south of the existing school. The aim of the work was to characterise the archaeological potential of the site.

The evaluation revealed an area of post-medieval fields demarcated by a broad system of north-south and east-west boundaries represented by four distinct ditches that fell into disuse before the present school was constructed.

1 INTRODUCTION

- 1.1 An archaeological trial trench evaluation was undertaken by Pre-Construct Archaeology Ltd (PCA) on an area of 2.4ha at Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk CO10 0JS (TL 889 398) prior to the proposed development of new school buildings and associated groundworks (Figure 1, Plates 1 & 22).
- 1.2 The archaeological work was commissioned by Kier Construction as a requirement of a planning condition attached to proposed development (Planning Reference B/14/00227/FUL).
- 1.3 The evaluation was carried out in accordance with a Written Scheme of Investigation (WSI) prepared by Mark Hinman of PCA (Hinman 2014) in response to a brief for archaeological evaluation issued by Matthew Brudenell of the Conservation Team of Suffolk County Council's Archaeological Service (SCCAS/CT) (Brudenell 2014).
- 1.4 As a requirement of the brief, PCA commissioned Britannia Archaeology Ltd to carry out a programme of magnetometry geophysical survey (See Appendix 5) to identify any potential buried archaeological remains within the proposed development area and to inform the location of evaluation trenches. The geophysics revealed no significant archaeological results but several of the positive readings did prove to align with some of the exposed archaeological remains.
- 1.5 Following the geophysical survey a trench plan was prepared for 520m of trenching with the potential for further 140m of contingency trenching (up to 660m in total). Nine c.50m long, one c.70m long and one c.20m long trial trench totalling 572.5m were excavated and recorded between 8th and 14th of May 2014 revealing evidence for post-medieval fields boundaries and a possible earlier precursor to this system of boundary ditches (Figure 2).
- 1.6 The aim of the evaluation was to determine the location, date, extent, character, condition and quality of any archaeological remains on the site, to assess the significance of any such remains in a local, regional, or national

context, as appropriate, and to assess the potential impact of the development proposals on the site's archaeology.

- 1.7 This report describes the results of the evaluation and aims to inform the design of an appropriate archaeological mitigation strategy. The site archive will be deposited at the SCCAS/CT archaeological stores.

2 GEOLOGY AND TOPOGRAPHY

2.1 Geology

- 2.1.1 The bedrock geology of the site is that of Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation and Culver Chalk Formation. This is a sedimentary bedrock formed approximately 71 to 94 million years ago during the Cretaceous Period.
- 2.1.2 The superficial geological deposits of the site are river terrace deposits of sands and gravels.
- 2.1.3 The natural geological horizon (102) found across the proposed development area was a yellowish orange sandy gravel representative of the expected superficial deposits of river terrace gravels. In places the underlying bedrock of chalk was exposed, most notably in Trench 1 (Section 5.2).

2.2 Topography

- 2.2.1 The proposed development area is currently used as school playing fields and is broadly flat with some slight undulations in places.
- 2.2.2 A level taken from the centre of the site was located at 24.663m Ordnance Datum (OD).
- 2.2.3 The proposed development area is located c.600m to the east of the River Stour, at the southern edge of the village of Great Cornard, southeast of the town of Sudbury. The site is bordered by agricultural land to the immediate south.

3 ARCHAEOLOGICAL BACKGROUND

The archaeological background detailed below has been taken from the archaeological brief (Brudenell 2014).

- 3.1 The proposed development lies in an area of archaeological interest, as recorded in the County Historic Environment Record (HER). The school grounds overlook the Stour Valley in a location that has been topographically favourable for occupation during most periods. Crop marks of a Bronze Age ring ditch are recorded on the school playing field (HER no. COG006). This forms part of a complex of funerary monuments excavated immediately west in 2009 (COG 004-005, 028 and 030; SCC Archaeology Service Report 2011/195). Later Saxon remains were also associated with these barrows. The scale of this development is such that there is a high potential for the discovery of further important features and deposits, particularly those of prehistoric date.

4 METHODOLOGY

4.1 General

4.1.1 Eleven 2.1m wide trenches totalling 572.5m of trenching were investigated across the site. Trenches 1-7 and 9-10 were c.50m long, Trench 8 was c.70m long and the contingency Trench 11 was c.20m (Figure 2).

4.1.2 As well as the planned 520m of trenches the already mentioned Trench 11 was excavated as a contingency in order to trace the alignment of the ditches found in Trenches 6-9. Further to this Trenches 9 and 10 had c.13m extensions excavated perpendicular to the north-east for Trench 9 and north-west of Trench 10. These trench extensions were excavated to better understand the ditch boundaries discovered in Trenches 6-9 (Figure 2).

4.2 Machining and Site Planning

4.2.1 A geophysical survey was carried out (Schofield 2014, Appendix 5) in advance of the trial trenching in order to inform the location of the trenches. Following the geophysical survey, the trial trenches were located across the site to investigate any anomalies identified in the geophysical survey and in order to evaluate all parts of the proposed development area.

4.2.2 Each trench was excavated using a 22 tonne tracked mechanical excavator with a toothless ditching bucket (Plates 2 & 23). The overlying topsoil (100) and subsoil (101) deposits were excavated down to the archaeological horizon or the natural geological horizon (102), whichever came first.

4.2.3 Exposed archaeological features and deposits were cleaned as necessary to define them using hand tools.

4.2.4 Metal-detecting was carried out on all stripped deposits throughout the evaluation process and all archaeological features and spoil heaps were surveyed by metal-detector as they were encountered.

4.2.5 Limits of all excavation areas, pre-excavation and post-excavation plans of archaeological features and heights above Ordnance Datum (m OD) will be recorded using a Leica 1200 Global positioning System (GPS) rover unit with

RTK differential correction, giving three-dimensional accuracy of 20mm or better.

4.3 Recording and Sampling

4.3.1 Field excavation techniques and recording methods are detailed in the PCA Fieldwork Induction Manual (Operations Manual I) by Joanna Taylor and Gary Brown (2009).

4.3.2 All features were investigated and recorded in order to properly understand the date and nature of the archaeological remains on the site and to recover sufficient finds assemblages to assess the chronological development and socio-economic character of the site over time.

4.3.3 Drawn records are in the form of survey plans, drawn plans and section drawings of all archaeological features at an appropriate scale (1:10, 1:20, 1:50) while all individual deposits and cuts were recorded as written records on PCA Pro-forma context sheets.

4.3.4 Linear features were investigated by means of slots excavated across their width and measuring at least 1m in length, positioned to avoid areas of intercutting/disturbance in order to provide uncontaminated finds assemblages. If stratigraphic relationships between features were not visible in plan, slots were positioned to determine inter-feature relationships.

4.3.5 Discrete features such as pits and postholes were at least 50% excavated and when considered appropriate 100% excavated.

4.3.6 High-resolution digital photographs were taken at all stages of the evaluation process. Digital Photographs were taken of all archaeological features and deposits and black and white film photographs were taken when considered appropriate by the excavator and supervisor.

4.3.7 Artefacts and ecofacts were collected by hand and retained, receiving appropriate care prior to removal from site (IfA 2001; Walker 1990; Watkinson 1981).

4.3.8 A metal detector was used during excavation to enhance finds recovery.

5 ARCHAEOLOGICAL RESULTS

5.1 Overview

- 5.1.1 All trench lengths, widths, depths and alignments are detailed in Appendix 3 while context information is detailed in Appendix 2.
- 5.1.2 All eleven of the evaluation trenches were excavated through site-wide deposits of topsoil (101) and subsoil (102) which overlay the natural geological horizon (102) and any archaeological features.
- 5.1.3 Topsoil (100) measured between 0.17m and 0.56m in thickness and comprised dark greyish brown silt with occasional gravel inclusions. The top 10mm of the topsoil was a firm to hard clay-silt turf deposit.
- 5.1.4 Underlying the topsoil, subsoil (101) measured between 0.18m and 1.03m in thickness and comprised mid orange-brown sandy silt with occasional flint and gravel inclusions. Finds recovered from the subsoil included post-medieval and modern brick and tile and two pieces of heavily abraded residual late Neolithic prehistoric struck flint (Hinman 2014 pers. comm.).

5.2 Trench 1 (Figure 2, Plate 3)

- 5.2.1 Trench 1, while containing no evidence for significant archaeological activity, did reveal an area towards the south-western end of the trench where the subsoil was significantly deeper than elsewhere on site. Measuring up to 1.38m deep below ground level (22.73m OD) this area appeared to correspond with a change in the natural geological horizon to a light whitish grey chalky clay rather than the overall horizon of sandy gravel river terrace deposits. Incidentally this deeper area corresponded with an anomaly on geophysics survey (Schofield 2014, Appendix 5 & Figure 3).

5.3 Trench 2 (Figure 2, Plate 4)

- 5.3.1 Located at the north-eastern end of Trench 2, ditch [104] (Figure 2, Plate 5) was linear with shallow sloped sides and a flat base measuring 0.51m wide and 0.08m deep. This ditch extended north and south beyond the limits of the trench and is part of boundary ditch 3 that also comprised ditch [106] in Trench 4 and ditch [108] in Trench 3. Ditch [104] contained a single fill of

dark greyish brown sandy silt (103); a naturally accumulated deposit containing occasional gravel inclusions that yielded no material culture.

5.4 Trench 3 (Figure 2, Plate 6)

5.4.1 Located towards the south-western end of Trench 3, ditch [108] (Figure 2, Plate 7) was linear with moderately sloped sides and a concave base measuring 1.64m wide and 0.76m deep. This ditch extended north and south beyond the limits of the trench and formed part of boundary ditch 3 that also included ditch [104] in Trench 2 and ditch [106] in Trench 4. Ditch [108] contained a single fill of mid greyish brown sandy silt (107) containing occasional gravel and flint inclusions but yielded no finds.

5.5 Trench 4 (Figure 2, Plate 8)

5.5.1 Located at the north-eastern end of Trench 4, ditch [106] (Figure 2, Plate 9) was linear with moderately sloped sides and a concave base measuring 1.26m wide and 0.34m deep. This ditch extended north and south beyond the limits of the trench and is likely part of boundary ditch 3 as ditch [104] in Trench 2 and ditch [108] in Trench 3. Ditch [104] contained a single fill of mid grey sandy silt (105) containing occasional gravel and flint inclusions. No finds were recovered from this feature.

5.6 Trench 5 (Figure 2, Plate 10)

5.6.1 Trench 5 contained no evidence for archaeological activity in the form of features or finds within the overlying deposits of subsoil and topsoil.

5.7 Trench 6 (Figure 2, Plate 11)

5.7.1 Located at the north-western end of Trench 6, ditch [110] (Figures 2, 3 & 4, Plate 12) was linear with moderately sloped sides and concave base measuring 1.5m wide and 0.44m deep. This ditch extended east and west beyond the limits of the trench and was part of boundary ditch 4 that also comprised ditch [ditch [126] in Trench 9 and ditch [120] in Trench 11. Ditch [110] was deliberately backfilled with a sandy silt (109) with occasional gravel and flint inclusions and contained c.10 fragments of post-medieval brick and tile. Ditch [110] aligned with one of the positive geophysics readings (Figure 3).

5.7.2 Towards the south-eastern end of Trench 6 was an ovoid tree-throw [112] (Figure 2, Plate 12). Measuring 1.5m wide and 0.54m deep, tree-throw [112] had near vertical sides and a concave base and was filled with a naturally accumulated silt (111) containing occasional flint and gravel inclusions.

5.8 Trench 7 (Figure 2, Plate 14)

5.8.1 At the north-eastern end of Trench 7, ditches [114] and [116] were revealed. (Figure 2, Plate 15). The precise relationship between these two ditches was not evident through excavation although it is apparent that the ditches represent an original boundary feature and a secondary re-cut ditch. Ditch [114/116] was linear with moderately sloped sides and a concave base measuring 1.8m wide and 0.42m deep. The ditch was infilled with a mid orange brown sandy silty (113/115) with frequent gravel inclusions. Ditch [114/116] extended out of Trench 7 and was the western component of boundary ditch 1 that also comprised ditch [118] within Trench 9, ditch [132] within Trench 10 and ditch [122] in Trench 11. Ditch [114/116] was undated, containing no dateable finds.

5.8.2 At the south-western end of Trench 7 was located the continuation of boundary ditch 4 represented by ditch [110] in Trench 6 to the west and ditch [126] in Trench 9 to the east. Measuring 1.4m wide, finds of post-medieval brick and tile were recovered from the surface of this 16m long section of ditch

5.9 Trench 8 (Figure 2, Plate 16)

5.9.1 Trench 8 contained no evidence for archaeological activity in the form of features or finds within the overlying deposits of subsoil and topsoil.

5.10 Trench 9 (Figure 2, Plate 17)

5.10.1 The north-western end of Trench 9 revealed the continuation of boundary ditch 1, which was traced west-northwest within the contingency part of Trench 9. Ditch [118] (Figures 2 & 4, Plate 18) was the same feature as ditch [114/116] in Trench 7 to the west, ditch [132] in Trench 10 and ditch [120] in Trench 11 to the east. Ditch [118] was linear with moderately sloped sides and slightly concave base measuring 1.42m wide and 0.4m deep and was

infilled with mid greyish brown sandy silt (117) with frequent gravel inclusions. No finds were recovered from this feature.

5.10.2 Further towards the centre of Trench 9 was the continuation of boundary ditch 4. Extending broadly east to west beyond the limits of the trench, ditch [126] (Figures 2 & 4, Plate 18) was linear with moderately sloped sides and flat base measuring 1.34m wide and 0.3m deep. Ditch [126] was filled by (125); a dark greyish brown silt with occasional gravel inclusions which contained post-medieval brick and tile fragments that were noted by the excavator but not retained.

5.10.3 Located between the two aforementioned ditches in Trench 9, ditch [128] (Figure 2) extended east and west beyond the extent of the trench. Ditch [128] did not correspond to any of the exposed boundary systems and was considered to be part of a previously unidentified boundary, possibly comprising a segmented ditch. Ditch [128] was linear with moderately sloped sides and a flat base measuring 1.04m wide and 0.2m deep and was infilled with (127), a mid greyish brown sandy silt containing moderate gravel inclusions and no finds.

5.11 Trench 10 (Figure 2, Plate 19)

5.11.1 Ditch [132] was the continuation of ditch boundary 1 that was represented by ditch [114/116] in Trench 7 and ditch [118] in Trench 9 to the west. Ditch [132] continued to the east-north-east and was seen as Ditch [120] in the contingency Trench 11 to the west. Ditch [132] (Figures 2 & 4, Plate 20) was linear with moderately sloped sides and a narrowly concave base measuring 1.2m wide and 0.36 m long and was infilled with a mid brown sandy silt (131) with occasional gravel inclusions. No dateable finds were recovered from this feature.

5.11.2 Ditch [130] (Figure 2) was a linear ditch that extended northeast and southwest of Trench 9 and was located towards the northwest end of the contingency Trench 10. Ditch [130] had moderately sloped sides and a concave base, measuring 1.24m wide and 0.4m deep. The ditch comprised a single fill of mid greyish brown sandy silt (129) with occasional gravel

inclusions. Ditch [130] was undated and is likely a component of boundary ditch 2 that is also represented within Trench 11 in the form of an unexcavated portion of ditch and ditch terminus [124].

5.11.3 A 33m long section of boundary ditch 4 (Figure 2) was revealed aligned along the northwest side of Trench 10 with the full width (1.3m) of the ditch being identified in the contingency extension excavated to the northwest. This ditch extended to the southwest (represented by ditch [126] in Trench 9) and to the northeast (ditch [120] in Trench 11). Surface finds of modern glass and post-medieval brick and tile were noted during machining but not retained from the ditch.

5.12 Trench 11 (Figure 2, Plate 20)

5.12.1 Trench 11 was a contingency trench excavated in order to trace the continuation of boundary ditches 1, 2 and 4.

5.12.2 Ditch [122] (Figure 2, Plate 21) was located towards the southwest end of Trench 11 and was the eastern most intervention of boundary ditch 1. Extending northwest out of the limit of excavation of Trench 11 and the proposed development area and east to ditch [132] in Trench 10, ditch [122] had moderately sloped sides and a concave base measuring 0.46m wide and 0.18m deep. Filled with a mid greyish brown sandy silt, this ditch contained no dateable finds.

5.12.3 Ditch terminus [124] was partially exposed within Trench 11 (Figures 2 & 4, Plate 21). While speculative, this appears to be the terminus of a segmented boundary ditch and aligns with ditch [130] within Trench 10 and an unexcavated feature (possible opposing terminus) directly opposite within Trench 11. The segmented ditch appears to form part of boundary ditch 2. The excavated terminus had moderately sloping, slightly stepped sides and a concave base, and measured 1.48m wide and 0.44m deep. The fill of this feature comprised a mid greyish brown sandy silt with occasional gravel inclusions. This deposit yielded one small undateable fragment of ceramic brick or tile that is likely to be medieval or post-medieval in date.

5.12.4 Located at the south-west end of Trench 11, ditch [120] (Figure 2, Plate 21)

extended northeast out of the limit of excavation of Trench 11 and the development area and south east towards ditch [118] in Trench 9 and was the most easterly part of boundary ditch 4 identified on the site. Ditch [120] was linear with moderately sloped sides and a concave base measuring 1.2m wide and 0.46m deep. The ditch appeared to have been deliberately backfilled with a dark greyish brown silt with occasional gravel inclusions and yielded a fragment of post-medieval clay pipe stem as well as modern glass and ceramic plant pots fragments.

6 DISCUSSION & CONCLUSIONS

6.1 Geophysics

- 6.1.1 While the initial of magnetometry results revealed very little evidence for archaeological features on the site, the trial trenching did reveal a system of field boundaries and one discrete tree throw.
- 6.1.2 The only feature to align with positive geophysical anomalies was boundary ditch 4 and this is likely because of the dark, slightly compacted silt fill of the ditch and inclusions within the deposit. This dark soil was very different to the natural sandy gravels and therefore provided an identifiable contrast in the geophysical results (Schofield, T. 2014 pers. comm.).
- 6.1.3 The deposits within the other features on site were directly comparable to the natural loose sands and gravels of the area and therefore were not detectable by the magnetometry survey (Schofield, T. 2014 pers. comm.).

6.2 Boundary Ditch 1 [114/116] [118] [122] [132]

- 6.2.1 While undated, boundary ditch 1 appeared to be of an earlier date than the later dateable boundary ditches 3 and 4.
- 6.2.2 Aligned broadly northeast to southwest, boundary ditch 1 was excavated in four interventions within Trenches 7, 9, 10 and 11. This ditch was the primary target of the contingency trenches being excavated in order to gather more dating evidence. This ditch appears to be an earlier part of the post-medieval system of land division represented by boundary ditches 3 and 4. The lack of finds compared with the material recovered from the boundary ditches 3 and 4, coupled with the more sterile and less organic fill suggests this ditch may predate the other ditch systems.

6.3 Boundary Ditch 2 [124] [132]

- 6.3.1 Boundary ditch 2 is the most speculative of the four boundaries identified across the site and yielded no dateable material.
- 6.3.2 Boundary ditch 2 was orientated northwest to southeast was exposed and excavated in Trenches 10 and 11. The ditch could be traced for

approximately 40m within the development area, and measured up to 1.6m wide. The ditch contained no dateable material where but appears to align with the well-dated post-medieval field system formed by boundary ditches 3 and 4.

6.4 Boundary Ditch 3 [104] [106] [108]

6.4.1 Aligned north-south and measuring up to 1.5m wide, boundary ditch 3, though undated was aligned perpendicular to the post-medieval boundary ditch 4 and is likely directly associated with it.

6.4.2 Boundary ditch 3 corresponds with the field system divisions visible on the 1st Edition Ordnance Survey map (1885-1887) (Figure 5).

6.5 Boundary Ditch 4 [110] [120] [126]

6.5.1 Boundary ditch 4 was the latest boundary identified across the site and is visible on the 1st Edition Ordnance Survey mapping (Figure 5). This ditch is also the only feature to correspond with the results of the geophysical survey (Figure 3), likely owing to the nature of its fill and large size of the ditch (see above).

6.5.2 Aligned broadly east to west and measuring up to 1.8m wide, boundary ditch 4 formed the northern arm of a large and narrow rectangular plot of land, as visible on the early mapping. This ditch was directly associated with and perpendicular to boundary ditch 3 (Figure 2) and was reliably dated to the post-medieval to modern period through finds of brick, tile and modern glass.

6.6 Other features [112] [128]

6.6.1 Ditch [128] could not be dated and appeared to be unconnected with the aforementioned field systems. The presence of this feature implies that further undated and unrelated remains could be present within the development area. However, the lack of significant early features or finds (aside from the two residual struck flints) suggests this feature may also belong to a phase of post-medieval activity.

6.6.2 The undated tree throw [112] does not aid the understanding of the archaeology of the area and could feasibly date to any period between the

later prehistoric and post-medieval.

6.7 Conclusions

- 6.7.1 The site represents an area of roughly east-west aligned post-medieval field plots, subdivided in places with roughly north-south aligned boundaries. These fields are visible in the 1st Edition Ordnance Survey Map of 1885-1887, although it is possible that some of the ditches may have their origins in the earlier post-medieval period. These land divisions went into disuse before the school was constructed.
- 6.7.2 No further evidence for significant settlement or archaeological activity was identified.
- 6.7.3 Despite the existence of significant archaeological activity to the southwest (HER COG 004-006, 028 and 030), the evaluation implies there is little potential for earlier significant archaeological remains within the proposed development area.

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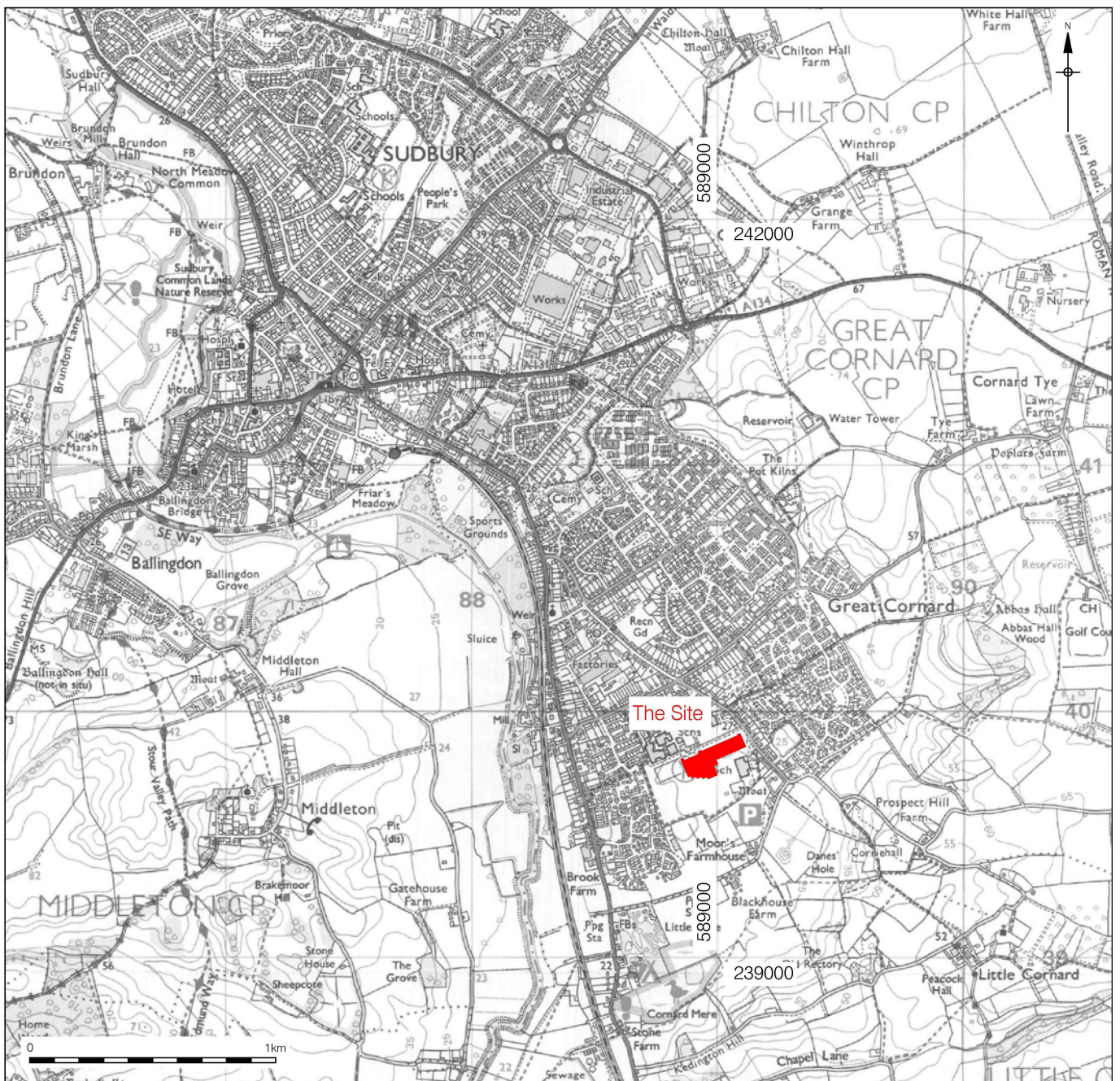
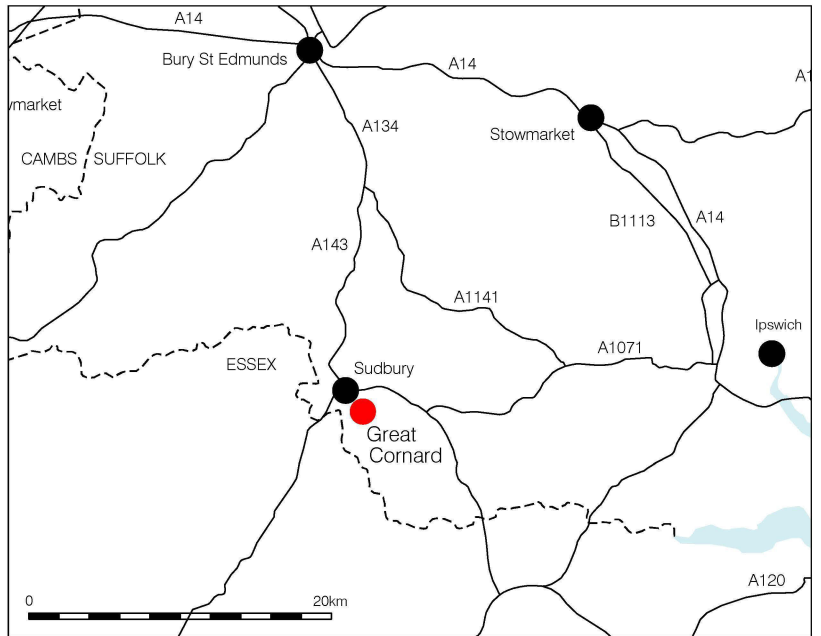
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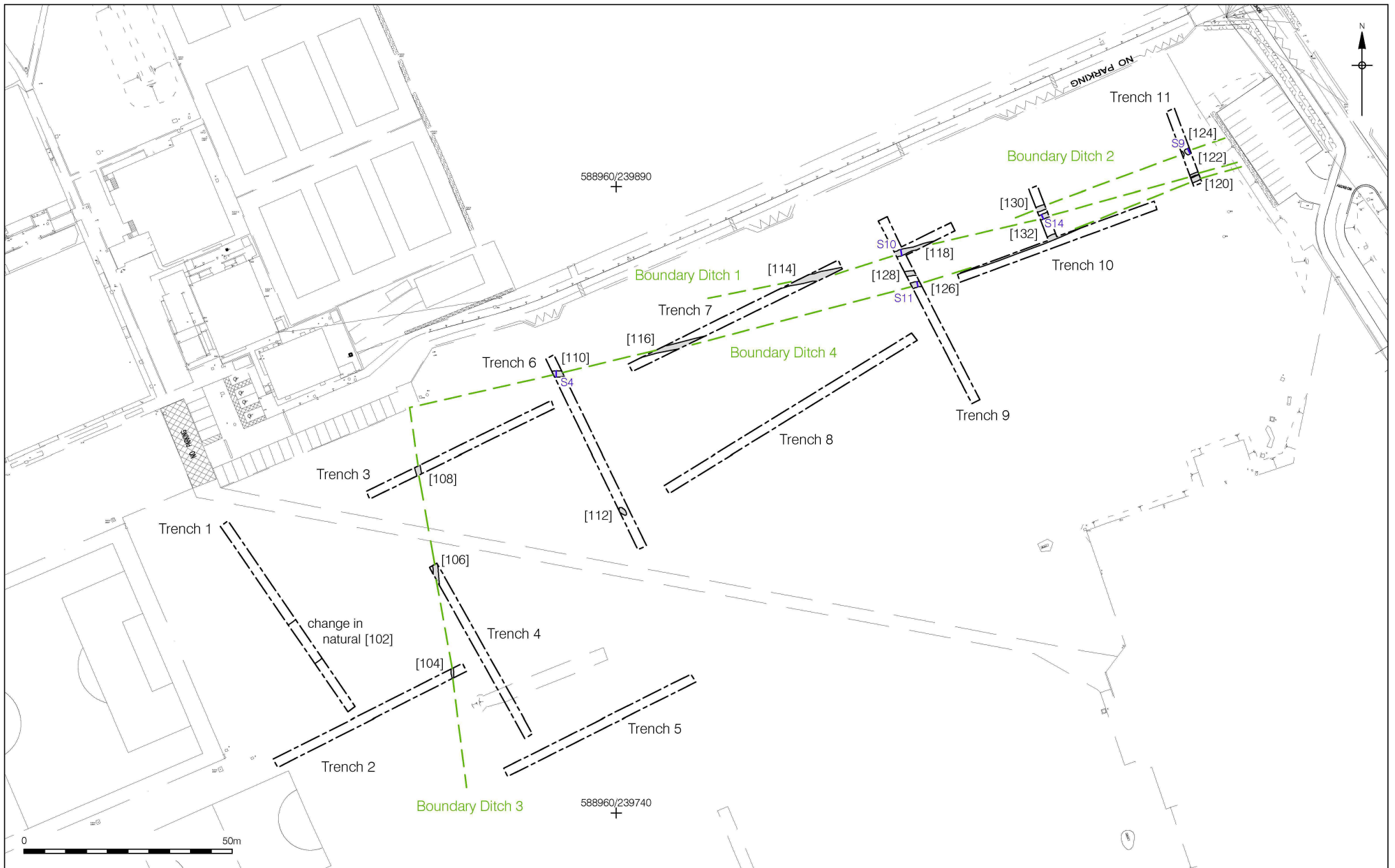
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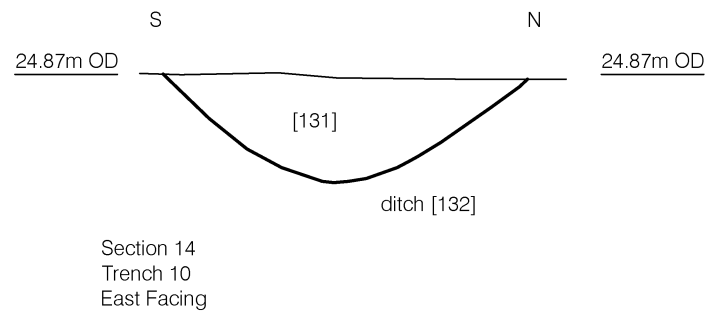
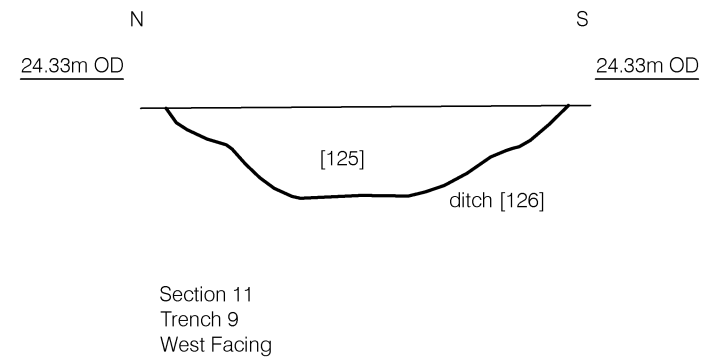
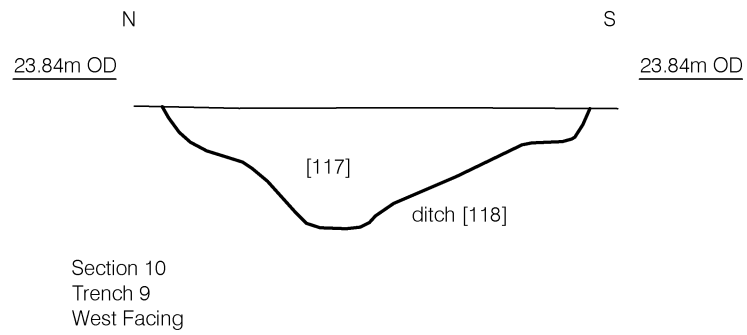
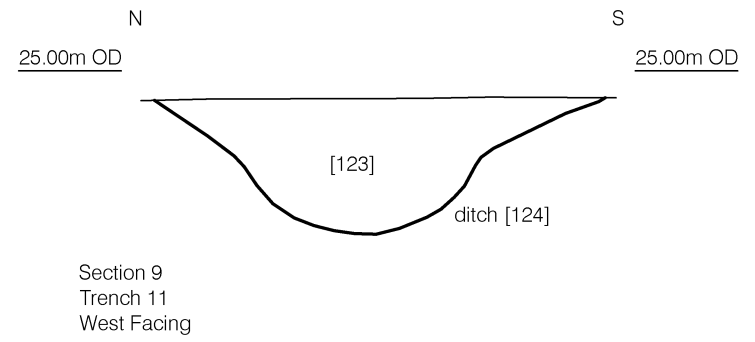
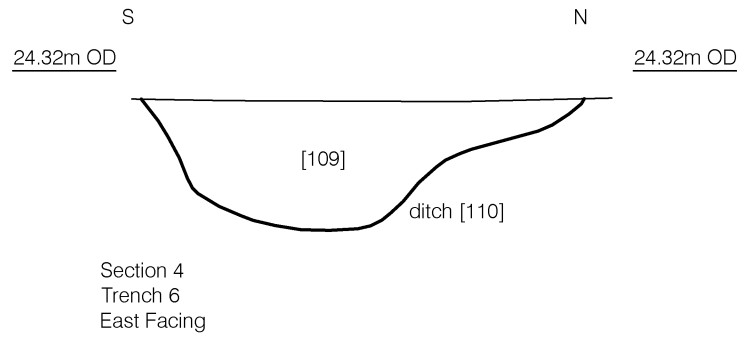
Topographic survey data provided by the client
 © Pre-Construct Archaeology Ltd 2014
 22/05/14 JS

Figure 2
 Trench Location with Archaeology
 1:1,250 at A4



Topographic survey data provided by the client
 Geophysics survey data provided by Britannia Archaeology Ltd
 © Pre-Construct Archaeology Ltd 2014
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Figure 3
 Trench Location with Geophysics
 1:1,250 at A4



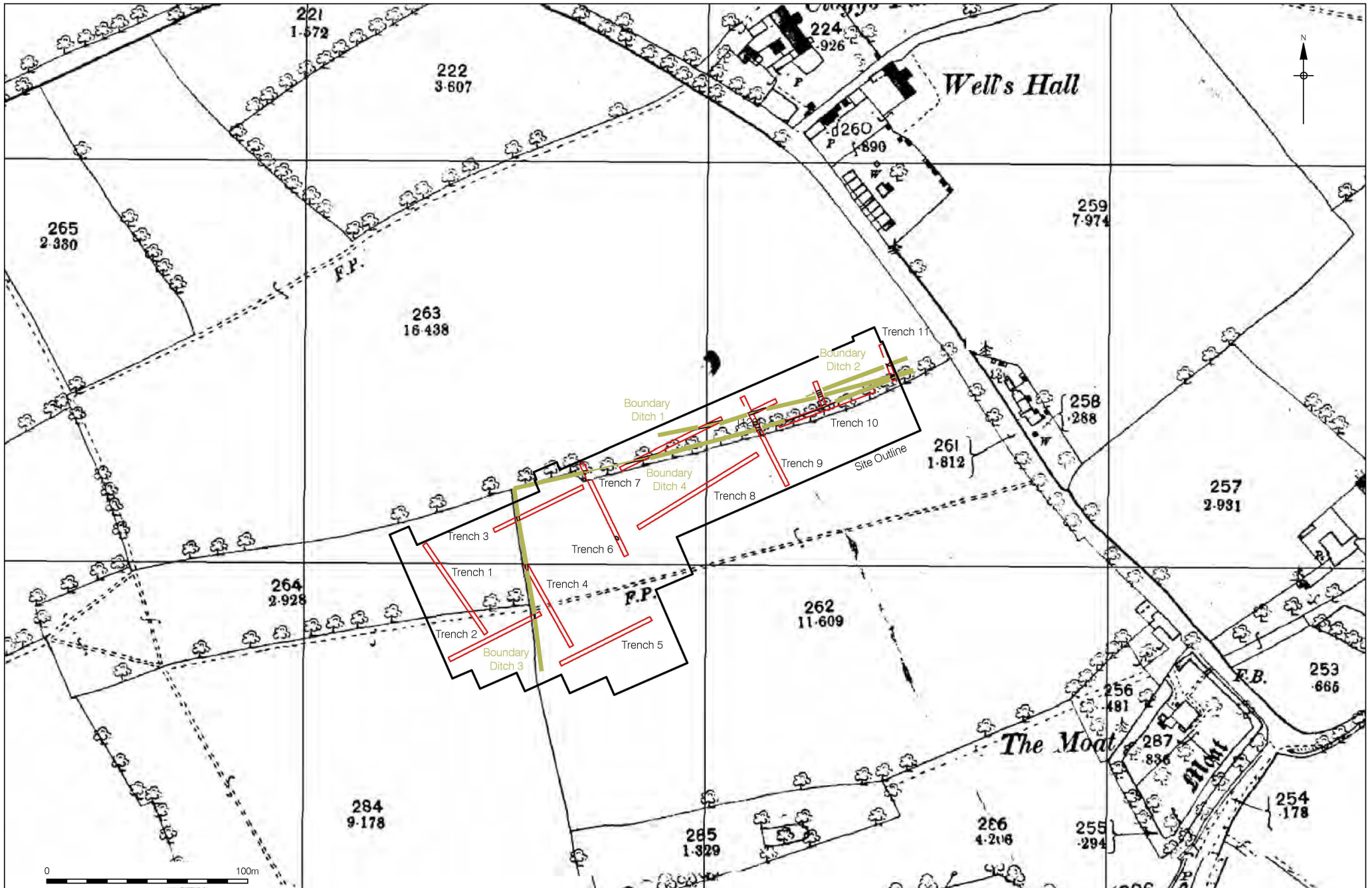


Figure 5
 First edition Ordnance Survey Map, 1885-1887,
 with archaeological features overlain
 1:2,500 at A4

9 APPENDIX 1: PLATES



Plate 1: Southwest facing view across the site



Plate 2: Machining trenches

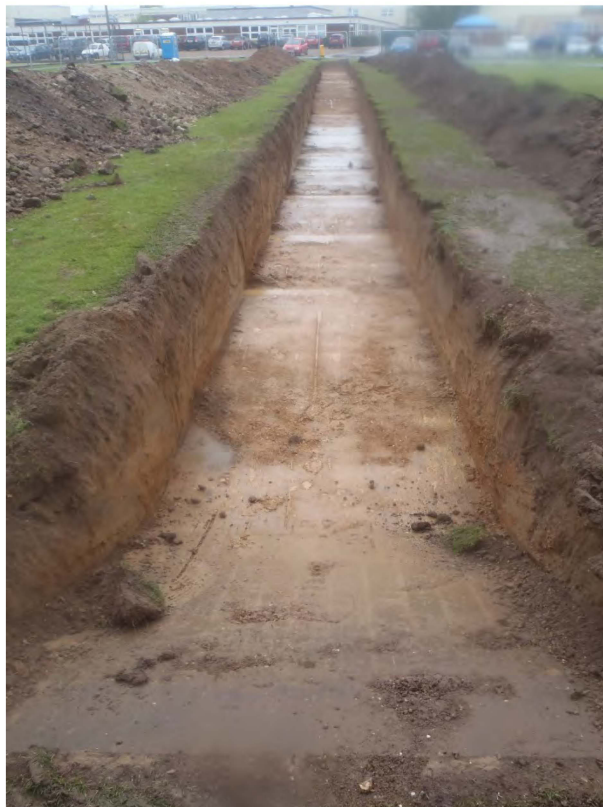


Plate 3: Northwest facing view of Trench 1



Plate 4: Southwest facing view of Trench 2, ditch [104] in foreground



Plate 5: South facing section of ditch [104]



Plate 6: Northeast facing view of Trench 3



Plate 7: South facing Trench 3 section with ditch [108]



Plate 8: Southeast facing view of Trench 4, ditch [106] in foreground



Plate 9: North facing section of ditch [106]



Plate 10: Southwest facing view of Trench 5



Plate 11: Southeast facing view of Trench 6, ditch [110] in foreground



Plate 12: East facing section of ditch [110]



Plate 13: Southeast facing section of tree throw [112]



Plate 14: Southwest facing view of Trench 7 and ditches [114] & [116]



Plate 15: East facing section of ditches [114] & [116]



Plate 16: Southwest facing view of Trench 8



Plate 17: Southeast facing view of Trench 9



Plate 18: East facing sections of Ditches [118] & [126]



Plate 19: Southwest facing view of Trench 10



Plate 20: Northwest facing view of Trench 11, ditches [120] & [122] in foreground



Plate 21: Northeast facing sections of ditches [120], [122] and southwest facing section of ditch [124]



Plate 22: West facing view across site, post-trenching



Plate 23: Trench backfilling

10 APPENDIX 2: CONTEXT INDEX

Context	Type	Category	Comments	Description	Trench	Section
(100)	Layer	Topsoil	Topsoil across site	Dark greyish brown silt with occasional gravel	1-11	-
(101)	Layer	Subsoil	Subsoil across site	Mid-orange brown sandy silt with moderate gravel	1-11	-
(102)	Layer	Natural Geological Horizon	Natural across site	Yellowish orange sandy gravel	1-11	-
(103)	Fill	Ditch	Fill of Ditch [104]	Dark greyish brown sandy silt with moderate gravel	2	1
[104]	Cut	Ditch	Cut of Ditch [104]	Linear, moderate sides, flat base, N-S aligned	2	1
(105)	Fill	Ditch	Fill of Ditch [106]	Mid-grey sandy silt with occasional gravel and flint	4	2
[106]	Cut	Ditch	Cut of Ditch [106]	Linear, moderate sides, concave base, N-S aligned	4	2
(107)	Fill	Ditch	Fill of Ditch [108]	Mid-greyish brown sandy silt with occasional gravel	3	3
[108]	Cut	Ditch	Cut of Ditch [108]	Linear, moderate sides, concave base, N-S aligned	3	3
(109)	Fill	Ditch	Fill of Ditch [110]	Dark grey sandy silt with occasional brick, gravel and flint inclusions	6	4
[110]	Cut	Ditch	Cut of Ditch [110]	Linear, moderate sides, concave base, E-W aligned	6	4
(111)	Fill	Tree Throw	Fill of Tree Throw [112]	Light yellowish grey sandy silt with flint and charcoal inclusions	6	5
[112]	Cut	Tree Throw	Cut of Tree Throw [112]	Ovoid, Sharp near vertical sides, concave base	6	5
(113)	Fill	Ditch	Fill of Ditch [114]	Mid-orange brown sandy silt with frequent gravel	7	6
[114]	Cut	Ditch	Cut of Ditch [114]	Linear, sharp sides, concave base, NEE-SWW aligned	7	6
(115)	Fill	Ditch	Fill of Ditch [116]	Mid-orange brown sandy silt with frequent gravel	7	6
[116]	Cut	Ditch	Cut of Ditch [116]	Linear, sharp sides, flat base, NEE-SWW Aligned	7	6
(117)	Fill	Ditch	Fill of Ditch [118]	Mid-greyish brown sandy silt with frequent gravel	9	10
[118]	Cut	Ditch	Cut of Ditch [118]	Linear, moderate sides, concave base, NEE-SWW aligned	9	10
(119)	Fill	Ditch	Fill of Ditch [120]	Dark greyish brown silt with occasional gravel inclusions	11	7
[120]	Cut	Ditch	Cut of Ditch [120]	Linear, moderate sides, concave base, NE-SW aligned	11	7
(121)	Fill	Ditch	Fill of Ditch [122]	Mid-greyish brown sandy silt with occasional gravel inclusions	11	8
[122]	Cut	Ditch	Cut of Ditch [122]	Linear, moderate sides, narrow base, NE-SW aligned	11	8

(123)	Fill	Ditch	Fill of Ditch [124]	Mid-greyish brown sandy silt with occasional gravel inclusions	11	9
[124]	Cut	Ditch	Cut of Ditch [124]	Linear, moderate sides, concave base, NE-SW aligned	11	9
(125)	Fill	Ditch	Fill of Ditch [126]	Mid-greyish brown silt with occasional gravel inclusions	9	11
[126]	Cut	Ditch	Cut of Ditch [126]	Linear, moderate sides, flat base, E-W aligned	9	11
(127)	Fill	Ditch	Fill of Ditch [128]	Mid-greyish brown sandy silt with moderate gravel	9	12
[128]	Cut	Ditch	Cut of Ditch [128]	Linear, moderate sides, flat base, E-W aligned	9	12
(129)	Fill	Ditch	Fill of Ditch [130]	Mid-greyish brown sandy silt with moderate gravel	10	13
[130]	Cut	Ditch	Cut of Ditch [130]	Linear, moderate sides, concave base, NE-SW aligned	10	13
(131)	Fill	Ditch	Fill of Ditch [132]	Mid-greyish brown sandy silt with moderate gravel inclusions	10	14
[132]	Cut	Ditch	Cut of Ditch [132]	Linear, moderate sides, concave base, NE-SW aligned	10	14

11 APPENDIX 3: TRENCH INDEX

Trench	Length	Alignment	Depth NE End	Depth NW End	Depth SW End	Depth SE End	Archaeology
1	54m	NW-SE	N/A	0.89m (23.77m OD)	N/A	1.09m (23.11m OD)	No
2	50.8m	NE-SW	0.38m (23.79m OD)	N/A	1.55m (22.75m OD)	N/A	Yes
3	49.5m	NE-SW	0.88m (23.45m OD)	N/A	0.49m (23.52m OD)	N/A	Yes
4	47m	NW-SE	N/A	0.72m (23.67m OD)	N/A	0.94m (23.45m OD)	Yes
5	50.2m	NE-SW	1.4m (22.75m OD)	N/A	0.51m (23.71m OD)	N/A	No
6	50.8m	NW-SE	N/A	0.63m (24.33m OD)	N/A	0.65m (23.91m OD)	Yes
7	56.1m	NE-SW	1.18m (23.62m OD)	N/A	0.5m (24.35m OD)	N/A	Yes
8	69.6m	NE-SW	0.76m (24.16m OD)	N/A	0.84m (23.82m OD)	N/A	No
9	49.3m (61.9m with extension)	NW-SE	N/A	1m (23.91m OD)	N/A	0.63m (24.60m OD)	Yes
10	50.3m (63.4m with extension)	NE-SW	0.65m (24.79m OD)	N/A	0.46m (24.65m OD)	N/A	Yes
11	19.1m	NW-SE	N/A	0.7m (24.9m OD)	N/A	0.6m (24.92m OD)	Yes

12 APPENDIX 4: OASIS FORM

OASIS ID: preconst1-179272

Project details

Project name	Land at Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk
Short description of the project	A c.580m, eleven trench archaeological evaluation identifying a post-medieval field boundary system.
Project dates	Start: 08-05-2014 End: 14-05-2014
Previous/future work	No / Not known
Type of project	Field evaluation
Site status	None
Current Land use	Other 14 - Recreational usage
Monument type	DITCH Post Medieval
Monument type	DITCH Modern
Monument type	TREE THROW Post Medieval
Significant Finds	NONE None
Significant Finds	NONE None
Methods & techniques	"Sample Trenches", "Targeted Trenches"
Development type	Public building (e.g. school, church, hospital, medical centre, law courts etc.)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)

Project location

Country	England
Site location	SUFFOLK BABERGH GREAT CORNARD Land at Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk
Postcode	CO10 0JS
Study area	27771.78 Square metres
Site coordinates	TL 889 398 52.0239109104 0.753611148954 52 01 26 N 000 45 13 E Point
Height OD / Depth	Min: 23.00m Max: 25.00m

Project creators

Name of Organisation	Pre-Construct Archaeology Ltd
Project brief originator	Suffolk County Council's Archaeological Officer
Project design originator	Mark Hinman
Project director/manager	Mark Hinman
Project supervisor	Matthew Lees

Type of sponsor/funding body Private Developer

Name of sponsor/funding body Kier Group

Project archives

Physical Archive recipient Suffolk County Council

Physical Archive ID COG 039

Physical Contents "Ceramics","Glass","Worked stone/lithics"

Digital Archive recipient Suffolk County Council

Digital Archive ID COG 039

Digital Contents "Survey"

Digital Media available "Images raster / digital photography","Survey"

Paper Archive recipient Suffolk County Council

Paper Archive ID COG 039

Paper Contents "none"

Paper Media available "Context sheet","Drawing","Notebook - Excavation',' Research',' General Notes","Photograph","Plan","Survey "

Project bibliography 1

Publication type Grey literature (unpublished document/manuscript)

Title Land at Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk: An Archaeological Trial Trench Evaluation

Author(s)/Editor(s) Lees, M

Other bibliographic details R11723

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Issuer or publisher Pre-Construct Archaeology

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Description PCA Grey Literature Evaluation Report. R11723

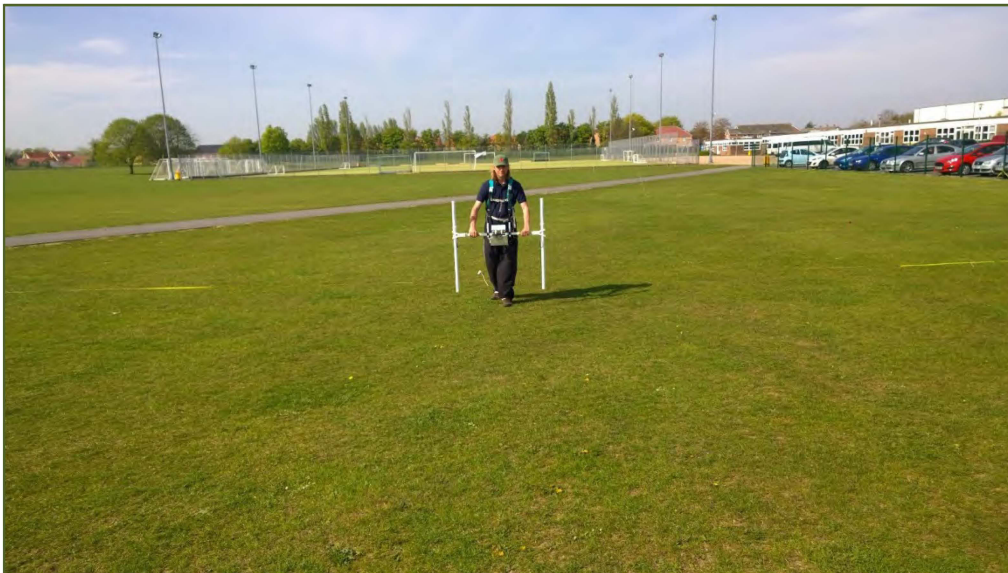
Entered by Matthew Lees (MLees@pre-construct.com)

Entered on 19 May 2014



THOMAS GAINSBOROUGH SCHOOL HEAD LANE, GREAT CORNARD, SUFFOLK

DETAILED MAGNETOMETER SURVEY



Report Number: 1054

April 2014



**THOMAS GAINSBOROUGH SCHOOL, HEAD LANE
GREAT CORNARD, SUFFOLK**

DETAILED MAGNETOMETER SURVEY

Prepared for:
Mark Hinman
Pre-Construct Archaeology Ltd
The Granary
Rectory Farm
Brewery Road
Pampisford
Cambridgeshire
CB22 3EN

By:
Timothy Schofield HND BSc PifA

Britannia Archaeology Ltd
**115 Osprey Drive,
Stowmarket, Suffolk
IP14 5UX**

T: 01449 763034

info@britannia-archaeology.com

www.britannia-archaeology.com

Registered in England and Wales: 7874460

April 2014

Site Code	COG 039	NGR	TL 889 398
Planning Ref.	B/14/00227/FUL	OASIS	britanni1-177137
Approved By	Martin Brook	DATE	April 2014



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ABSTRACT

Detailed fluxgate gradiometer survey was undertaken by Britannia Archaeology Ltd over one playing field (c.2.4 hectares) on the 17th April 2014. Despite the sites high potential for encountering remains of a prehistoric origin, only a relatively narrow range of anomalies were recorded, of which only a few have a potential archaeological derivation. A degree of site levelling and terracing is believed to have been undertaken in the 1970's that may have damaged and could also be masking anomalies of potential archaeological origin.

Isolated dipolar responses were most numerous and probably relate to the introduction of modern ferrous cultural debris into the topsoil. Eleven areas of magnetic disturbance were recorded, some of which were caused by ferrous fences on the periphery and a Tarmacadam path. A further six smaller areas of magnetic disturbance are likely to be modern, however an archaeological origin cannot be ruled out.

A linear area of magnetic disturbance demarcates the location of a recently removed all weather cricket wicket, surrounded by ten isolated dipolar anomalies likely to be ferrous posts employed to fence off the cricket square. Four very strong isolated dipolar responses relate to a pair of extant goalposts located on the football pitch.

One very strong dipolar linear trend delineates the location of a ferrous and/or electric underground service run.

Three small positive discrete anomalies recorded through the centre of the north-eastern half of the dataset are indicative of archaeological rubbish pits, however a modern or geological derivation cannot be ruled out.

One positive curvilinear anomaly indicative of a ring ditch was recorded close to the northern boundary and may be of archaeological derivation, however the reading is fairly strong and a modern origin cannot be ruled out.

It would be prudent to ground-test anomalies interpreted as having archaeological potential, in combination with a proportion of the areas of magnetic disturbance.



1.0 INTRODUCTION

On Thursday the 17th April 2014 Britannia Archaeology Ltd (BA) undertook detailed fluxgate gradiometer survey over 2.4 hectares on one playing field in advance of the construction of new school buildings and associated groundworks (Figure 1) at Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk, (NGR TL 889 398).

The survey was commissioned by Mark Hinman of Pre-Construct Archaeology Ltd in response to a design brief issued by Suffolk County Council Archaeological Service/Conservation Team (SCCAS/CT), (Brudenell. M, dated 28/03/2014).

2.0 SITE DESCRIPTION

The site is located to the south-east of the main buildings at Thomas Gainsborough School, it is currently used as a football pitch and playing field bisected by a Tarmacadam path (Figure 2). It is present at a height of c.25m AOD and slopes from the north-east down to the south-west.

Bedrock geology is described as Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk and Culver Chalk Formation, a sedimentary bedrock formed approximately 71 to 94 million years ago in the Cretaceous Period when the local environment was dominated by warm chalk seas depositing microscopic plankton remains (BGS 2014).

Superficial geology is described as river terrace deposits of sand and gravel formed up to 3 million years ago in the Quaternary Period when the local environment was dominated by rivers, depositing sand and gravel detrital material in channels forming terraces that also include fine silt and clay overbank flood and estuarine alluvium, and peat bogs (BGS 2014).

3.0 PLANNING POLICIES

The geophysical survey was carried out on the recommendation of the county council (SCCAS/CT), following guidance laid down by the *National Planning and Policy Framework* (NPPF, DCLD 2012) which replaced *Planning Policy Statement 5: Planning for the Historic Environment* (PPS5, DCLG 2010) in March 2012. The relevant local development framework is *The Babergh Development Framework Core Strategy (2011-2031)*.

3.1 *National Planning Policy Framework (NPPF, DCLG March 2012)*

The NPPF recognises that 'heritage assets' are an irreplaceable resource and planning authorities should conserve them in a manner appropriate to their significance when considering development. It requires developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. The key areas for consideration are:



- The significance of the heritage asset and its setting in relation to the proposed development;
- The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance;
- Significance (of the heritage asset) can be harmed or lost through alteration or destruction, or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification;
- Local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred; and
- Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.

3.2 Babergh Development Framework Core Strategy (2011-2031) Submission Draft

The local development framework for Babergh states the following:

- Provide support and guidance to ensure that development which may affect historic assets and ensure new development makes a positive contribution to local character and distinctiveness (section 3.3.6).

4.0 ARCHAEOLOGICAL BACKGROUND

The following archaeological background is taken from information recorded in the brief (Section 2.1, Brudenell, M). This proposed development is located within an area of archaeological interest that is recorded and held in the County Historic Environment Record (HER) in Suffolk. The grounds of the school are located on higher ground that overlooks the Stour Valley, this area is known to be topographically favourable for early occupation from all archaeological periods. Cropmarks that are believed to be the remains of a Bronze Age ring ditch are recorded on the school playing field (HER no. COG 006) that forms part of a funerary complex of monuments excavated immediately to the west in 2009 (COG 004-005, 028 and 030; SCC Archaeology Service Report 2011/195). Saxon remains were also associated with these barrows.

The large scale of this school development means that there is a high potential for the discovery of previously unknown features and deposits, particularly those of a Prehistoric date.

5.0 PROJECT AIMS

A non-intrusive field survey by geophysical prospection is required of the development to determine the extent and significance of subsurface anomalies. A subsequent trial trench evaluation is required to enable the archaeological resource both in quality and extent to be assessed. The main requirements are as follows (Brief, Section 3.2):



- 'Ground-truth' the geophysical results;
- Identify the date, approximate form and purpose of any archaeological deposit, together with its likely extent, localised depth and quality of preservation;
- Evaluate the likely impact of past land uses, and the possible presence of masking colluvial/alluvial deposits;
- Establish the potential for the survival of environmental evidence;
- Establish the suitability of the area for development.

6.0 METHODOLOGY

6.1 Instrument Type Justification

Britannia Archaeology Ltd employed a Bartington Dual Grad 601-2 fluxgate gradiometer to undertake the survey, because of its high sensitivity and rapid ground coverage. The surveyors noted that the background magnetic susceptibility was relatively high, which caused a small degree of difficulty when locating a suitable zero station.

6.2 Instrument Calibration

One hour was allowed in the morning for the magnetometers sensors to settle before the start of the first grid. The instrument was zeroed after every three grids to minimise the effect of sensor drift. An area with a relatively low magnetic reading was chosen to calibrate the instrument; this same point was used to zero the sensors throughout the survey providing a common zero point. The weather was changeable throughout the day with overcast conditions interspersed with long periods of sunshine causing sensor drift, and the characteristic parallel traverse 'striping' in the raw dataset (Figure 3) that is particularly prevalent in the eastern half of the dataset.

6.3 Sampling Interval and Grid Size

The sampling interval was set at 0.25m along 1m traverse intervals, providing 4 readings a metre, the magnetometer survey was undertaken on 20 x 20m grids.

6.4 Survey Grid Location

The survey grid was set out to the Ordnance Survey OSGB36 datum to an accuracy of $\pm 0.1\text{m}$ employing a Leica Viva Glonass Smart Rover GS08 real time kinetic (RTK) survey system. Data were converted to the National Grid Transformation OSTN02 and the instrument was regularly tested using stations with known ETRS89 coordinates. The grids were positioned on a north-east to south-west alignment (Figure 2).



6.5 Data Capture

Instrument readings were recorded on an internal data logger that were downloaded to a laptop at lunchtime and then also at the end of the day. The grid order was recorded on a BA pro-forma to aid in the creation of the data composites. Data were filed in job specific folders. These data composites were checked for quality on site by BA, allowing grids to be re-surveyed if necessary. The data were backed up onto an external storage device in the office and finally a remote server at the end of the day. A five metre exclusion zone was left between the boundaries and the survey area to reduce the amount of field boundary magnetic disturbance, which slightly reduced the area available.

6.6 Data Presentation and Processing

Data are presented in both raw and processed data plots in greyscale format (Figures 3 and 4). An XY trace plot of the processed data has also been included (Figure 5).

The raw data is presented with no processing, and was clipped to produce a uniform greyscale plot, processed data schedules are also displayed below.

Raw Data:

Data Clipping: 2 standard deviations.
Display Clipping: +/- 3 standard deviations.

Processed Data:

De-stripe: Median Sensors: Grids 5 – 54;
De-stripe: Median Traverse: Grids 55 – 57;
Data Clipping: -12 to 12nT;
Display Clipping: +/- 3 standard deviations.

An interpretation plan characterising the anomalies recorded can be found at Figure 6, drawing together the evidence collated from both greyscale and XY trace plots (Figures 3, 4 and 5). All figures are tied into the National Grid and printed at an appropriate scale.

6.7 Software

Raw data were downloaded using DW Consulting's Archeosurveyor v2.0 and will be stored in this format as raw data. The software used to process the data and produce the composites was also DW Consulting's Archeosurveyor v2.0. Datasets were exported into AutoCAD and placed onto the local survey grid. Interpretation plots were then produced using AutoCAD.

6.8 Grid Restoration

Britannia Archaeology Ltd positioned no reference stations within the playing field however the grids can be relocated using the geo-referenced stations presented in Figure 2; these can also enable the accurate targeting of geophysical anomalies.



7.0 RESULTS & DISCUSSION

Isolated dipolar ('iron spike') responses were most numerous throughout the dataset and were probably caused by the introduction of modern ferrous cultural debris into the topsoil through loss, rather than resulting from the presence of buried archaeological artefacts. These responses (yellow hatched circles) seem to be fairly evenly spaced throughout the playing field with no apparent concentration.

Eleven areas of magnetic disturbance (yellow hatching) were recorded that vary both in strength and shape. Those present on the sites periphery are caused by the location of a metal fence that bounds both the football pitch immediately to the west and the school grounds to the north. One linear area of magnetic disturbance delineates the Tarmacadam path that bisects the site. A further six smaller areas of magnetic disturbance were also recorded, however no discernible topographic cause can be established from local features or known service locations. Many of them are likely to be of modern origin, however it may be prudent to further investigate a proportion to determine an origin.

A linear area of magnetic disturbance (magenta hatching), that also appears as a topographic feature, demarcates the location of a recently removed all weather cricket wicket. Surrounding it are ten isolated dipolar anomalies (magenta dots), that form a rectangular boundary, likely to be the ferrous remains of posts employed to fence off the cricket square.

Four very strong isolated dipolar responses (cyan dots) relate to a pair of extant goalposts of an existing football pitch, located in the north-eastern half of the dataset.

One very strong dipolar linear trend (dark blue line) delineates the location of a ferrous and/or electric underground service run, marked as an Un-identified Trace on the topographic plan provided by the client. Caution should be exercised when excavating below ground level in this area.

Three small positive discrete anomalies (orange hatching) located through the centre of the north-eastern half of the dataset are indicative of archaeological rubbish pits, however a modern or geological derivation cannot be ruled out. Further archaeological investigations would be prudent.

One positive curvilinear anomaly (orange hatching) recorded in the centre of the dataset and close to the northern boundary is indicative of a potential ring ditch, however it is fairly strong (+10nT) and therefore equally could be of modern origin. It would be prudent to further investigate this anomaly.

8.0 CONCLUSION

Despite the high potential for recording anomalies of an archaeological potential, only a small degree of those presented within this report are worthy of further archaeological investigation. The site has a relatively high background magnetic susceptibility,



potentially caused by a degree of un-substantiated ground levelling or terracing that ground staff (*pers. comm.*) have stated occurred during the 1970's. If this is indeed true there would be a degree of damage to the underlying archaeology and also areas of deeper soil that could potentially mask low magnetic contrast anomalies.

9.0 PROJECT ARCHIVE AND DEPOSITION

A full archive will be prepared for all work undertaken in accordance with guidance from the *Selection, Retention and Dispersion of Archaeological Collections*, Archaeological Society for Museum Archaeologists, 1993. Arrangements will be made for the archive to be deposited with the relevant museum/HER Office.

10.0 ACKNOWLEDGEMENTS

Britannia Archaeology Ltd would like to thank Mr Mark Hinman of Pre-Construct Archaeology for commissioning the project and his input throughout the project, and to Dr Mr Matthew Brudenell of Suffolk County Council Archaeological Service/Conservation Team for his advice.



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Websites

The British Geological Survey, 2013, (Natural Environment Research Council) – Geology of Britain Viewer - www.bgs.ac.uk/opengeoscience/home.html?Accordion2=1#maps



APPENDIX 1 METADATA SHEETS

Raw Data

Filename	TG Raw.xcp
Description	
Instrument Type	Grad 601-2 (Gradiometer)
Units	nT
Surveyed by	TPS/MB on 4/17/2014
Assembled by	TPS on 4/17/2014
Direction of 1st Traverse	45 deg
Collection Method	ZigZag
Sensors	2 @ 1.00 m spacing.
Dummy Value	32702.00
Dimensions	
Composite Size (readings)	1120 x 120
Survey Size (meters)	280.00m x 120.00 m
Grid Size	20.00 m x 20.00 m
X Interval	0.25 m
Y Interval	1.00 m
Stats	
Max	33.81
Min	-32.86
Std Dev	9.01
Mean	0.55
Median	0.87
Composite Area	3.36 ha
Surveyed Area	1.93 ha
Program	
Name	ArcheoSurveyor
Version	2.5.16.0

Processed Data

Filename	TG Processed.xcp
Description	
Instrument Type	Grad 601-2 (Gradiometer)
Units	nT
Surveyed by	TPS/MB on 4/17/2014
Assembled by	TPS on 4/17/2014
Direction of 1st Traverse	45 deg
Collection Method	ZigZag
Sensors	2 @ 1.00 m spacing.
Dummy Value	32702.00
Dimensions	
Composite Size (readings)	1120 x 120
Survey Size (meters)	280.00m x 120.00 m
Grid Size	20.00 m x 20.00 m
X Interval	0.25 m
Y Interval	1.00 m
Stats	
Max	12.00
Min	-12.00
Std Dev	4.17
Mean	-0.07
Median	-0.05
Composite Area	3.36 ha
Surveyed Area	1.93 ha
Program	
Name	ArcheoSurveyor
Version	2.5.16.0



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APPENDIX 2 – TECHNICAL DETAILS

Magnetometer Survey

The magnetometer differs from the 'active' magnetic susceptibility meter by being a 'passive' instrument. Rather than injecting a signal into the ground it detects slight variations in the Earth's magnetic field caused by cultural and natural disturbance (Clark).

Thermoremanent magnetism is produced when a material containing iron oxides is strongly heated. Clay for example has a high iron oxide content that in a natural state is weakly magnetic, when heated these weakly magnetic compounds become highly magnetic oxides that a magnetometer can detect.

The demagnetisation of iron oxides occurs above a temperature known as the Curie point; for example haematite has a Curie point of 675 Celsius and magnetite 565C. At the time of cooling the iron oxides become permanently re-magnetised with their magnetic properties re-aligned in the direction of the Earth's magnetic field (Gaffney and Gater). The direction of the Earth's magnetic field shifts over time and these subtle alignment differences can be recorded. Kilns, hearths, baked clay and ovens can reach Curie point temperatures, and are the strongest responses apart from large iron objects that can be detected. Other cultural anomalies that can be prospected include occupation areas, pits, ditches, furnaces, sunken feature buildings, ridge and furrow field systems and ritual activity (David, 2011). Commonly recorded anomalies include modern ferrous service pipes, field drainage pipes, removed field boundaries, perimeter fences and field boundaries.

Fluxgate Gradiometers

Fluxgate gradiometers are sensitive instruments that utilise two sensors placed in a vertical plane, spaced 1 metre apart. The sensor above reads the Earth's magnetic (background) response while the sensor below records the local magnetic field. Both sensors are carefully adjusted to read zero before survey commences at a 'zeroing' point, selected for its relatively 'quiet' magnetic background reading. When differences in the magnetic field strength occur between the two sensors a positive or negative reading is logged. Positive anomalies have a positive magnetic value and conversely negative anomalies have a negative magnetic value relative to the site's magnetic background. Examples of positive magnetic anomalies include hearths, kilns, baked clay, areas of burning, ferrous material, ditches, sunken feature buildings, furrows, ferrous service pipes, perimeter fences and field boundaries. Negative magnetic anomalies include earthwork embankments, plastic water pipes and geological features.

The instruments are usually held approximately 0.30m to 0.50m above the ground surface and can detect to a depth of between 1-2metres. Best practice dictates that the optimal direction of traverse in Britain is east to west.



Magnetic Anomalies

Linear trends

Linear trends can be both positive and negative magnetic responses. If they are broad, relatively weak or negative in nature they may be of agricultural or geological origin, for example periglacial channels, land drains or ploughing furrows. If the responses are strong positive trends they are more likely to be of archaeological origin. Archaeological settlement ditches tend to be rich in highly magnetic iron oxides that accumulate in them via anthropogenic activity and humic backfills. Conversely surviving banks will be negative in nature, the material is derived from subsoil deposits that is less likely to be positively magnetic. Curvilinear trends can also be recorded and are indicative of archaeological structures such as drip-gullies.

Discrete anomalies

Discrete anomalies appear as increased positive responses present within a localised area. They are caused by a general increase in the amount of magnetic iron oxides present within the humic back-fill of for example a rubbish pit.

'Iron spike' anomalies

These strong isolated dipolar responses are usually caused by ferrous material present in the topsoil horizon. They can have an archaeological origin but are usually introduced into the topsoil during manuring.

Areas of magnetic disturbance

An area of magnetic disturbance is usually associated with material that has been fired. For example areas of burning, demolition (brick) rubble or slag waste spreads. They can also be caused by ferrous material, e.g. close proximity to barbwire or metal fences and field boundaries, buried services, pylons and modern rubbish deposits.



APPENDIX 3 – OASIS FORM

OASIS ID: [britannia1-177137](#)

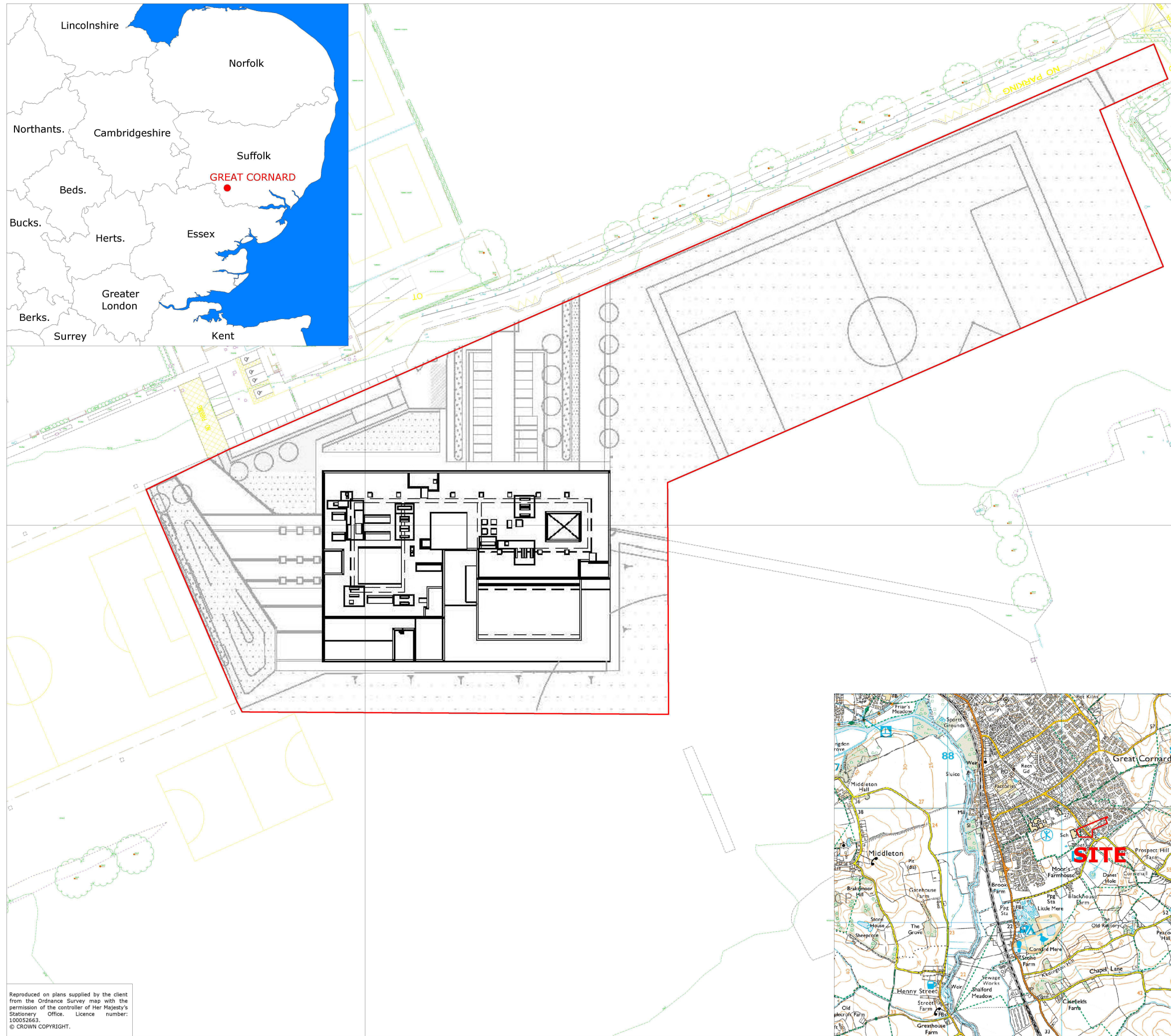
Project details

Project name	Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk, Detailed Geophysical Survey
Short description of the project	Detailed fluxgate gradiometer survey was undertaken by Britannia Archaeology Ltd over one playing field in April 2014. Despite the sites high potential for encountering remains of a prehistoric origin, only a relatively narrow range of anomalies were recorded, of which only a few have a potential archaeological derivation. A degree of site levelling and terracing is believed to have been undertaken in the 1970's that may have damaged and could also be masking anomalies of potential archaeological origin.
Project dates	Start: 17-04-2014 End: 17-04-2014
Previous/future work	Not known / Yes
Any associated project reference codes	P1057 - Contracting Unit No. R1054 - Contracting Unit No.
Type of project	Field evaluation
Site status	None
Current Land use	Community Service 1 - Community Buildings
Monument type	NONE None
Significant Finds	NONE None
Methods & techniques	"Geophysical Survey"
Development type	Public building (e.g. school, church, hospital, medical centre, law courts etc.)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)
Solid geology	CHALK (INCLUDING RED CHALK)
Drift geology	RIVER TERRACE DEPOSITS
Techniques	Magnetometry
Project location	
Country	England
Site location	SUFFOLK BABERGH GREAT CORNARD Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk
Study area	2.40 Hectares
Site coordinates	TL 889 398 52.0239109104 0.753611148954 52 01 26 N 000 45 13 E Point
Height OD /Depth	Min: 25.00m Max: 25.00m
Project creators	
Name of Organisation	Britannia Archaeology Ltd
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body
Project design originator	Timothy Schofield
Project director/manager	Timothy Schofield
Project supervisor	Timothy Schofield
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Kier Group PLC



Project archives

Physical Archive Exists?	No
Digital Archive recipient	Suffolk HER
Digital Contents	"Survey"
Digital Media available	"Geophysics", "Images raster / digital photography", "Images vector", "Survey", "Text"
Paper Archive recipient	Suffolk HER
Paper Contents	"Survey"
Paper Media available	"Report", "Survey ", "Unpublished Text"
Project bibliography 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Thomas Gainsborough School, Head Lane, Great Cornard, Suffolk; Detailed Magnetometer Survey
Author(s)/Editor(s)	Schofield, T.P
Other bibliographic details	R1054
Date	2014
Issuer or publisher	Britannia Archaeology Ltd
Place of issue or publication	Stowmarket
Description	A4 bound report with A3 fold-out figures.
URL	www.britannia-archaeology.com
Entered by	Tim Schofield (tim@britannia-archaeology.com)
Entered on	25 April 2014

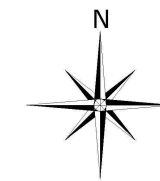
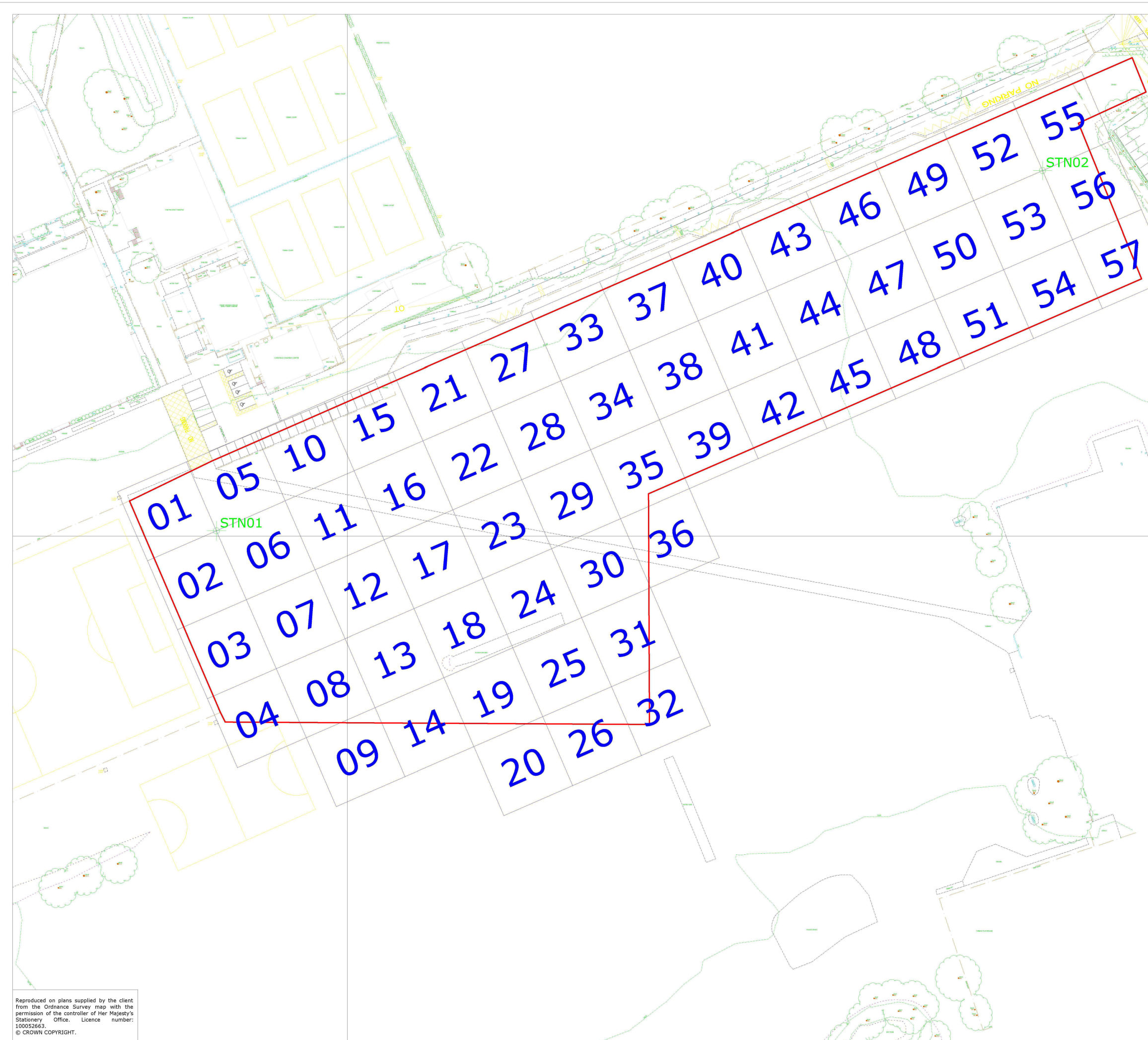


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588900

239800

 Proposed Construction	
 Site Boundary	
NGR: TL 889 398	REPORT NUMBER: 1054
PROJECT: THOMAS GAINSBOROUGH SCHOOL, HEAD LANE, GREAT CORNARD, SUFFOLK	
CLIENT: 	
DESCRIPTION: SITE & PROPOSED CONSTRUCTION LOCATION PLAN	
BRITANNIA ARCHAEOLOGY LTD  115 OSPREY DRIVE, STOWMARKET, SUFFOLK IP14 5UX T: 01449 763034 E: info@britannia-archaeology.com W: www.britannia-archaeology.com	
SCALE: 0 50m 1:1000 	
PLOT: A3	APPROVED: MCA
DATE: APR 2014	VERSION: 01
AUTHOR: TPS	FIGURE: 01



STATION	EASTING	NORTHING
01	588865.122	239801.422
02	589085.203	239897.151

 Survey Grid	
 Site Boundary	
NGR: TL 889 398	REPORT NUMBER: 1054

PROJECT:
 THOMAS GAINSBOROUGH SCHOOL,
 HEAD LANE, GREAT CORNARD,
 SUFFOLK

CLIENT:


DESCRIPTION:
 SURVEY GRID & REFERENCING
 INFORMATION PLAN

BRITANNIA ARCHAEOLOGY LTD



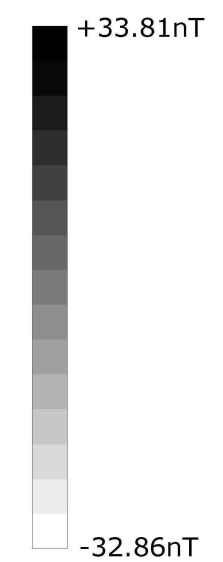
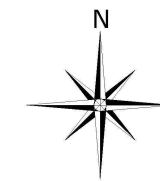
115 OSPREY DRIVE, STOWMARKET, SUFFOLK
 IP14 5UX

T: 01449 763034
 E: info@britannia-archaeology.com
 W: www.britannia-archaeology.com



PLOT: A3	APPROVED: MCA	VERSION: 01
DATE: APR 2014	AUTHOR: TPS	FIGURE: 02

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 Site Boundary

NGR: TL 889 398 REPORT NUMBER: 1054

PROJECT:
THOMAS GAINSBOROUGH SCHOOL,
HEAD LANE, GREAT CORNARD,
SUFFOLK

CLIENT:


DESCRIPTION:
RAW MAGNETOMETER
GREYSCALE PLAN

BRITANNIA ARCHAEOLOGY LTD



115 OSPREY DRIVE, STOWMARKET, SUFFOLK
IP14 5UX

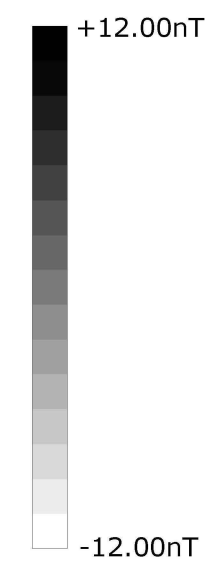
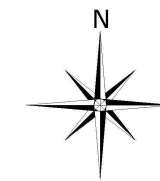
T: 01449 763034
E: info@britannia-archaeology.com
W: www.britannia-archaeology.com


SCALE: 1:1000 0 50m

PLOT: A3 APPROVED: MCA VERSION: 01

DATE: APR 2014 AUTHOR: TPS FIGURE: 03

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 Site Boundary

NGR: TL 889 398 REPORT NUMBER: 1054

PROJECT:
THOMAS GAINSBOROUGH SCHOOL,
HEAD LANE, GREAT CORNARD,
SUFFOLK

CLIENT:


DESCRIPTION:
PROCESSED MAGNETOMETER
GREYSCALE PLAN

BRITANNIA ARCHAEOLOGY LTD



115 OSPREY DRIVE, STOWMARKET, SUFFOLK
IP14 5UX

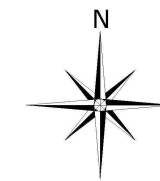
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E: info@britannia-archaeology.com
W: www.britannia-archaeology.com


SCALE: 1:1000 0 50m

PLOT: A3	APPROVED: MCA	VERSION: 01
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DATE: APR 2014	AUTHOR: TPS	FIGURE: 04
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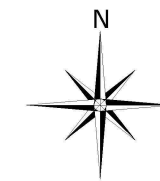
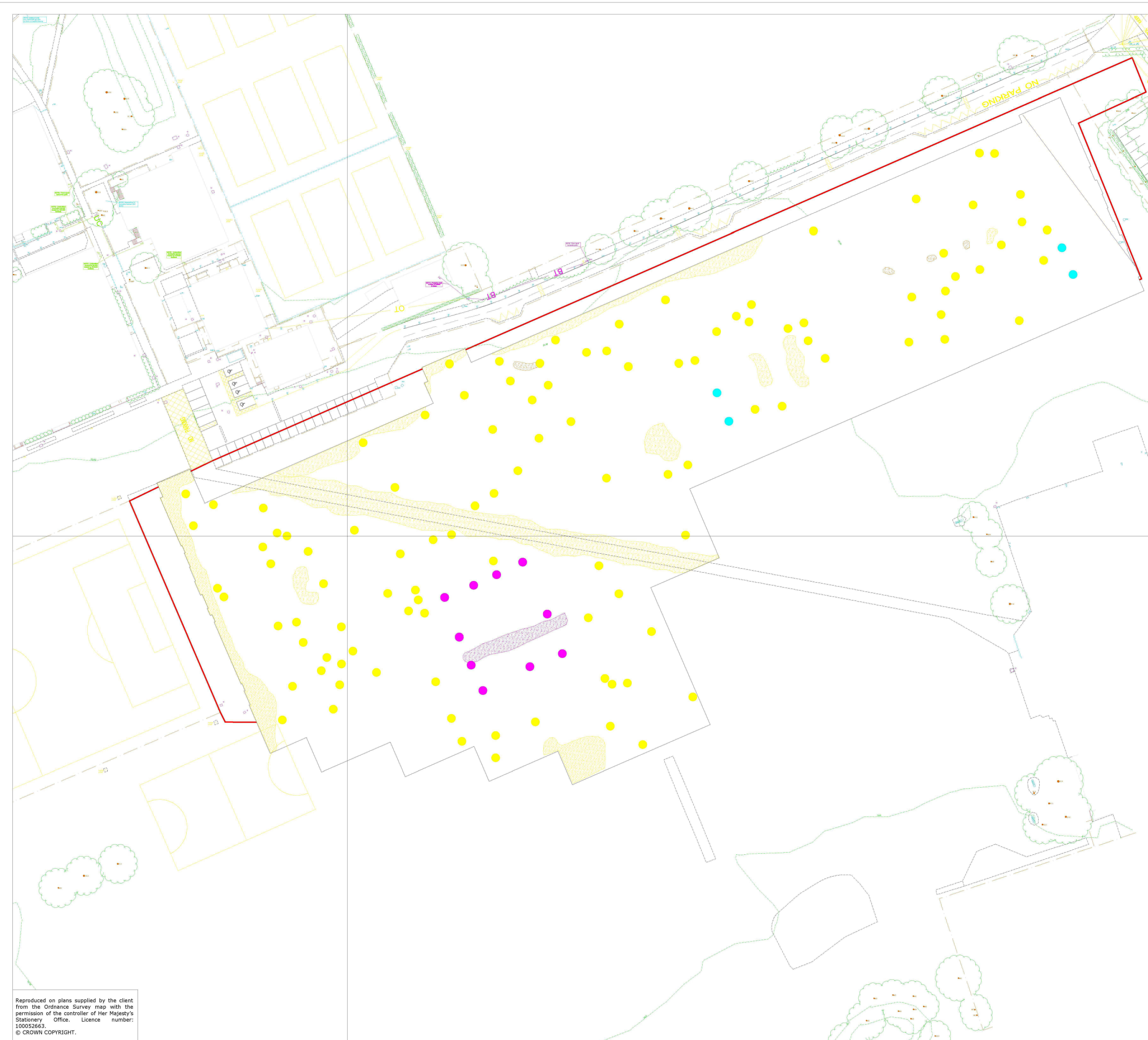
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40nT/cm	Scale Interval	
	Site Boundary	
NGR:	TL 889 398	REPORT NUMBER: 1054
PROJECT:	THOMAS GAINSBOROUGH SCHOOL, HEAD LANE, GREAT CORNARD, SUFFOLK	
CLIENT:		
DESCRIPTION:	PROCESSED MAGNETOMETER XY TRACE PLOT	
BRITANNIA ARCHAEOLOGY LTD		
		
115 OSPREY DRIVE, STOWMARKET, SUFFOLK IP14 5UX		
T: 01449 763034 E: info@britannia-archaeology.com W: www.britannia-archaeology.com		
SCALE:	0 50m	
1:1000		
PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE:	AUTHOR:	FIGURE:
APR 2014	TPS	05

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	Positive Discrete Anomaly, Archaeology?
	Positive Curvilinear Anomaly, Archaeology?
	Strong Dipolar Linear Trend, Ferrous/Electric Service Run
	Extant Goalposts
	Cricket Wicket & Square
	Area of Magnetic Disturbance
	Isolated Dipolar Response
	Site Boundary

239800

NGR: TL 889 398 REPORT NUMBER: 1054

PROJECT:
**THOMAS GAINSBOROUGH SCHOOL,
 HEAD LANE, GREAT CORNARD,
 SUFFOLK**

CLIENT:

DESCRIPTION:
**INTERPRETATION PLOT
 OF MAGNETOMETER ANOMALIES**

BRITANNIA ARCHAEOLOGY LTD



115 OSPREY DRIVE, STOWMARKET, SUFFOLK
 IP14 5UX

T: 01449 763034
 E: info@britannia-archaeology.com
 W: www.britannia-archaeology.com

SCALE: 1:1000 0 50m

PLOT: A3 APPROVED: MCA VERSION: 01

DATE: APR 2014 AUTHOR: TPS FIGURE: 06

588900

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PCA

PCA SOUTH

UNIT 54
BROCKLEY CROSS BUSINESS CENTRE
96 ENDWELL ROAD
BROCKLEY
LONDON SE4 2PD
TEL: 020 7732 3925 / 020 7639 9091
FAX: 020 7639 9588
EMAIL: info@pre-construct.com

PCA NORTH

UNIT 19A
TURSDALE BUSINESS PARK
DURHAM DH6 5PG
TEL: 0191 377 1111
FAX: 0191 377 0101
EMAIL: info.north@pre-construct.com

PCA CENTRAL

THE GRANARY, RECTORY FARM
BREWERY ROAD, PAMPISFORD
CAMBRIDGESHIRE CB22 3EN
TEL: 01223 845 522
FAX: 01223 845 522
EMAIL: info.central@pre-construct.com

PCA WEST

BLOCK 4
CHILCOMB HOUSE
CHILCOMB LANE
WINCHESTER
HAMPSHIRE SO23 8RB
TEL: 01962 849 549
EMAIL: info.west@pre-construct.com

PCA MIDLANDS

17-19 KETTERING RD
LITTLE BOWDEN
MARKET HARBOROUGH
LEICESTERSHIRE LE16 8AN
TEL: 01858 468 333
EMAIL: info.midlands@pre-construct.com

