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**LAND NORTH OF GREEN LANE, REYDON,
SUFFOLK IP18 6PD**

GEOPHYSICAL SURVEY

OASIS ID: archaeol7-315083P

Authors: Keeley-Jade Diggons, Dr John Summers & Dr David Bescoby	
NGR: TM 49700 78100	Report No: 5569
District: Waveney	Site Code: REY 107
Approved: Claire Halpin MCIfA	Project No: 7385
	Date: 11 May 2018 Revised 12 October 2018

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ARCHAEOLOGICAL SOLUTIONS LTD

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

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

**e-mail info@ascontracts.co.uk
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OASIS SUMMARY SHEET

Project details			
Project name	<i>Land North of Green Lane, Reydon, Suffolk, IP18 6PD</i>		
<i>In April 2018, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on land north of Green Lane, Reydon, Suffolk (NGR TM 49700, 78100). The work was carried out on the advice of Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT) to comply with the planning requirement of the local planning authority.</i>			
<i>Roman pottery and ceramic building material was found in a plantation to the north (REY 008). An archaeological evaluation abutting the south of the site revealed a series of 13th-14th century medieval ditches and intercutting pits (REY 105). Reydon Common was located to the east and north of the site (REY 030), and cropmarks of possible ditches, field boundaries and pits have been recorded from there (REY 056, REY 088).</i>			
<i>The survey identified six positive linear anomalies of possible archaeological origin. Four of these (1-4) appear to form part of an enclosure system, which potentially has a relationship with historical boundary (8). However, the date of this system cannot be verified from the survey data. Two other linear anomalies were identified (5-6) which are likely to represent cut and infilled ditch/ gully features. A cluster of large positive anomalies (7) may represent a group of large quarry pits.</i>			
Project dates (fieldwork)	<i>10th-12th April 2018</i>		
Previous work (Y/N/?)	<i>N</i>	Future work	<i>TBC</i>
P. number	<i>7385</i>	Site code	<i>REY 107</i>
Type of project	<i>Geophysical Survey</i>		
Site status	<i>-</i>		
Current land use	<i>Fallow land and grazing pasture</i>		
Planned development	<i>Residential</i>		
Main features (+dates)	<i>Probable enclosure system formed of four linear features on E-W and N-S orientation (1-4) Two other linear anomalies of unknown date (5-6) A cluster of large positive anomalies, possibly representing a group of quarry pits (7)</i>		
Significant finds (+dates)	<i>-</i>		
Project location			
County/ District/ Parish	<i>Suffolk</i>	<i>Waveney</i>	<i>Reydon</i>
HER/ SMR for area	<i>Suffolk Historic Environment Record</i>		
Post code (if known)	<i>IP18 6PD</i>		
Area of site	<i>8.765ha</i>		
NGR	<i>TM 49700 78100</i>		
Height AOD (max/ min)	<i>c.12-13m AOD</i>		
Project creators			
Brief issued by	<i>SCC AS-CT</i>		
Project supervisor/s	<i>Archaeological Solutions Ltd</i>		
Funded by	<i>Artisan Planning and Property Services</i>		
Full title	<i>Land North of Green Lane, Reydon, Suffolk, IP18 6PD: Geophysical Survey</i>		
Authors	<i>Diggons, K-J., Summers, J.R. and Bescoby, D.(fieldwork and report); Thompson, P. (background)</i>		
Report no.	<i>5569</i>		
Date (of report)	<i>May 2018; revised October 2018</i>		

LAND NORTH OF GREEN LANE, REYDON, SUFFOLK IP18 6PD

GEOPHYSICAL SURVEY

SUMMARY

In April 2018, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on land north of Green Lane, Reydon, Suffolk (NGR TM 49700, 78100). The work was carried out on the advice of Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT) to comply with the planning requirement of the local planning authority.

Roman pottery and ceramic building material was found in a plantation to the north (REY 008). An archaeological evaluation abutting the south of the site revealed a series of 13th-14th century medieval ditches and intercutting pits (REY 105). Reydon Common was located to the east and north of the site (REY 030), and cropmarks of possible ditches, field boundaries and pits have been recorded from there (REY 056, REY 088).

The survey identified six positive linear anomalies of possible archaeological origin. Four of these (1-4) appear to form part of an enclosure system, which potentially has a relationship with historical boundary (8). However, the date of this system cannot be verified from the survey data. Two other linear anomalies were identified (5-6) which are likely to represent cut and infilled ditch/ gully features. A cluster of large positive anomalies (7) may represent a group of large quarry pits.

1 INTRODUCTION

1.1 In April 2018 Archaeological Solutions (AS) carried out a Geophysical Survey on land North of Green Lane, Reydon, Suffolk (NGR TM 49700 78100; Figs. 1-2). The evaluation was undertaken to provide for further information in association with a planning application to redevelop the site.

1.2 The project was carried out *on the advice of Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT) to comply with the planning requirement of the local planning authority*. The survey was carried out in accordance with SCC AS-CT guidelines (*Requirements for a Geophysical Survey, updated March 2017*) and a specification compiled by AS (dated 3rd October 2017) and approved by SCC AS-CT. The geophysical survey was carried out in accordance with the Historic England document *Geophysical Survey in Archaeological Field Evaluation* (2008), and ClfA, *The use of Geophysical Techniques in Archaeological Evaluations and ClfA Standard and Guidance for Archaeological Geophysical Survey* (2014).

Objectives

1.3 The investigation of the site by geophysical survey was designed to determine the nature, extent and significance of sub-surface features in order to inform further archaeological mitigation requirements for the development.

Planning policy context

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

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

2 DESCRIPTION OF THE SITE

2.1 The site lies on the northern side of Green Lane which borders the northern edge of Reydon. It is bounded on the west side by a short section of the B1126 Wangford Road. The site which encloses 8.765ha, is made up of three fields, two are arable/fallow fields while the third (the western field) is grazing pasture and paddocks. At its north-eastern corner, also within the proposed development area is a group of buildings probably stables, that are accessed by a track running from Green Lane.

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND Fig.3

3.1 The proposed development site is on low lying ground at 12-13m AOD with the waterlogged area of Smear Marshes beginning approximately 350m to the north. A closer feature that may relate to the marsh is the pool of Reydon Smear located to the north-east of the site. The local soils are of the Newport 4 series described as deep well drained sandy soils including some that are acidic. The underlying drift geology is Lowestoft Formation sand and gravel, while the solid bedrock geology comprises Crag Group clay, sand, and gravel.

3.2 The Suffolk Historic Landscape Characterisation map identifies the proposed development site as Sub-type 1.1. Pre-18th century enclosure – random fields. These landscapes are made up of fields that have an irregular pattern (i.e. without any dominant axis). Many were in existence by the medieval period but could be earlier. Boundaries often take the form of species-rich hedges (normally coppiced not laid) with associated ditches and banks. Areas with this field pattern are probably some of our earliest farming landscapes (SCC HLC).

3.3 An archaeological evaluation abutting the proposed development site, carried out on the strip of land between Green Lane and the eastern most field of the proposed development, revealed a series of primarily east-west aligned medieval ditches and a group of intercutting pits. Pottery recovered from the pits and ditches suggests activity was during the 13th and 14th centuries. The features indicate use of the area for agriculture (REY 105).

3.4 Roman building material and a dark grey bowl were found some 280m north of the proposed development site in a plantation at Reydon Smear (REY 008). A watching brief at the Old School and Community Centre located across the B1126 from the site, found a scatter of medieval and post-medieval pottery, but no archaeological features (REY 055). In fields to the south of the community centre are nine World War Two earth-covered underground air raid shelters which are visible on aerial photographs (REY 085).

3.5 Cropmarks of undated ditches are visible on aerial photographs commencing approximately 190m north of the site beyond Rissemere Lane East (REY 088). A Series of linear cropmarks of a ring ditch, field boundaries, trackways and a possible enclosure are in an area commencing 130m east of the site (REY 056). Possible post-medieval pits were identified during evaluation trenching at Reydon Business Park 430m to the east (REY 100). In the same area, Hodskinsons map of 1783 shows that there was a village green to the east of the proposed development site which reached as far west as Rissemere Lane East (REY 030)

4 METHOD OF WORK

Introduction

4.1 The magnetic survey was performed using a dual sensor Grad601-2 Magnetic gradiometer manufactured by Bartington instruments Ltd. The gradiometer measures small distortions in the earth's magnetic field caused by the presence of magnetically susceptible buried objects. The instrument is extremely stable and capable of detecting changes in magnetic field strength of the order of 0.03 nanoTesla (nT/m).

4.2 Magnetic gradiometer survey was selected due to its efficiency in providing easily interpretable data over a large site area. The instrument offers the ability to rapidly cover a survey area and responds to a wide variety of anomalies caused by past human activity (e.g. Historic England, 2008, 20-24).

Survey Methodology

4.3 Grid squares measuring 30m x 30m were set out across the entirety of the survey area using an RTK GPS rover (**Fig. 4**). Geophysical data were collected systematically in a zig-zag pattern within each grid square along traverses spaced at 2m apart (1m sensor spacing). The gradiometers were configured to record measurements at 0.25m intervals along each traverse, giving a total of 3600 measurements per grid square.

4.4 A single grid square was selected for re-survey on a daily basis to demonstrate the consistency of the data throughout the survey and provide confidence in the reliability of the data gathered. These data are presented in Appendix 1, having been subjected to the same processing regime as the main survey.

4.5 The western field was not surveyed (**Fig. 4**). This was a result of occupation by livestock and a large number of electric fences, which would have both impeded survey and had a detrimental impact on the results due to magnetic interference. The unsurveyed area amounts to 2.6ha.

Data Processing

4.6 The remedial processing of the data can enhance anomalous responses caused by potential archaeological features and eliminate magnetic noise from natural/modern sources. Data processing also allows for the correction of spatial errors introduced during the survey and inherent instrument heading errors. The survey data were processed using Terrasurveyor LITE software, where the following data processing routines were applied:

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

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

Clip: Clipping the data replaces all values outside a specified minimum and maximum with those values. This reduces the large dynamic range of the data, improving the visibility of weaker magnetic anomalies. The data were clipped to -5nT and +5nT.

Interpolation: The overall appearance of the data were improved (smoothed) by adding interpolated data points between each traverse using a binomial function.

Display and interpretation

4.7 The processed data are displayed as a greyscale magnetic map (**Fig. 6**) and the interpretation of anomalous magnetic responses undertaken manually with recourse to documented responses from subsequently excavated features, along with reference to historic map data. A graphical interpretative plan of the site identifying potential archaeological features (**Fig. 7**) was then produced in AutoCAD LT2012.

5 RESULTS

5.1 The unprocessed data from the magnetic survey are shown in **Fig. 5**, displayed as an x-y trace plot indicating the dynamic range of magnetic values recorded within the study area. A greyscale plot of the processed data, following the application of the data processing methodology described in 4.6, is shown in **Fig. 6**. The processed data revealed a number of anomalies of possible archaeological and modern origin, which are plotted in **Fig. 7**, with their interpretation described below.

Archaeological Anomalies

5.2 Six positive linear anomalies (**1-6**) of varying length, orientation and amplitude were present within the survey. Three of these (**1-3**) have a broadly E-W orientation and appear to intersect with historic boundary (**8**) and a further N-S positive linear anomaly (**4**). It is likely that these represent part of the historic land division, although a secure date cannot be confirmed.

5.3 A slightly curving positive linear anomaly (**5**) running 108m on a NE-SW orientation was present in the northern part of the survey. This is likely to represent a cut and infilled ditch feature.

5.4 A weaker linear anomaly (6) on a NW-SE alignment, some 38m in length was also identified. It is possible that this represents part of a ditch/gully feature.

5.5 In the SW of the survey was a group of strongly positive, discrete anomalies (7). These responses measure between 5m and 8m across. It is likely that these represent large cut and infilled pit type features or pit clusters, perhaps in the form of large quarry pits.

Historical Anomalies

5.6 Consultation of historical mapping, from the first edition OS map (1884) onwards, as well as modern satellite imagery, has facilitated the identification of historical and modern boundary features.

5.7 Bisecting the site on a NNE-SSW orientation was a positive linear anomaly (8), which respects the course of the division of this field that was removed in recent years. There remains an extant hedgerow along part of the course of this anomaly.

5.8 Projecting from (8) was a diffuse anomaly (9) which appears to respect the former course of this boundary. This boundary appears to have been removed after 2007, based on historic satellite imagery.

Agricultural features

5.9 There was a degree of striping in the dataset on a NNE-SSW orientation. This is likely to be an artefact of modern ploughing, which has also created perpendicular striping on the headlands. Three faint anomalies (10) on this orientation are likely to be part of this system, perhaps where ploughing has penetrated deeper into natural deposits.

Modern

5.10 A large area of magnetic interference (11) was present in the SE portion of the survey due to a wire fence in this location. This interference could potentially have masked weaker anomalies of archaeological origin in this area. Other small areas of interference were identified around the boundary, also probably representing ferrous material or fencing on the field margins.

5.11 Thirteen dipolar responses (12) were identified across the survey area. The majority of these are probably not archaeologically significant, and represent modern ferrous material within the near subsurface.

6 CONCLUSIONS

6.1 The survey on land north of Green Lane, Reydon, Suffolk, has identified six positive linear anomalies of possible archaeological origin. Four of these (1-4) appear to form part of an enclosure system, which potentially has a relationship with historical boundary (8). However, the date of this system cannot be verified from the survey data. Two other linear anomalies were identified (5-6) which are likely to represent cut and infilled ditch/ gully features.

6.2 A cluster of large positive anomalies (7) may represent a group of large quarry pits.

6.3 Overall, the contrast in the magnetic data was good, and the results can be considered a reliable representation of sub-surface archaeological features within the surveyed area. Only the interference from the wire fence in the SE of the survey may have obscured potential weaker anomalies of archaeological origin in this area.

ACKNOWLEDGEMENTS

Archaeological Solutions Limited would like to thank the client, Artisan Planning and Property Services, for funding the project and for their assistance

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

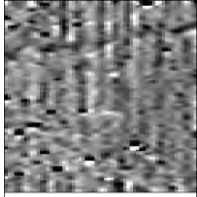
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Chartered Institute For Archaeologists, 2014, *Standard and Guidance for Archaeological Geophysical Survey*. Available online at: http://www.archaeologists.net/sites/default/files/CIfAS&GGeophysics_1.pdf

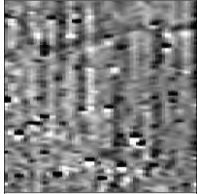
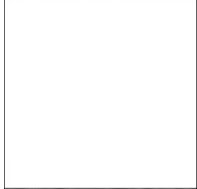
Historic England (English Heritage), 2008. *Geophysical Survey in Archaeological Field Evaluation*

SCC HLC 2008 Suffolk County Council Historic Land Characterisation Map

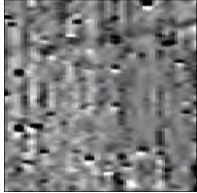
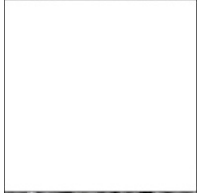
APPENDIX 1
Repeatability



10/04/2018



11/04/2018



12/04/2018

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OASIS ID: archaeol7-315083

Project details

Project name	LAND NORTH OF GREEN LANE, REYDON, SUFFOLK IP18 6PD (GEO)
Short description of the project	In April 2018, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on land north of Green Lane, Reydon, Suffolk (NGR TM 49700, 78100). The work was carried out on the advice of Suffolk County Council Archaeological Service Conservation Team (SCC AS-CT) to comply with the planning requirement of the local planning authority. Roman pottery and ceramic building material was found in a plantation to the north (REY 008). An archaeological evaluation abutting the south of the site revealed a series of 13th-14th century medieval ditches and intercutting pits (REY 105). Reydon Common was located to the east and north of the site (REY 030), and cropmarks of possible ditches, field boundaries and pits have been recorded from there (REY 056, REY 088). The survey identified six positive linear anomalies of possible archaeological origin. Four of these (1-4) appear to form part of an enclosure system, which potentially has a relationship with historical boundary (8). However, the date of this system cannot be verified from the survey data. Two other linear anomalies were identified (5-6) which are likely to represent cut and infilled ditch/ gully features. A cluster of large positive anomalies (7) may represent a group of large quarry pits.
Project dates	Start: 10-04-2018 End: 12-04-2018
Previous/future work	No / Not known
Any associated project reference codes	P7385 - Contracting Unit No.
Any associated project reference codes	REY107 - Sitecode
Type of project	Recording project
Site status	Area of Archaeological Importance (AAI)
Current Land use	Other 15 - Other
Monument type	PROBABLE ENCLOSURE SYSTEM FORMED OF FOUR LINEAR FEATURES ON E-W AND N-S ORIENTATION (1-4) Uncertain
Monument type	TWO OTHER LINEAR ANOMALIES (5-6) Uncertain
Monument type	A CLUSTER OF LARGE POSITIVE ANOMALIES, POSSIBLY REPRESENTING A GROUP OF QUARRY PITS (7) Uncertain
Significant Finds	NONE None
Investigation type	"Geophysical Survey"
Prompt	to provide for further information in association with a planning application to redevelop the site
Solid geology (other)	Crag Group clay, sand, and gravel

Drift geology (other) Lowestoft Formation sand and gravel

Techniques Magnetometry

Project location

Country England

Site location SUFFOLK WAVENEY REYDON LAND NORTH OF GREEN LANE, REYDON, SUFFOLK IP18 6PD

Postcode IP18 6PD

Study area 8.77 Hectares

Site coordinates TM 49700 78100 52.343412251158 1.666383815803 52 20 36 N 001 39 58 E Point

Height OD / Depth Min: 12m Max: 13m

Project creators

Name of Organisation Archaeological Solutions Ltd

Project brief originator Archaeological Solutions

Project design originator Jon Murray

Project director/manager Jon Murray

Project supervisor Archaeological Solutions Ltd

Name of sponsor/funding body Artisan Planning and Property Services

Project archives

Physical Archive Exists? No

Digital Archive recipient Suffolk County Archaeological Store

Digital Contents "none"

Digital Media available "GIS","Geophysics","Survey","Text"

Paper Archive recipient Suffolk County Archaeological Store

Paper Contents "none"

Paper Media available "Map","Plan","Report","Survey "

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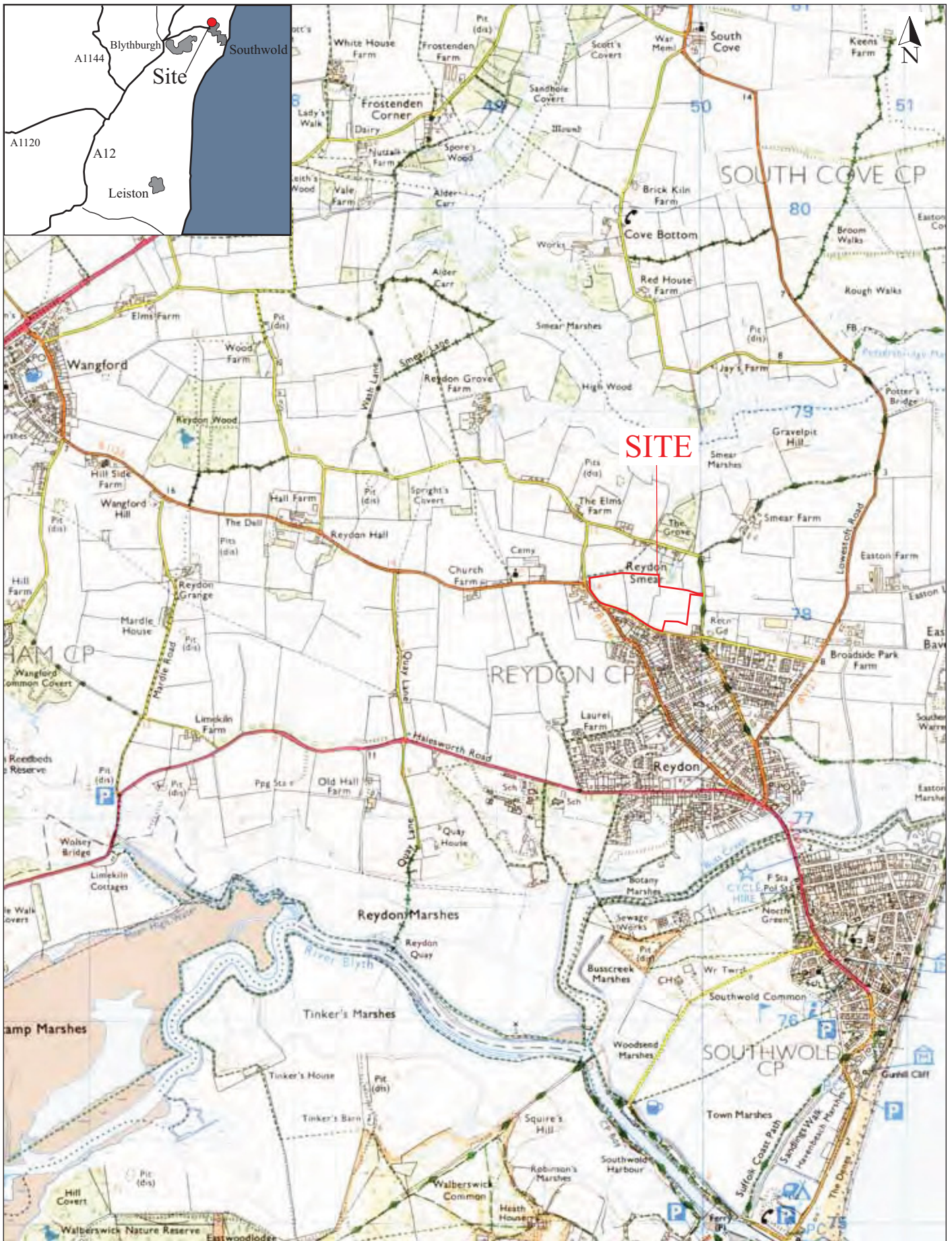
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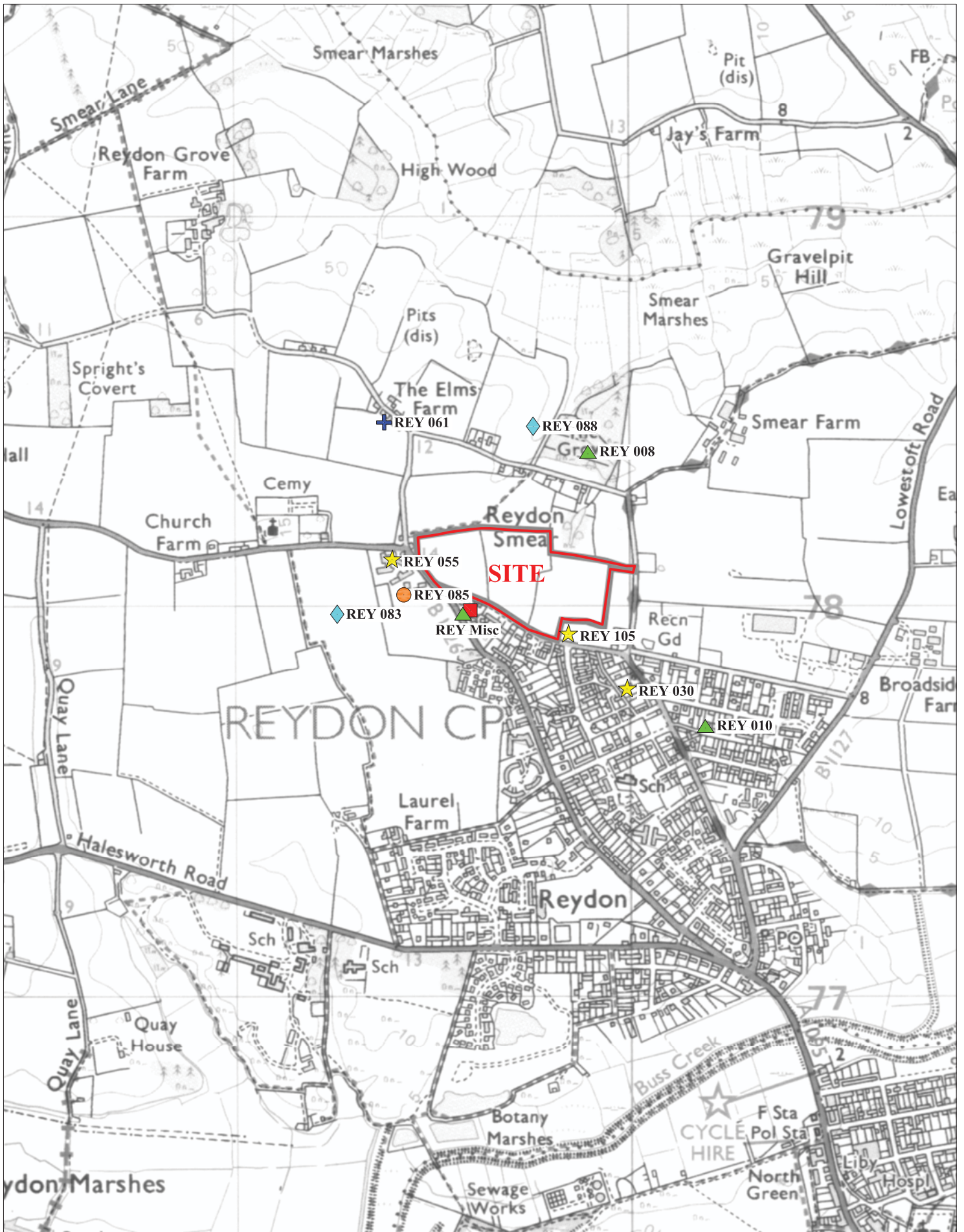
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Fig. 1 Site location plan
 Scale 1:25,000 at A4
 Green Lane, Reydon (P7385)



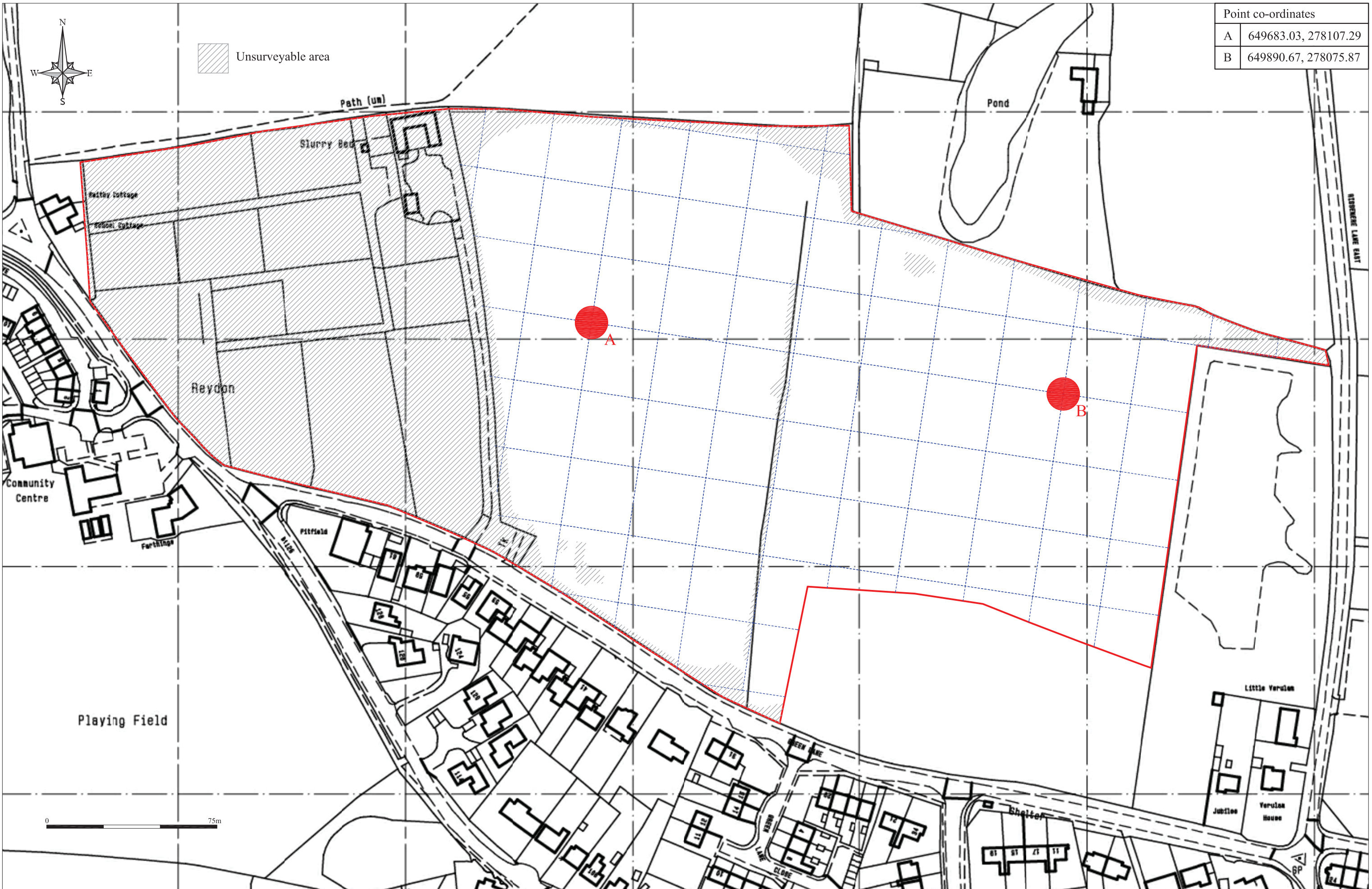
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Fig. 3 HER data

Scale 1:12,500 at A4

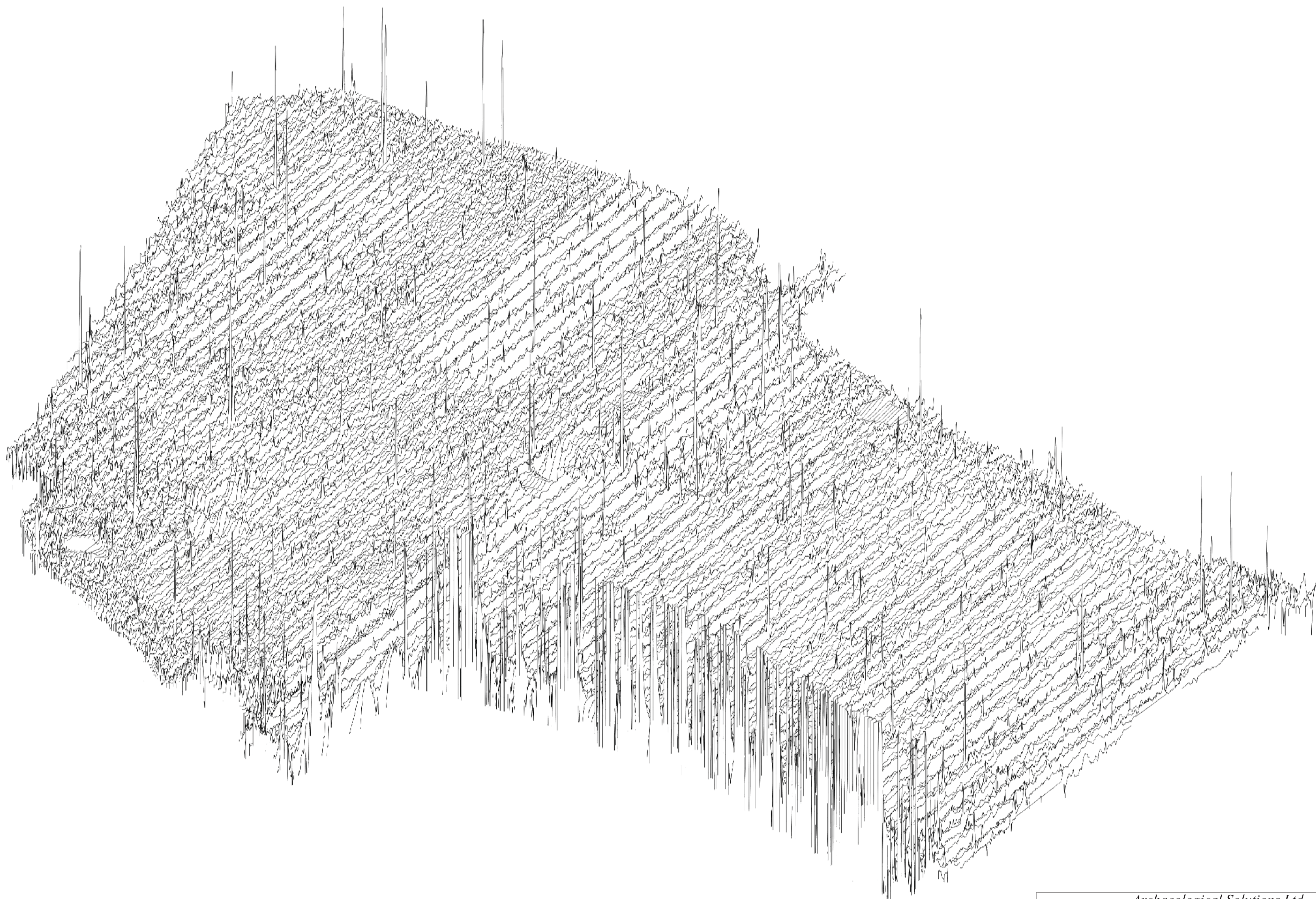
Green Lane, Reydon (P7385)



Point co-ordinates	
A	649683.03, 278107.29
B	649890.67, 278075.87

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Fig. 4 Survey grid
 Scale 1:1500 at A3
 Green Lane, Reydon (P7385)

I
50 nT

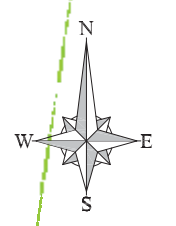


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Fig. 5 X-Y plot of gradiometer data
Scale - As scale bar above
Green Lane, Reydon (P7385)

Plotting parameters

Maximum +2nT (Black)

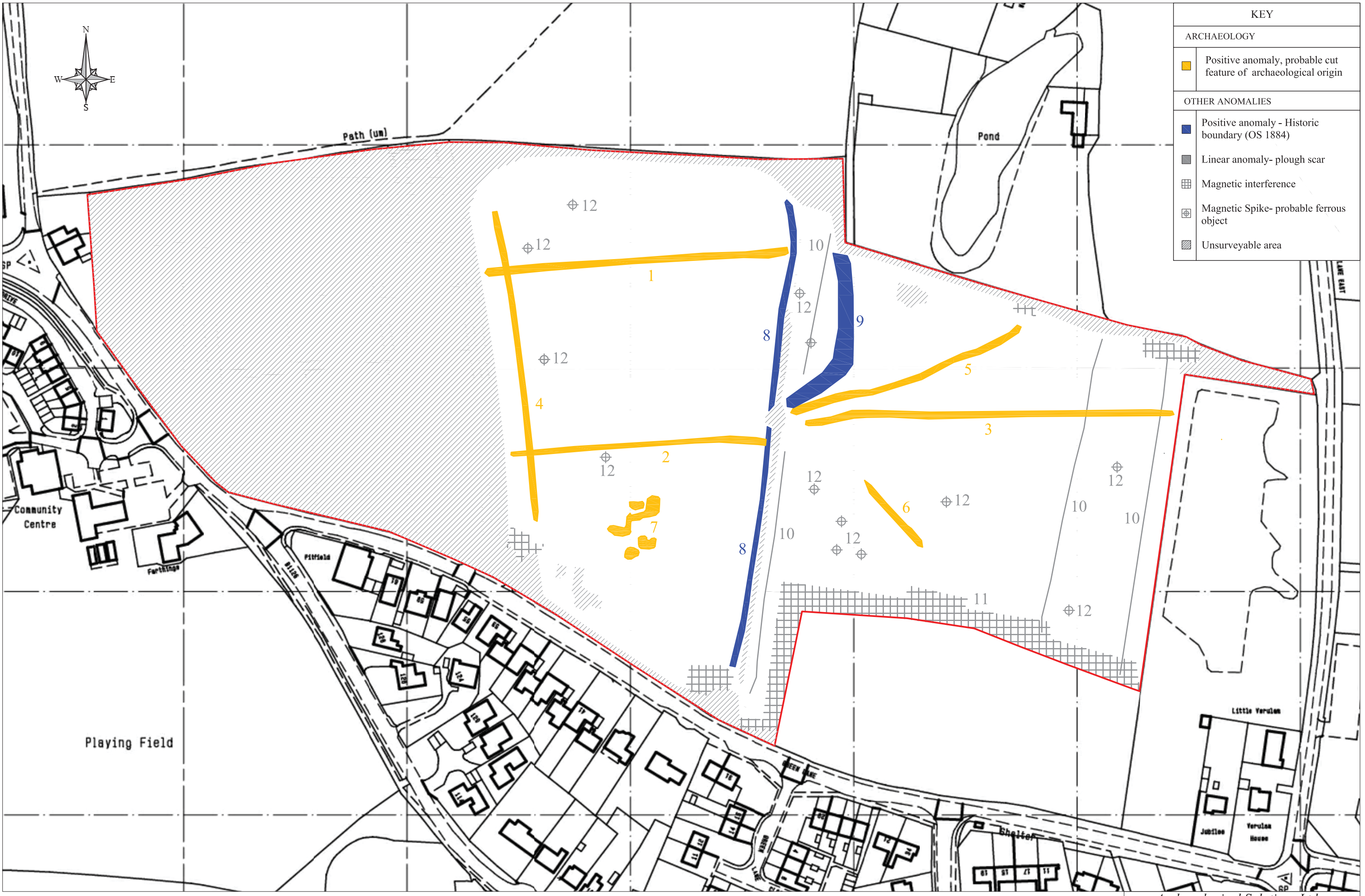
Minimum -2nT (White)



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Fig. 6 Minimally processed gradiometer data
Scale 1:1000 at A3
Green Lane, Reydon (P7385)

0 75m



KEY	
ARCHAEOLOGY	
■	Positive anomaly, probable cut feature of archaeological origin
OTHER ANOMALIES	
■	Positive anomaly - Historic boundary (OS 1884)
■	Linear anomaly- plough scar
■	Magnetic interference
⊕	Magnetic Spike- probable ferrous object
■	Unsurveyable area

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Fig. 7 Interpretation plot
 Scale 1:1500 at A3
 Green Lane, Reydon (P7385)