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SITE AT RYE STREET, BISHOP'S STORTFORD, HERTFORDSHIRE

GEOPHYSICAL SURVEY

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NGR: TL 4923 2289	Report No: 5539
District: East Hertfordshire	Site Code: AS1932
Approved: Claire Halpin MCIfA	Project No: 6418
	Date: 19 February 2018

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Desk-based assessments and environmental impact assessments
Historic building recording and appraisals
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Project dates (fieldwork)	*8th February 2018*		
Previous work (Y/N/?)	*N*	Future work	*TBC*
P. number	*6418*	Site code	*AS1932*
Type of project	*Geophysical Survey*		
Site status	-		
Current land use	*Rough pasture*		
Planned development	*Residential*		
Main features (+dates)	*All anomalies identified are likely to be of modern origin*		
Significant finds (+dates)	-		
Project location			
County/ District/ Parish	*Hertfordshire*	*East Hertfordshire*	*Bishop's Stortford*
HER/ SMR for area	*Hertfordshire County Council Historic Environment Record*		
Post code (if known)	*CM23 2HE*		
Area of site	*c.1.5ha*		
NGR	*TL 4923 2289*		
Height AOD (max/ min)	*c.65-75m AOD*		
Project creators			
Brief issued by	*Hertfordshire County Council Historic Environment Advisory Team*		
Project supervisor/s	*Keeley-Jade Diggons*		
Funded by	*Bellis Homes Limited*		
Full title	*Site at Rye Street, Bishop's Stortford, Hertfordshire: Geophysical Survey*		
Authors	*Diggons, K-J., Summers, J.R., Bescoby, D. and Cussans, J.E.M.*		
Report no.	*5539*		
Date (of report)	*February 2018*		

SITE AT RYE STREET, BISHOP'S STORTFORD, HERTFORDSHIRE

GEOPHYSICAL SURVEY

SUMMARY

In February 2018, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on c.1.5 hectares of land at Rye Street, Bishop's Stortford (NGR TL 4923 2289). The survey was commissioned as the initial requirement of a condition attached to planning approval for the construction of 30no new residential dwellings with a new access and landscaping. The condition required a programme of archaeological work commencing with a geophysical survey.

*The survey identified a number of anomalies (**1-4**), all of which are likely to be modern in origin. A large area of magnetic interference (**5**) may have obscured weaker anomalies of archaeological origin in the northern and eastern areas of the survey.*

1 INTRODUCTION

1.1 In February 2018, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on c.1.5 hectares of land at Rye Street/Farnham Road, Bishop's Stortford, Hertfordshire CM23 2HE (NGR TL 4923 2289; Figs. 1 - 2). The survey was commissioned as the initial requirement of a condition attached to planning approval for the construction of 30no new residential dwellings with a new access and landscaping (EHDC Planning Approval Ref. 3/16/0452/FUL). The condition required a programme of archaeological work commencing with a geophysical survey. The latter was carried out at the request of the LPA, based on advice from the Hertfordshire County Council Historic Advisory Team (HCC HEAT).

1.2 The survey was carried in accordance with advice from HCC HEAT), and in accordance with a specification for evaluation compiled by AS (dated 8th January 2018) and approved by HCC HEAT. It represents the first stage of the requirement, to be followed by a trial trench evaluation. If remains are present HCC HEA may advise the LPA that further mitigation will be required in to complete the requirements of the planning condition. The geophysical survey was carried out in accordance with the Historic England document *Geophysical Survey in Archaeological Field Evaluation* (2008), and CIfA, *The use of Geophysical Techniques in Archaeological Evaluations* and *CIfA Standard and Guidance for Archaeological Geophysical Survey (2014).*

Objectives

1.3 The investigation of the site by geophysical survey was designed to determine the nature, extent and significance of sub-surface features in order

to inform further archaeological mitigation requirements for the development and target subsequent trial trenching.

Planning policy context

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

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

2 DESCRIPTION OF THE SITE

2.1 The site is situated between *c*.65-75m AOD on the northern outskirts of Bishop's Stortford, less than 0.25km to the west of the River Stort, and is bordered by the Bourne Brook on its south western edge. The site is gently sloping from north to south. It is situated immediately to the west of the junction between Farnham Road and Rye Street, which forms its easternmost corner. The site is currently laid to rough pasture but has previously been subject to arable cultivation. The site extends to c.1.5ha.

2.2 The site lies on bedrock geology of the Lewes Nodular and Seaford chalk formations formed in the Cretaceous period (BGS 2015). Superficial deposits are mixed and include glaciofluvial deposits, Lowestoft formation diamicton and a mix of clay, sand, silt and gravel, all dating to the Quaternary (BGS 2015). The soils are of the Melford soil association, overlaying a chalky

till the soils are described as deep well drained fine loamy over clayey and fine loamy (SSEW 1983).

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Prehistoric

3.1 Evidence for prehistoric settlement in the area of Bishop's Stortford ranges from finds of Palaeolithic hand axes (HER 1091 & 13312) to a late Iron Age ditch complex (HER 30301), and while prehistoric evidence is considerably less abundant than Roman or post medieval activity there is a cluster of find spots just to the north of the site relating to Neolithic and Bronze Age activity (HER 18775, 18776 & 18777). Recent archaeological investigations to the immediate north of the site have however revealed evidence of Neolithic flint scatters, a Bronze Age ring ditch and associated features, Iron Age storage pits and further evidence of Saxon settlement.

Roman

3.2 There is abundant evidence for Roman settlement to the south of the site in the northern part of Bishop's Stortford. The HER has a general entry for the site of the Roman town at Bishop's Stortford (HER 513) but there are many other entries relating to specific elements of the settlement. The cluster of activity to the south of the site is focussed around Stane Street, the Roman Road which ran from Braughing to Bishop's Stortford (HER 4620), where it crossed the Stort by the Cannons Close estate. Several examples of occupation features and deposits (HER 1435, 2139, 6505, 9868 & 13755) have been found, as well as cemeteries (HER 512, 12051 & 30867) and many finds including coins, pottery, jewellery and other artefacts (e.g. HER 1343, 2132, 2140 & 30677).

Saxon

3.3 A ditch terminus or pit containing a quantity of 6th-7th century pottery is the only evidence of Saxon occupation in this part of Bishop's Stortford and is situated a short distance to the east of the site (HER 18779).

Medieval

3.4 A small quantity of medieval evidence is present in the vicinity, which largely consists of collections of pottery sherds (HER 784, 2234 & 13679). The site of a wayside cross - Colin's Cross (HER 2827) - is also catalogued, as is a series of medieval ditches (HER 13756). None of these finds are particularly close to the site.

Post-Medieval

3.5 Post medieval sites are similarly numerous to Roman sites in this part of Bishop's Stortford but somewhat more dispersed. These include a number of industrial sites particularly brickfields and gravel and chalk extraction pits (HER 6856, 6858, 6860, 6861, 6862, 15482 & 18778); two of which are located close to the site (HER 6860).

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 (**Fig. 3**) using a Leica GS-09 RTK GPS. Geophysical data were collected systematically in a zig-zag pattern within each grid square along traverses spaced at 1 m apart. The gradiometers were configured to record measurements at 0.25m intervals along each traverse, giving a total of 3600 measurements per grid square.

4.4 A significant area around the boundary of the site was unsurveyable due to overgrown vegetation. This amounted to approximately 0.5ha.

Data Processing

4.5 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.

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

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.

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. 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. 4**, displayed as an x-y trace plot indicating the overall range of magnetic values recorded within the study area, and as a colour plot, showing extreme values in **Fig. 5**. A greyscale plot of the processed data, following the application of the data processing methodology described in Section 4.5 (above), is shown in **Fig. 6**. The processed data revealed a number of anomalies, most likely of modern origin, which are plotted in **Fig. 7**, with their interpretation described below.

5.2 In the NW sector of the survey was a very strong negative anomaly (**1**) measuring approximately 5.5m across. This is likely to be derived from a single source with a strong remanent (residual) magnetic component and is in all likelihood of modern origin.

5.3 On the eastern edge of the survey was a large dipolar response (**2**) representing the former location of an electricity pole.

5.4 In the NW sector was another high amplitude anomaly (**3**), most likely representing a ferrous object. This anomaly corresponds with an object visible on satellite imagery as far back as the year 2000, perhaps representing an animal food or water trough.

5.5 A further high amplitude anomaly (**4**) is also likely to represent a ferrous object of modern origin.

5.6 A significant area of magnetic interference (**5**) was present along the northern and eastern edges of the survey. This is likely to derive from disturbance associated with road construction and passing vehicles on Rye Street.

5.7 Two smaller areas of magnetic interference (**6**) on the western edge of the survey correspond with metal fencing on the western boundary.

5.8 Some 24 positive dipolar responses (**7**) were identified across the survey area. The majority of these are probably not archaeologically significant, and represent modern ferrous material within the near subsurface. Several, such as those recorded to the SE of (**1**) appear to roughly align at equidistant intervals and may represent the remains of corroded metal fence posts.

6 CONCLUSIONS

6.1 The survey at Rye Street has identified a number of anomalies, all of which are likely to be modern in origin.

6.2 Significant magnetic interference on the northern and eastern edges of the survey (**5**), most likely associated with road construction, have obscured a significant area of the survey. This could have inhibited the identification of weaker anomalies of archaeological origin.

ACKNOWLEDGEMENTS

Archaeological Solutions Limited would like to thank the client, Bellis Homes Limited, for funding the project and for their assistance (in particular Mr Tom Whitaker).

AS is pleased to acknowledge the advice and input of Dr Simon Wood of the Hertfordshire County Council Historic Environment Advisory Team. AS would also like to acknowledge the assistance of the Hertfordshire Historic Environment Record

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

APPENDIX 1 HER SUMMARY SHEET

Site name and address:	*Site at Rye Street, Bishop's Stortford, Hertfordshire*
County: *Hertfordshire*	***District:*** *East Herts*
Village/Town: *Bishop Stortford*	***Parish:***
Planning application reference:	*3/16/0452/FUL*
Client name/address/tel:	*Bellis Homes Limited*
Nature of application:	*Residential*
Present land use:	*Pasture*
Size of application area:	*Size of area investigated* *1.5ha*
NGR (8 figures):	*TL 4923 2289*
Site Code:	*AS 1932*
Site director/Organisation:	*Archaeological Solutions Ltd*
Type of work:	*Archaeological Evaluation by Geophysical Survey*
Date of work:	*February 2018*
Location of finds/Curating museum:	*Bishop's Stortford*
Related SMR Nos:	*Periods represented:*
Relevant previous summaries/reports: -	None
Summary of fieldwork results:	*The survey identified a number of anomalies (**1-4**), all of which are likely to be modern in origin. A large area of magnetic interference (**5**) may have obscured weaker anomalies of archaeological origin in the northern and eastern areas of the survey.*
Author of summary: *KJ Diggons*	*Date of Summary:* *February 2018*

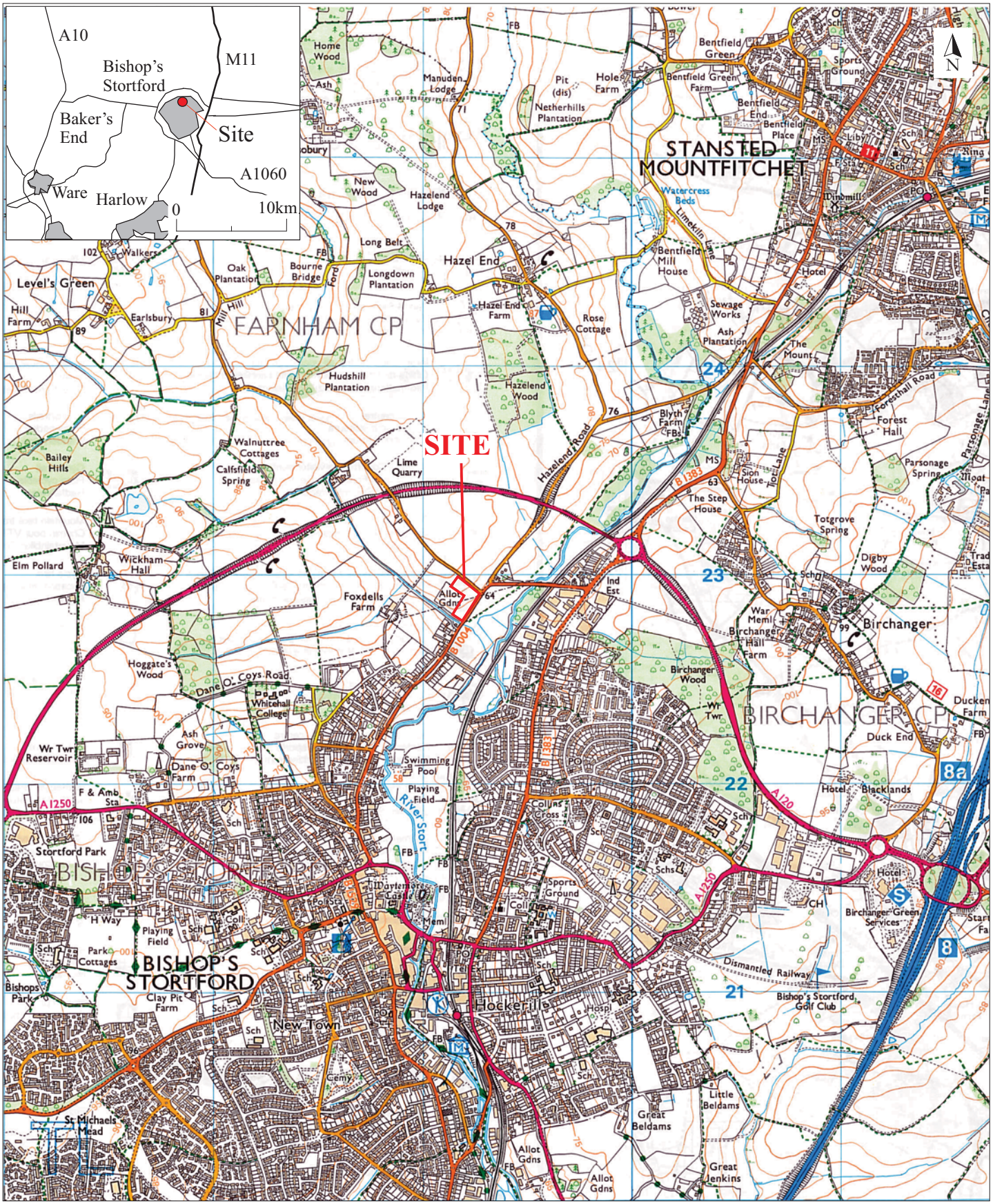

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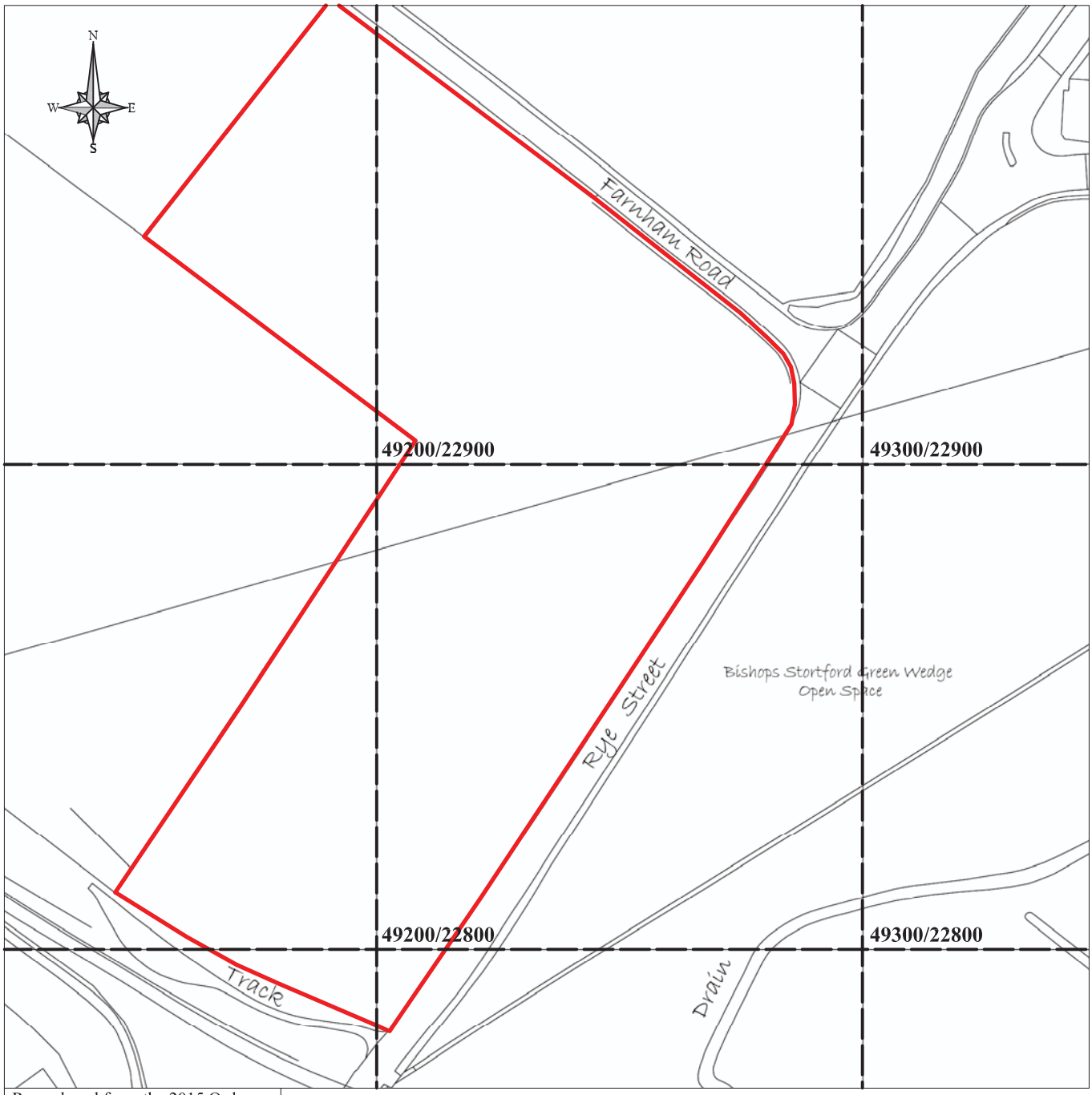
Fig. 1 Site location plan

Scale 1:25,000 at A4

Rye Street, Bishops Stortford, Herts (P6418)



0 75m

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Fig. 2 Detailed site location plan

Scale 1:1250 at A4

Rye Street, Bishops Stortford, Hertfordshire (P6418)

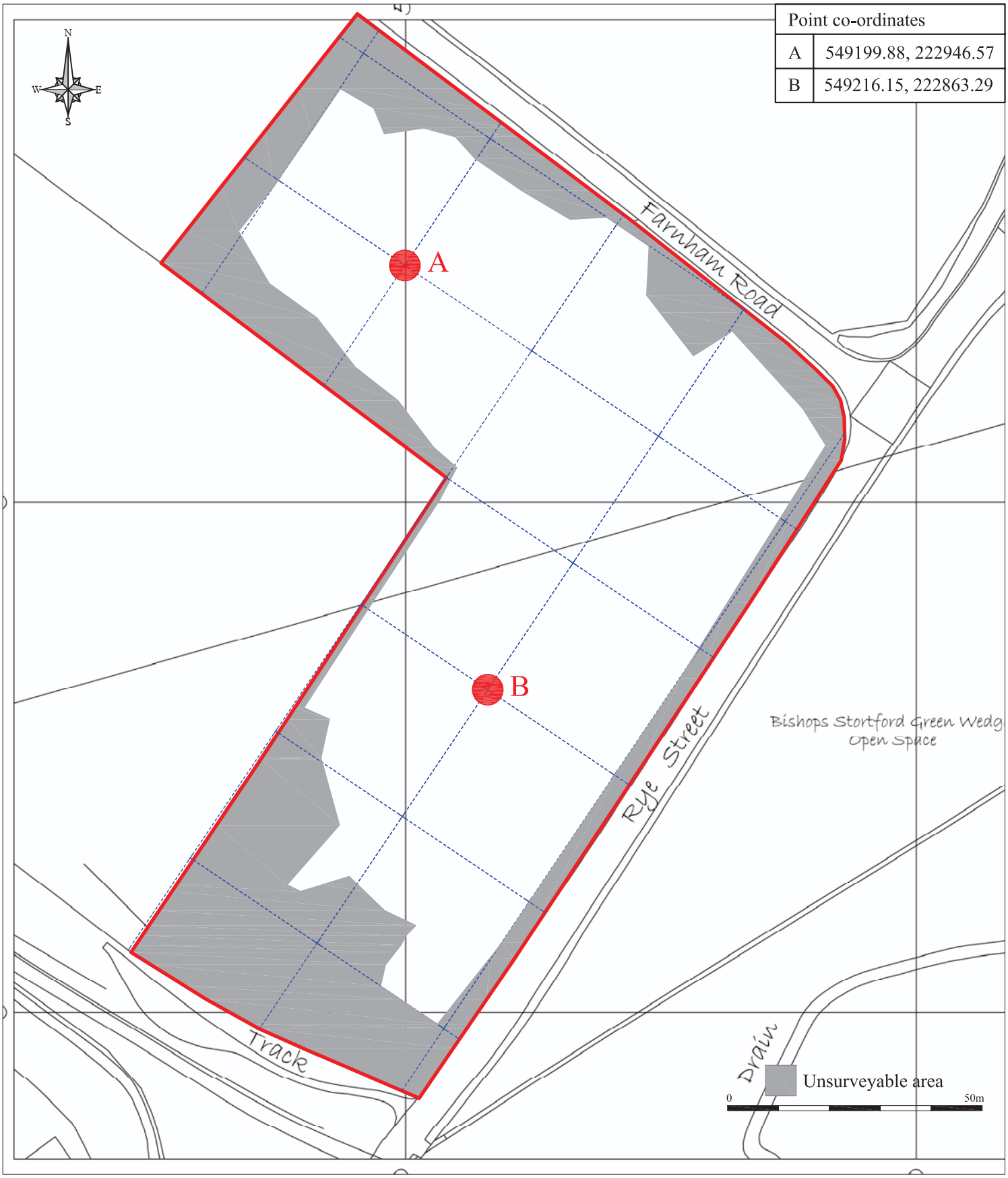

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Fig. 3 Survey grid

Scale 1:1000 at A4

Rye Street, Bishop's Stortford (P6418)

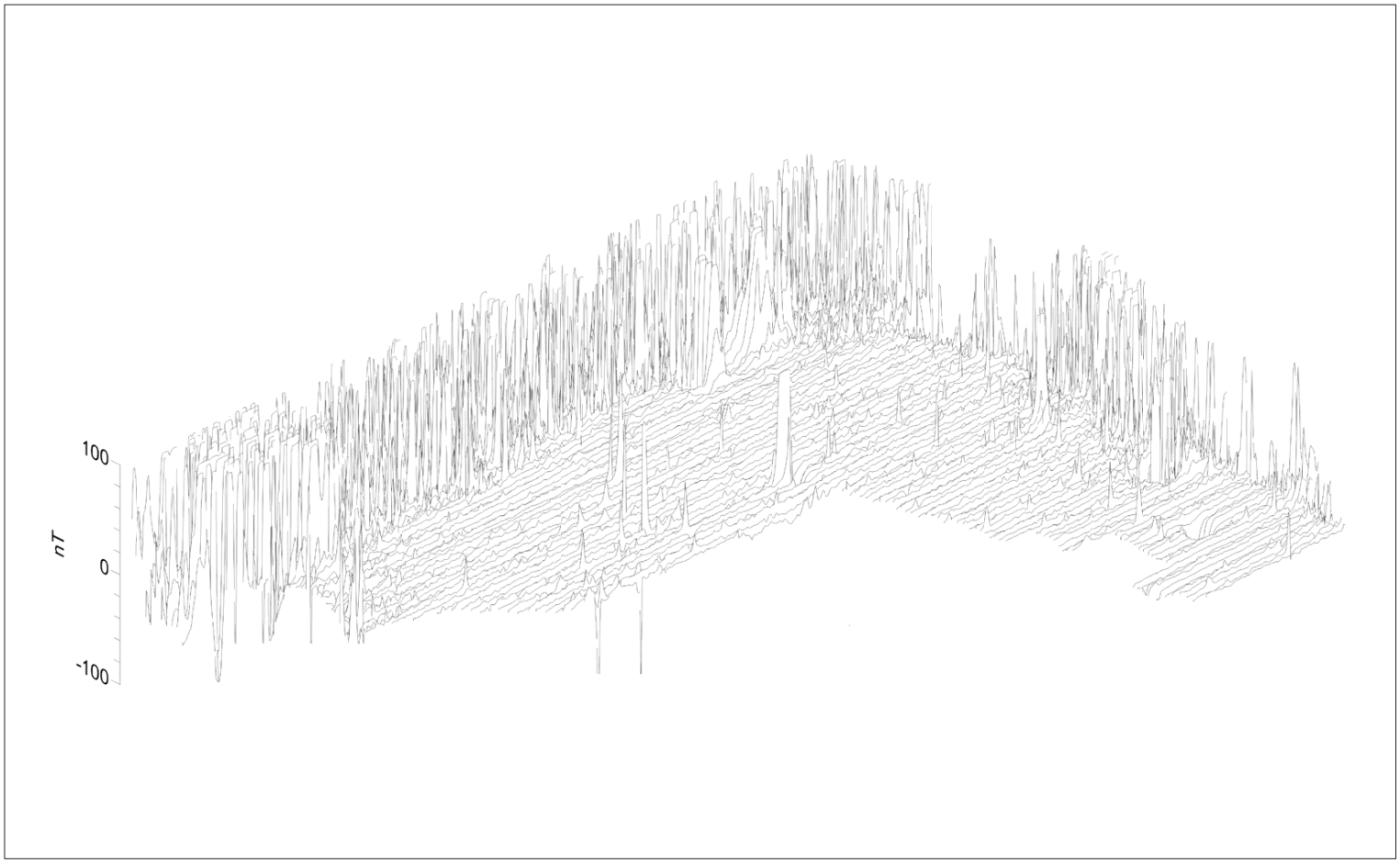

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Fig. 4 X-Y plot of gradiometer data

Rye Street, Bishop's Stortford (P6418)

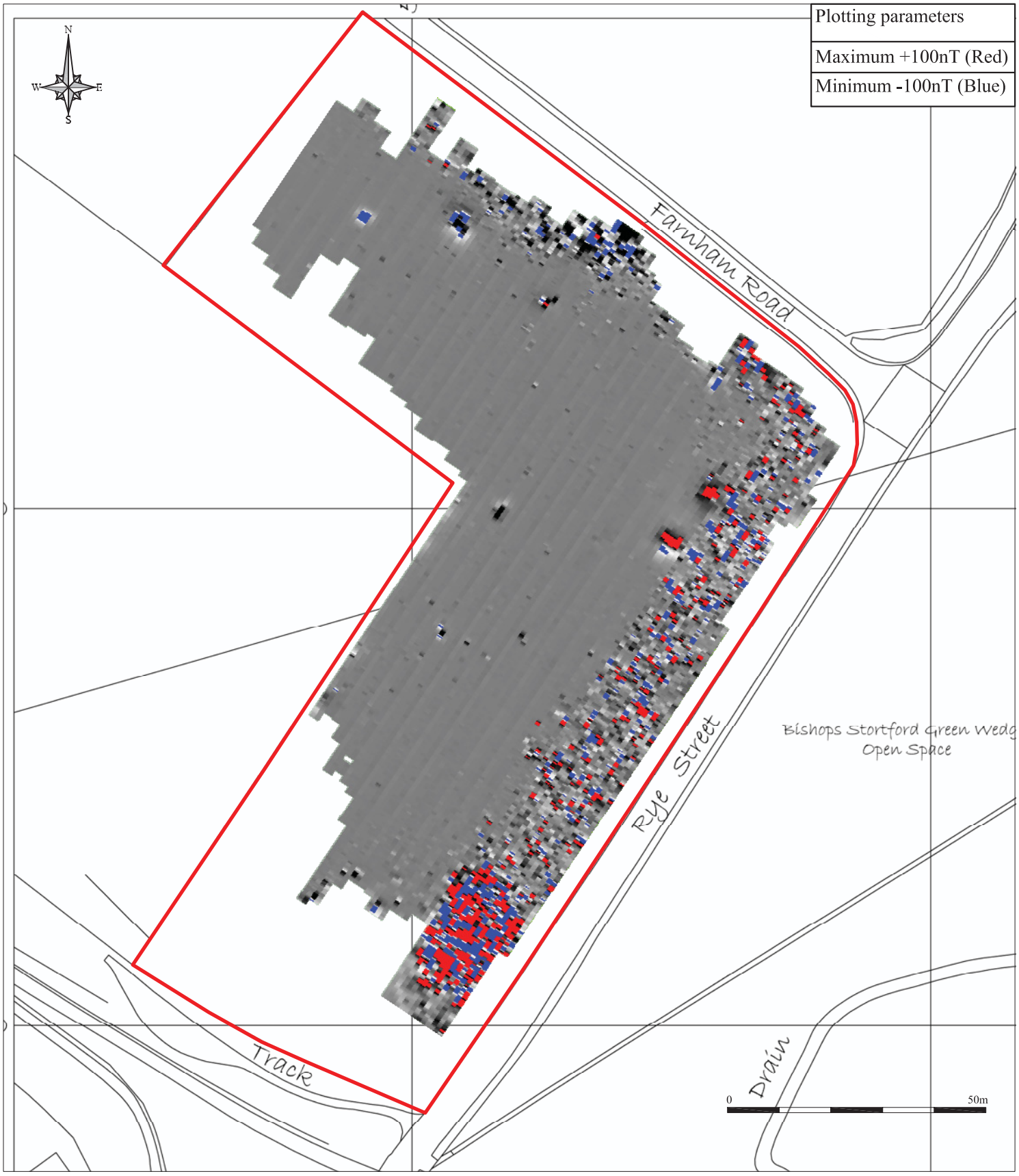

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Fig. 5 Colour plot of gradiometer data

Scale 1:1000 at A4

Rye Street, Bishop's Stortford (P6418)

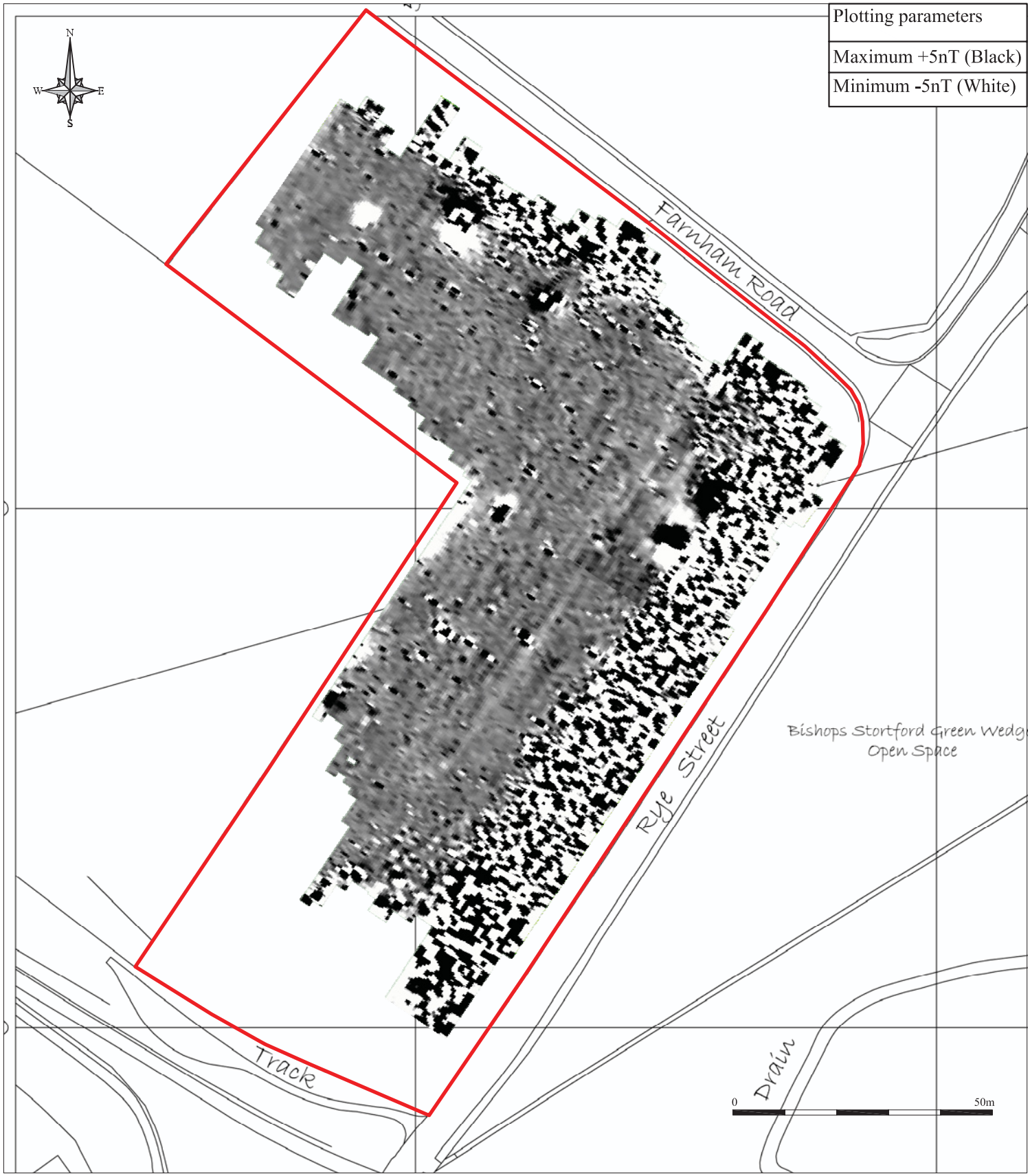

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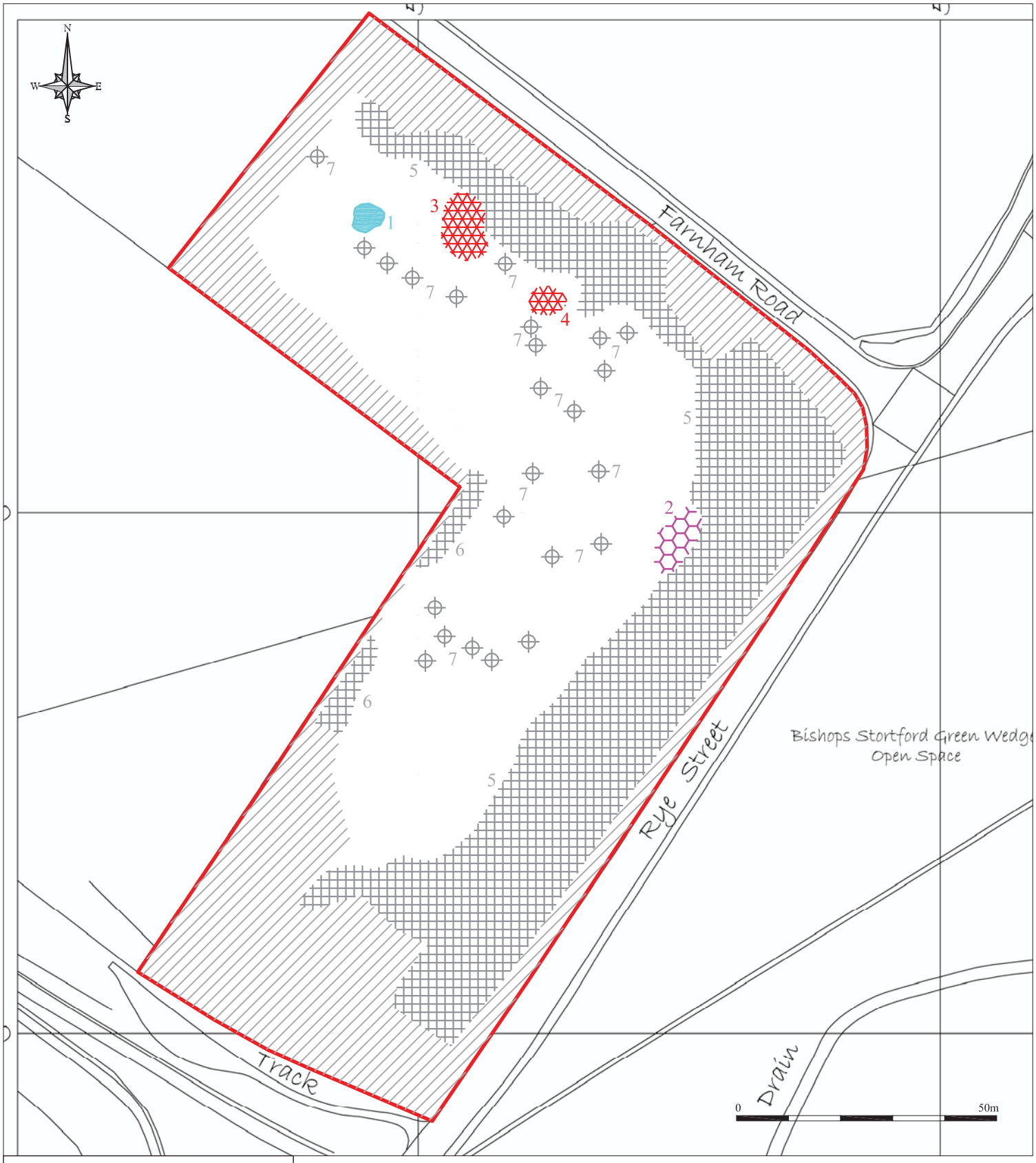
Fig. 6 Minimally processed gradiometer data

Scale 1:1000 at A4

Rye Street, Bishop's Stortford (P6418)



KEY	
	Negative anomaly, of probable modern origin
	Positive anomaly - former location of electricity pole
	Positive anomaly - probable ferrous object
	Magnetic interference
	Magnetic Spike- probable ferrous object
	Unsurveyable area

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Fig. 7 Interpretation plot

Scale 1:1000 at A4

Rye Street, Bishop's Stortford (P6418)