



**Geophysical survey and
Trial trench evaluation on
land off Welford Road, Boughton
Northamptonshire
November 2014**

Report No. 14/220

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Illustrator: Amir Bassir

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evaluation on
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OASIS REPORT FORM

PROJECT DETAILS		Oasis No. molanort1-195189	
Project title	A geophysical survey and trial trench evaluation on land off Welford Road, Boughton, Northamptonshire		
Short description	A detailed magnetometer survey was carried out and five trenches were excavated across two arable fields. The geophysical survey identified some strong magnetic responses, indicative of geological processes. However no archaeological features or finds were encountered.		
Project type	Geophysical survey and Trial trench evaluation		
Site Status	-		
Previous work	None		
Current land use	Arable land		
Future work	Unknown		
Monument type and period	None		
Significant finds	None		
PROJECT LOCATION			
County	Northamptonshire		
Site address	Welford Road, Boughton		
Post code	NN2 8PS		
OS co-ordinates	NGR SP 7365 6494		
Area (sq m/ha)	3.7ha		
Height aOD	65.75m to 66.99m aOD		
PROJECT CREATORS			
Organisation	MOLA Northampton		
Project brief originator	Liz Mordue, Northampton County Council, Assistant Archaeological Officer		
Project Design originator	MOLA Northampton		
Director/Supervisor	Sam Egan (MOLA) John Walford (MOLA)		
Project Managers	Mark Holmes (MOLA)		
Sponsor or funding body	Wilbraham Associates		
PROJECT DATE	Geophysical Survey	Evaluation	
Start date	27 October 2014	5 November 2014	
End date	27 October 2014	6 November 2014	
ARCHIVES	Location (Accession no.)	Contents	
Physical	MOLA Northampton store ENN107	Geophysical Survey results	
Paper		Site records	
Digital		Survey data, report, photographs	
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report (MOLA report)		
Title	Geophysical survey and trial trench evaluation on land off Welford Road, Boughton 2014		
Serial title & volume	14/221		
Author(s)	Samuel Egan		
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Geophysical survey and trial trench evaluation on land off Welford Road, Boughton, Northamptonshire November 2014

Abstract

MOLA was commissioned by Wilbraham Associates to carry out a geophysical survey and trial trench evaluation in advance of new buildings on land at Welford Road, Boughton. The site lies in an area topographically favourable for prehistoric occupation, and evidence of multi-period activity has been recorded in the immediate area surrounding the site. The geophysical survey did not locate any features of archaeological interest and no archaeological features or finds were found during the trial trench evaluation. The trenches displayed extensive alluvial and colluvial layers with dense ironstone concentrations; this explains strongly magnetic geophysical survey results.

1 INTRODUCTION

MOLA was commissioned by Wilbraham Associates to carry out a geophysical survey and trial trench evaluation in advance of new buildings off land at Welford Road, Boughton (NGR SP 7365 6494; Fig 1). Due to the high archaeological potential of the site a scheme of archaeological work was completed on the advice of the Northamptonshire Assistant Archaeological Advisor. The works were carried out in accordance with the National Planning Policy Framework (NPPF; DCLG 2012).

2 TOPOGRAPHY AND GEOLOGY

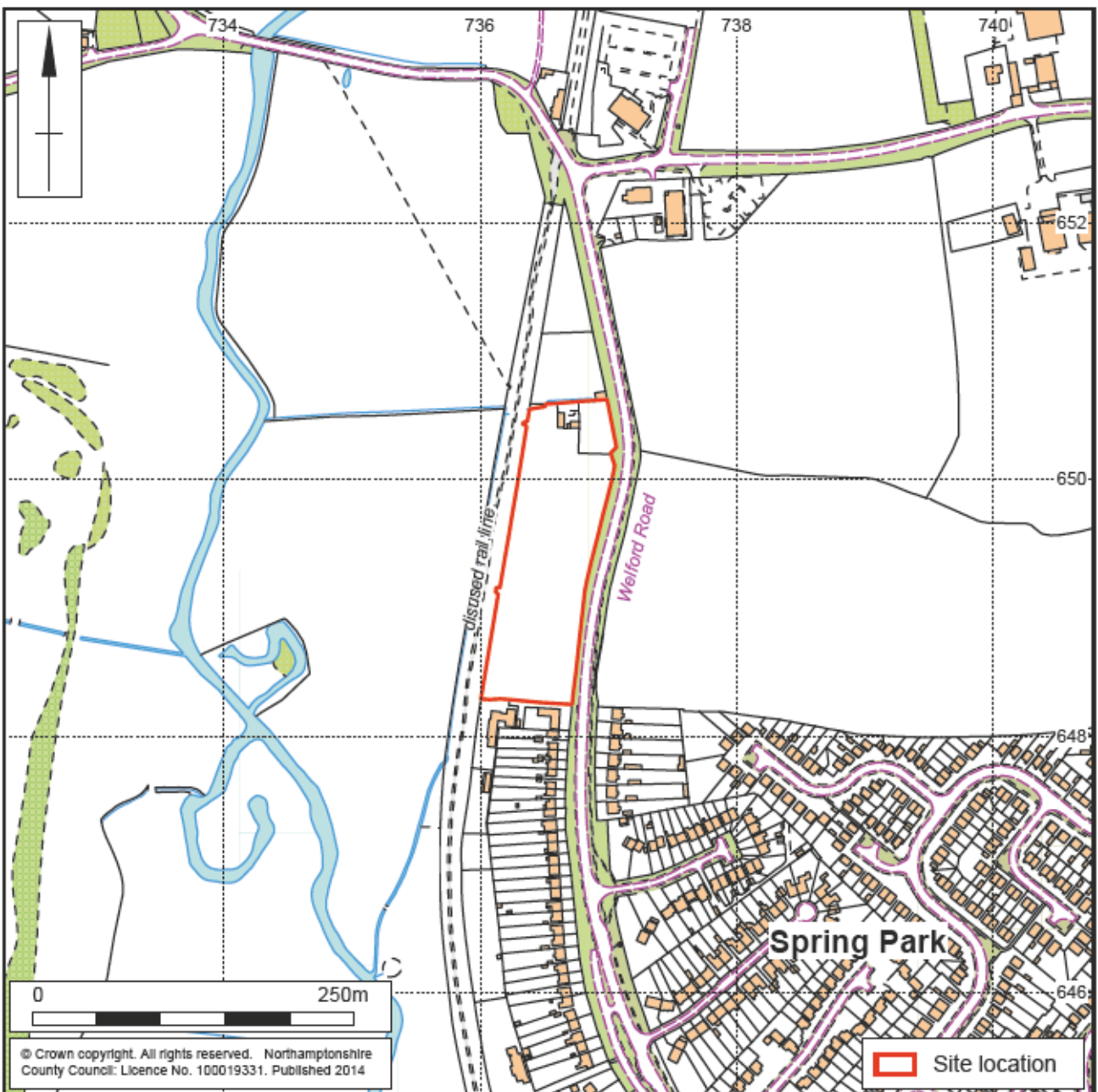
The evaluation area is located at about 60m aOD in the base of a stream valley, a tributary of the River Nene runs c 250m to the west. The underlying bedrock is mapped as Whitby Mudstone Formation overlain by alluvium (BGS 2014).

3 AIMS AND OBJECTIVES

The main aim of the investigation was to confirm whether archaeological remains were present within the proposed development area.

The specific objectives of the project were to provide further information on the following:

- The location, extent, nature, and date of any archaeological features or deposits that may be present within the proposed development site;
- The integrity and state of preservation of any archaeological features or deposits that may be present within the proposed development site;
- The presence or absence of any datable archaeological deposits that may have environmental potential.
- To recover paleo-environmental remains to determine local environmental conditions



Scale 1:5000

Site location Fig 1

4 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

Archaeological background

There are no archaeological finds or historic monuments within the proposed development area listed in the Northamptonshire Historic Environment Record. However, on the valley slope to the immediate east and south east of the proposed development area there are the sites of possible prehistoric and Romano-British settlement identified through geophysical survey (HER 5075, 9992). On the opposite western valley side, there are cropmarks representing Neolithic and Bronze Age burial activity and Iron Age settlement (HER 5996, 8272). The Northampton to Market Harborough stretch of the former London and North Western Railway forms the eastern boundary to the proposed development area. (Holmes 2014)

5 GEOPHYSICAL SURVEY METHODOLOGY BY JOHN WALFORD

5.1 Methodology

The magnetometer survey was conducted with Bartington Grad 601-2, twin sensor array, vertical component fluxgate gradiometers (Bartington and Chapman 2003). These are standard instruments for archaeological survey and can resolve magnetic variations as slight as 0.1 nanoTesla (nT).

An independent network of 30m grid squares was established across each of the fields to be surveyed. The grid was set out with a tape measure and optical square and was tied in to the Ordnance Survey National Grid by means of a Leica Viva dGPS. The gradiometers were carried at a brisk but steady pace through each grid square, collecting data along 1m spaced traverse lines. Measurements were automatically triggered every 0.25m along the traverses, giving a total of 3600 measurements per square. All fieldwork methods complied with the guidelines issued by English Heritage and by the Institute for Archaeologists (EH 2008; IfA 2011).

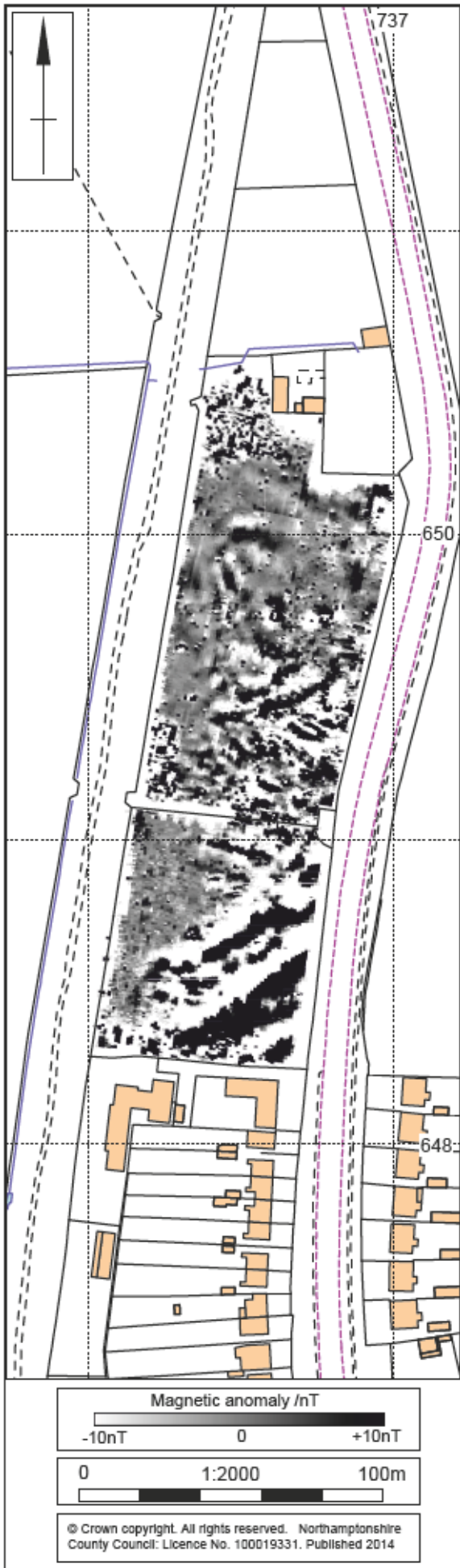
The survey data was processed using Geoplot 3.00v software. The striping was removed using the 'Zero Mean Traverse' function and destaggering of the data was performed where necessary. The processed data is presented in this report in the form of a greyscale plot at a range of +4nT (black) to -4nT (white). This has been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Fig 5) and is shown with an interpretative overlay in Figure 3. A separate plot of the unprocessed data is presented in Figure 4.

5.2 Survey Results

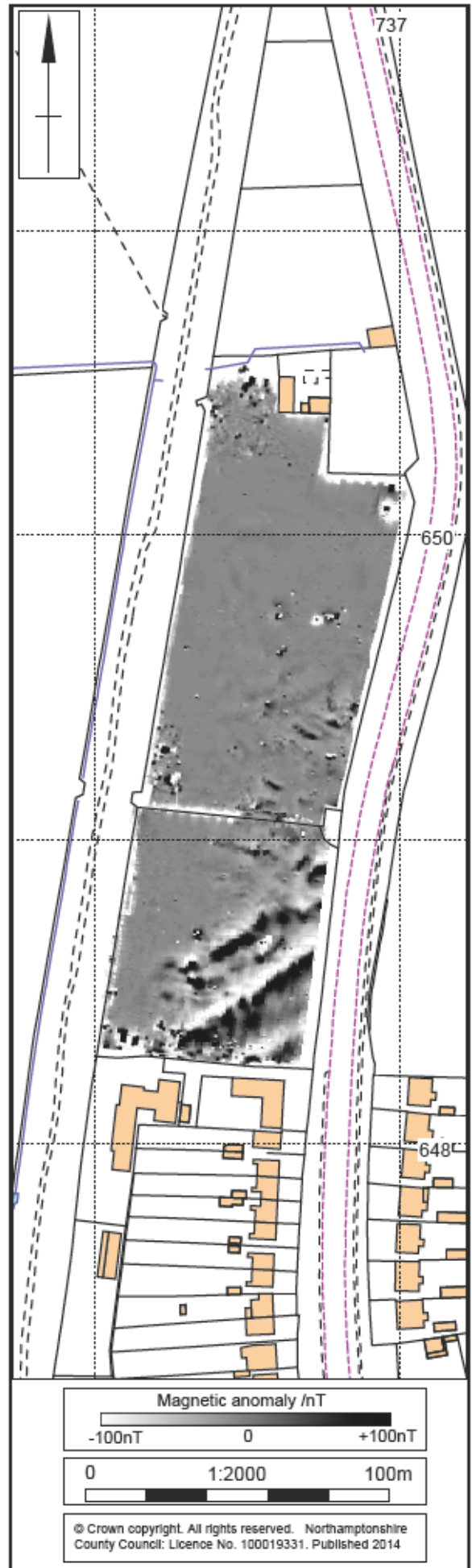
The survey data exhibits no features which are of archaeological interest.

The south region of site contains distinct bands of high magnetic disturbance, the evaluation revealed channels of ironstone rich clay indicating that this is a geological process. The results correlate with a survey completed on the field immediately east of site (Butler 2005). An area of weak sinuous background responses seen in the Northern field is indicative of alluvium.

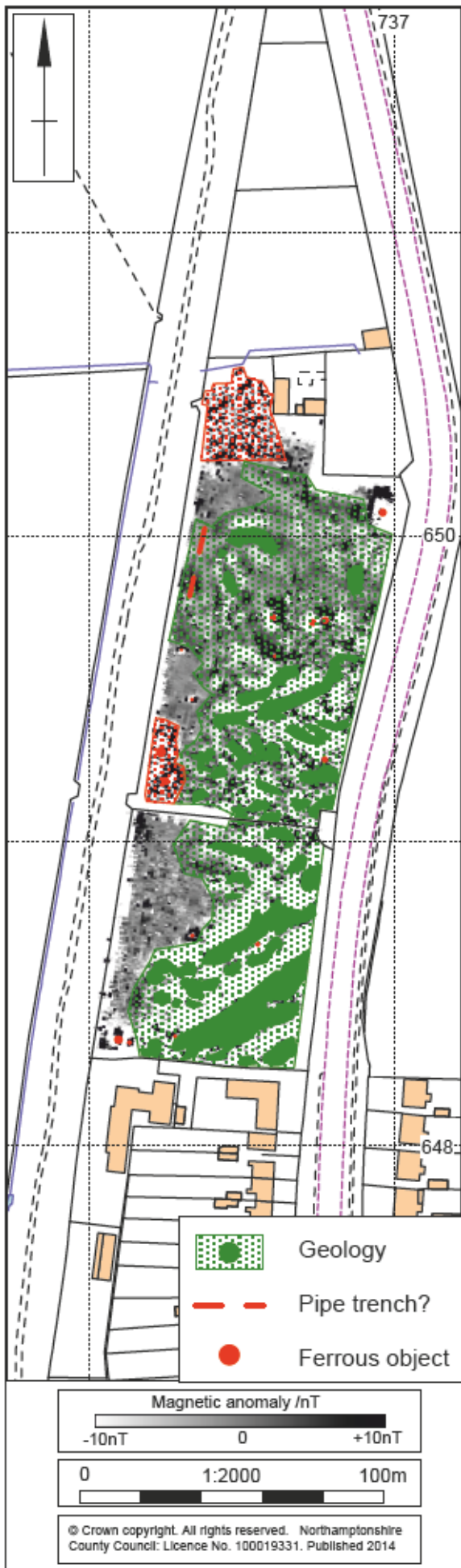
The northernmost area displays broadly scattered magnetic responses; this is most likely modern hard core. Three more bipolar anomalies were located on site which was observed above ground during the survey, these consist of a manhole cover, a tree with metal fencing and a small area of waste material.



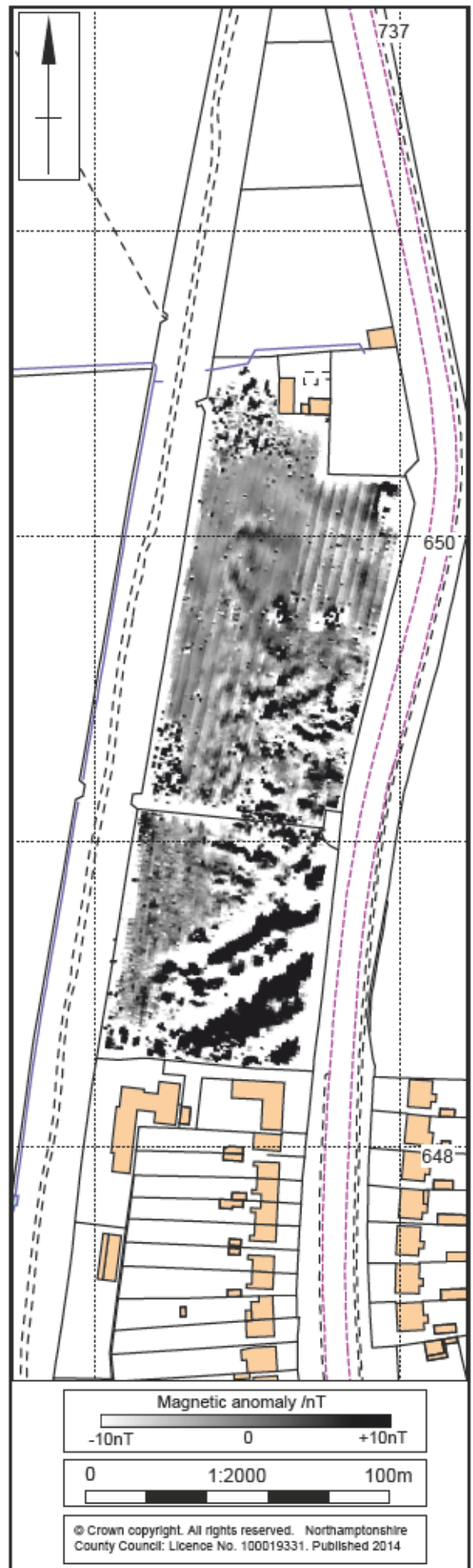
Magnetometer survey results (+/-10nT)
Fig 2a



Magnetometer survey results (+/-100nT)
Fig 2b



Magnetometer survey interpretation Fig 3



Unprocessed magnetometer data Fig 4

6 TRIAL TRENCH EVALUATION

6.1 Methodology

A programme of evaluation was carried out in accordance with a Written Scheme of Investigation (WSI) prepared by MOLA (Holmes 2014). This required the excavation of five trenches, planned to investigate the potential impact of the proposed development on any archaeological remains within the development area. The trenches were set out using differential GPS (Leica Viva) operating to an accuracy of +/- 0.05m.

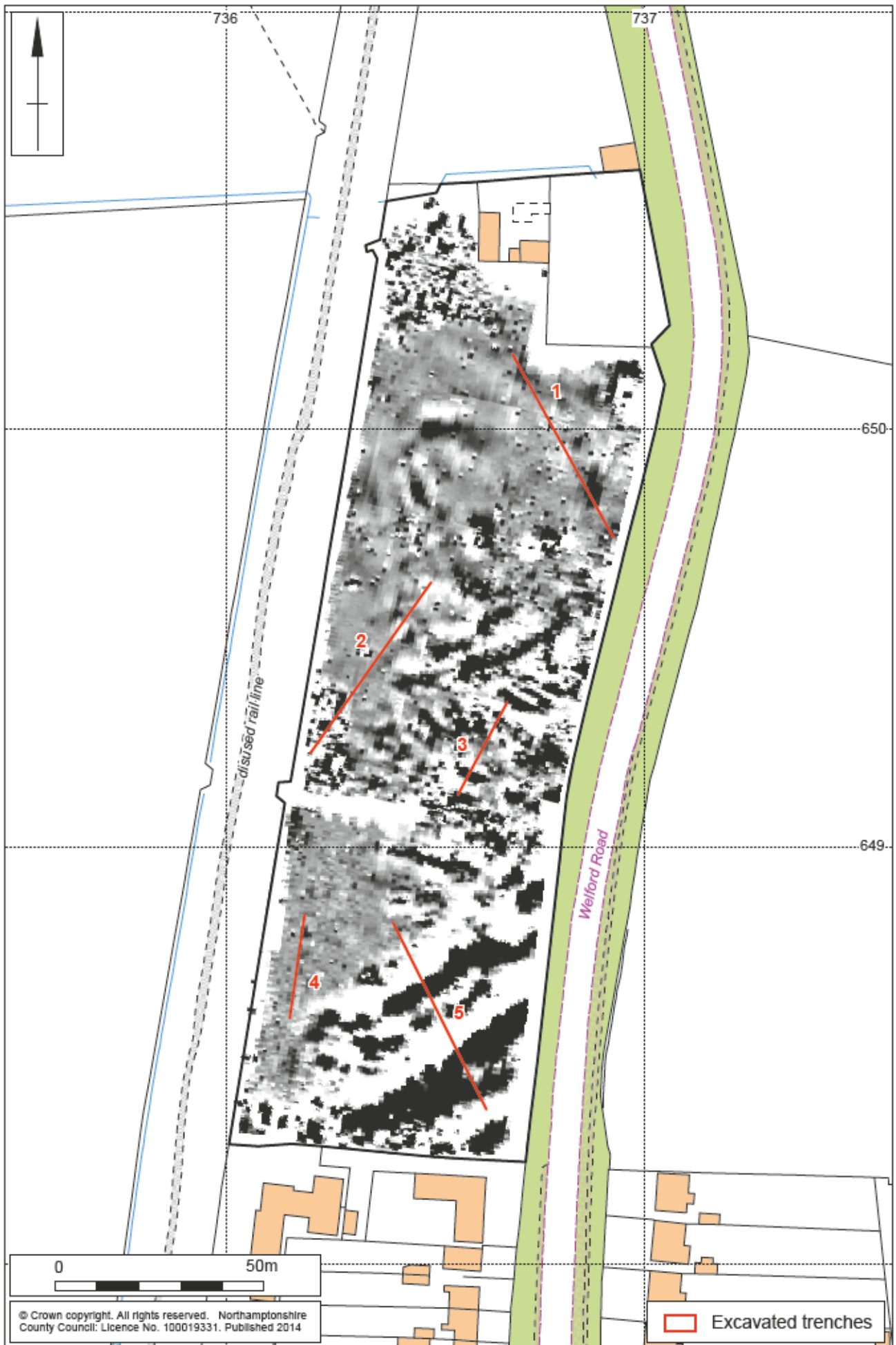
All trenches were excavated using a JCB, fitted with a 1.6m wide toothless ditching bucket, operated under constant archaeological supervision. Trenches 1, 2 and 5 were 50m long and trenches 2 and 4 were 25m long. The excavation and recording were carried out in accordance with MOLA guidelines and all records were created using MOLA pro-forma (MOLA 2014). Photographs were taken of all trenches and all relevant deposits on 35mm monochrome print film, high resolution digital images were also taken. Work was carried out in accordance with the Institute for Archaeologists' *Standard and guidance for archaeological field evaluation* (IfA 2008).

The trenches were excavated to the top of the natural geological horizon. Levels in metres above Ordnance Datum were established for all trenches using GPS and for all excavated features using a dumpy level from temporary bench marks (TBMs) established using GPS. All records and materials will be compiled in a structured archive in accordance with the guidelines of Appendix 3 in the English Heritage procedural document, *Management of Archaeological Projects 2* (EH 1991).

6.2 The excavated evidence

Topsoil was present across site varying between 0.24m- 0.42m thick, topsoil was firm, dark greyish/brown silty clay with rare small sub-angular ironstone fragments. Topsoil overlay colluvium, a 0.42m thick, firm mid orange/brown silty clay with rare small sub-angular ironstone. In trenches 1 and 3 colluvium overlay natural, firm mid/light orange/brown silty clay with moderate small and medium sub-angular ironstone fragments. In trench 5 colluvium overlay bands of firm mid orange/brown silty clay and ironstone and mid greyish/brown silty clay and ironstone. In trenches 2 and 4 colluvium overlay alluvium, firm blue silty clay with no inclusions. Two sondages were placed in the ends of trenches 2 and 4 to analyse the depth and nature of alluvial layers Figure 6

No archaeological finds or features were found during the evaluation.



Scale 1:1250

The excavated trenches Fig 5



Representative section displaying site stratigraphy, Trench 2 looking east Fig 6

9 CONCLUSION

Although the site lies in an area topographically favourable for prehistoric occupation and evidence of multiperiod activity has been record in the immediate area surrounding the site, no archaeology or features were encountered during the evaluation. The trenches displayed extensive alluvial and colluvial layers with dense ironstone concentrations, which explain the strongly anomalies revealed by the geophysical survey.

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APPENDIX : CONTEXT INVENTORY

Trench No	Length, width & alignment	NGR	Surface height (aOD)	Depth & height of natural (aOD)
1	50m x 1.6m, NW-SE	473668.47 265107.52	NW end- 66.41m	0.80m deep 65.61m aOD
<i>Context</i>	<i>Context type</i>	<i>Description</i>	<i>Dimensions</i>	<i>Artefacts/Samples</i>
101	Topsoil	Firm, dark greyish/ brown, silty clay with small sub-angular ironstone, poorly sorted.	0.29m thick	-
102	Subsoil	Firm, mid orange/brown silty clay with occasional small sub-angular ironstone nodules, poorly sorted.	0.51m thick	-
103	Natural	Firm, mid yellow/orange silt clay and small to medium sub-angular ironstone, poorly sorted.	-	-

Trench No	Length, width & alignment	NGR	Surface height (aOD)	Depth & height of natural (aOD)
2	50m x 1.6m, NE-SW	473694.02 264963.43	NE end- 65.97	0.72m deep 65.25m aOD
<i>Context</i>	<i>Context type</i>	<i>Description</i>	<i>Dimensions</i>	<i>Artefacts/Samples</i>
201	Topsoil	Firm, dark greyish brown silty clay with rare, small sub-angular ironstone. Poorly sorted	0.26m thick	-
202	Colluvium	Firm, mid orange/brown silty clay with occasional small sub-angular ironstone nodules, poorly sorted.	0.46m thick	-
203	Alluvium	Light yellow/blue silty clay with no inclusions.	-	-

Trench No	Length, width & alignment	NGR	Surface height (aOD)	Depth & height of natural (aOD)
3	25m x 1.6m, NE-SW	473667.25 264934.72	NE end- 67.83m	0.84m deep 66.99m aOD
<i>Context</i>	<i>Context type</i>	<i>Description</i>	<i>Dimensions</i>	<i>Artefacts/Samples</i>
301	Topsoil	Firm, dark greyish/brown silty clay with rare, small sub-angular ironstone. Poorly sorted	0.26m thick	-
302	Colluvium	Firm, mid orange/brown silty clay with occasional small sub-angular ironstone nodules, poorly sorted.	0.58m thick	-

WELFORD ROAD, BOUGHTON

303	Natural	Firm mid/light orange brown silty clay and ironstone with irregular patches of blue clay	-	
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Trench No	Length, width & alignment	NGR	Surface height (aOD)	Depth & height of natural (aOD)
4	25m x 1.8m, NNE-SSW	473618.67 264922.32	NNE end- 65.75m	0.66m deep 65.09m aOD
<i>Context</i>	<i>Context type</i>	<i>Description</i>	<i>Dimensions</i>	<i>Artefacts/Samples</i>
401	Topsoil	Firm, dark greyish/brown silty clay with rare, small sub-angular ironstone. Poorly sorted	0.17m thick	-
402	Alluvium	Firm, light yellow/blue silty clay with no inclusions.	0.49m thick	-
403	Natural	Light orange/yellow silty clay with no inclusions	-	

Trench No	Length, width & alignment	NGR	Surface height (aOD)	Depth & height of natural (aOD)
5	50m x 1.8m, NW-SE	473639.81 264881.93	NW end- 66.99m	0.70m deep 66.29m aOD
<i>Context</i>	<i>Context type</i>	<i>Description</i>	<i>Dimensions</i>	<i>Artefacts/Samples</i>
501	Topsoil	Firm, dark greyish/brown silty clay with rare, small sub-angular ironstone. Poorly sorted	0.41m	-
502	Subsoil	Firm, mid orange/brown silty clay with occasional small sub-angular ironstone nodules, poorly sorted.	0.29m	-
503	Natural	Bands of firm, mid orange /brown, silty clay and ironstone and firm mid greyish brown silty clay and ironstone.	-	



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