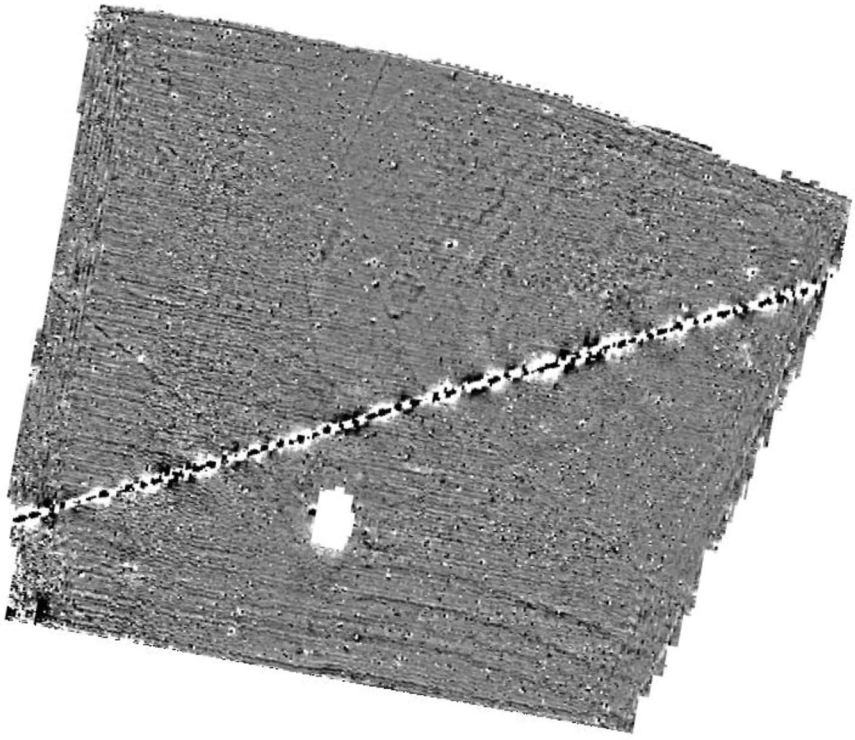
Northamptonshire Archaeology

Further archaeological geophysical survey of land at the proposed Bicester Eco Development Bicester, Oxfordshire November 2013



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Report 13/258

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QUALITY CONTOL

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Checked by	Mark Holmes	*MH*	16/12/13
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OASIS REPORT FORM

PROJECT DETAILS	**OASIS No. 166867**	
Project title	Further archaeological geophysical survey of land at the proposed Bicester Ecotown, Bicester, Oxfordshire	
Short description	Northamptonshire Archaeology was commissioned by Oxford Archaeology, on behalf of their clients to conduct an archaeological geophysical survey of land at the proposed Bicester Ecotown, Bicester, Oxfordshire. A magnetometer survey was undertaken over an area of 12ha. The survey identified a small number of linear ditch anomalies and a former field boundary.	
Project type	Geophysical survey	
Previous work	Northamptonshire Archaeology 2012; Airphoto Services 2011; Oxford Archaeology 2010	
Current land use	Arable Land	
Future work	Unknown	
Monument type and period		
Significant finds	None	
PROJECT LOCATION		
County	Oxfordshire	
Site address	Bucknell Road	
Easting Northing	SP 5621 2352	
Area (sq m/ha)	12ha	
Height aOD	90 aOD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology (NA)	
Project brief originator	Richard Oram, Oxfordshire County Council	
Project Design originator	Northamptonshire Archaeology	
Director/Supervisor	Ian Fisher	
Project Manager	Mark Holmes (NA), Ken Welsh (OA)	
Sponsor or funding body	Oxford Archaeology (OA)	
PROJECT DATE		
Start date	05/11/2013	
End date	16/12/2013	
ARCHIVES	**Location (Accession nos.)**	**Contents**
Physical		
Paper		Site survey records
Digital		Survey data
BIBLIOGRAPHY		
Title	Further archaeological geophysical survey of land at the proposed Bicester Ecotown, Bicester, Oxfordshire	
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FURTHER ARCHAEOLOGICAL GEOPHYSICAL SURVEY OF LAND AT THE PROPOSED BICESTER ECO DEVELOPMENT BICESTER, OXFORDSHIRE NOVEMBER 2013

Abstract

Northamptonshire Archaeology was commissioned by Oxford Archaeology to conduct an archaeological geophysical survey of the proposed Ecotown development area at Bicester, Oxfordshire. A magnetometer survey was undertaken over an area of 12ha and identified a small number of linear ditch anomalies and a former field boundary.

1 INTRODUCTION

Northamptonshire Archaeology was commissioned by Oxford Archaeology (OA), on behalf of Hyder Consulting, to conduct a magnetometer survey on land for the proposed Bicester 'Eco Town', Bicester, Oxfordshire (NGR SP 5621 2352). The proposed Eco Town is located to the north-west of Bicester (Fig 1).

The fieldwork was carried out in November 2013, to augment a previous survey undertaken in 2011-2012 (NA 2012) and covered approximately 12ha. It comprised the 'infilling' of areas previously not surveyed within two separate land parcels; fields E2, E9 and E10. This was undertaken in order to inform the future mitigation strategy for the site, since trial trench evaluation was not feasible within these two fields. The work conformed to a specification prepared by Northamptonshire Archaeology (NA 2013) as a condition of a planning application for development of the land.

2 BACKGROUND

2.1 Location and geology

The site is located on the western edge of Bicester and lies at 90m aOD. To the north, south and west the field is bounded by hedgerows to further open fields. The eastern boundary is formed by a thicker tree line to further fields.

The site slopes slightly from north-west to south-east and is primarily situated on cornbrash limestone formations interspersed with forest marble formation of interbedded limestone and mudstone (BGS 2013).

2.2 Historical and archaeological background

The archaeological and historical background of the site has been described in a desk-based assessment (Hyder Consulting 2011).

The site is located in an area which has seen little archaeological investigation prior to the current project but its archaeological potential is demonstrated by a number of recorded monuments within the vicinity. There is an area of ditches and enclosures at the south of the site at Himley Farm. There is also evidence of a ring ditch, which may be the remains of a Bronze Age barrow (Oxford Historic Environment Record (OHER) no 13907).

An extensive complex of features, including ditches, pits, possible tracks and enclosures are visible as cropmarks close to Hawkswell Farm (OHER no 15958). They are probably the remains of a prehistoric or Romano-British settlement and may relate to Iron Age settlement recorded at Slade Farm, 400m to the south of the site. Further cropmarks identified during the air photo survey within the area may also date to this period (Airphoto Services 2010).

Geophysical survey, which was undertaken across the entire Bicester 'Eco Town' area, confirmed and expanded upon the presence of these features (Butler and Walker 2012). Particular concentrations of features were located to the north of the current site in Block B (Fig 1). These included sub-rectangular and sub-circular ditched enclosures, curvilinear ditches and pits, likely to be of late prehistoric or Roman date. Other foci of archaeological features were detected in Block A and Block C. Of particular interest was a possible, long curving droveway or crowding alley in Block C.

To the north of the site lie the remains of a deserted medieval settlement at Caversfield. There is a 10th/11th-century church at Caversfield and a post-medieval fishpond to the south of the church. A large depression to the north-east has been recorded as an earlier, medieval fishpond (OHER no 13743). There are several areas where eroded ridge and furrow earthworks still survive. These represent the remains of the medieval open field system of agriculture. Close to a small watercourse within the site are a number of upstanding ridges which may be the remains of post-medieval water meadows (Airphoto Services 2010).

A trial trench evaluation was undertaken in 2010 by Oxford Archaeology in fields at Home Farm, at the northern part of the site (exemplar site). Of seventy trenches, only six contained any features (OA 2010). These were all linear and were interpreted as agricultural boundaries, although they were ambiguous and may equally have been natural in origin.

Further evaluation trenching of the site is ongoing, with preliminary results indicating that the first stage of geophysical survey provided a reasonably reliable representation of the archaeological features and deposits within the site. Six trenches have already been excavated in Block E10, but no archaeological features or deposits were present in any of them (OA 2013). Evaluation trenching undertaken in fields immediately to the east and south of the current site found evidence of Iron Age and Roman activity (Walker 2013).

The specific area covered in this survey has already been partially surveyed. The data from this supports the evidence drawn from aerial photography to show the presence of two ditches following a north-west to south-east orientation (Butler and Walker 2013). Little else is evident in the field aside from a modern pipeline running south-west to north-east.

3 METHODOLOGY

The 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).

A system of 30m grids contiguous with the previous survey was established within the areas to be surveyed. The grids were established with a tape measure and optical square and were tied in to the Ordnance Survey National Grid. The gradiometers were carried at a brisk but steady walking 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 and with the agreed method statement for this project (EH 2008; IfA 2011; NA 2013).

The survey data was processed using Geoplot 3.00v software. Striping, caused by slight mismatches in sensor balance, was removed using the 'Zero Mean Traverse' function and destaggering of the data was performed as necessary.

The processed data is presented in this report in the form of grey-tone plots, at a scale of +/- 4nT black/white. The plots have been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Fig 2). An interpretative overlay has been produced and is shown in Figure 3. The raw data is available in Figure 4.

Field numbers used in the earlier report have been retained for this stage of reporting.

4 SURVEY RESULTS

Magnetic anomalies detected by this stage of the geophysical survey represent subsurface features, as follows:

- Ditches – linear positive anomalies;
- Remnant medieval ridge and furrow - repeated parallel weakly positive linear anomalies;
- Ferrous pipelines – linear chains of alternating intense positive/negative anomalies;
- Land drains/other pipes – linear positive anomalies;
- Iron debris - 'dipolar' paired intense positive/negative anomalies, small if on the surface (eg nails, horseshoes), broader by size and depth of burial. The smaller dipolar anomalies are very common and so are not generally illustrated in the interpretation diagram.

In the central northern part of the field, was a semi-circular anomaly, possibly representing part of a small enclosure ditch. A short linear anomaly to the north-west of this may be a further spur ditch. Two further short lengths of ditch, aligned south-east to north-west were located *c* 70m to the north-west.

Remnant medieval ridge and furrow aligned roughly parallel to the southern boundary of field E2, was located at the south.

A ferrous pipeline, aligned north-east to south-west, crossed field E2 and was probably the same one as previously found in E1, the field immediately to the west (Butler and Walker 2013).

Cropmark evidence (APS 2010) shows two features arcing across the field from the south-eastern corner to the west. The northern most of these was mapped as far as the ferrous pipeline, beyond which it changed alignment, becoming more northerly. The continuous linear nature of these anomalies, coupled with their relatively low magnetic response, perhaps suggest that they are land drains rather than ditches.

The eastern part of an anomaly at the south of field E2, thought to have been a ditch when located in the previous survey, proved to be part of the ridge and furrow cultivation. To the west was a further linear anomaly, aligned north-west to south-east. It is possible that this feature is associated with the pond, from which it appears to originate and as such it possibly represents a pipe or land drain rather than a ditch.

Linear anomalies on the eastern and western boundaries represent modern agricultural ploughing practices.

In Fields E9 and E10 was an anomaly possibly representing a former field boundary, aligned north to south. A parallel anomaly located to the east of this may represent a ditch with further possible short lengths of ditch at the west and east.

There was an extensive area of disturbed ground around the western side of a pond at the south of the survey area. This may be caused by the spoil from its excavation.

5 CONCLUSION

The survey has detected a small number of possible short ditches, which might represent a low level of prehistoric or Roman activity in Block E2, possibly field systems associated with nearby settlement. No other significant archaeological features were identified.

Many of the cropmarks identified by the aerial photograph survey are not apparent on the survey results.

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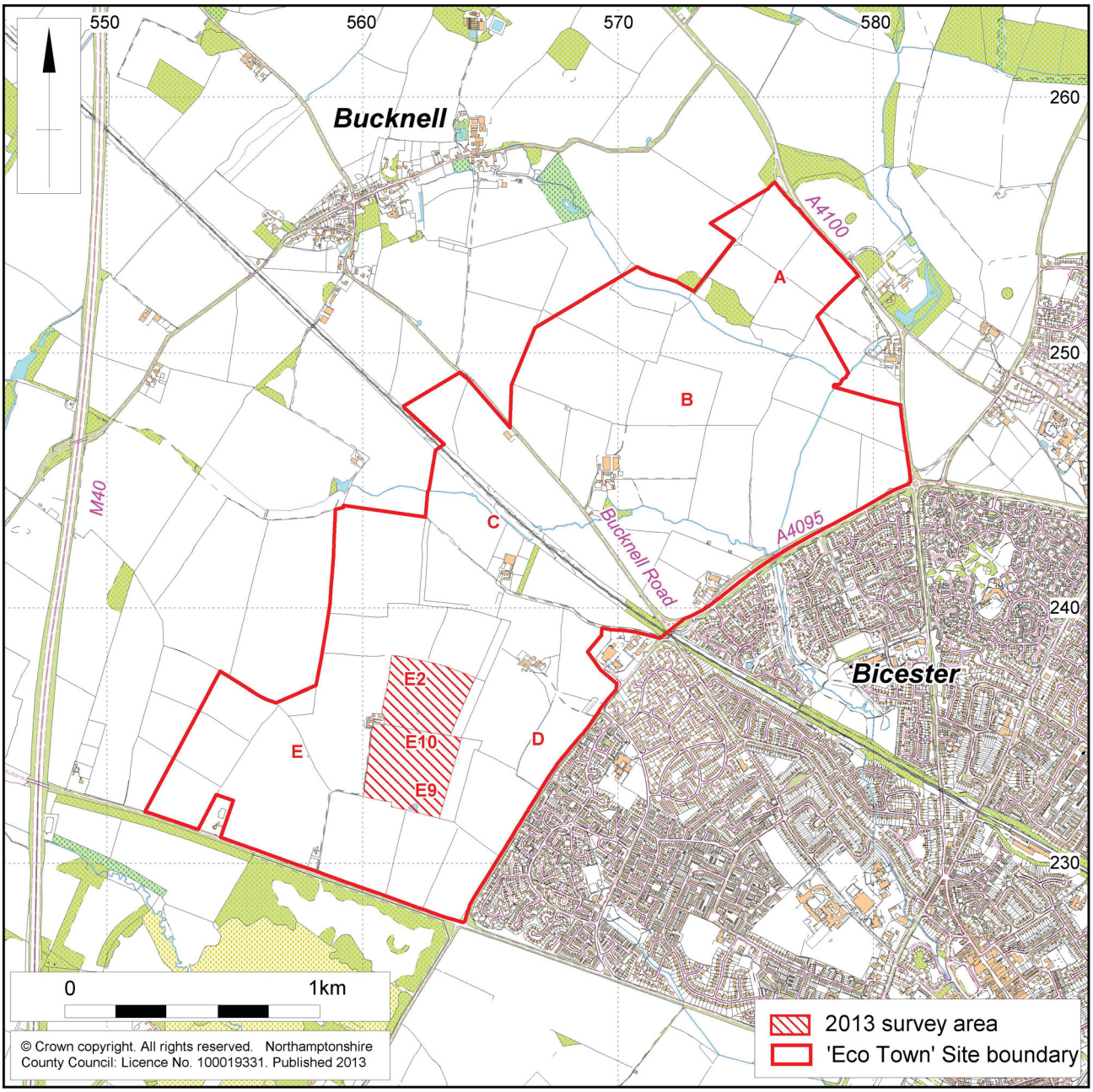
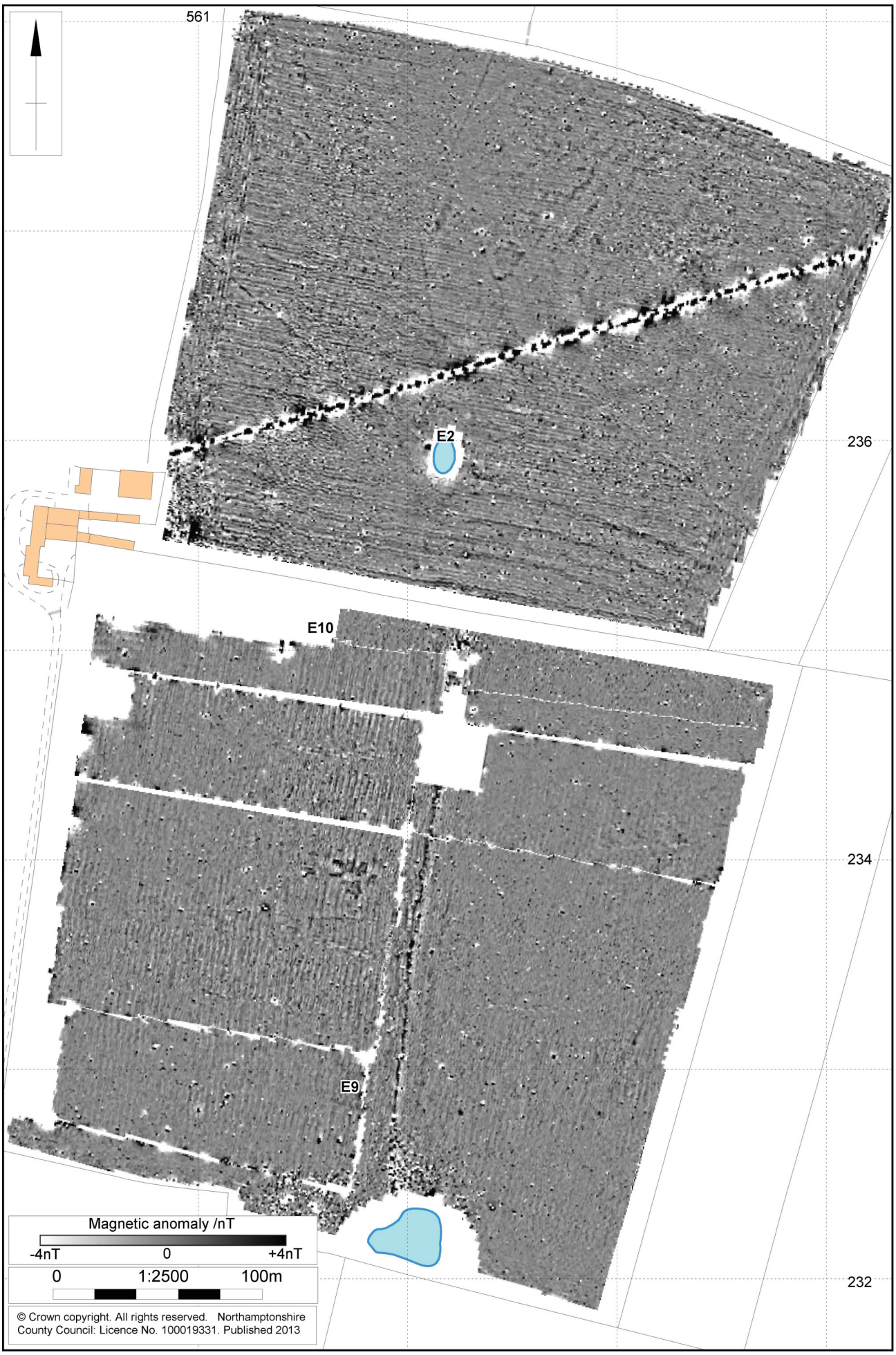


Scale 1:25,000

Site Location Fig 1



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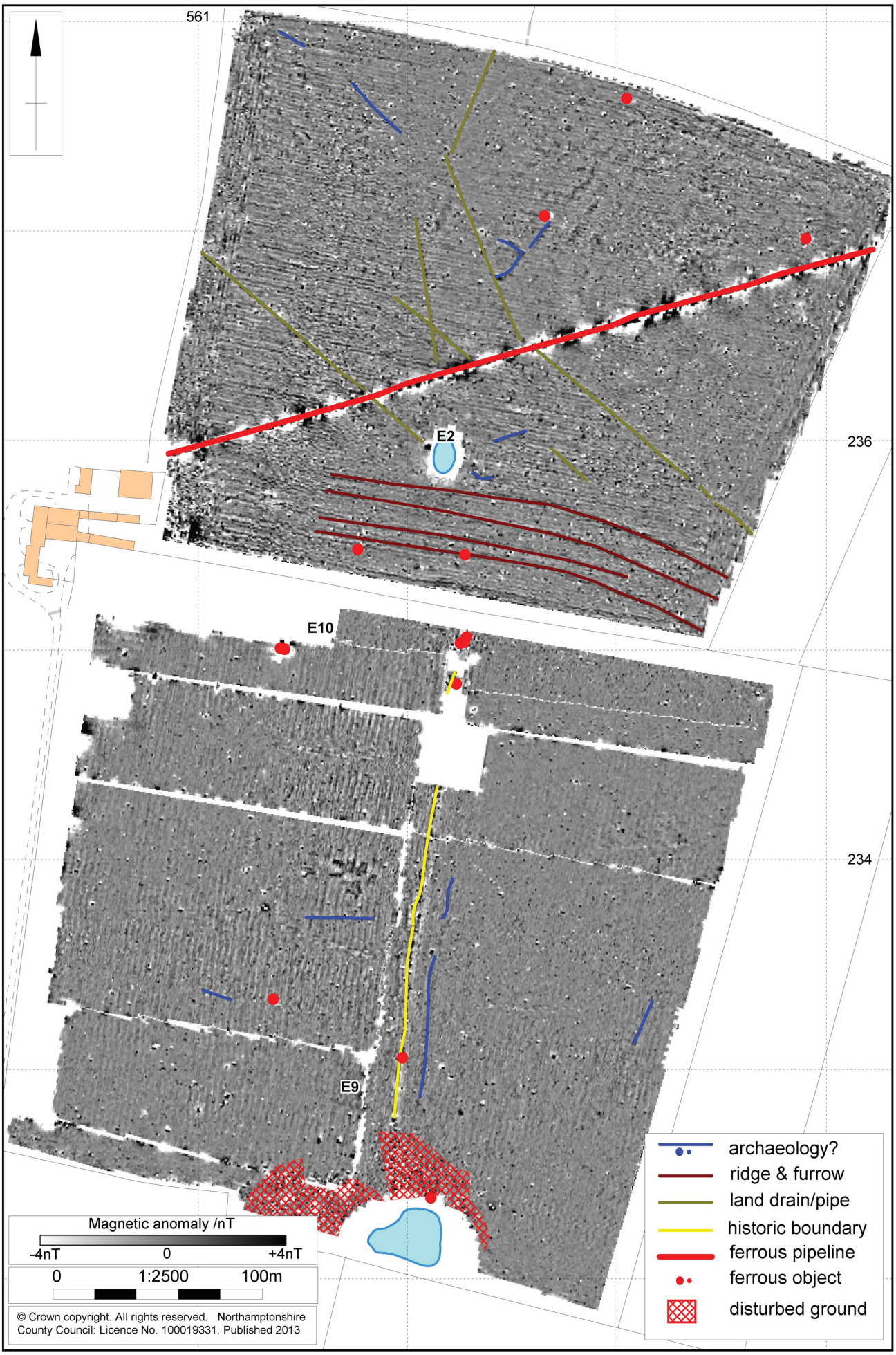
Survey results: Block E2, E9 and E10 Fig 2



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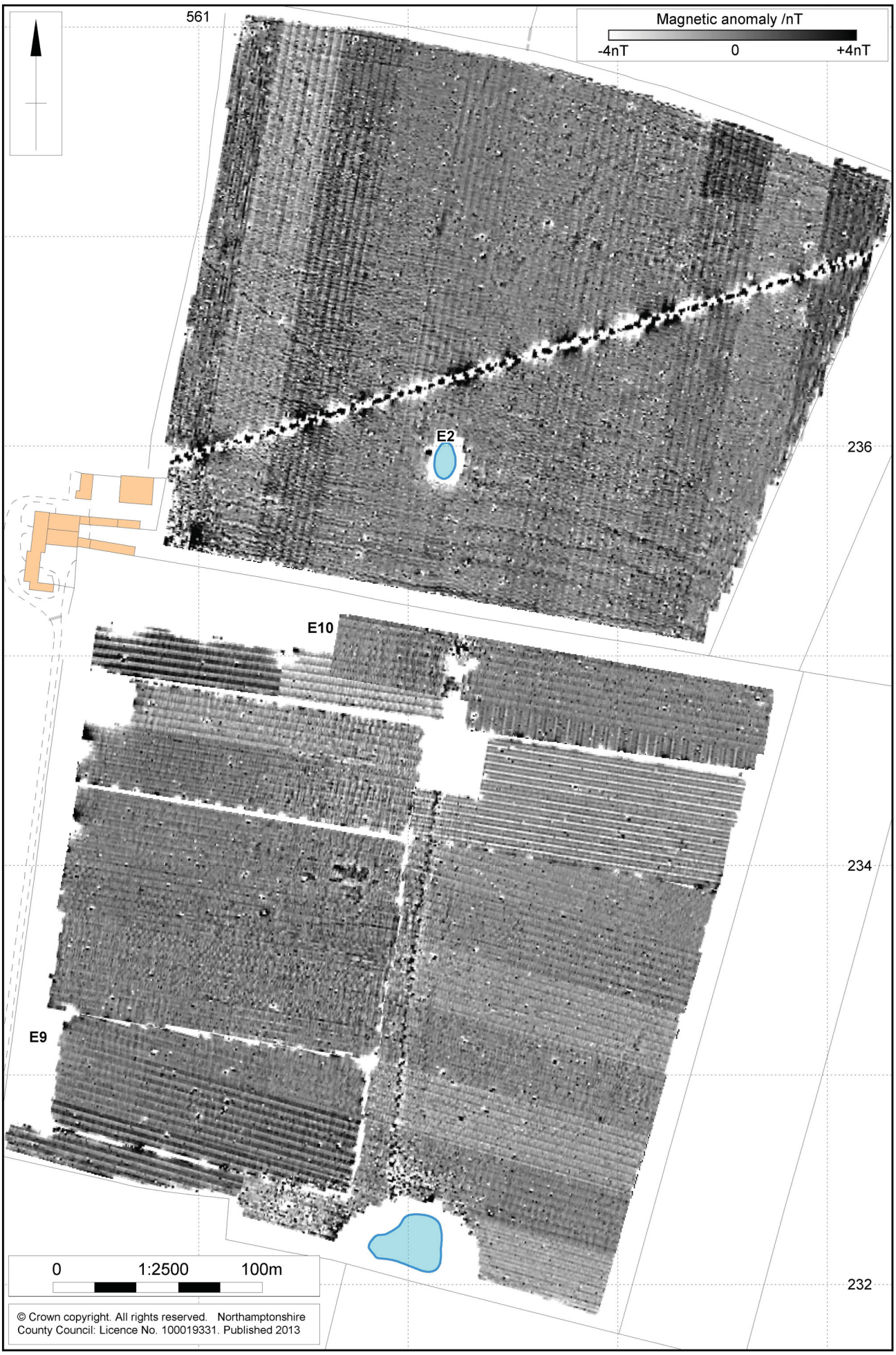
Survey results and interpretation: Block E2, E9 and E10 Fig 3



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Survey raw data: Block E2, E9 and E10 Fig 4

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