

**Detailed Magnetometer Survey
on Land at Uplands Farm, Rattle Road,
Stone Cross, East Sussex**



NGR: TQ 62520 04260

ASE Project No: 6331

OASIS ID: archaeol6-159760

ASE Report No. 2013226

By John Cook BSc AlfA and Catherine Douglas BA

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Abstract

Archaeology South East was commissioned by AS Planning Ltd to undertake a detailed fluxgate gradiometer survey on land at Uplands Farm, Rattle Road, Stone Cross, East Sussex. The survey took place between the 9th and the 12th of September 2013. The survey area covered approximately 6 hectares and comprised arable and pasture land bounded by post-and-rail fences, wire fences and hedgerows. Possible archaeological features were represented by discrete and linear positive anomalies.

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1.0 INTRODUCTION

1.1 Site background

1.1.1 Archaeology South-East (ASE, a division of the University College London Centre for Applied Archaeology) was commissioned by AS Planning Ltd, on behalf of Upland LLP to undertake a magnetometer survey on land at Uplands Farm, Rattle Road, Stone Cross, East Sussex (centred NGR 562520 104260), and hereafter referred to as 'the site', (Figure 1).

1.2 Geology and topography

1.2.1 According to the British Geological Survey (2013) the site lies over weald clay formation mudstone.

1.2.2 The site lies on the eastern edge of the settlement of Stone Cross, a small village of mainly modern origin forming part of the outer northern suburbs of Eastbourne. The area identified for the Proposed Development comprises a L-shaped group of fields around Uplands Farm. The Site is bounded by Rattle Road and a hedgerow-lined green lane to the north, woodland and fields bordering the Lewes to Eastbourne railway line to the south and further fields to the west and east.

1.3 Aims of the geophysical investigation

1.3.1 The aims of the archaeological investigation were as follows:

- To determine, as far as reasonably practicable, the location, extent and character of any archaeological remains that are detectable by the instrumentation used.

1.4 Scope of report

1.4.1 The scope of this document is to report on the findings of the survey. The fieldwork was conducted by John Cook with the on-site assistance of Catherine Douglas and John Hirst, and was project managed by Darryl Palmer (fieldwork) and by Jim Stevenson (post fieldwork).

2.0 ARCHAEOLOGICAL BACKGROUND

- 2.1 A comprehensive Archaeological Desk Based Assessment (DBA) of the site has been undertaken by Archaeology South-East (ASE 2013). The full historical background for the site is presented therein and is not repeated in full here.
- 2.2 In summary the Site has a low-moderate potential for containing archaeological deposits relating to Bronze Age activity across the Site as a whole, moderate potential for medieval settlement associated with the farmstead and high potential for earlier post-medieval phases of the farmstead. Historic fabric may also survive within the existing buildings.
- 2.3 Historical research indicates that the farmstead has existed in its current configuration since at least the mid-19th century, although significantly altered in the later 20th century. Place-name evidence suggests the origins of the farmstead may extend back into the medieval or early post-medieval period.

3.0 SURVEY METHODOLOGY

3.1 Geophysical survey

- 3.1.1 A fluxgate gradiometer (magnetometry) survey was undertaken in the area depicted in Figures 1 and 2 (NGR 562520 104260).
- 3.1.2 The fieldwork was undertaken between Monday 9th September and Thursday 12th September 2013 when the weather was cool and showery.

3.2 Applied geophysical instrumentation

- 3.2.1 The Fluxgate Gradiometer employed was the Bartington Instrumentation Grad 601-2. The Grad 601-2 has an internal memory and a data logger that store the survey data. This data is downloaded into a PC and is then processed in a suitable software package.
- 3.2.2 30m x 30m grids were set out using a GPS (see below). Each grid was surveyed with 1m traverses; samples were taken every 0.125m.
- 3.2.3 Data was collected along north-south traverses in a zigzag pattern beginning in the south-west corner of each grid.

3.3 Instrumentation used for setting out the survey grid

- 3.3.1 The survey grid for the site was geo-referenced using a Leica Viva Smartrover. The GPS receiver collects satellite data to determine its position and uses the mobile phone networks to receive corrections, transmitting them to the RTK Rover via Bluetooth to provide a sub centimetre Ordnance Survey position and height. Each surveyed grid point has an Ordnance Survey position; therefore the geophysical survey can be directly referenced to the Ordnance Survey National Grid.

3.4 Data processing

- 3.4.1 All of the geophysical data processing was carried out using Geoplot V3 published by Geoscan Research. Minimally processed data was produced using the following schedule of processing. Due to the very high positive readings of some of the magnetic disturbance the values were replaced with a dummy value so as to avoid detrimentally affecting the dataset when further processed. The first process carried out upon the data was to apply a DESPIKE to the data set which removes the random 'iron spikes' that occur within fluxgate gradiometer survey data. A ZERO MEAN TRAVERSE was then applied to survey data. This removes stripe effects within grids and ensures that the survey grid edges match. Figures 4, 8, 12 and 16 display the processed survey data. The data was then interpolated (Figures 5, 9, 13 and 17)

3.5 Data presentation

- 3.5.1 Data is presented using images exported from Geoplot into Autocad software and inserted into the geo-referenced site grid. Data is presented (Figures (Area 1) 3-5, (Area 2) 7-9, (Area 3) 11-13 (Area 4) 15-17) as raw data, processed data and interpolated data greyscale plots.

4.0 GEOPHYSICAL SURVEY RESULTS

4.1 Description of site

4.1.1 The survey consisted of five enclosures under horse pasture and an enclosure used as a caravan park totalling approximately 6.2 hectares. The site is bounded by post and rail fencing, wire fencing and hedgerows.

4.2 Survey limitations

4.2.1 Physical limitations of the survey consisted of caravans, vehicles and buildings which also caused magnetic disturbance. Also, the effectiveness of magnetometer surveys depends on a contrast between the absolute magnetic susceptibility of the topsoil to the underlying subsoil (Clark 1996). Features may also be difficult to detect where there has been significant primary silting and development of significant overburden. Areas where physical obstructions form a barrier to survey, or a health and safety issue, have been omitted.

4.3 Introduction to results

4.3.1 The results should be read in conjunction with the figures at the end of this report. The types of features likely to be identified are discussed below.

4.3.2 Positive Magnetic Anomalies

Positive anomalies generally represent cut features that have been in-filled with magnetically enhanced material.

4.3.3 Negative Magnetic anomalies

Negative anomalies generally represent buried features such as banks that have a lower magnetic signature in comparison to the background geology

4.3.4 Magnetic Disturbance

Magnetic disturbance is generally associated with interference caused by modern ferrous features such as fences and service pipes or cables.

4.3.5 Magnetic Debris

Low amplitude magnetic debris consists of a number of dipolar responses spread over an area and is indicative of ground disturbance.

4.3.6 Dipolar Anomalies

Dipolar anomalies are positive anomalies with an associated negative response. These anomalies are usually associated with discreet ferrous objects or may represent buried kilns or ovens.

4.3.7 Bipolar Anomalies

Bipolar anomalies consist of alternating responses of positive and negative magnetic signatures. Interpretation will depend on the strength of these responses; modern pipelines and cables typically produce strong bipolar responses.

4.3.8 Thermoremanence

Thermoremanence is most commonly encountered through the magnetizing of clay through the firing process although stones and soils can also acquire thermoremanence.

4.4 Interpretation of fluxgate gradiometer (magnetometry) results (Figures 6, 10, 14 and 18)

4.4.1 The survey has been divided into four areas based on the areas designated for geophysical survey.

Magnetometry results

Area 1 (Figure 6)

4.4.2 Area 1 was situated in the north of the survey area in an area of pasture. A bus and small cluster of caravans slightly obstructed the south-eastern corner of the survey area.

4.4.3 Archaeological activity is indicated throughout Area 1 by a significant number of anomalies, especially in the eastern half of the area.

4.4.4 A number of discrete moderate positive anomalies in the north-east corner of the site may represent cut features such as pits, and moderate positive linear anomalies may indicate ditches defining a series of axial enclosures and possible trackways.

4.4.5 A scattering of dipolar anomalies may represent archaeological features such as kilns or ovens, but more likely they indicate discreet ferrous objects such as parts dropped from farm machinery.

4.4.6 A number of weak positive linear anomalies may relate to former agricultural activity.

Area 2 (Figure 10)

4.4.7 Area 2 was situated in the west of the survey area in a field used as a campsite and caravan store. Caravans obstructed the southern and eastern perimeter of the area, and magnetic debris in the centre of the field is likely to relate to previous camping activities within the field.

4.4.8 Evidence of archaeological features included a number of linear moderate positive anomalies, and in the western end, perhaps indicating three ditches. A scattering of discrete moderate positive anomalies in the eastern part of the area may represent cut features such as pits. However, these anomalies may also relate to infilled natural features or more modern agricultural activity.

Area 3 (Figure 14)

4.4.9 Area 3 was a square shaped enclosure used for grazing horses. A large

quantity of magnetic debris related to the stables was identified in the north corner of the area.

- 4.4.10 Evidence of features of possible archaeological origin was limited to a number of discrete moderate positive and weak positive linear anomalies in the north west corner which may represent cut features such as pits and ditches. However, these anomalies may also relate to in-filled natural features or more modern agricultural activity. A small circular iron fence caused a circular area of magnetic disturbance near the southern tip of the site.

Area 4 (Figure 18)

- 4.4.11 Area 4 was an L-shaped area positioned between areas 2 and 3, in a field used for horse-training.
- 4.4.12 Evidence of possible archaeological features was identified in the form of a number of discrete moderate positive anomalies and weak positive linear anomalies which may represent cut features such as pits and ditches. However, these anomalies may also relate to in filled natural features or more modern agricultural activity. Magnetic disturbance on the north-east perimeter related to the stables, whilst magnetic disturbance on the south-east perimeter probably resulted from the close proximity of the railway.

5.0 CONCLUSION

5.1 Discussion

Area 1

- 5.1.1 Area 1 contained the most significant evidence for archaeological activity, consisting of a number of linear and discrete positive anomalies suggesting cut features in this area of the site defining enclosures/fields and associated trackways.

Area 2

- 5.1.2 The geophysical survey in Area 2 provided some evidence for possible archaeological activity indicated by a number of linear positive anomalies within the northwest suggestive of cut features.

Area 3

- 5.1.3 The geophysical survey in Area 3 provided limited evidence for archaeological activity indicated by a number of discrete and linear positive anomalies spread across the area.

Area 4

- 5.1.4 The geophysical survey in Area 4 provided limited evidence for archaeological activity indicated by a number of discrete positive anomalies spread across the area.

5.2 Summary

- 5.2.1 Evidence of archaeological features was successfully detected throughout the magnetic survey, particularly in Area 1. Possible archaeological features were mostly represented by discrete and linear positive anomalies representative of cut features. Other anomalies identified consisted of magnetic debris and disturbance relating to the campsite, stables and railway. Areas of magnetic disturbance may mask underlying features with a weaker magnetic signature
- 5.2.2 In general the linear anomalies identified within the survey are ephemeral. This may be due to the features themselves being ephemeral, overburden between the magnetometer and the feature, the result of more recent agricultural activity, infilling of natural features or a combination of these. For this reason the archaeological geophysics would need to be tested by invasive techniques (e.g. targeted trial trenching carried out post determination as a planning condition) to assess the nature of the anomalies.

ACKNOWLEDGEMENTS

Archaeology South –East would like to thank AS Planning Ltd for commissioning

the investigation.

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HER Summary Form

Site Code	-					
Identification Name and Address	Land at Uplands Farm, Rattle Road, Stone Cross, East Sussex					
County, District &/or Borough	East Sussex					
OS Grid Refs.	562450 104250					
Geology	Weald Clay					
Arch. South-East Project Number	6331					
Type of Fieldwork	Eval.	Excav.	Watching Brief	Standing Structure	Survey	Other
Type of Site	Green Field	Shallow Urban	Deep Urban	Other		
Dates of Fieldwork	Eval.	Excav.	WB.	9th – 12th September 2013		
Sponsor/Client	AS Planning					
Project Manager	Darryl Palmer					
Project Supervisor	John Cook					
Period Summary	Palaeo.	Meso.	Neo.	BA	IA	RB
	AS	MED	PM	Other Modern		
<p>100 Word Summary. <i>Archaeology South East was commissioned by AS Planning Ltd to undertake a detailed fluxgate gradiometer survey on land at Uplands Farm, Rattle Road, Stone Cross, East Sussex. The survey took place between the 9th and the 12th of September 2013. The survey area covered approximately 6 hectares and comprised arable and pasture land bounded by post-and-rail fences, wire fences and hedgerows. Possible archaeological features were represented by discrete and linear positive anomalies</i></p>						

OASIS FORM

OASIS ID: archaeol6-159760

Project details

Project name	Detailed Magnetometer Survey on Land at Uplands Farm, Rattle Road, Stone Cross, East Sussex
Short description of the project	Archaeology South East was commissioned by AS Planning Ltd to undertake a detailed fluxgate gradiometer survey on land at Uplands Farm, Rattle Road, Stone Cross, East Sussex. The survey took place between the 9th and the 12th of September 2013. The survey area covered approximately 6 hectares and comprised arable and pasture land bounded by post-and-rail fences, wire fences and hedgerows. Possible archaeological features were represented by discrete and linear positive anomalies.
Project dates	Start: 09-09-2013 End: 12-09-2013
Previous/future work	Yes / Not known
Any associated project reference codes	6331 - Contracting Unit No.
Type of project	Field evaluation
Methods & techniques	"Geophysical Survey"
Development type	Housing estate
Position in the planning process	Pre-application
Solid geology	WEALD CLAY
Drift geology	Unknown
Techniques	Magnetometry

Project location

Country	England
Site location	EAST SUSSEX WEALDEN PEVENSEY Uplands Farm
Postcode	BN24 5DT
Study area	6.00 Hectares
Site coordinates	TQ 62450 04250 50 0 50 48 51 N 000 18 22 E Point

Project creators

Name of Organisation	Archaeology South-East
Project brief originator	AS Planning
Project design originator	Archaeology South-East
Project director/manager	Darryl Palmer
Project supervisor	John Cook
Type of sponsor/funding body	private client

Project archives

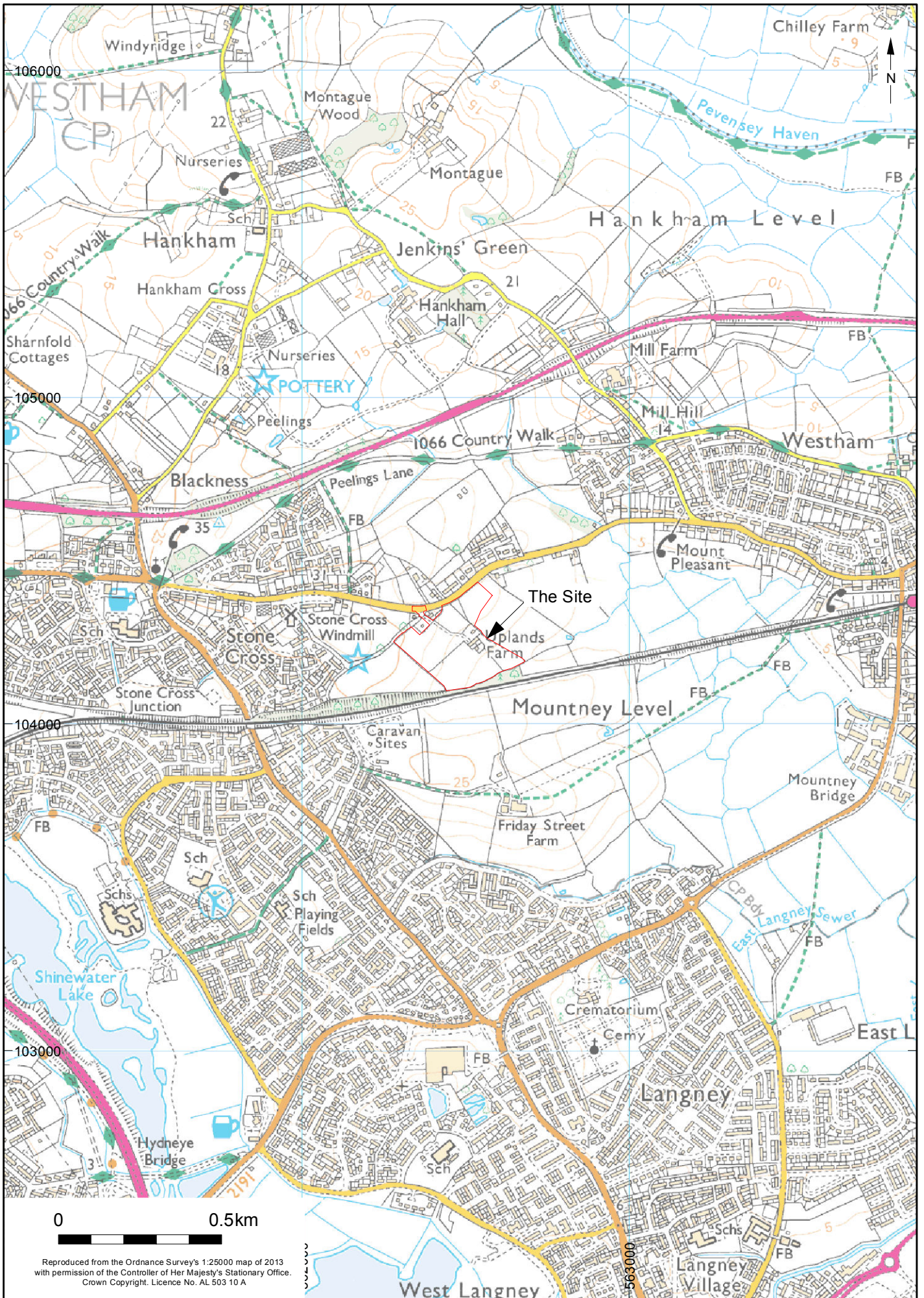
Physical Archive Exists?	No
Digital Contents	"Survey"
Digital Media available	"Geophysics","Images raster / digital photography","Survey"
Paper Contents	"Survey"
Paper Media available	"Map","Miscellaneous Material","Photograph","Report","Survey","Unpublished Text"

Project bibliography 1

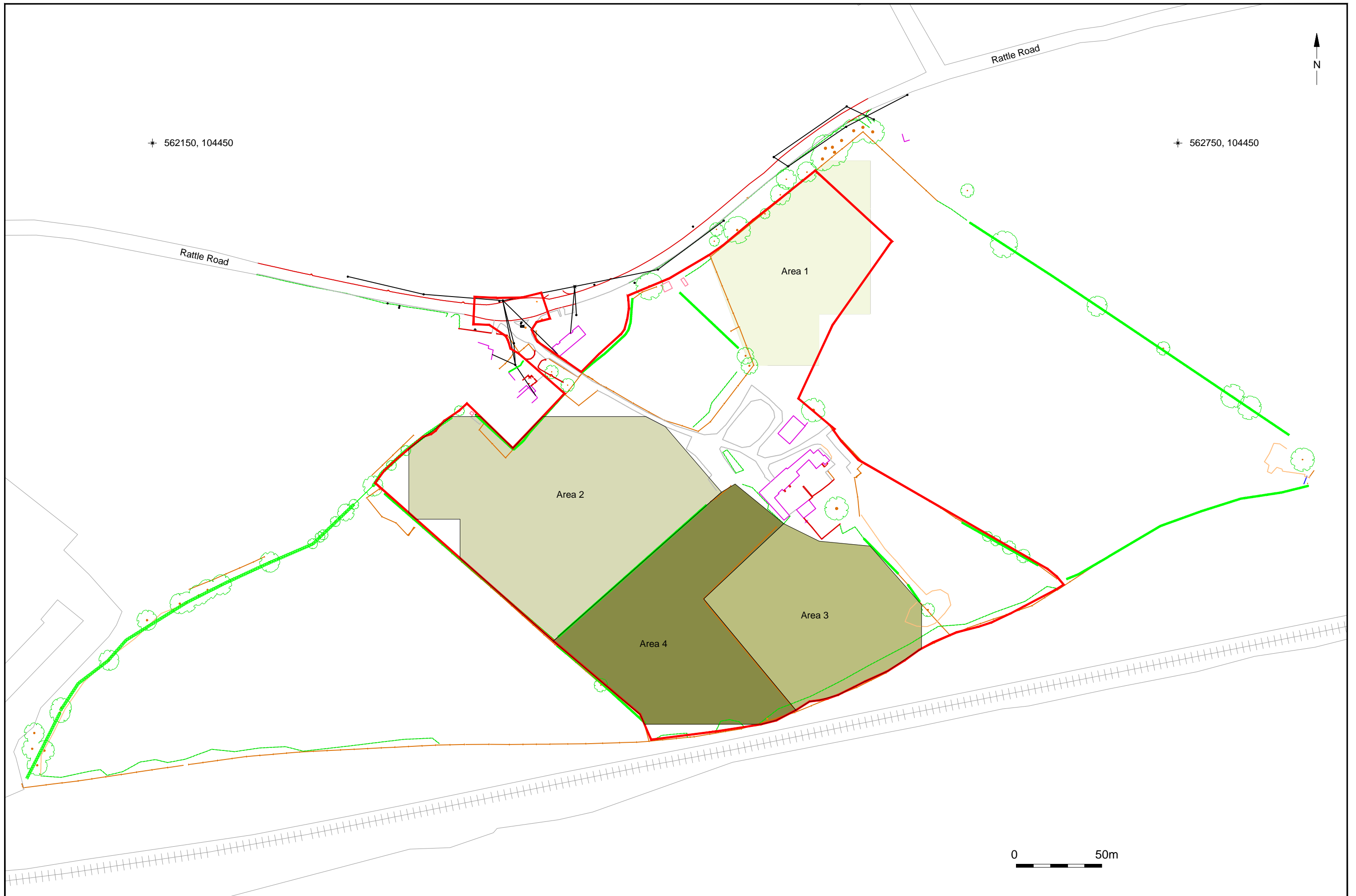
Publication type	Grey literature (unpublished document/manuscript)
Title	Detailed Magnetometer Survey on Land at Uplands Farm, Rattle Road, Stone Cross, East Sussex
Author(s)/Editor(s)	Cook, J. and Douglas, C.
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Date	2013
Issuer or publisher	Archaeology South-East
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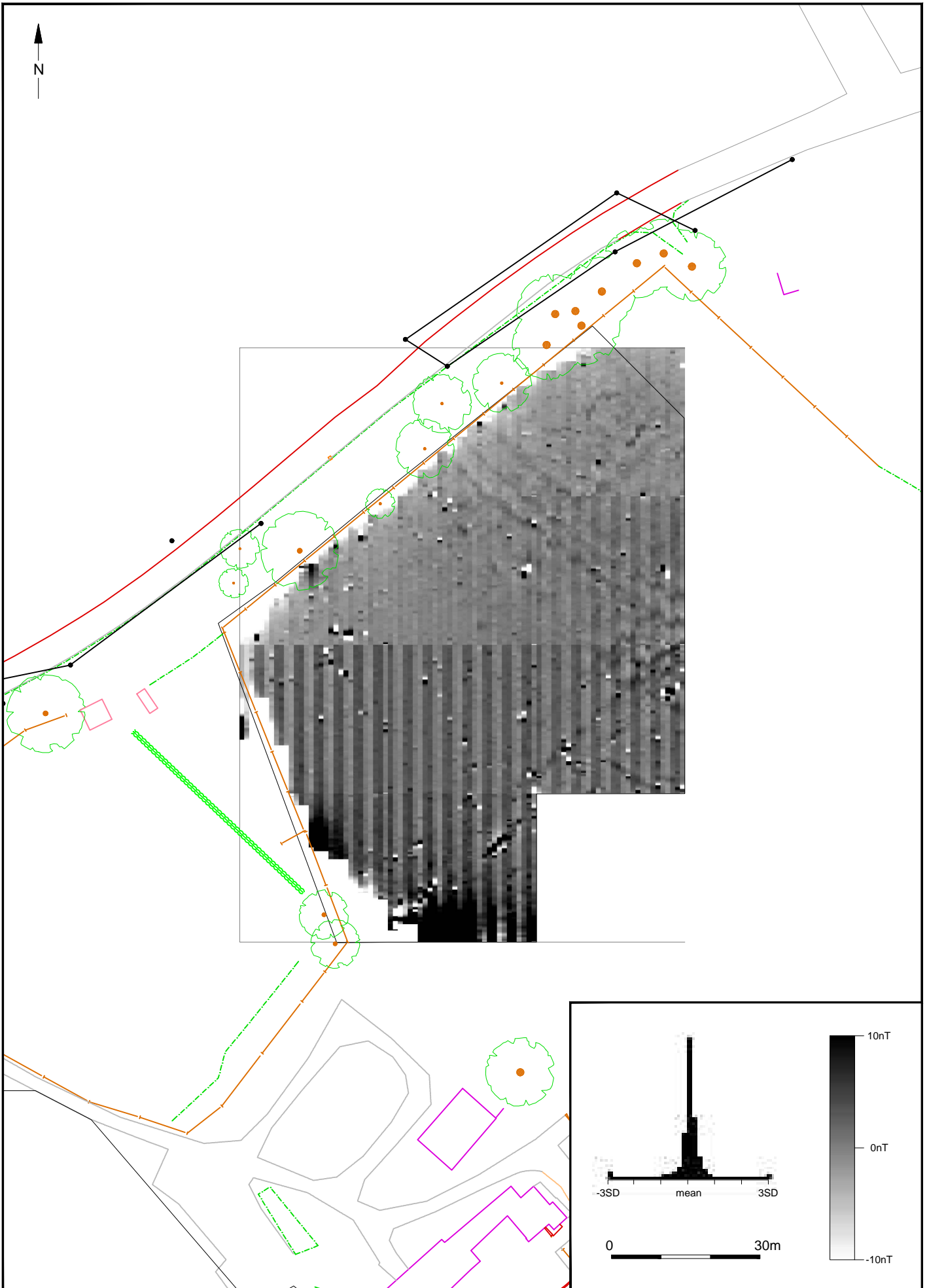
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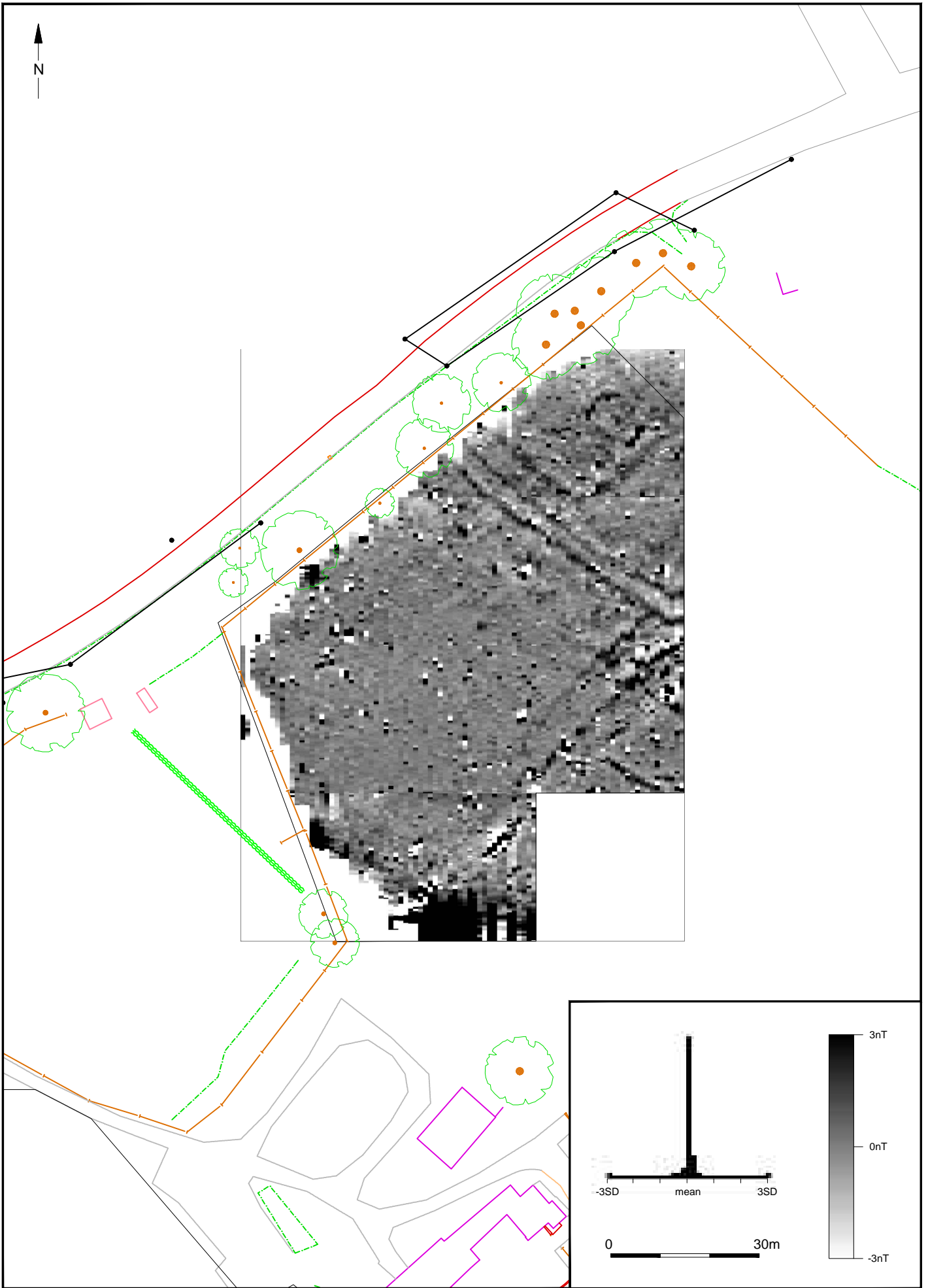
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Project Ref: 6331	Sept 2013	Site location	
Report Ref: 2013226	Drawn by: JC		



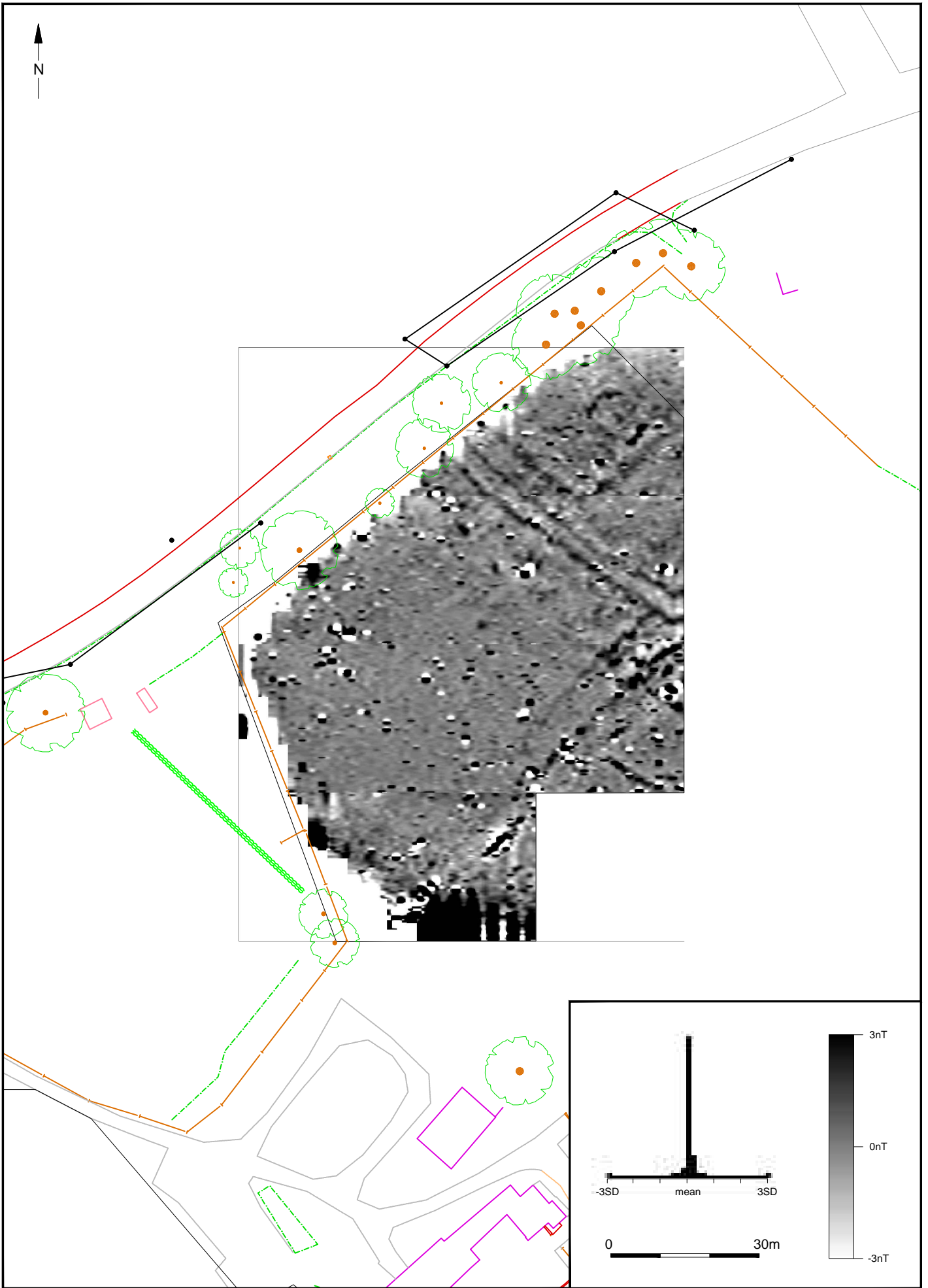
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Project Ref: 6331	Sept 2013	Location of geophysical survey areas	
Report Ref: 2013226	Drawn by: FEG		



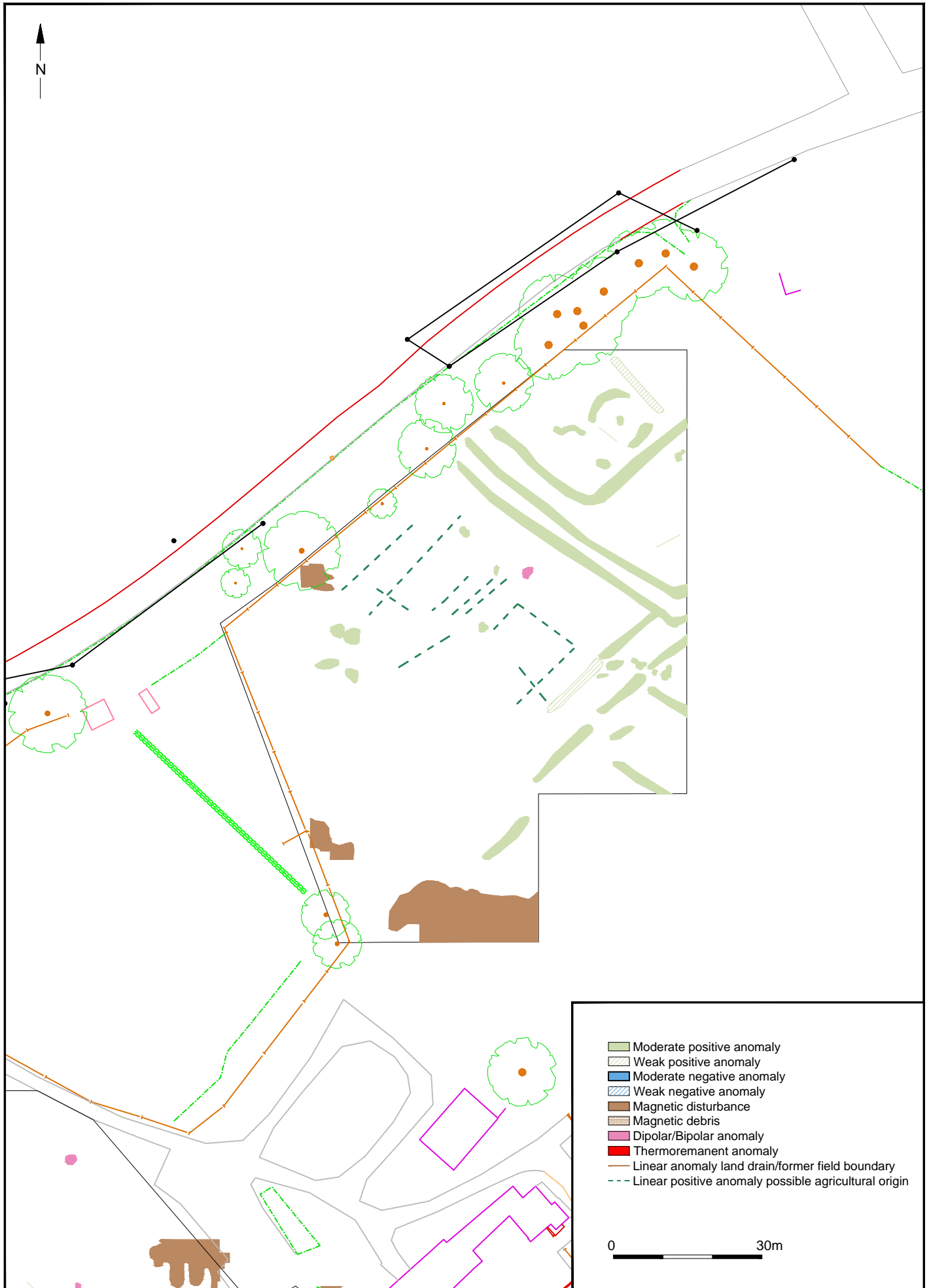
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Report Ref: 2013226	Drawn by:FEG/JC		



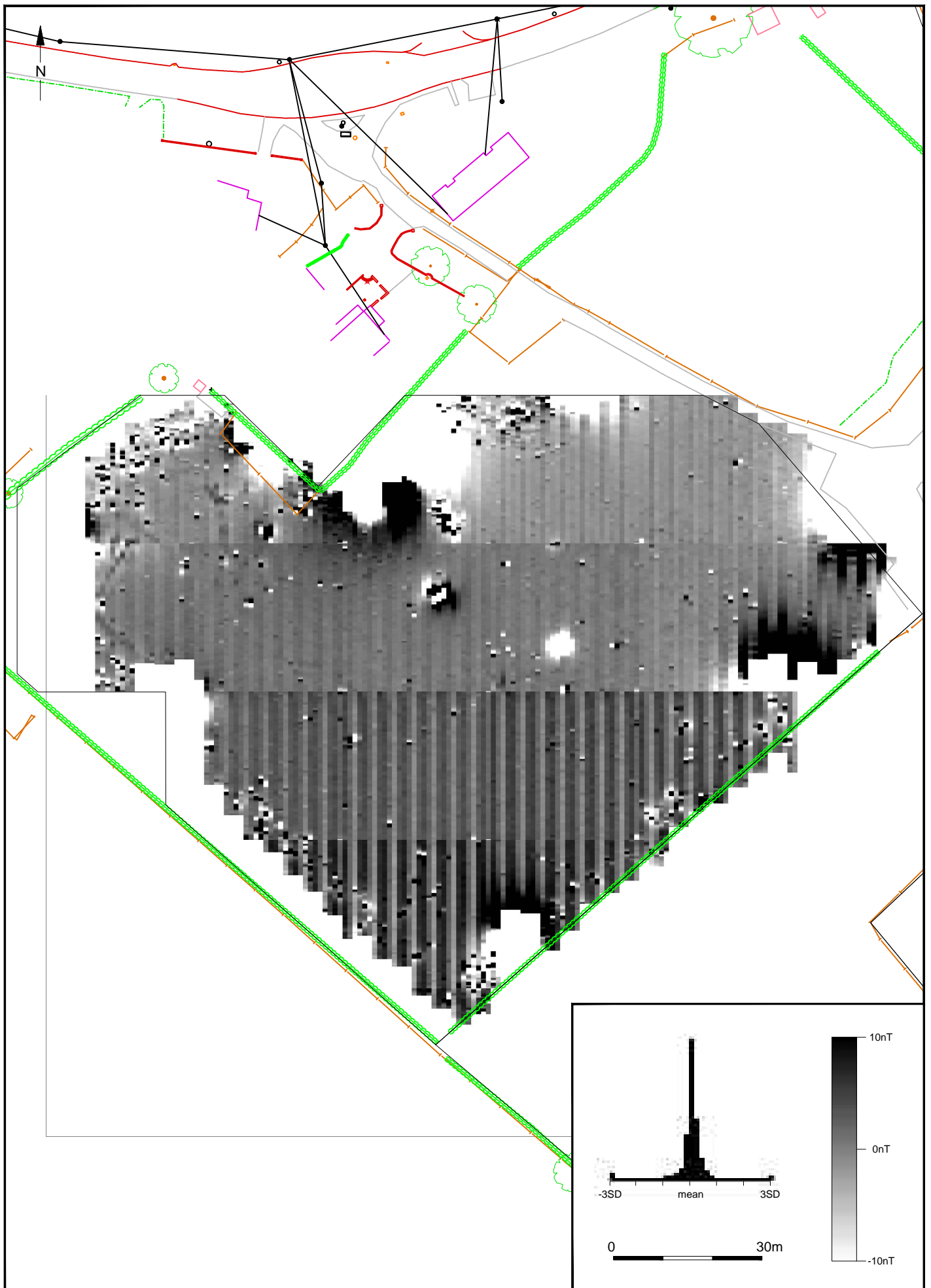
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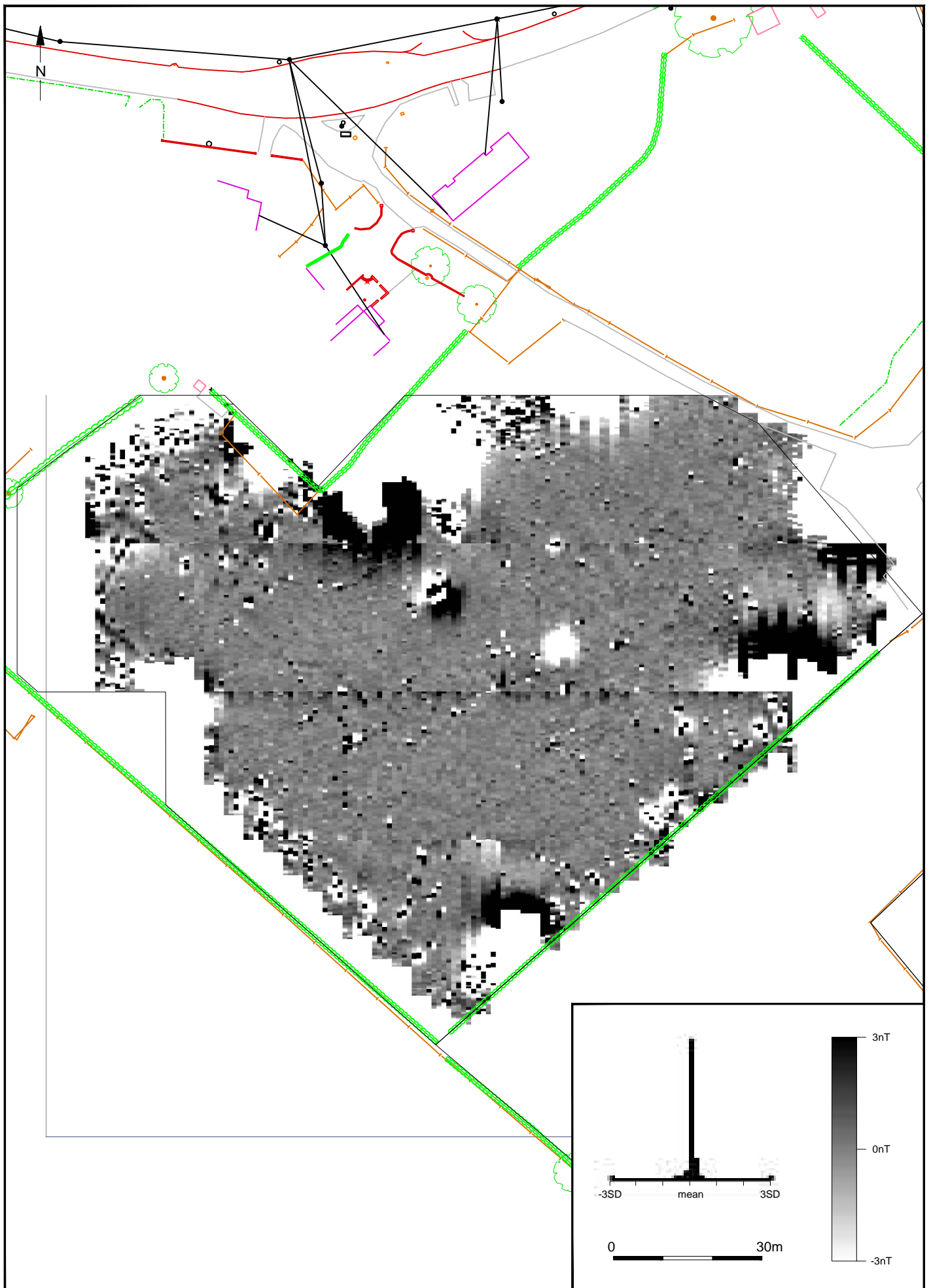
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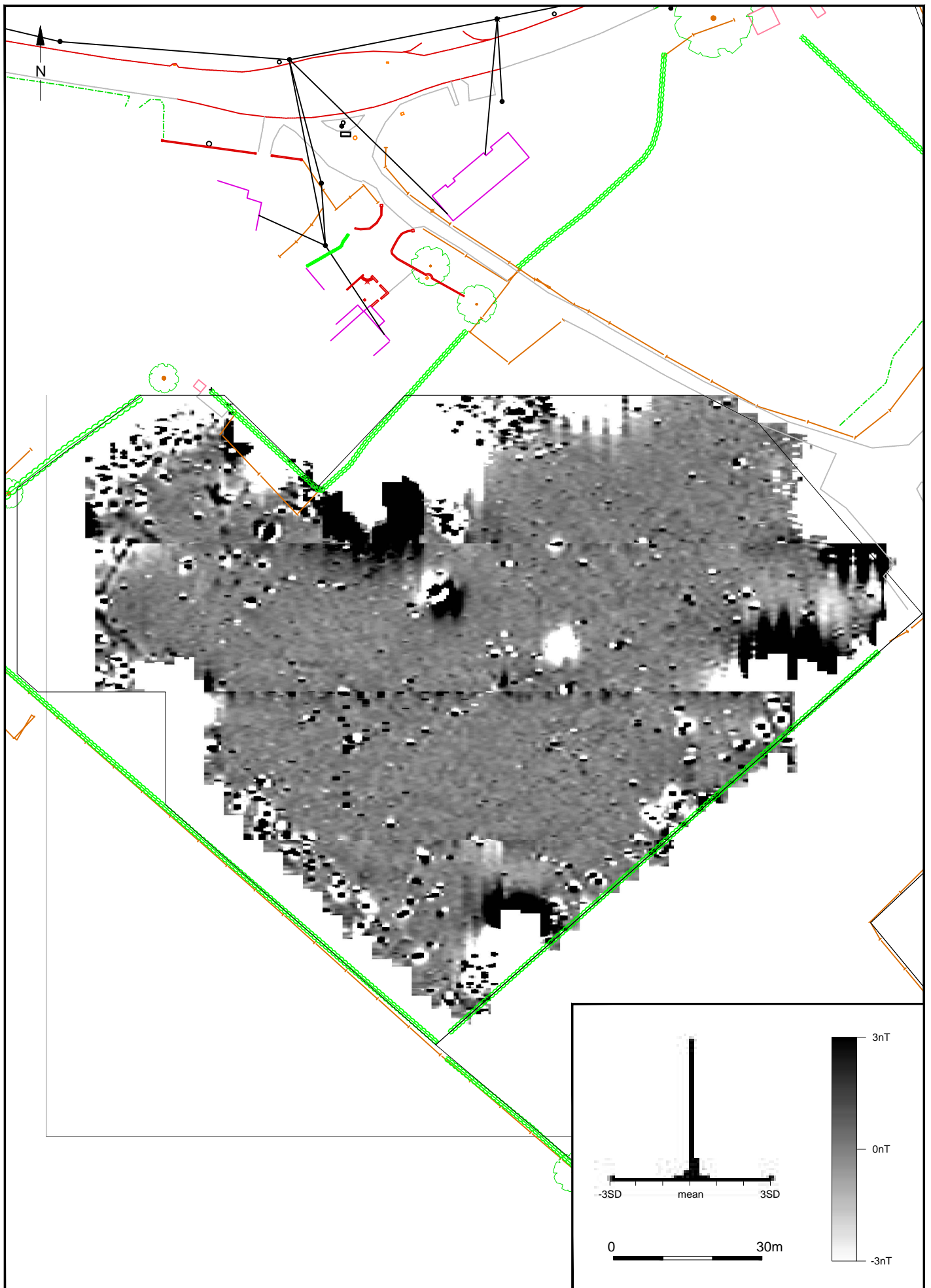
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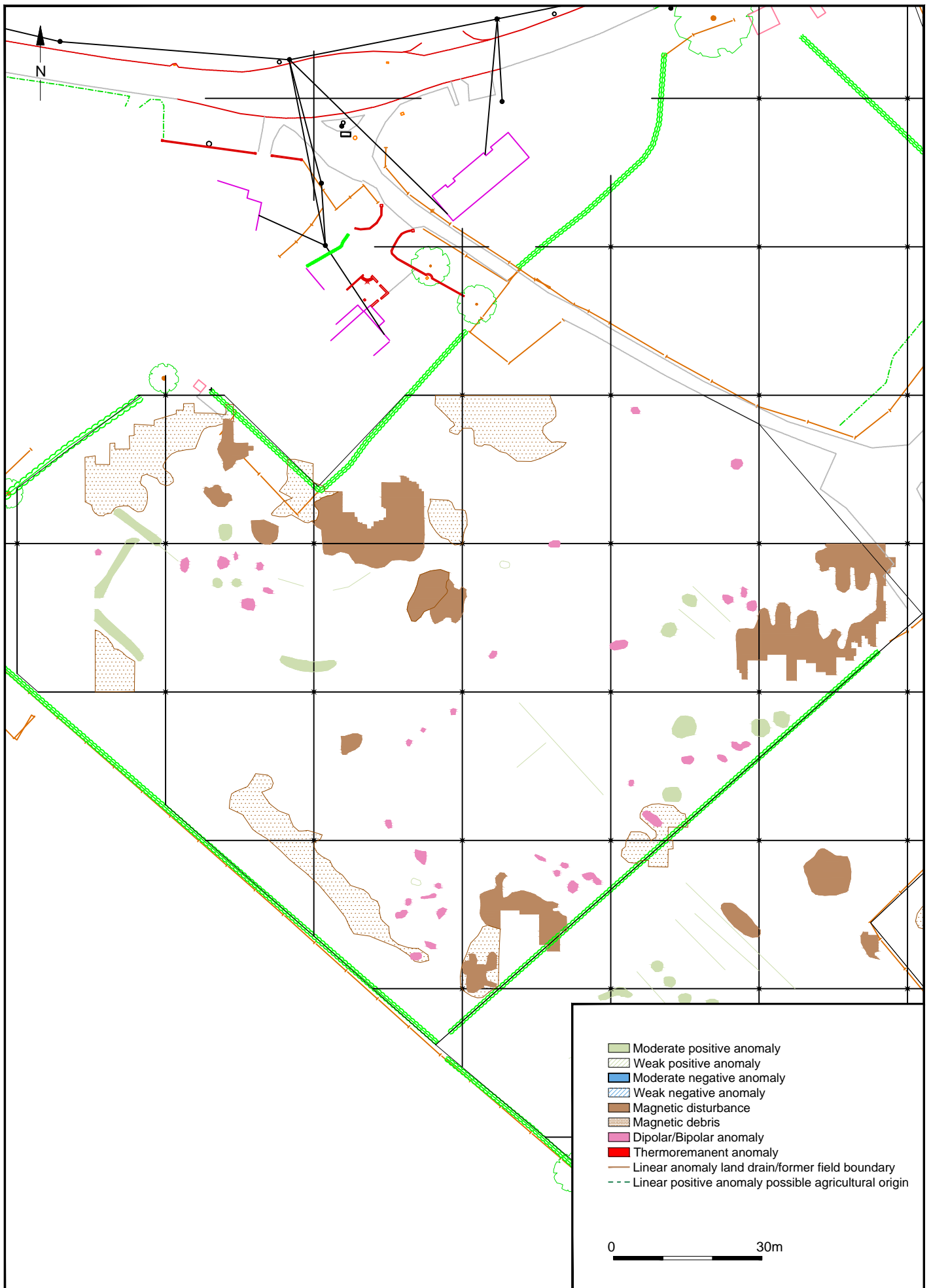
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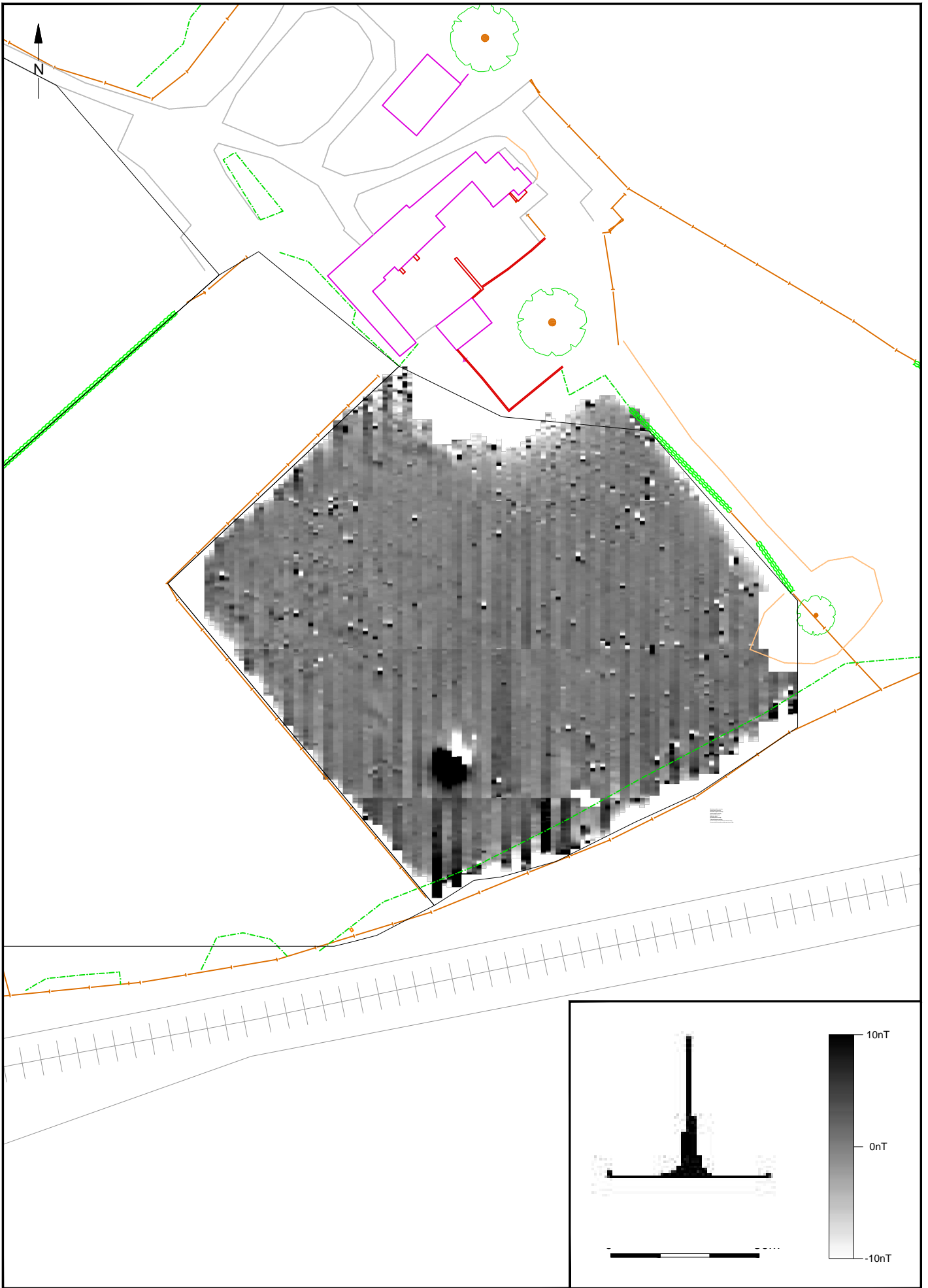
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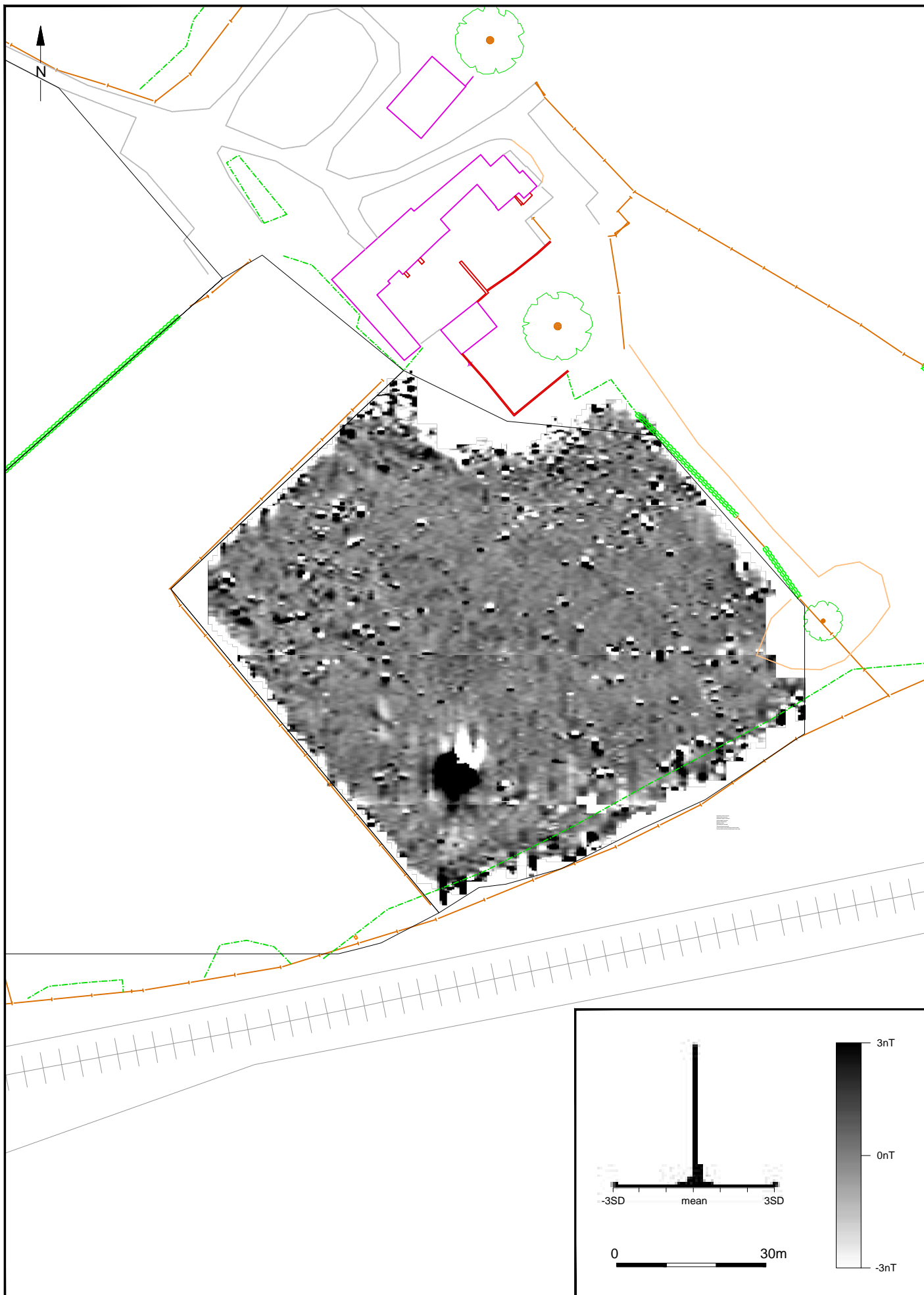
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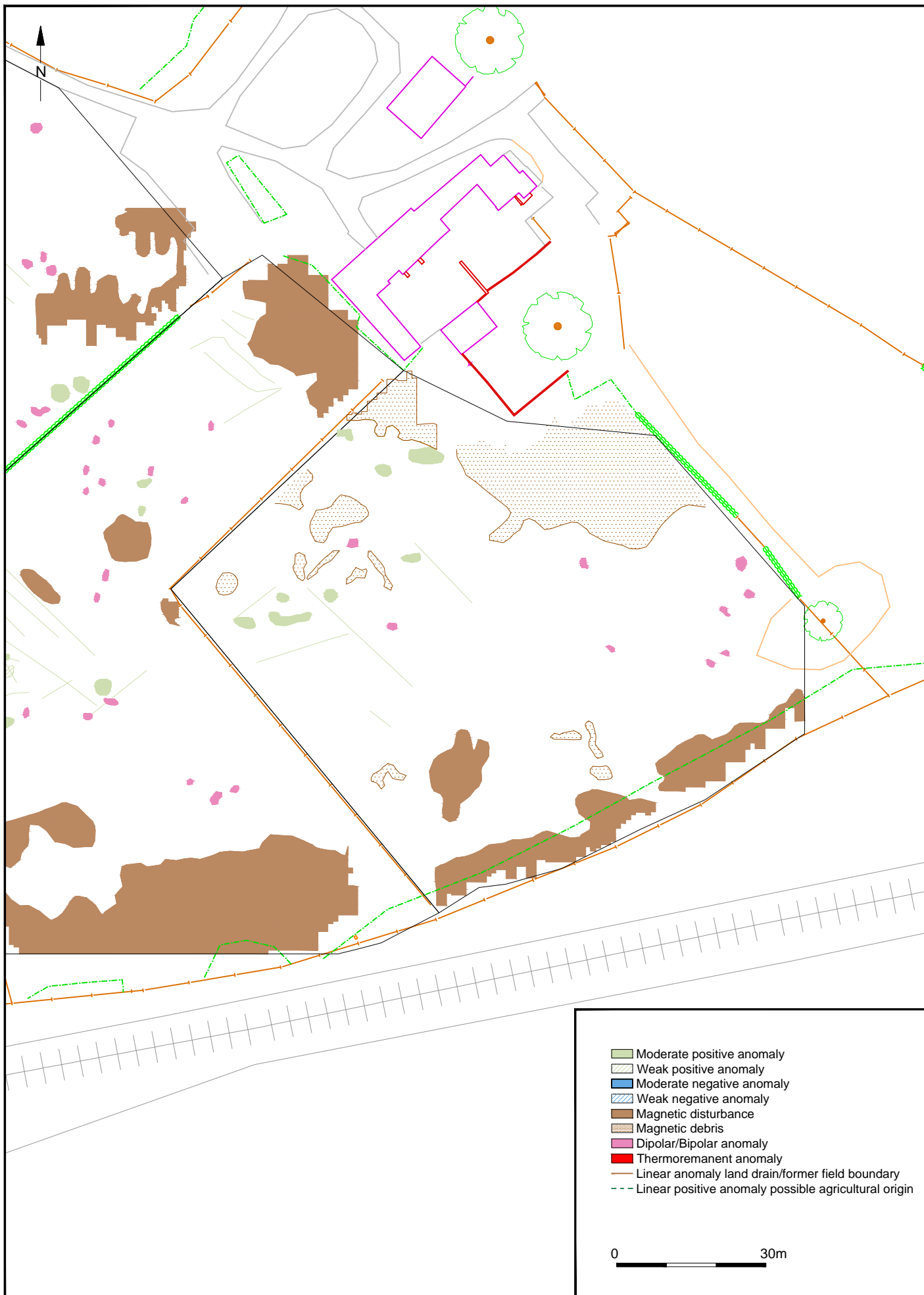
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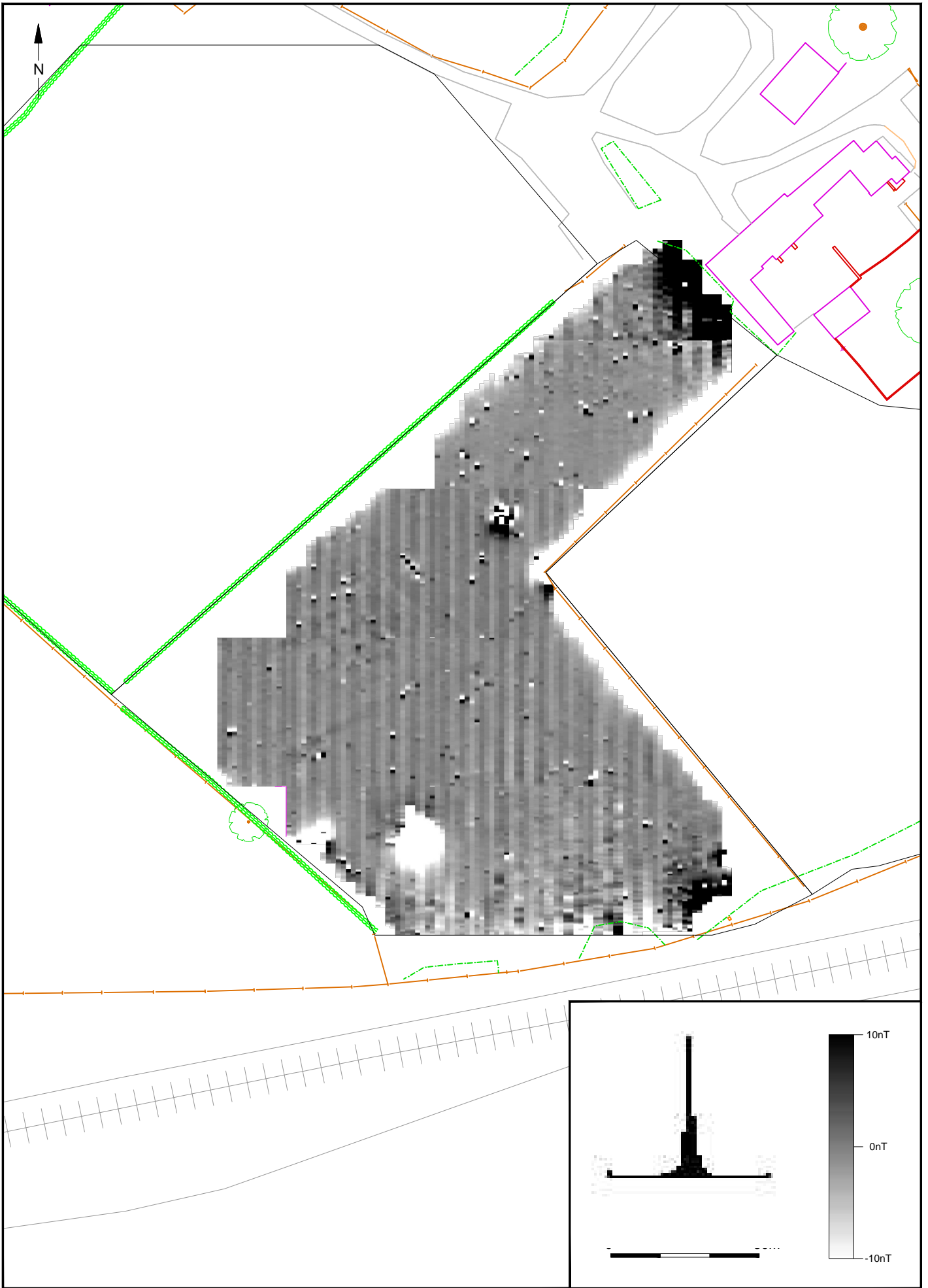


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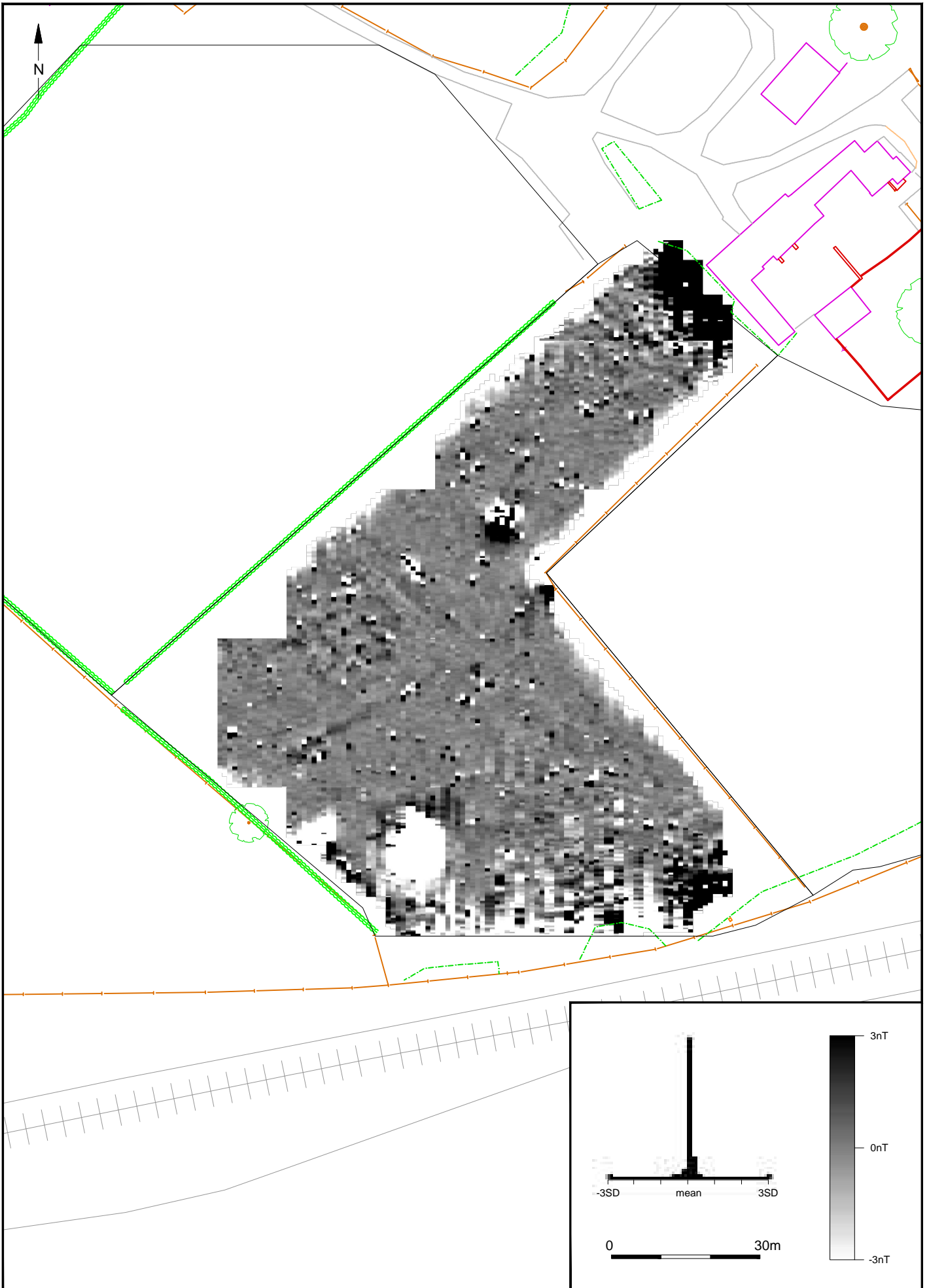


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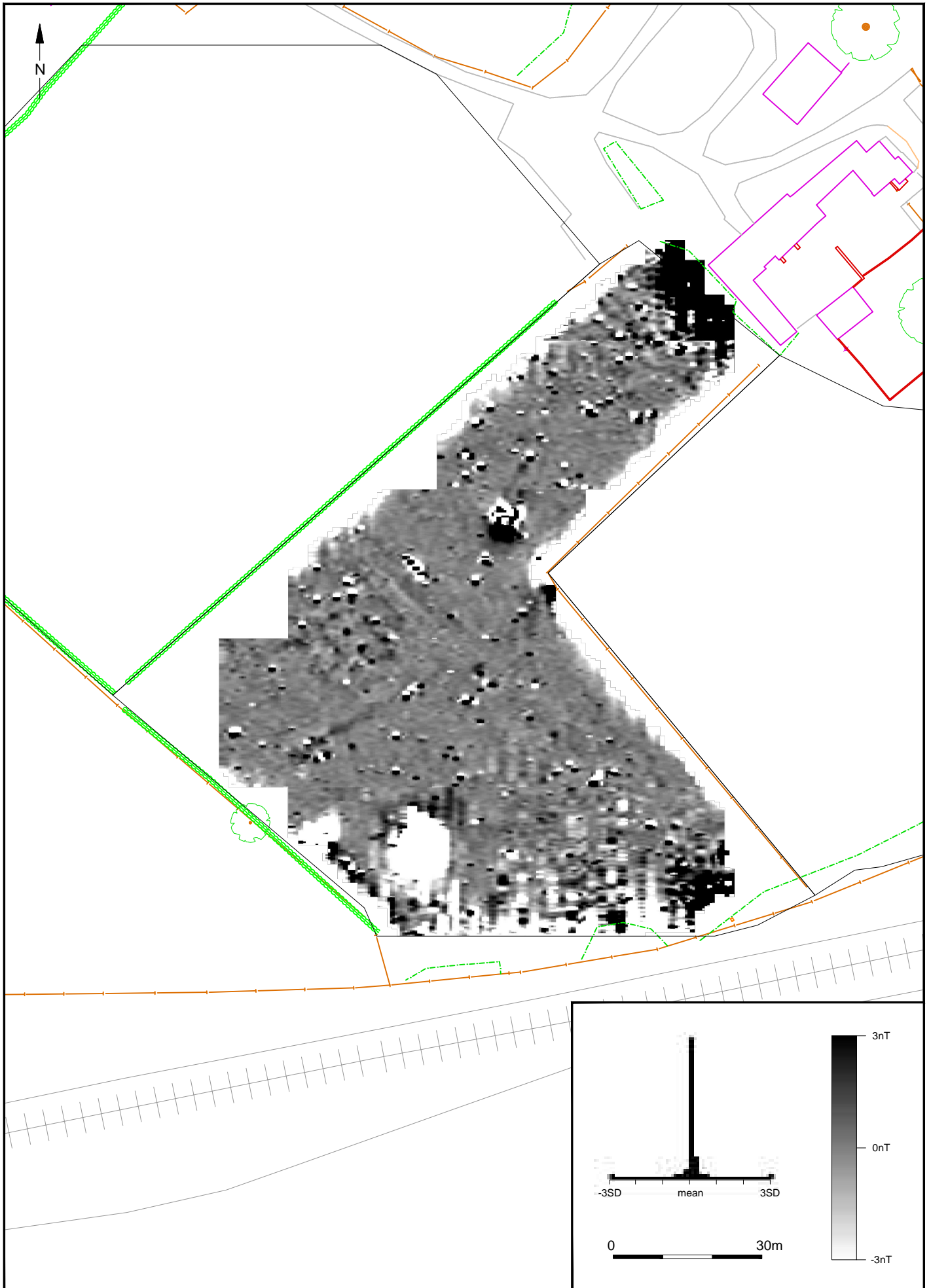




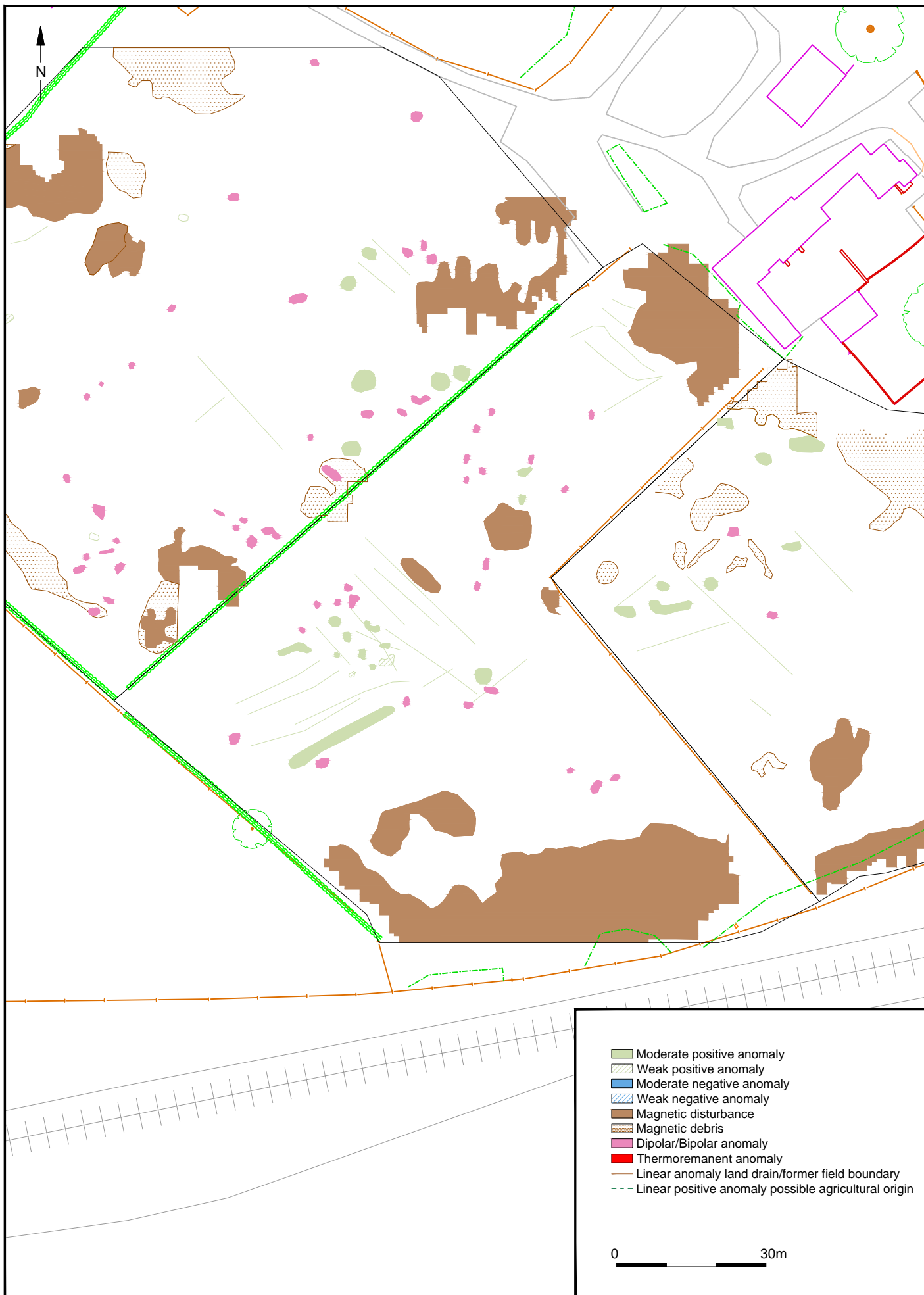
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