

**Archaeological geophysical survey at
RAF Peplow, Eaton-Upon-Tern
Shropshire
October 2021**

Report No. 21/101

Author/Illustrator: Adam Meadows



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Project Manager: John Walford
NGR: SJ 660 232

MOLA
Kent House
30 Billing Road
Northampton
NN1 5DQ 01604 809800
www.mola.org.uk
business@mola.org.uk

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Author/Illustrator: Adam Meadows

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Kent House
30 Billing Road
Northampton
NN1 5DQ
01604 809 800
www.mola.org.uk
business@mola.org.uk

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STAFF

Project Manager: John Walford MSc

Supervisors: Adam Meadows BSc PCIfA
John Walford

Assistant: Daniel Whatton

Text: Adam Meadows

Illustrations: Adam Meadows

Project: RAF PELOW, EATON-UPON-TERN		OASIS No: molanort1-503310	
ACTIVITY TYPE			
Project/Activity type	Geophysical survey		
Reason for investigation	Planning: Pre application		
Development type	Energy and power generation		
Planning reference ID	-		
PROJECT LOCATION			
National grid ref	SJ 660 232		
Site name	RAF Peelow, Eaton-upon-Tern		
REVIEWERS/ ADMIN			
HER for project	Shropshire		
National organisation	-		
WORK UNDERTAKEN			
Methodological summary	Magnetometer survey with a cart-mounted array of Bartington Grad-01-100L fluxgate gradiometers.		
Previous work?	None	Future works?	Unknown
Dates - Start date:	19-10-21	End date:	27-10-21
GEOPHYSICS			
Geology	Bridgenorth Formation sandstone overlain by Devensian glacial till		
Land use (i.e. arable)	Pasture and arable		
Survey type	Magnetometer survey		
Size of survey area	c45ha		
Instrumentation	Bartington Grad-01-1000L	Fluxgate – Multiple sensor	
Configuration	Pushed cart survey (6-probe)		
Spatial resolution	Traverse spacing	0.8m	Reading interval 0.225m
Resolution (data values)	0.1nT		
BIBLIOGRAPHY			
Title	Archaeological geophysical survey of RAF Peelow, Eaton-upon-Tern, Shropshire, October 2021		
Author(s)	Adam Meadows		
Publisher / place / date	MOLA Northampton / Northampton / 2021		
Report number	21/101		
Report release delay?	Six months		
PEOPLE			
Organisation	MOLA		
Project manager	John Walford		
Project supervisor	Adam Meadows		
Funding body	Wardell Armstrong		
KEYWORDS			
Monuments found/ date	Post-medieval building Post-medieval road Modern airfield		
RESULTS			
Description of outcomes	The survey recorded the location of two pre-war roads and a cottage, along with parts of three wartime runways, associated underground services and rubble spreads. There was no conclusive evidence of earlier archaeological remains.		
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Accession ID	None		
Finds Archive repository	None	Expected date of submission:	-
Paper Archive repository	None	Expected date of submission:	-
Digital Archive repository	TBC	Expected date of submission:	TBC

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Archaeological geophysical survey of RAF Peplow, Eaton-upon-Tern Shropshire. October 2021

ABSTRACT

MOLA (Museum of London Archaeology) was commissioned to undertake a magnetometer survey across c45ha of land on what was once RAF Peplow, Eaton-upon-Tern, Shropshire. The location of two pre-war roads and a cottage were recorded, along with parts of three wartime runways, associated underground services and rubble spreads. The survey detected almost no evidence for earlier archaeological remains.

1 INTRODUCTION

MOLA (Museum of London Archaeology) was commissioned by Rob Johns of Wardell Armstrong to undertake an archaeological geophysical survey on the site of the former RAF Peplow, Eaton-upon-Tern, Shropshire (NGR 366047 323280) (Fig 1). The purpose of the survey was to identify and map any archaeological remains which may be affected by the proposed development of a solar farm.

The survey comprised a magnetometer survey and was conducted over seven days from 19th to 27th October 2021. A hand pushed magnetometer cart was used across the majority of the site, except for one field where the cart had to be re-configured for vehicle towing as the grass height exceeded what could be surveyed manually.

The survey works were conducted under a Written Scheme of Investigation (MOLA 2021) and was also conducted in accordance with Chartered Institute for Archaeologists and European Archaeological Council guidelines (ClfA 2014 and Schmidt *et al* 2015).

2 BACKGROUND

2.1 Location, geology and topography

The survey area is located in the southern portion of the old airfield and broadly comprises three pasture fields, partially subdivided internally with electric fencing, and two arable fields containing a young fodder crop (Fig 1). It includes several areas that were unsuitable for survey, including chicken sheds and other agricultural buildings, areas of recently planted saplings and belts of rough, scrub-covered ground along the lines of some of the former runways.

The boundary of the site is defined on the east, south and west by the course of the former airfield perimeter track which, in the west, is aligned parallel with Eaton Road. To the north, the boundary is largely defined by a series of field boundaries.

The survey area is positioned on predominantly level ground at c70m above Ordnance Datum (aOD). A gentle south-west facing slope is present on the western end of the site,

where it descends to c65m aOD by the old airfield perimeter track. The British Geological Survey (BGS) records a solid geology of Cisuralian sandstone of the Bridgnorth Formation overlain by Devensian glacial till (BGS 2021).

2.2 Historical and archaeological background

The Shropshire Historic Environment Record (HER) holds a variety of records relating to the survey area and its surroundings, though many of these relate to farmsteads and other structures which are of only localised significance and do not have a bearing on this survey. The following discussion presents only a selection of the more archaeologically and historically relevant.

A cropmark of a potential rectilinear enclosure is recorded within the north-eastern field of the survey area at NGR SJ 6633 2324. This was first observed within aerial photography in 1990 and it is visible within more modern satellite imagery and may represent an early field boundary (HER No. ESA3380, 04495).

Towards Eaton-upon-Tern, c150m south of the survey area, the HER records a potential section of a prehistoric pit alignment, oriented west to east. This has been observed as a cropmark on Google Earth satellite imagery dating from 27th June 2018, but no physical intervention has been made to confirm its identity and date (34479).

A second prehistoric pit alignment is present c150 west of the survey area, oriented north-east to south-west. This was recorded by aerial photographic surveys conducted in 1999 and 2013, it is also visible within 2018 Google Earth imagery (31524).

Google Earth imagery from 2018 has also indicated a section of a potential pit alignment c650m west of the survey area, west of Cramer Cottage. This section runs in a near east-west alignment with hints of a second run coming up from the south terminating against it, implying it may define part of a field system (34475).

Further cropmarks, c300m south of the survey area show what is thought to be a circular enclosure with an east facing entrance way. This was first recorded from an aerial photography study in 1990, though it is more recently present in the 2018 Google Earth imagery alongside hints of other enclosures (04478).

Several post-medieval to modern farmsteads have been identified within close proximity to the survey area. These include the 19th-century farmsteads of The Chestnuts (22297) and Village Farm (22295) located within Eaton-upon-Tern, c150m south-west of the survey area. A third farmstead, Eaton Villa, once stood just outside the north-western boundary of the survey area but was removed to make way for the airfield (22294). The age of Eaton Villa is unknown, though it appears to be equivalent to a farm labelled as 'Crows Nest' on the 1831 Old Series Ordnance Survey map.

The construction of RAF Peplow (28261) in 1941 resulted in substantial changes to the local landscape. Late 19th- to early 20th-century Ordnance Survey maps show that the survey area formerly contained two roads, several buildings (including Eaton Villa) and a variety of field boundaries, ponds, footpaths and other minor features. These were largely erased by the airfield, although the lines of the two roads survive ephemerally as public rights of way.

The airfield was equipped with three runways and used primarily for training with the 83rd Operation Training Unit of RAF bomber Command located here alongside a Heavy Glider Conversion Unit run by Training Command. It also saw a period of use for naval aviation. It underwent several changes of name during its active life, being variously known as RAF Childs Ercall, RAF Peplow, HMS Godwit II and RNAS Peplow. It was closed for military use in 1949, and by 1985 it had been largely reclaimed for agricultural purposes.

3 METHODOLOGY

3.1 Fieldwork

The magnetometer survey was undertaken with a Bartington magnetometer cart. This is a two-wheeled, lightweight sensor platform which may be operated by hand or adapted for towing behind a Utility Task Vehicle (UTV). The cart incorporates a bank of six vertically-mounted Bartington Grad-01-1000L magnetic sensor tubes, spaced at 0.8m intervals along a bar aligned crossways to the direction of travel. It also incorporates a Leica Geosystems Viva GNSS antenna, mounted on the central axis.

The survey was largely conducted with a hand-operated magnetometer cart, though in one field the cart had to be towed by a UTV as the grass was too tall and dense to permit survey by hand (Fig 6). The data collected by each method was broadly equivalent in character and quality.

The magnetic sensors were calibrated ('zeroed') at the start of each day's work to minimise any heading errors or offsets between the zero points of each individual sensor. For ease of handling the cart was only hitched to the tow vehicle after zeroing; as a result the raw UTV-collected data exhibits a uniform offset of circa 5nT relative to the raw hand-collected data (Fig 6).

The cart was propelled along straight and parallel traverses across each survey area, with data logging being manually toggled on and off at the start and end of each traverse to avoid the collection of spurious data whilst turning. Traverse ends were marked with ranging poles to aid even coverage, and the evenness of coverage was further checked by monitoring the positional trace plotted in real time by the MultiGrad601 logging software.

The magnetic sensors were set to output data at a rate of eight readings per second. The GNSS antenna was set to output NMEA format data (GGA messages) at a rate of one position per second. These data streams were compiled into a single raw data file by MultiGrad601 logging software.

The typical speeds of coverage were c1.7m/s by hand or c2.3m/s by vehicle, with some variation depending on the terrain and slope. The combination of sensor spacing, survey speeds and data output rates ensured that the spatial resolution of all the data sets would approximate to 0.25m x 0.80m.

3.2 Data processing and presentation

The raw survey data was initially processed with MLGrad601 software, which calculated a UTM co-ordinate for each data point by interpolating the GPS readings and applying offset corrections based on the array geometry and calculated heading direction. This produced an output file in XYZ format which could be imported into TerraSurveyor software for data visualisation and further processing.

The raw XYZ data exhibited minor striping caused by slight mismatches in the calibration of the individual magnetic sensors. This was removed in TerraSurveyor by applying the median de-stripe function to runs of data from each sensor.

The processed survey data is presented in this report as greyscale raster images which have been rotated and scaled to fit against topographic base-mapping at a scale of 1:2500.

The processed magnetometer data is displayed at +/-5nT (Figs 2 and 3). An interpretive overlay highlights notable anomalies for discussion (Figs 4 and 5). A minimally processed data plot for the magnetometer survey is presented at a scale of +/- 10nT (Figs 6 and 7) as a comparison to the final de-striped results.

4 SURVEY RESULTS

4.1 Overview

The survey has predominantly uncovered extensive remains of the wartime airfield that once stood upon the site. Given this, the results of the survey can be categorised based on whether they relate to events before or during the operational period of RAF Peplow. However, there are some anomalies whose origins are uncertain due to the type feature or the undiagnostic appearance provided within the data.

4.2 Pre-airfield features

Features known from historic mapping

The survey has detected linear anomalies that correspond with the two historic roads and with short lengths of former field boundaries pre-dating the airfield. It has also detected a patch of magnetic disturbance on the site of a former building.

In the west, a strongly magnetic linear anomaly is aligned north-east to south-west through two fields, marking the former course of the road from Eaton to Child's Ercall (Fig 4, A). The edges of the anomaly are particularly strong, perhaps due to the remains of roadside drains or ditches. A short, magnetically noisy linear anomaly spurs out perpendicularly from the northern side of the road and corresponds to the remains of an old field boundary depicted on pre-war Ordnance Survey maps (Fig 4, B).

The other historic road, from Eaton to Alford Brook, is less completely resolved, with elements detected in the south-western and north-eastern fields but no evidence for its line across the intervening ground.

An ill-defined and magnetically noisy linear anomaly in the south-western field marks where the Alford Brook road enters from the western edge of the survey area (Fig 4, C1). It runs south-eastwards and terminates abruptly, but its line is picked up again by a much slighter linear anomaly spurring out from the eastern edge of the same field (Fig 4, C2). A further part of the road is marked by a moderately intense linear anomaly crossing the north-eastern field (Fig 5, C3), although it is arguable whether this represents the road *per se* or instead a drain or pipe laid alongside it.

An area of strongly magnetic disturbance is located in the south-western field alongside the former road (Fig 4, D). It corresponds with the site of some former buildings and a well, marked on the pre-war mapping, and is the type of response that would be expected from a spread of demolition rubble and ferrous debris. To the immediate north there is a sequence of strongly magnetic ferrous anomalies that form two short alignments, matching with two sides of a small triangular field depicted on the historic mapping (Fig 4, E). This indicates that several moderately large metal objects are buried within the backfill of that field's boundary ditches.

Other possible features

A weak positive linear anomaly in the north-western field (Fig 4, F) probably represents an undated length of ditch, and two much slighter linear anomalies in the north-eastern field may similarly represent very short ditch segments (Fig 4, G). As the latter lie at right angles to each other it is possible, though unconfirmed, that they relate to the right-angled cropmark feature (HER No. 04495) which is recorded in roughly the same location.

4.3 Airfield features

The survey has detected areas of magnetic disturbance rating to all three former airfield runways. These magnetic responses are indicative of hardcore and other debris of rubble buried within the soils. However, large parts of the runways were not surveyed, due variously to the presence of modern buildings and areas of rough, scrubby vegetation.

Rows of strongly positive ferrous anomalies with negative halos are present in places alongside the edges of the runways (Fig 4, H1-H2). These are likely to represent the remains of landing lights or other such furniture that was present while the airfield was operational.

A moderately sized discrete ferrous halo occurs on the edge of the runway in the south-western field (Fig 4, I). This coincides with a hole which exposed an open manhole for a large brick drain (*pers obs*). The rest of this drain may be represented by a long, weakly positive linear feature running along the runway edge.

A large area of magnetic disturbance has been detected within the north-western field (Fig 4, J). This is shown by a spread of small magnetic dipoles interspersed with the occasional larger ferrous anomaly. A historic map of RAF Peplow (ABCT 2021) indicates that this area was the location for various small structures for the airbase, most notably a workshop area and the control building. One strong linear anomaly at the south-west of this area (Fig 4, K) is of uncertain origin but possibly relates to a path, a drain, a boundary or a similarly minor airfield feature.

4.4 Buried utilities

In the western half of the survey there is a large alternating magnetic linear anomaly extending from the southern edge of the south-western field into the north-western field. Here it meets a second linear anomaly aligned north-west to south-east forming a T-shaped junction. The south-eastern end of this linear extends beyond the surveyable area under the hardstanding of the modern farm while the north-western end fragments, continuing north-westwards before turning 90 degrees towards the north-east, again leading outside of the survey area. These anomalies (Fig 4, L1-L4) are typical for underground pipes. The fact they appear fragmented suggest they may be redundant features associated with the demolished airfield buildings.

In the north-eastern field, there is a positive linear anomaly with a tight negative halo extending from the south-east limit of the survey area to the north-west, with a spur projecting off northwards and a shorter spur to the south-west (Fig 5, M). The anomaly is moderately weak in the north-west but strengthens progressively south-eastwards. It probably represents another pipe or drain, with the variable intensity reflecting a variation in the depth at which this is buried.

4.5 Field drains

In the southern field, a weakly magnetic, alternating linear anomaly extends from the southern boundary a short distance before turning north-west, aligned parallel to the edge of the field (Fig 5, N1). A similar, though less distinct, anomaly projects northwards from the southern corner of the south-western field (Fig 5, N2). Anomalies of this type are typical of ceramic field drains.

A complex pattern of strongly positive linear anomalies with tight negative halos (Fig 4, O) occupies the centre of the south-western field and extends into the field to the north. These represent a closely spaced set of drains, mainly aligned north to south, that pass across the line of the runway and feed into one pipeline that runs north-west to south-east to the southern edge of the survey area. A pond is shown in this

approximate location on the pre-war Ordnance Survey mapping, which may indicate the reason for the enhanced drainage.

4.6 Ferrous anomalies and halos

As is commonly the case, the survey has detected a seemingly random assortment of ferrous anomalies (magnetic dipoles) of varying size and strength. These all relate to iron or steel objects lying on or buried within the soil. Many of these objects will be trivial pieces of modern debris, and only a representative selection are depicted on the interpretation plots.

The very large positive halo present on the eastern side of the south-western field is the magnetic signature of the adjacent chicken shed. Smaller, though still pronounced, halos in the fields either side of the sheds are largely due to the corrugated iron sheeting on small animal shelters standing in those areas. Much smaller halos present intermittently along the edges of the fields are due to adjacent gates and wire fences. None of these halos are individually marked on the interpretation figures, as they are of little to no significance.

5 CONCLUSION

The survey has successfully detected some elements of the pre-airfield landscape, comprising the remains of roads, buildings and field boundaries that are recorded on late 19th- and early 20th-century Ordnance Survey mapping. There is no conclusive evidence of earlier archaeological remains, although one short linear anomaly present in the north-western field may represent a ditch of uncertain date and a very faint right-angled anomaly in the east of the site perhaps corresponds to part of a cropmark feature noted on the Historic Environment Record (HER No. 04495).

The survey has also detected some of the remains of RAF Peplow, including parts of the runways, the routes of utility or drainage pipes and a large spread of debris across the site of the former control tower, workshop and ancillary buildings.

The data from the eastern half of the site is much quieter than that in the west and, in part, this reflects the distribution of the airfield remains. However, it is noticeable that the former road across this eastern area has produced a much more fragmented response than the former Child's Erccall road to the west and vanishes entirely in the data from two of the southern fields. A possible, though speculative, explanation for this might be if different parts of the site saw different levels of truncation during the construction of the airfield, with a resultingly uneven preservation of earlier features.

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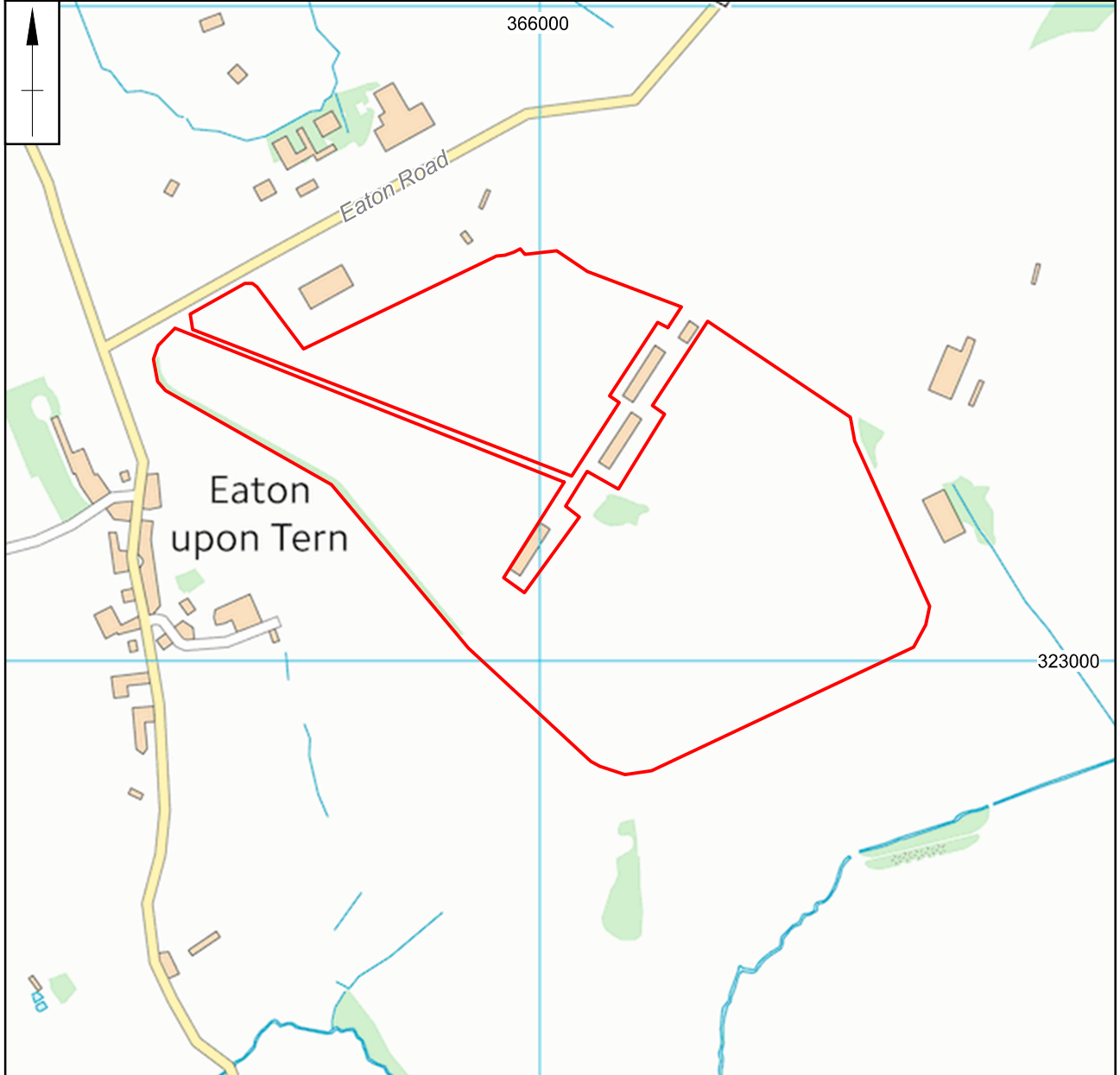
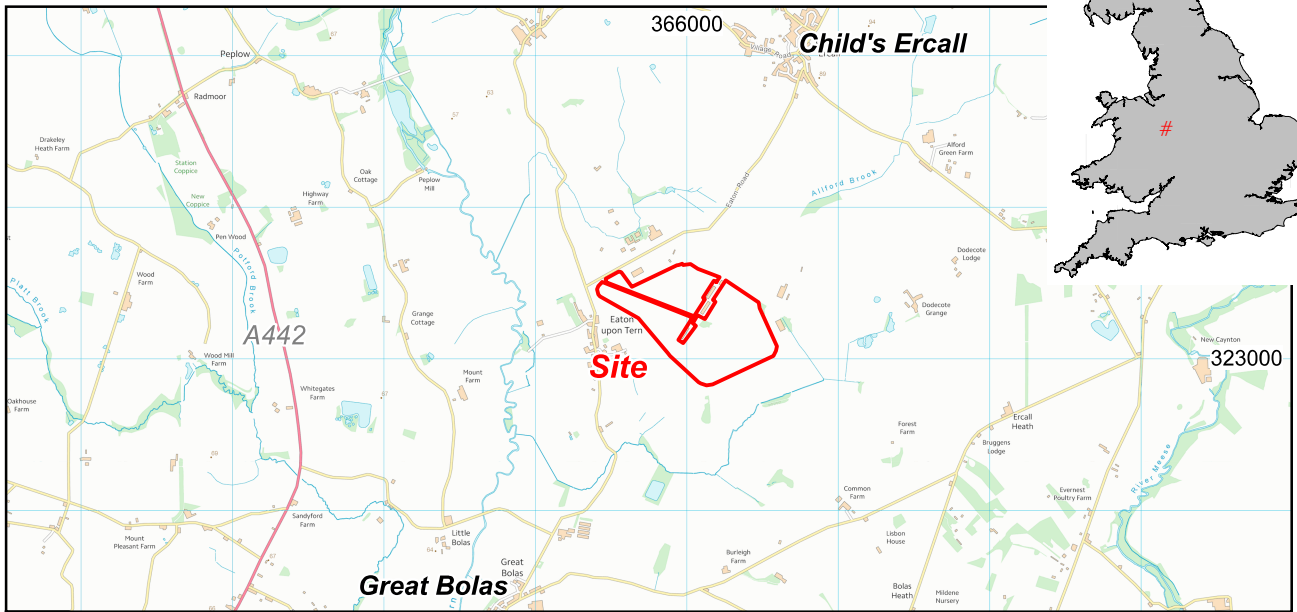
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14th December 2021



0 500m

Survey area

OS OpenData contains Ordnance Survey data © Crown copyright and database right 2021

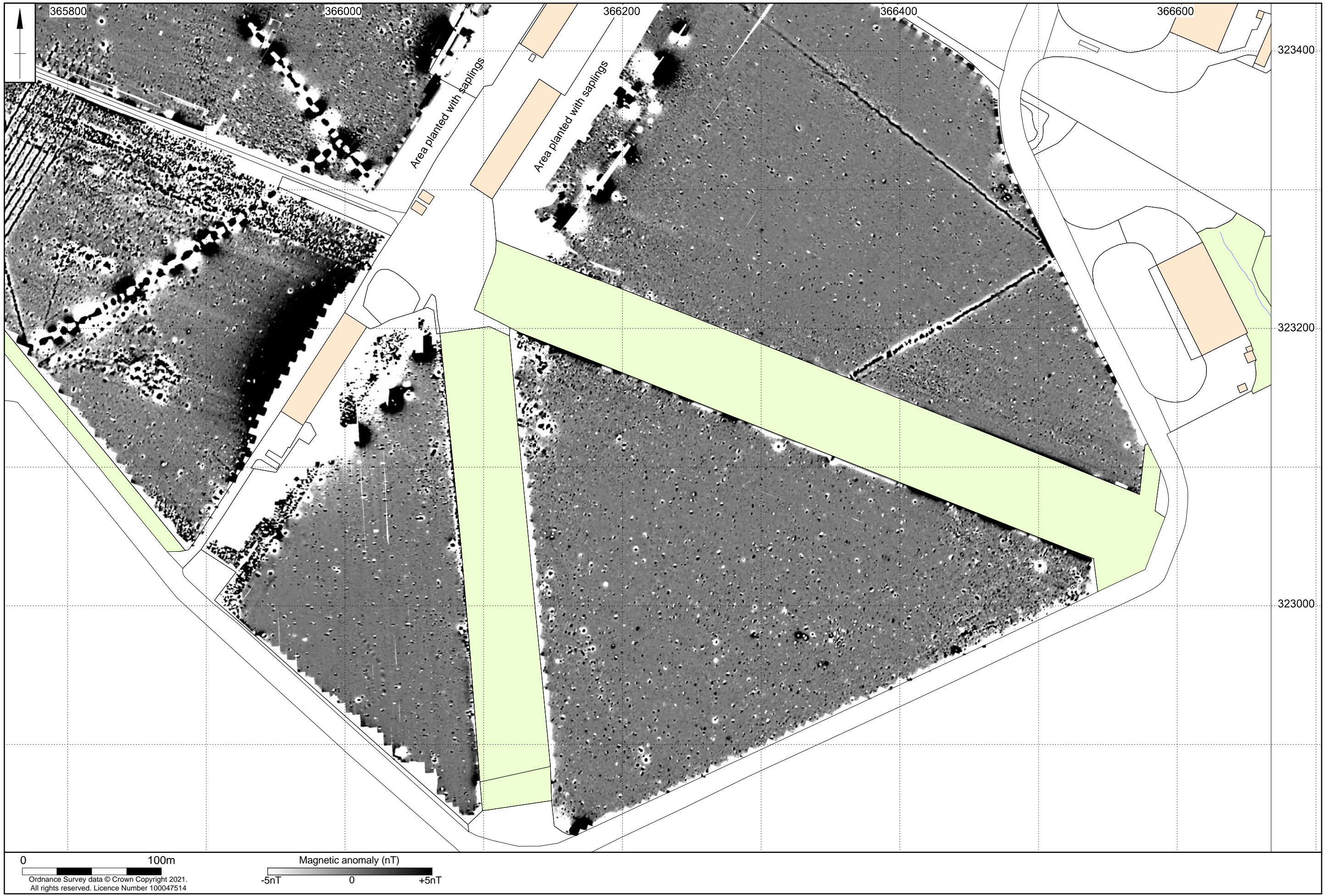
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Site location Fig 1



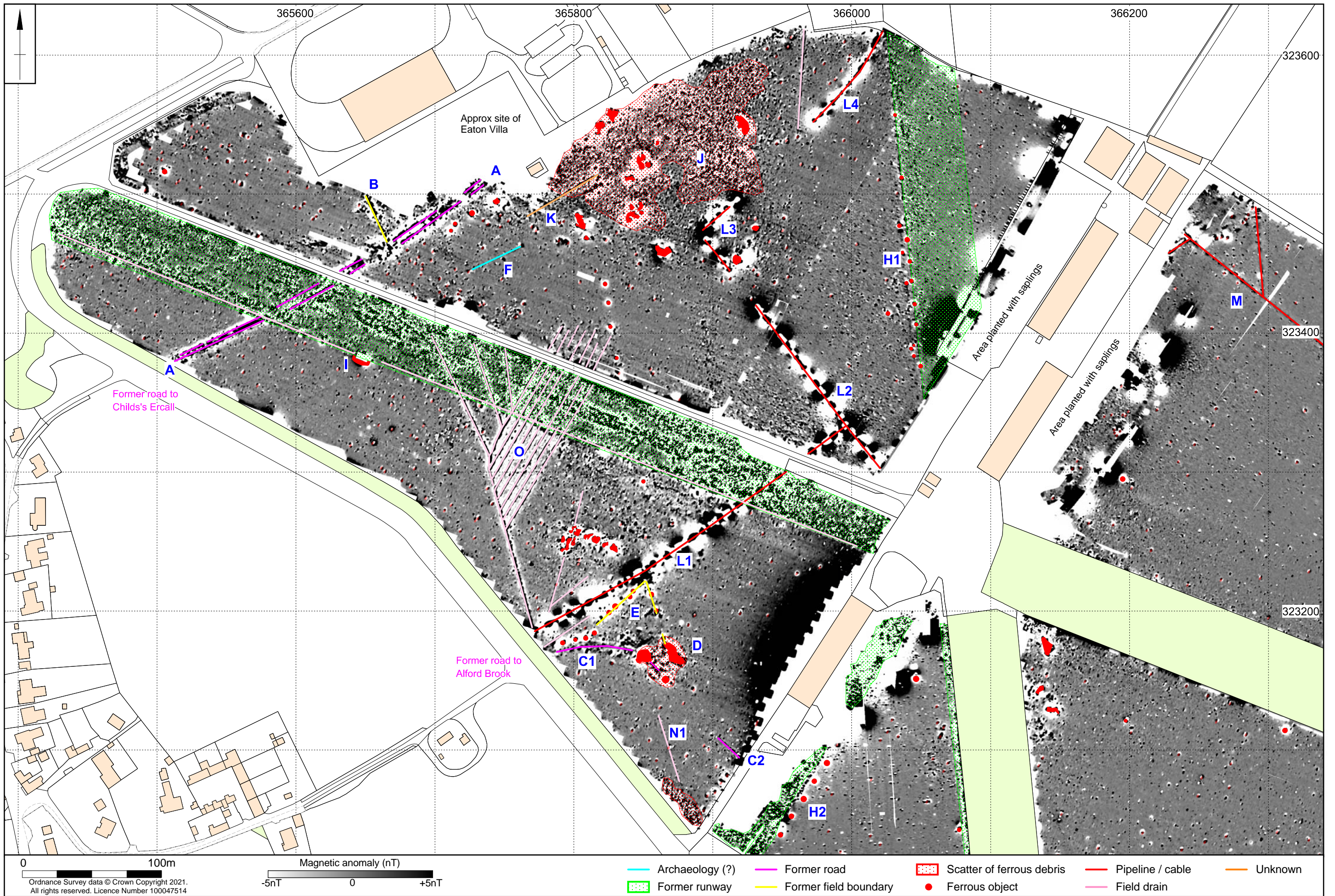
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Processed magnetometer data (west) Fig 2



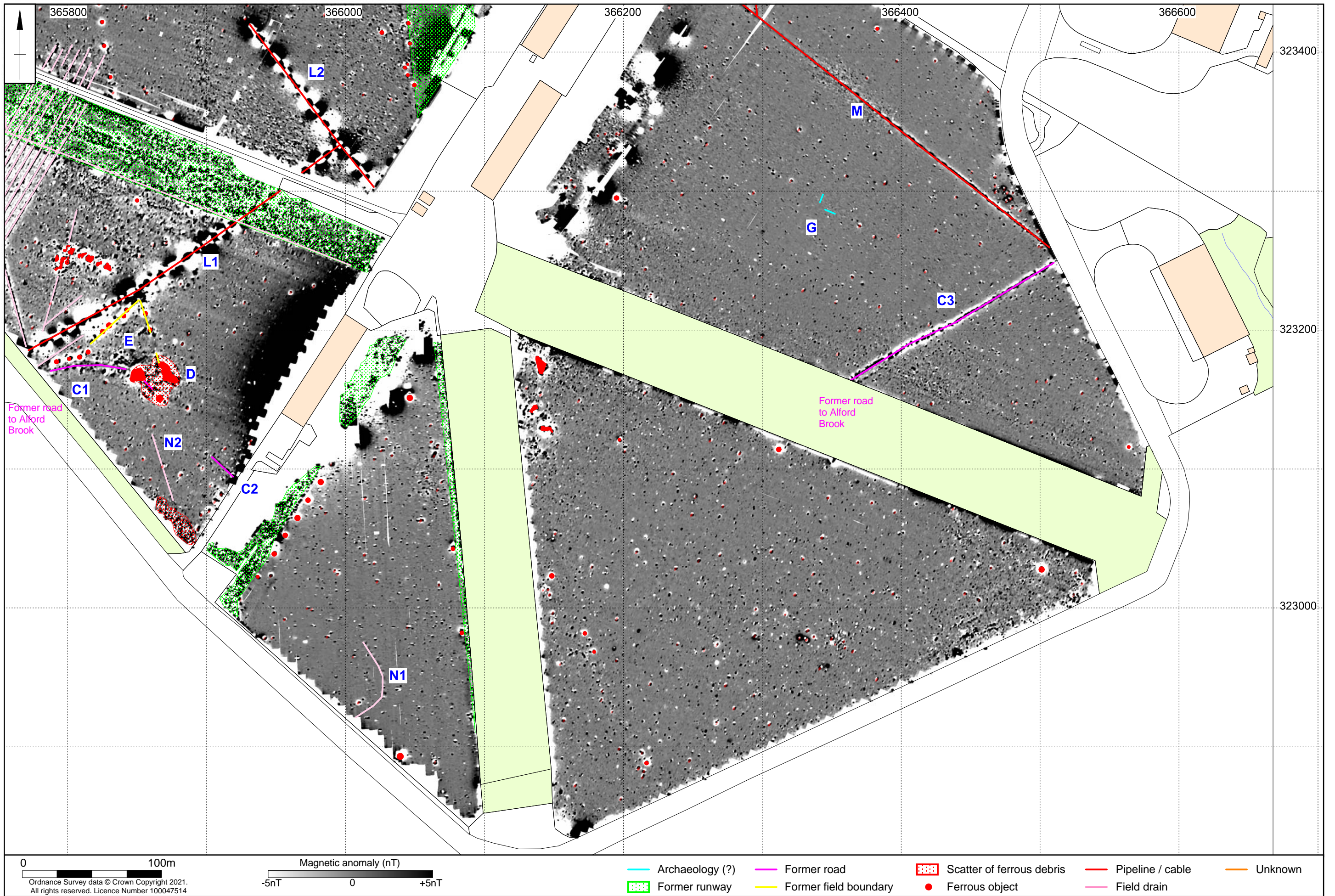
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Processed magnetometer data (east) Fig 3



Scale 1:2500

Magnetometer survey interpretation (west) Fig 4



Scale 1:2500

Magnetometer survey interpretation (east) Fig 5



Scale 1:2500

Unprocessed magnetometer data (west) Fig 6



Scale 1:2500

Unprocessed magnetometer data (east) Fig 7



MOLA
Kent House
30 Billing Road
Northampton
NN1 5DQ
01604 809800
www.mola.org.uk
business@mola.org.uk