



**Archaeological geophysical survey of land
off Barlestone Road, Newbold Verdon
Leicestershire
December 2023**

Accession Number: X.A131.2023

Report Number: 23/110

Author: Chris Manktelow
Illustrator: Chris Manktelow



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Project: Newbold Verdon, Barlestone Road		OASIS No: molanort1-521380	
ACTIVITY TYPE			
Project/Activity type	Geophysical survey		
Reason for investigation	Planning: Between application and determination		
Development type	Residential development - Housing		
Planning reference ID	-		
PROJECT LOCATION			
National grid ref	SK 448 043		
Site name	Barlestone Road, Newbold Verdon		
REVIEWERS/ ADMIN			
HER for project	Leicestershire and Rutland Historic Environment Record		
National organisation	Historic England		
WORK UNDERTAKEN			
Methodological summary	Magnetometer survey with a cart-mounted array of Bartington Grad-01-1000L fluxgate gradiometers.		
Previous work?	No	Future works?	Unknown
Dates - Start date:	04-12-2023	End date:	06-12-2023
GEOPHYSICS			
Geology	Edwalton member mudstone Glaciofluvial sand and gravel		
Land use (i.e. arable)	Pasture		
Survey type	Magnetometer survey		
Size of survey area	c16ha		
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 land off Barlestone Road, Newbold Verdon, Leicestershire, December 2023		
Author(s)	Chris Manktelow		
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Report release delay?	Six months		
PEOPLE			
Organisation	MOLA		
Project manager	John Walford		
Project supervisor	Chris Manktelow		
Funding body	RPS Consulting		
KEYWORDS			
Monuments found/ date	Enclosure – Uncertain Ridge and furrow – medieval to post-medieval		
RESULTS			
Description of outcomes	The c32m long north-eastern side of an enclosure was detected in the west of the survey area, as well as a few possible ditches near the centre of the site. Some evidence of medieval to early post-medieval ridge and furrow was also detected throughout the survey area as well as several modern utilities and areas of disturbed ground relating to the horse riding school.		
ARCHIVES			
Accession ID	X.A131.2023		
Finds Archive repository	None	Expected date of submission:	-
Paper Archive repository	Leicestershire County Council Museums Service	Expected date of submission:	2024
Digital Archive repository	Archaeology Data Service	Expected date of submission:	2024

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ABSTRACT

MOLA (Museum of London Archaeology) was commissioned to undertake a magnetometer survey of c16ha of land on the north side of Newbold Verdon, Leicestershire. The c32m long north-eastern side of an enclosure was detected in the west of the survey area, as well as a few possible ditches near the centre of the site. Some evidence of medieval to early post-medieval ridge and furrow was also detected throughout the survey area as well as several modern utilities and areas of disturbed ground relating to the horse riding school.

1 INTRODUCTION

MOLA (Museum of London Archaeology) was commissioned by RPS Consulting to undertake an archaeological geophysical survey on c16ha of land off Barlestone Road, Newbold Verdon, Leicestershire (Fig 1). The purpose of the survey was to identify and map any archaeological remains that may be affected by a proposed development.

The survey was conducted over three days between 4th and 6th December 2023. The survey methodology was set out in a Written Scheme of Investigation (MOLA 2023) which took account of Chartered Institute for Archaeologists and European Archaeological Council guidelines (CIfA 2020 and Schmidt *et al* 2015).

The Leicestershire County Council Museums Service and Historic Environment Team were both informed of the intended work, and the former will accept the paper element of the project archive under the Accession Number: X.A131.2023. The digital element of the archive will be deposited with the Archaeology Data Service (ADS).

2 BACKGROUND

2.1 Location, topography and geology

The survey area comprised six grass fields located on the northern edge of Newbold Verdon, off Barlestone Road. At the time of survey, the fields were being used as part of the Newbold Verdon Equestrian Centre, with several of them sub-divided into horse paddocks. The northern section of Field 5 was set up for show jumping, with several horse jumps scattered throughout the area. A footpath crosses Fields 5 and 6 in a north-east to south-west direction.

The survey area covers broadly level land at c132m above Ordnance Datum (aOD) on top of the east to west ridge on which the village of Newbold Verdon sits.

The solid geology of the survey area has been recorded as Edwalton member mudstone laid down during the Triassic period. This is wholly overlain by mid-Pleistocene deposits of glaciofluvial sand and gravel (BGS 2023).

2.2 Historical and archaeological background

The survey area contains no designated heritage assets. However, the Leicestershire Historic Environment Record (LHER) records that a 1980s fieldwalking programme across the survey area recovered two flint scrapers and several other flakes and fragments. A couple of sherds of Roman pottery and 35 medieval pot sherds were also recovered (MLE6358).

A geophysical survey completed on the south side of Newbold Verdon to the east of Brascote Lane, c900m south of the survey area, detected a three-sided enclosure (Manktelow 2021). An Iron Age date was later confirmed by evaluation trenching (Clark and Issitt 2022). On the opposite side of Brascote Lane, the stripping of soils for a quarry extension revealed enclosure ditches, a ring ditch, a double-ditched roundhouse, pits and a pottery kiln (Hunt 2017).

A prehistoric pit alignment (MLE2976) which crosses three fields c850m south-east of the survey area was noted as a cropmark in the 1980s.

A probable Roman kiln site lies c600m east of the survey area, where a scatter of Roman pottery and tile was recovered during fieldwalking. The area was later subject to a magnetometer survey and a small excavation which found several tiles, possible stone walls and a slate-lined pit (MLE2972). Another possible Roman site was recorded c700m west of the survey area during fieldwalking in 1979 when four sherds of Roman pottery were recovered (MLE2978).

A scheduled medieval moated site (Scheduled monument number 1009198; MLE2984) is located c750m south-west of the survey area and is thought to have surrounded a medieval manor house (MLE2985). The northern arm of the moat has been infilled, possibly when it was incorporated into the formal gardens of Newbold Verdon Hall (MLE2988).

A post-medieval post mill (MLE2974), shown on the 1788 Kilby – Osbaston turnpike map, was located c600m south-east of the survey area.

The village of Newbold Verdon is thought to have a late Anglo-Saxon origin and was noted in the Domesday Book as '*Niwebold*,' meaning 'the new building.' The second part of the village name comes from Nicholas de Verdon, from Verdun in France, who held the manor in 1226.

3 METHODOLOGY

3.1 Fieldwork

The magnetometer survey was undertaken with a Bartington magnetometer cart. This is a two-wheeled, lightweight sensor platform designed to be pushed by hand. It 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. These sensors were calibrated ('zeroed') at the start of each day's survey to minimise heading errors and offsets in their zero values.

The cart also incorporates a Leica Geosystems Viva GNSS antenna mounted on the central axis, 1.02m astern of the sensors. The magnetic sensors each output data at a rate of eight readings per second and the GNSS antenna outputs NMEA format data (GGA messages) at a rate of one position per second. These data streams are compiled into a single raw data file by MultiGrad601 logging software.

The cart was propelled along straight and parallel traverses across the survey area, with data logging being 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 typical speed of coverage was under 1.8m/s, with an effective data resolution thus approximating to better than 0.225m 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 GNSS 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 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 at a range of $\pm 3\text{nT}$ (Fig 2) which have been rotated and scaled to fit against topographic base-mapping at a scale of 1:2000. Interpretive drawings (Fig 3) highlight notable anomalies for discussion, but omit some minor anomalies, including magnetic halos and most small ferrous dipoles. Minimally processed data plots are presented at a range of $\pm 10\text{nT}$ (Fig 4) as a comparison to the processed results.

4 SURVEY RESULTS

4.1 Archaeology

The survey has detected a staple-shaped positive anomaly against the south-west edge of Field 2. This represents a section of ditch which probably forms the north-east side of a 32m wide enclosure, though only a small portion of this feature lies within the survey area. Several weakly positive linear anomalies in Fields 2-5 may represent ditches, possibly of field boundaries, though some sections are weak and intermittent enough that they may instead arise from modern field drains. A collection of rounded positive anomalies near the eastern edge of Field 2 could possibly represent a collection of pits.

A poorly resolved group of discrete positive anomalies, which may indicate fragmentary sections of ditch or cluster of pits is located towards the south of Field 5 near the south-western end of the footpath.

4.2 Ridge and furrow

Sets of parallel, positive linear anomalies have been detected in Fields 3, 5 and 6. These anomalies are typical of medieval to early post-medieval ridge and furrow cultivation. Very slight ridge and furrow earthworks were noted by the survey team in the same areas of Field 5 (*pers obs*).

4.3 Modern features

Equestrian centre equipment

At the time of survey the north and north-east portions of Field 5 contained many horse jumps, most of which were wooden with metal fittings. These gave rise to various large magnetic halos (Fig 2) which have been omitted from the interpretation (Fig 3) as they are of trivial significance.

The narrow linear anomalies of alternating polarity detected around the edges and across the middle of the fields relate to modern electric fences, as do some rows of weak magnetic dipoles. These have been indicated on Figure 3 to avoid potential confusion with utilities and drains, which can produce similar-looking responses. A negative halo either side of the footpath which crosses Field 5 was caused by a more substantial post and wire fence with an additional electrified course.

Buried utilities

A linear anomaly of alternating polarity in the north of Field 3 represents a buried utility, probably a small pipe or drain. A short, strong positive linear anomaly with a broad negative halo has been detected between a telegraph pole in the south-west of Field 5 and the track which runs up the western edge of that field. This probably represents an electricity cable.

A weak negative linear anomaly that lies north-east to south-west across Field 6, perhaps arises from a utility trench containing a non-ferrous utility. A network of blue plastic water pipes linking water troughs across the survey area was noted by the survey team (*pers obs*).

Overhead utilities

A set of overhead cables cross east to west across Field 5, supported by two telegraph poles. The most westerly of the poles appears as a gap in the data with a broad negative halo due to large metal stays and cables running into the ground. The other shows as a gap in the data with a small negative halo arising from the metal fittings at the top of the pole.

Uncertain

Two weakly negative linear anomalies orientated east to west across the centre of Field 5 match the location of a strip of grass mown perpendicular to the rest of the field, shown on various aerial images. It is unclear what this represents but the linear anomalies could represent shallow wheel ruts caused by modern agricultural equipment, though it is possible that one of the anomalies forms an extension to the utility in Field 6.

Ferrous anomalies

The survey has detected many individual dipolar anomalies scattered at random across the entire survey area. These will mostly result from ferrous materials in the topsoil, including discarded fragments of farming equipment, horseshoes and general rubbish. Field 1 has a denser distribution of these ferrous responses possibly arising from debris and hardcore related to the construction of the indoor riding school to the north-east of this field.

A dense collection of dipolar responses in the north-east of Field 1 is representative of an area of made ground which surrounds the indoor riding school. Two other ferrous scatters in the north of Field 5 represent two landscaped features, a mound and shallow pond, which are used as part of the show jumping course.

5 CONCLUSION

The magnetometer survey has been completed successfully across the whole of the site. A reasonably definite archaeological feature was detected in the west of the survey area comprising one end of a probable enclosure measuring c32m wide detected against the south-western edge of Field 2. This feature is not closely datable but ditched enclosures tend to be late prehistoric or Roman in date. Several other possible archaeological responses were also identified in the centre of the survey area with some fragmentary / incoherent responses in the south.

Several other linear features detected in Fields 2, 3, 4 and 5 may represent ditches but could also represent more modern features such as field drains. A few short sections of ridge and furrow were also detected in Fields 3 and 5 and match the locations of very low extant earthworks. Much of the 'noise' detected in Field 1 can be attributed to the construction of the indoor riding school to the north of the field.

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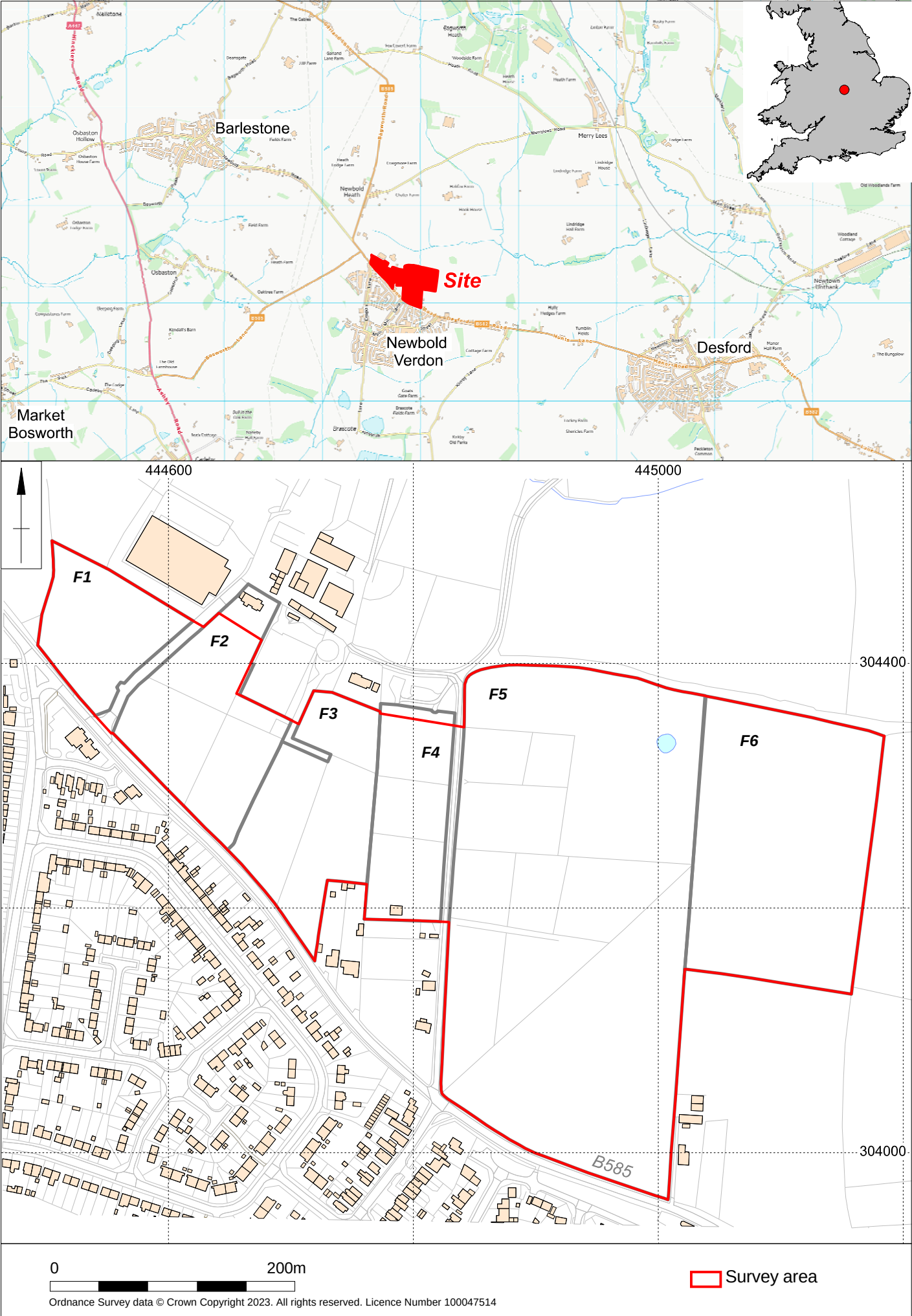
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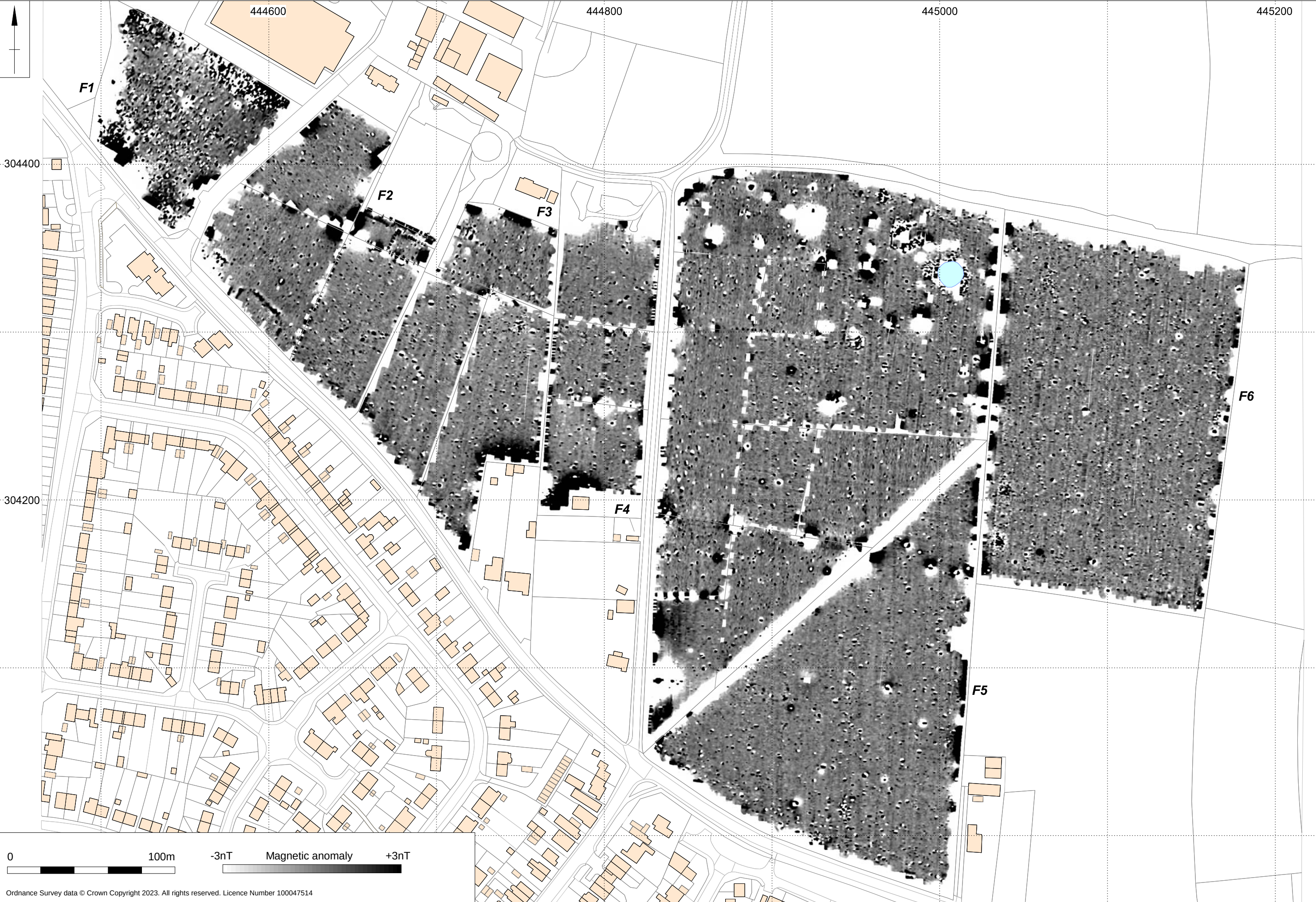
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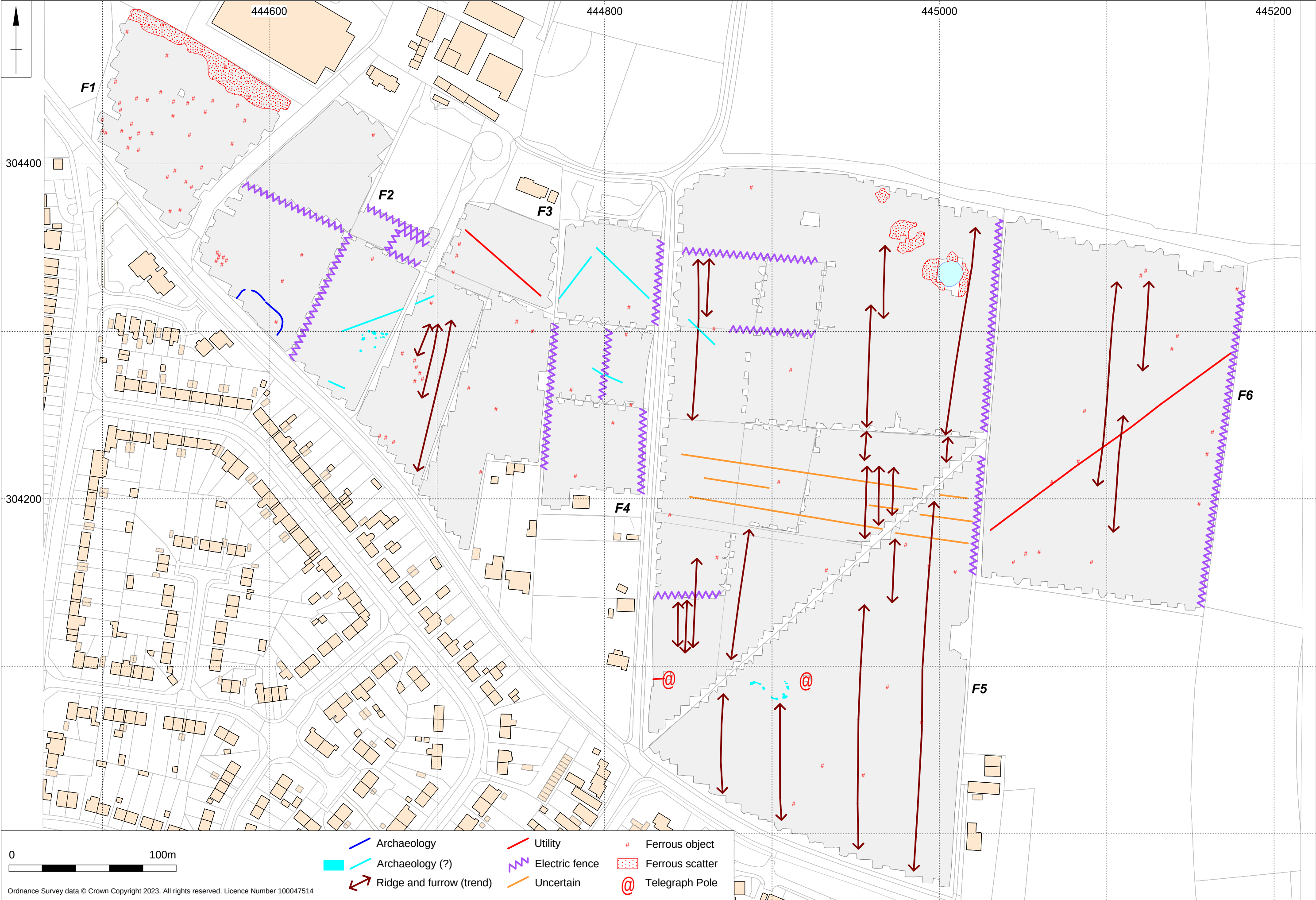
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