



Archaeological geophysical survey of land south of Spencers Wood Berkshire December 2023

Report No. 24/010

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Illustrator: Sean Emery



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Project Manager: John Walford

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Project: Spencers Wood (Geophysics)		OASIS No: molanort-521503	
ACTIVITY TYPE			
Project/Activity type	Geophysical survey		
Reason for investigation	Planning requirement: pre-application / Housing		
Development type	Residential		
Planning reference ID	-		
PROJECT LOCATION			
National grid ref	SU 717 660		
Site name	Spencers Wood		
REVIEWERS/ ADMIN			
HER for project	Berkshire 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:	08-12-2023
GEOPHYSICS			
Geology	London Clay Formation		
Land use (i.e. arable)	Arable; Grassland		
Survey type	Magnetometer survey		
Size of survey area	c37.5ha		
Instrumentation	Bartington Grad-01-1000L	Fluxgate – Multiple sensor	
Configuration	Pushed cart survey (6-probe)		
Spatial resolution	Traverse spacing	0.8m	Reading interval
Resolution (data values)	0.1nT		
BIBLIOGRAPHY			
Title	Archaeological geophysical survey of land south of Spencers Wood Stanton, Berkshire, December 2023		
Author(s)	Graham Arkley		
Publisher / place / date	MOLA Northampton / Northampton / 2024		
Report number	24/010		
Report release delay?	Six months		
PEOPLE			
Organisation	MOLA		
Project manager	John Walford		
Project supervisor	Adam Meadows		
Funding body	RPS Consulting UK Ltd		
KEYWORDS			
Monuments found/ date	House – medieval Ditch - undated		
RESULTS			
Description of outcomes	The survey detected two groups of possible ditches, one of which correlates with the site of a previously recorded tiled hearth, along with more convincing responses arising from former field boundaries and a pond. The survey also detected the route of a disused Ministry of Defence pipeline, as well groups of ceramic field drains and the inferred routes of smaller utilities. A pair of strong responses in the south-east of Field 2 may indicate pits or trenches of uncertain origin		
ARCHIVES			
Accession ID	None		
Finds Archive repository	None	Expected date of submission:	-
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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 c37.5ha to the south of Spencers Wood, Berkshire. The survey detected two groups of possible ditches, one of which correlates with the site of a previously recorded tiled hearth, along with more convincing responses arising from former field boundaries and a pond. The survey also detected the route of a disused Ministry of Defence pipeline, as well groups of ceramic field drains and the inferred routes of smaller utilities. A pair of strong responses in the south-east of Field 2 may indicate pits or trenches of uncertain origin.

1 INTRODUCTION

MOLA (Museum of London Archaeology) was commissioned by RPS Consulting UK and Ireland Ltd to undertake an archaeological geophysical survey (magnetometry) on c37.5ha of land to the south of Spencers Wood, Berkshire (NGR SU 717 660) (Fig 1). The purpose of the survey was to identify and map any archaeological remains that may be affected by a proposed residential development.

The survey was conducted between 4th and 8th of 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 digital element of the archive will be deposited with the Archaeology Data Service.

2 BACKGROUND

2.1 Location, topography and geology

The survey area covers three arable and two fallow fields to the south of Spencers Wood, bounded to the west by the B3349 / Basingstoke Road, with residential properties to the north and further arable fields to the south and east (Fig 1).

The survey area lies on an east-facing slope, with an elevation of c55m above Ordnance Datum (aOD) along the road in the west, dropping to c48m aOD in the east.

The solid geology of the survey area is recorded as clays and silts of the London Clay Formation, with no substantial overlying deposits (BGS 2023).

2.2 Historical and archaeological background

A Desk Based Assessment was compiled by CgMs Ltd (now RPS Consulting UK and Ireland Ltd) in 2016 (Bethell 2016). The findings of that report are summarised below.

Cropmarks are recorded in the southern portion of the survey area, indicating the buried archaeological remains of features of presumed prehistoric date (MWK1822; MWK1820; MWK1818; MWK1819; MWK1821). A further concentration of cropmarks is recorded between 70m and 300m south-east of the survey area, including a mix of linear features, enclosures and circular features that may be representative of hut circles (MWK1813-1817; MWK1823; MWK1826-1828; MWK1830). The possible date of the latter features ranges from the late Prehistoric period through to the Iron Age.

Small clusters of worked flints (MWK15273; MWK15272) and isolated flakes (MWK15274; MWK15275-15278) have been recovered from the south of the survey area. Similarly, a trio of flint blades were recovered from the centre of the area (MWK15266), a flint blade from the north-east (MWK15254) and further worked flints from the north (MWK15256).

A sherd of Roman pottery was recovered by fieldwalking in the south-west of the survey area (MWK15362). More substantive evidence of the Roman occupation is provided by sherds of Roman roof and floor tiles recovered during an evaluation of land c200m north of the survey area (MRM16755). Material dating from the early to late Roman period was also recovered immediately west of the survey area (MRM15934; MRM15936). The proximity of the Silchester Roman road, which passes c500m west of the survey area, should also be noted (MWK4813).

A Saxon spearhead has been recovered c450m north of the survey site (MWK8577) with other finds of pottery sherds recovered from a ditch and a gully excavated c250m north of the survey area (MWM16758). This implies that some localised settlement of Saxon age might be present beneath present-day Spencers Wood.

Medieval pottery sherds have been recovered from the south-western portion of the survey area (MWK15362). A separate concentration of pottery sherds was recorded in the north-eastern half of the survey area, where an excavation found tumbled flints and a tile hearth of 12th to 13th century date, possibly comprising the remains of a dwelling (MWK1115).

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 specifically designed for that purpose.

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 (range +/-3nT) which have been rotated and scaled to fit against topographic base-mapping at a scale of 1:2500 (Figs 2 and 3). Interpretive drawings (Figs 4 and 5) highlight notable anomalies for discussion, but omit some minor anomalies, including magnetic halos and the majority of small ferrous dipoles. Minimally processed data plots are presented at a range of +/-10nT (Figs 6 and 7) as a comparison to the final processed results.

4 SURVEY RESULTS

4.1 Archaeology

The most notable archaeological features lie in the eastern part of Field 2, where several weak and intermittent linear anomalies are thought to represent parts of a rectilinear pattern of ditches defining a small plot of land (Fig 4). Within this there are some smaller and less coherent anomalies of obscure significance. These possible remains lie c50m south of the recorded location of a medieval hearth (MWK1115), although the location of that record is only given to an accuracy of 100m.

One short linear anomaly in the far south-west of the survey area (Field 5) may also represent a length of ditch and the same interpretation is suggested (Fig 5), with less confidence, for three short, ill-defined linear anomalies in the south-eastern corner of Field 2 (Fig 4).

4.2 Former field boundaries and ponds

Several linear responses have been detected in the north-east of Field 1 and centre of Field 2, indicative of field boundary ditches and grubbed-out hedgerows (Fig 4). These have been directly matched to former field boundaries on historic mapping. One of these, a pair of responses in the north-east of Field 1, correlates with a former trackway that formed part of the Parliamentary County Division Boundary noted on the available historic mapping. A further anomaly in the west of Field 3 is more continuous and probably indicates a boundary ditch (Fig 5).

The survey has also detected an elongated oval area of jumbled, moderate-sized ferrous anomalies in the east of Field 2 (Fig 4). This is typical of the response from a pond or quarry pit backfilled with large pieces of scrap material or rubble, and correlates to a pond depicted on the 1872 Ordnance Survey map. However, neither the pond nor the possible ditches mentioned above feature on the 1838 Tithe map.

4.3 Field drains

The survey has detected several sets of closely spaced parallel linear features exhibiting a weak alternating response along their length. In some cases, such as the east of Field 2, the survey has only detected evenly spaced parallel linear anomalies, while in other places, such as the near the centre of Field 2, they are arranged in dendritic or “herringbone” formations upon a central “trunk” (Fig 4). These are characteristic formats for relatively modern ceramic field drains.

4.4 Ferrous material

General

The survey has detected many individual dipolar anomalies scattered at random across the entire survey area. These will mostly result from trivial ferrous scrap in the topsoil, including discarded fragments of farming equipment and general rubbish. Only a representative sample of the largest and strongest responses have been flagged on the interpretations (Figs 4 and 5).

Ferrous scatters

Two clusters of small dipolar anomalies have been noted at the western end of Fields 1 and 2 (Fig 4). Such clusters commonly arise from either consolidation of boggy ground or around the sites of demolished buildings. In this case the clusters are immediately adjacent to surviving concrete hard-standing for recently demolished sheds.

4.5 Modern services

Buried utilities

Ferrous pipes often produce distinctive high intensity linear anomalies with segments of alternating magnetic polarity. The data includes two very strong examples of this, indicating two pipes lying immediately alongside each other and crossing Fields 1 and 2 from east to west, with one response diverging slightly southwards from the other pipe in the east (Fig 4). Utility records provided by MOLA's client suggest that these correspond with the route of a decommissioned Ministry of Defence (MoD) / Defence Infrastructure Organisation (DIO) pipe, although that source records just one pipe extending part-way into the east of the site, rather than two pipes crossing its entire width.

The survey has also detected two short anomalies of a similar type indicating the intermittent course of another ferrous pipe, aligned north-west to south-east in the south-east of Field 2 (Fig 4).

Non-ferrous utilities are also occasionally detected where their route is revealed by the intermittent responses arising from connectors or inspection hatches. One example of this may be seen in the east of Field 2, where a series of discrete anomalies, primarily positive although some dipolar, form a north-west to south-east alignment across the larger pipeline (Fig 4). This correlates with a large T-shaped anomaly seen on cropmarks from 2018 (GoogleEarth).

Overhead utilities

Overhead utilities held by wooden telegraph poles cross the survey area. Some of the pole locations are marked by very weak and diffuse dipoles or negative responses arising from the metal brackets on the tops of the poles, whilst others have a more normal dipolar response arising from metal sockets or stays at ground level.

4.6 Geology

The survey has detected short, irregular, sinuous positive linear anomalies across much of Field 4 and a more densely concentrated cluster in the centre of Field 2 (Figs 4 and 5). These likely arise from variations in the clay geology, while a trio of broader responses in the east of Field 2 possibly indicate portions of a former stream or similar shallow geological feature.

4.7 Uncertain

A well-defined pair of short, magnetically positive linear anomalies within a single tight negative halo lie in the south-east of Field 2, positioned close to and respecting the alignment of the boundary fence (Fig 4). The responses could indicate the fragmentary remains of an obsolete utility. Alternatively, they show some similarity to “anomaly 12” identified in a geophysical survey surrounding Great Thickthorn Farm in Bedfordshire (Davies 2016) which later trenching found to arise from the backfill of suspected modern refuse pits (Hainsworth *et al* 2017).

5 CONCLUSION

The survey has detected a small rectilinear arrangement of ditches in the east of Field 2. This lies within 50m of the reported location of a medieval hearth and stone scatter (MWK1115) and, as the latter features were only recorded to the nearest 100m grid intersection, it is a reasonable supposition that the ditches and the hearth may be related. In this scenario, the ditches might define the plot of land associated with a cottage or similarly low-status medieval building. Three short lengths of further ditches have also been detected in the south-east of Field 2.

It is worth noting that the survey data is notably “quiet”, and many of the archaeological responses that have been detected are substantially weaker than could be expected elsewhere in the country. This is principally due to the underlying geology of London Clay, which is widely recognised as problematic for geophysical survey (EH 2008, 15) and which rarely supports the development of soils with strong magnetic enhancements.

The detection of features over London Clay or other problematic geologies can be aided by habitation effect, where ditches in immediate proximity to areas of prolonged occupation are gradually filled with domestic waste, which typically generates an increased magnetic response. The detection of a possible medieval house plot may reflect the operation of this effect, with the lack of convincing archaeological responses elsewhere suggesting that the extent of occupation was limited, and the majority of the survey area was largely subject to low-intensity agricultural use.

Apart from the few archaeological features, the survey has detected one pair of anomalies in the south-east of Field 2 which possibly indicate a pair of short trenches backfilled with a strongly magnetic material. These are likely to be relatively modern given the strength of the response and the placement of the features square to the field boundary.

The survey has also identified the route of two adjacent buried pipes aligned east to west through Fields 1 and 2 (Fig 4). Utility information supplied by the client depicts a single disused MoD / DIO pipeline on a similar alignment, extending approximately 400m into the eastern end of the site. However, the survey data reveals that two pipes are present and that they cross the entire width of the area surveyed (Fig 4).

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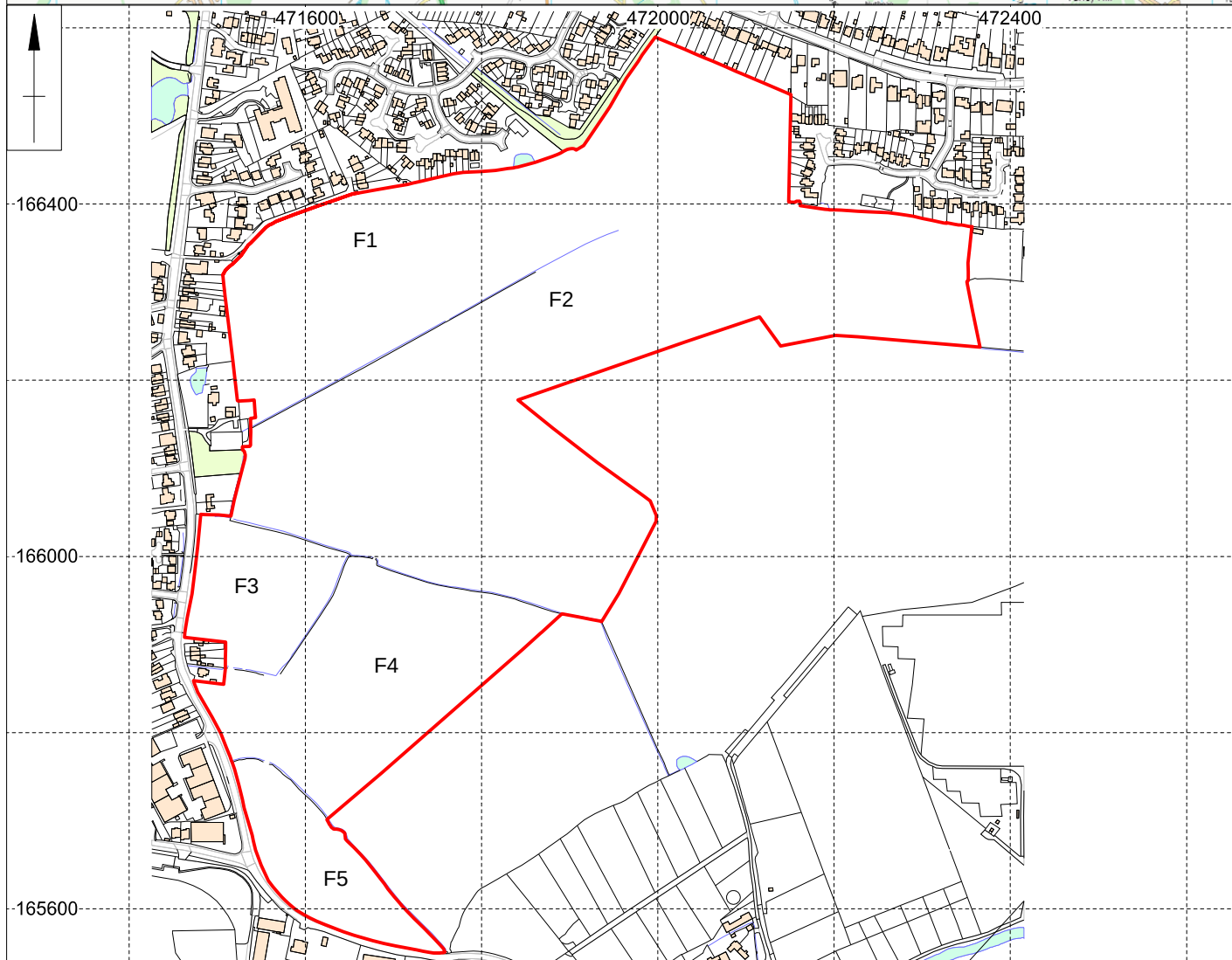
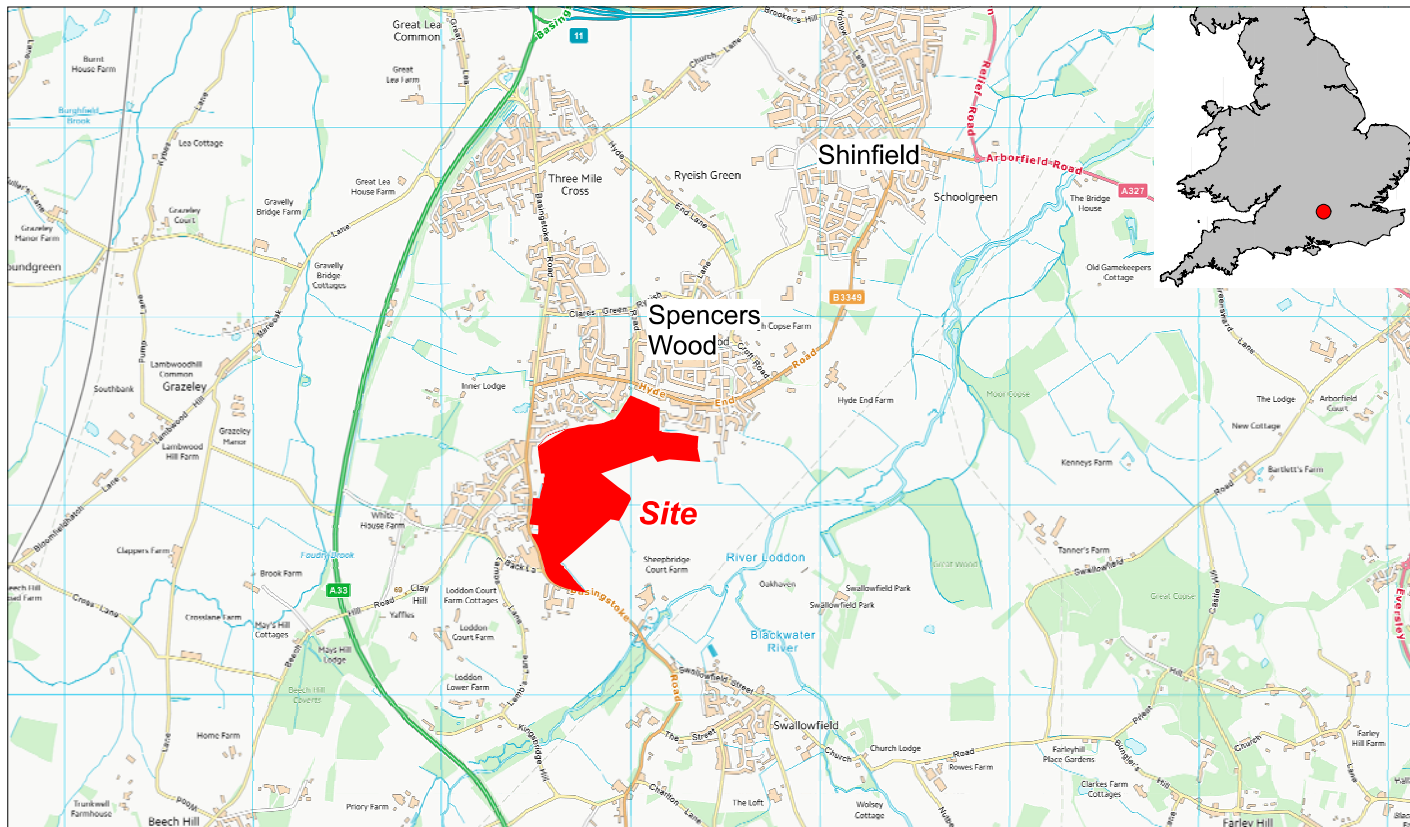
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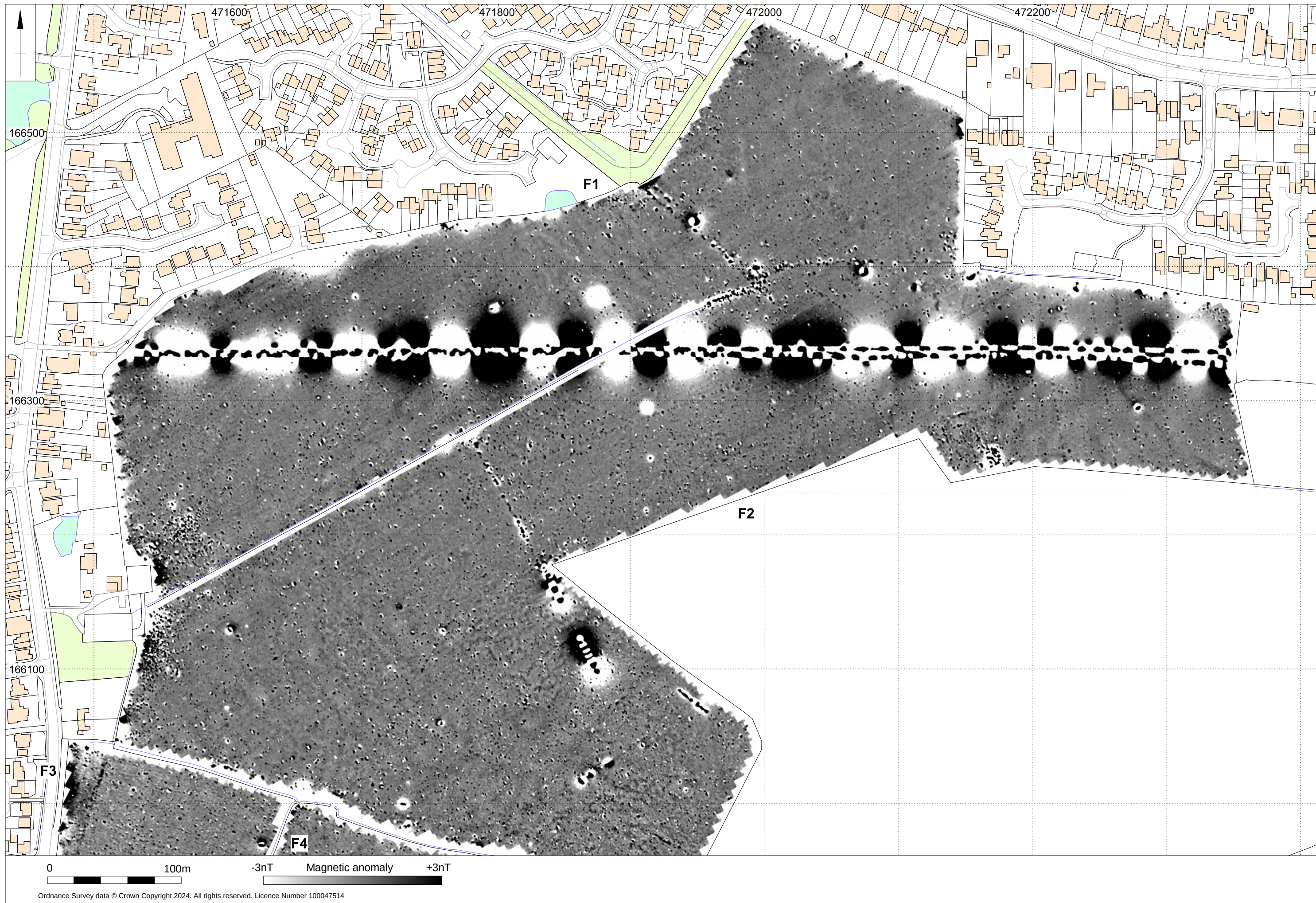
MOLA

January 2024



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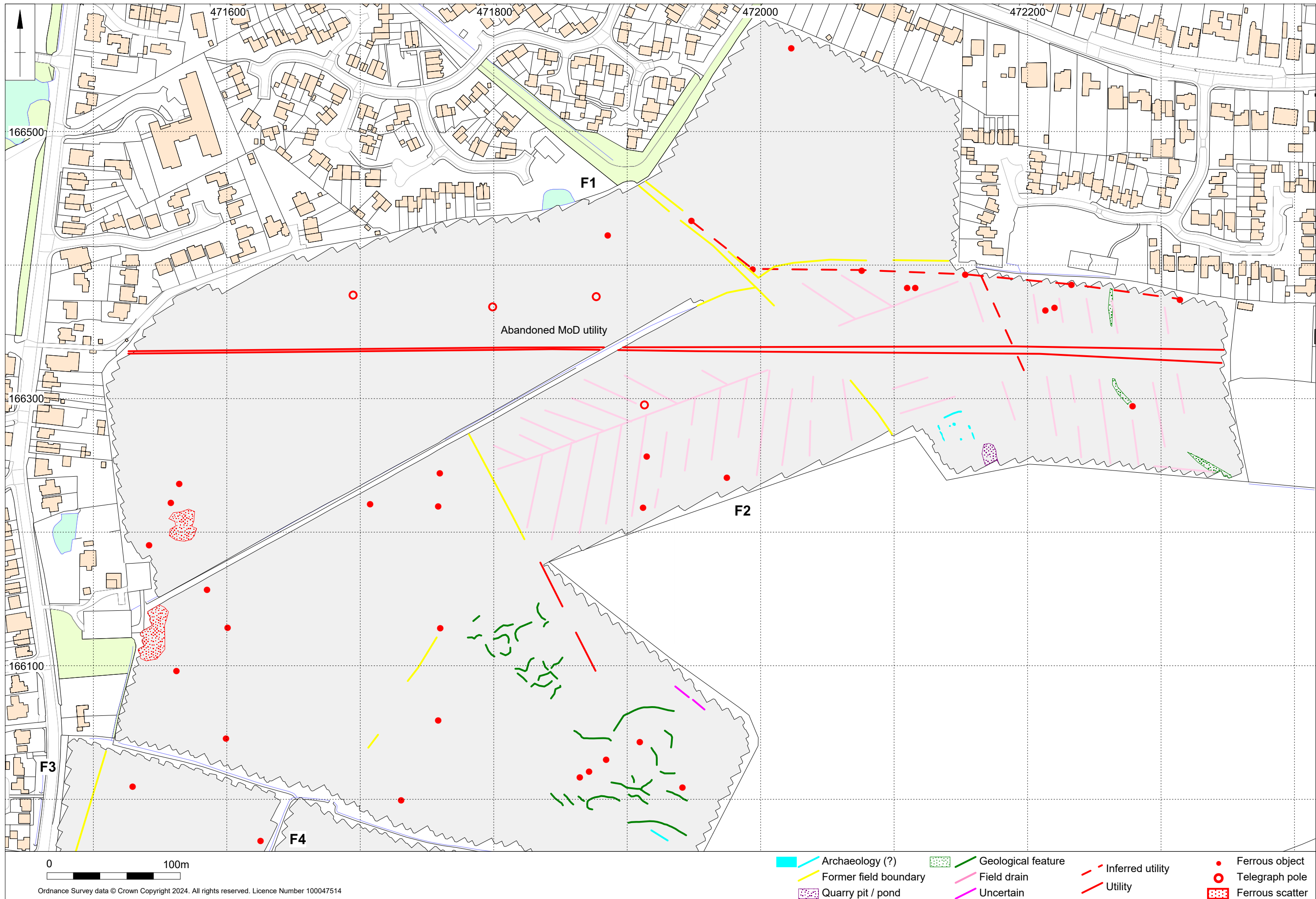
Survey area

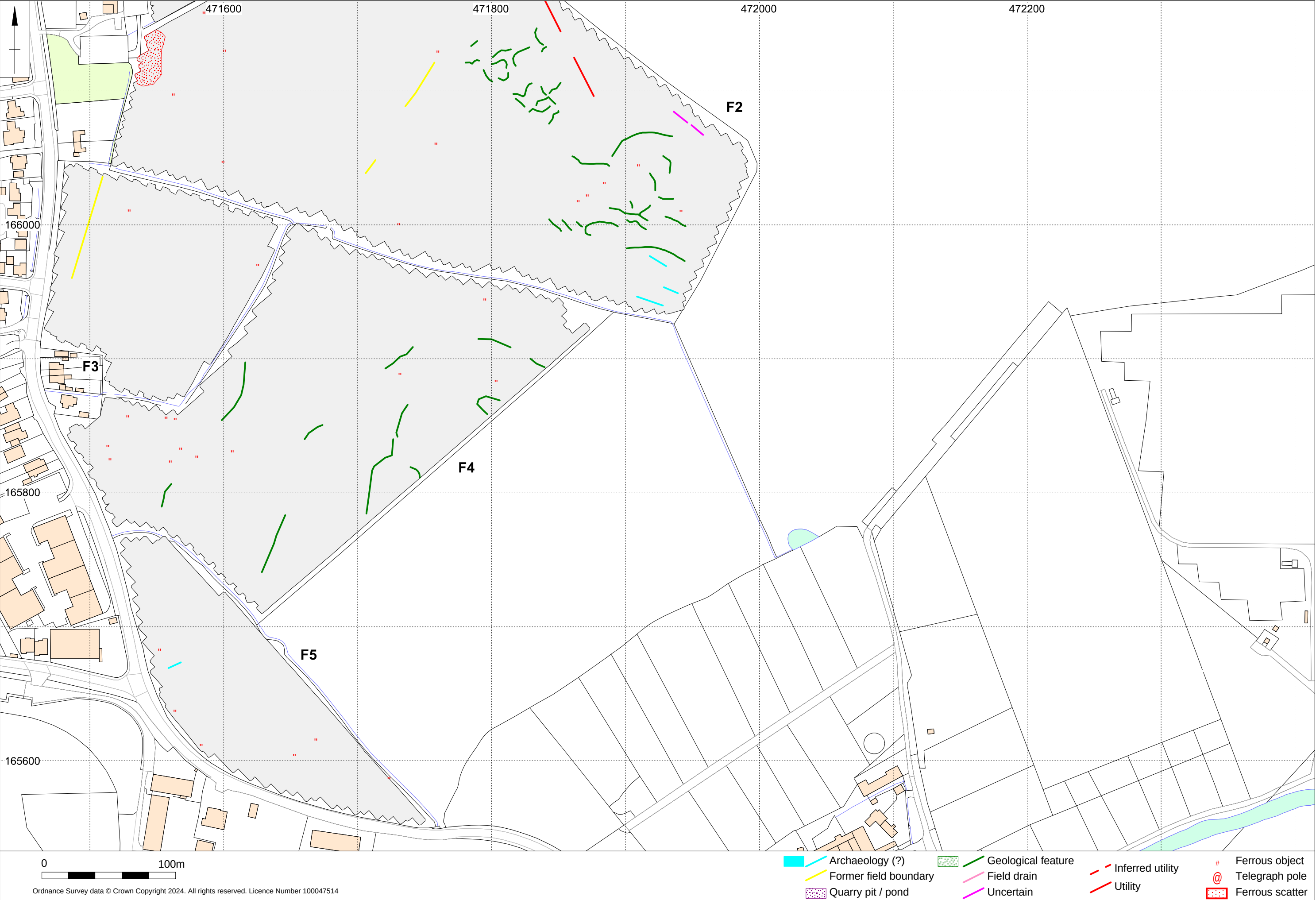




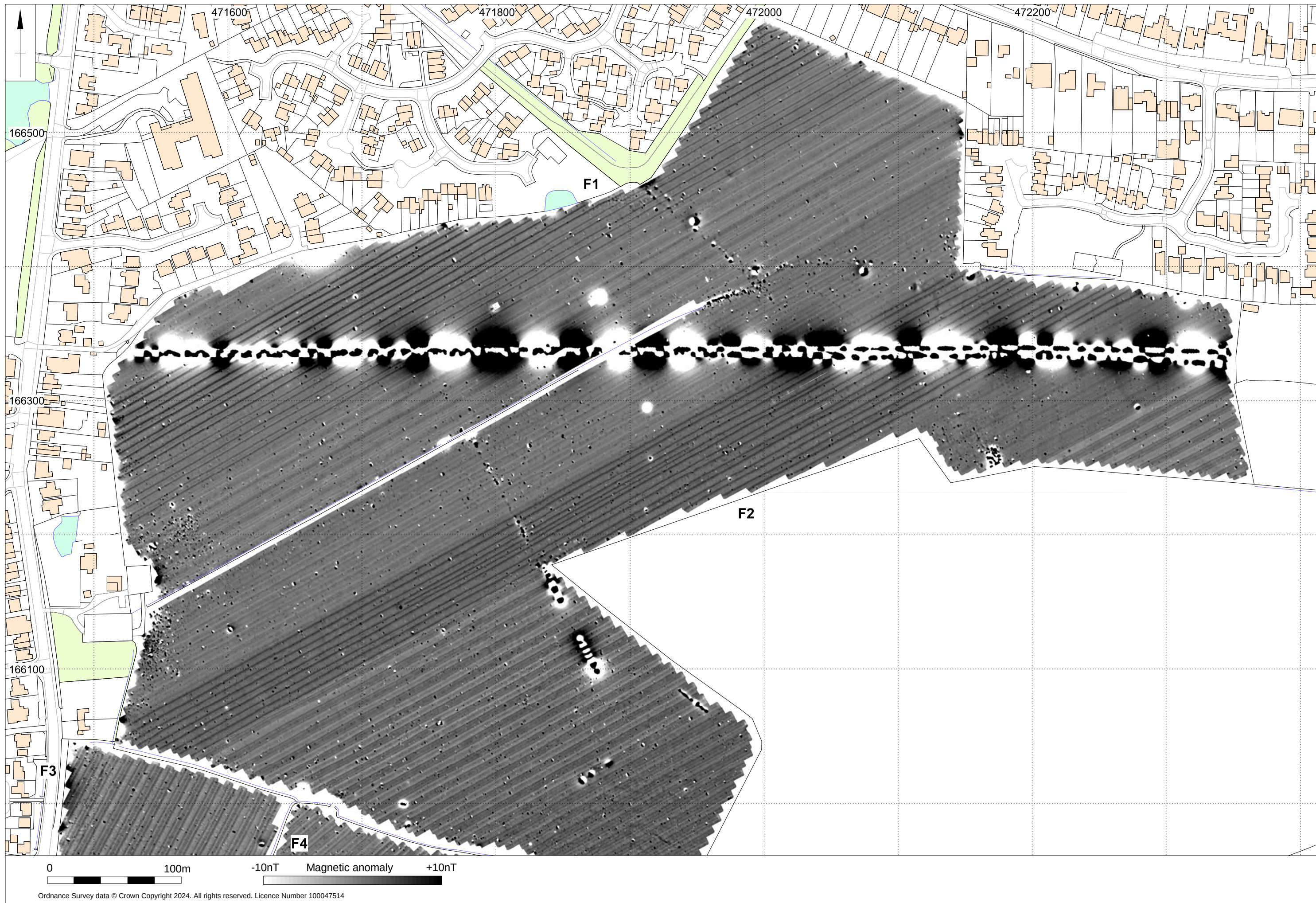
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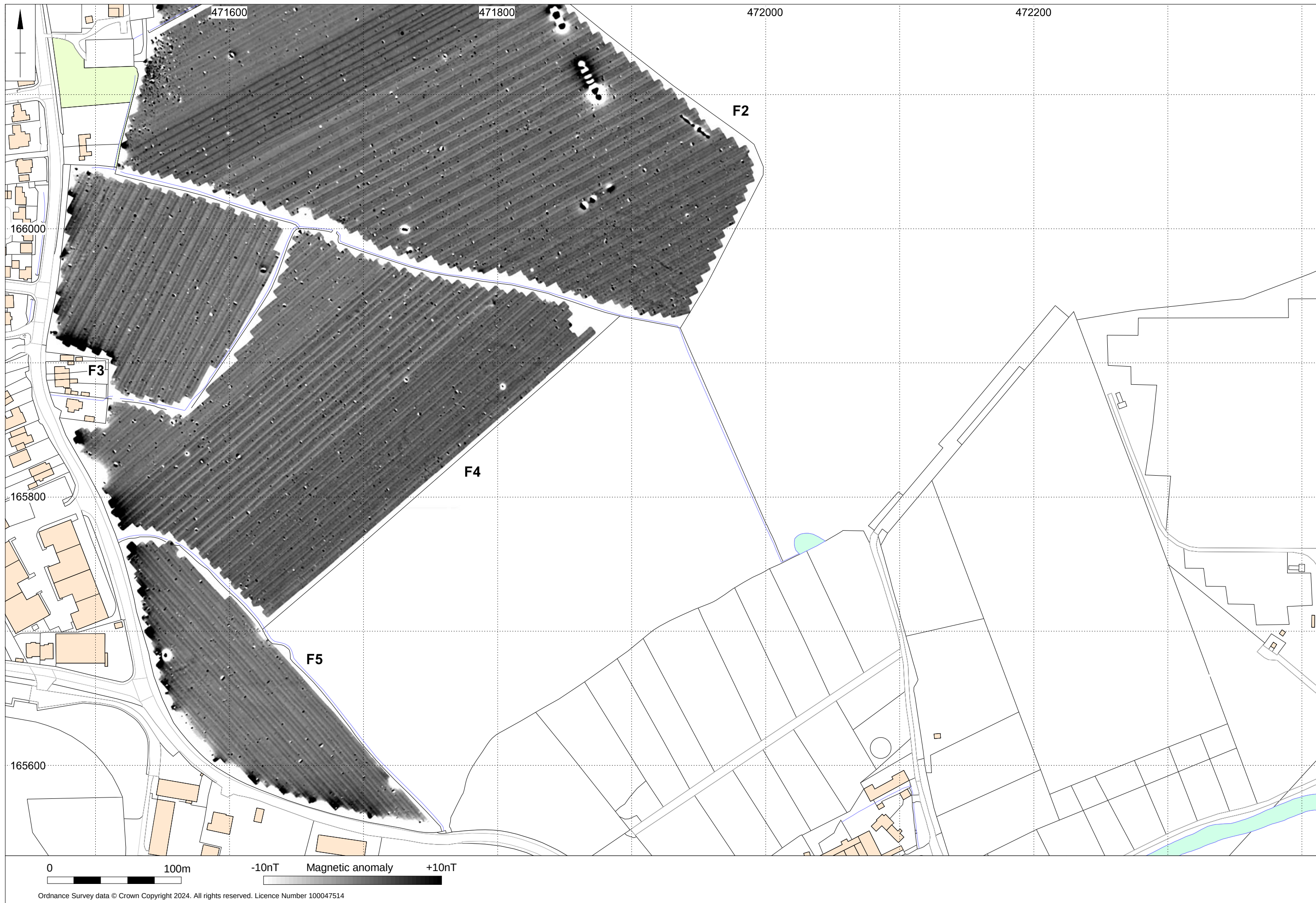
Magnetometer survey results Fig 3





Scale 1:2500 (A3)







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