



**Archaeological geophysical survey on land
north of Normandy Way, Hinckley
Leicestershire
January – February 2022**

Accession No. X.A13.2022

Report No. 22/014

Author and Illustrator: Graham Arkley



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Project Manager: John Walford

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Author and illustrator: Graham Arkley

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

*MOLA Northampton is a company limited by guarantee registered in England and Wales
with company registration number 8727508 and charity registration number 1155198.
Registered office: Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED.*

STAFF

Project Manager: John Walford MSc

Supervisor: Graham Arkley MSc PCIfA

Assistant: Daniel Whatton

Text: Graham Arkley

Illustrations: Graham Arkley

Project: Hinckley, Normandy Way		OASIS No: molanort1-504821	
ACTIVITY TYPE			
Project/Activity type	Geophysical survey		
Reason for investigation	Planning: Pre application		
Development type	Unconfirmed		
Planning reference ID	-		
PROJECT LOCATION			
National grid ref	SP 421 956		
Site name	Hinckley, Normandy Way		
REVIEWERS/ ADMIN			
HER for project	Leicestershire		
National organisation	Historic England		
WORK UNDERTAKEN			
Methodological summary	Magnetometer survey with a cart-mounted array of Bartington Grad-01-1000L fluxgate gradiometers.		
Previous work?	None	Future works?	Unknown
Dates - Start date:	24-01-2022	End date:	02-02-2022
GEOPHYSICS			
Geology	Triassic Mercia mudstone with drift of Bosworth clay, Wolston sand and gravels and Oadby diamicton. Alluvium adjacent to eastern boundary.		
Land use (i.e. arable)	Cattle pasture		
Survey type	Magnetometer survey		
Size of survey area	c25.0ha		
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 on land north of Normandy Way, Hinckley Leicestershire, January – February 2022		
Author(s)	Graham Arkley		
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Report release delay?	Six months		
PEOPLE			
Organisation	MOLA		
Project manager	John Walford		
Project supervisor	Graham Arkley		
Funding body	RPS Ltd		
KEYWORDS			
Monuments found/ date	Ditches – undated Windmill - undated Ridge and Furrow – medieval to post-medieval		
RESULTS			
Description of outcomes	<i>Scattered archaeological remains have been detected in the north-east and centre of the survey area. They comprise an unusual cross-shaped anomaly and neighbouring ring-ditch, possibly indicating windmill bases, as well as boundary ditches and other linear and curvilinear features of unknown date. Evidence for medieval or post-medieval ridge and furrow cultivation and later field drain systems have been detected across the whole survey area. At least one buried utility has also been located.</i>		
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ABSTRACT

MOLA (Museum of London Archaeology) was commissioned to undertake a magnetometer survey of c25.0ha of land across six fields lying north of Normandy Way, Hinckley, Leicestershire.

Scattered archaeological remains have been detected in the north-east and centre of the survey area. They comprise an unusual cross-shaped anomaly and neighbouring ring-ditch, possibly indicating windmill bases, as well as boundary ditches and other linear and curvilinear features of unknown date. Evidence for medieval or post-medieval ridge and furrow cultivation and later field drain systems have been detected across the whole survey area. At least one buried utility has also been located.

1 INTRODUCTION

MOLA (Museum of London Archaeology) was commissioned by RPS Group to undertake an archaeological geophysical survey across six fields lying north of Normandy Way, Hinckley, Leicestershire (NGR SP 421 956) (Fig 1). The purpose of the survey was to identify and map any archaeological remains that may be affected by potential development of the land.

The survey comprised a magnetometer survey and was conducted over seven days between 26th January and 2nd February 2022. While no formal brief has been issued, the works were conducted under a Written Scheme of Investigation (MOLA 2022) in anticipation of a requirement from Leicestershire and Rutland Historic Environment Team. The survey was also conducted in accordance with Chartered Institute for Archaeologists and European Archaeological Council guidelines (CIfA 2014 and Schmidt *et al* 2015).

2 BACKGROUND

2.1 Location, geology and topography

This survey and report comprises six fields to the north of Normandy Way, Hinckley: one arable field immediately west of Stoke Road (Field 1, Fig 1), and five pasture fields bounded to the west by Stoke Road and to the east by a small brook, (Fields 2-6, Fig 1). The area is surrounded by hedgerows and crossed by a public right of way between Middlefield Farm and Normandy Way. Further fields lie to the north and east. At the time of survey the fields lay under c10cm grass, with a small area at the shared corner of Fields 2, 3, 4 and 5, which was unsurveyable due to mounds of building rubble.

This survey area sits astride a ridge, with a west-facing gradual slope rising from 106m above Ordnance Datum (aOD) along Stoke Road to 118m aOD at the northern corner of Field 4, before descending again to c108m aOD along the eastern brook.

The British Geological Survey (BGS) records an underlying geology of Triassic Mercia mudstone, which is overlain by Oadby Diamicton, and is in turn overlain by bands of Bosworth clay and Wolston sand and gravels. A narrow band of Alluvium (sands, clay and gravels) has also been recorded adjacent to the brook which bounds the eastern end of the site (BGS 2022).

2.2 Historical and archaeological background

The client has provided MOLA with data from the Leicestershire and Rutland Historic Environment Record (HER) covering the survey area. This record indicated no designated Listed Buildings or Scheduled Monuments within the survey area, nor any non-designated known monuments. The following information summarises the HER record, supplemented with relevant archaeological and cartographic resources from the surrounding area.

MOLA previously carried out work comprising a geophysical survey (Walford 2014) and archaeological trial trench evaluation (Elston and Simmonds 2015) c1.1km south-west of the survey area. This work discovered two enclosures, one of Roman origin, along with a trackway, cobbled surfaces, ditches and pits. A fieldwalking survey was completed in conjunction with the geophysical survey, recovering pottery from the Roman, medieval and post-medieval periods and worked flint from the late Neolithic or early Bronze Age (Wolframm-Murray 2015).

An assemblage of flint artefacts was recovered during fieldwalking c800m south-west of the survey area completed between 1976 and 1978, with at least six identified as scrapers. Most of the assemblage was dated to the late Neolithic to early Bronze Age (MLE7056). A later fieldwalking survey completed in 2002 to 2003, c350m north-west of the previous one, discovered worked flint and a dense scatter of medieval and post medieval pottery along with a sherd of possible Anglo-Saxon pottery (MLE9622 and MLE9621).

An archaeological evaluation at St Mary's Court, Barwell, c2km north-east of the survey area, discovered an Iron Age roundhouse along with Roman finds and a possible medieval fishpond (Hurford 2006).

Two curvilinear features were discovered during a geophysical survey c900m north of the survey area off Rogue's Lane, although no trace of the features identified in the survey were found during subsequent trial trench evaluation (MLE17610).

Further cropmarks indicating an enclosure and a ring-shaped feature were seen on aerial photographs during an assessment undertaken for the Hinckley northern perimeter road, now Normandy Way (Liddle 1993). Subsequent watching brief during construction of the Normandy Way bypass (ELE6274) did not identify any trace of archaeological remains and suggested a possible natural origin for these cropmarks, although it also noted conditions were poor and there remains the possibility that archaeological evidence has remained undiscovered.

Two Grade II listed farmhouses lie within 1km of the survey area. Wykin Hall Farmhouse (MLE12978), first built in the 17th century, is c800m west of the area and the 18th-century Barwell House Farm (MLE12977) is located c850m to the north-east, with further non-listed farmsteads in the vicinity. Early to mid 20th-century OS (Ordnance Survey) maps, dating up until the late 1960s, show that a now-demolished farmstead named Neale's Farm was formerly located within the survey area close to Stoke Lane (NLS 2022).

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 consistent 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 (Fig 5). 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, and at a range of $\pm 3\text{nT}$ (Figs 2 and 3). An interpretive overlay highlights notable anomalies for discussion, presented both over the greyscale (Fig 3) and without the greyscale (Fig 4). A minimally processed data plot for the magnetometer survey is presented at a scale of $\pm 10\text{nT}$ (Fig 5) as a comparison to the final de-striped results.

4 SURVEY RESULTS

The survey has detected a cross-shaped, magnetically positive anomaly measuring c7m x 7m in the east of Field 4. This lies immediately south-east of sections of a curvilinear anomaly with an indicative diameter of c15m, although the north-eastern extent of this circular feature is partially obscured by the response from a nearby telegraph pole. Although speculative, their position atop the high ground lends credence to the possibility that these indicate the cross-tree (support beam) trench for a post mill and the ring ditch around a later tower mill, although no mapped evidence has been found to corroborate this.

Strong linear responses along the south-east of Fields 4 and 6, and further sections of linear anomalies crossing the north-east of Fields 5 and 6, correspond with field boundaries depicted on historical OS mapping (NLS 2022). It is interesting to note that no significant response has been detected in Field 5 over the course of the former Middlefield Lane, which partially survives as the trackway between fields 4 and 6. This may be because the former lane followed the ridge of a plough headland and lacked any side-ditches or other magnetically detectable elements.

The survey has also detected a number of weak linear anomalies in Fields 4 and 5 which possibly have an archaeological origin. The pair of parallel responses in the north may indicate sections of ditches flanking an east to west trackway, while the lone section noted in Field 4 clearly cannot be attributed to either the ridge and furrow or later field drain systems. A rectilinear set of anomalies forming an open box along the south-east edge of Field 5 could relate to a small, ditched enclosure.

Multiple sets of weakly positive, gently curving parallel linear anomalies have been detected across the survey area. These respect the historically mapped field boundaries and exhibit the classic reverse-S shape of medieval or post-medieval ridge and furrow. These broadly lie south-west to north-east, except for very short north-west to south-east sections detected perpendicular to the boundary with Normandy Way.

The survey has detected linear collections of weak anomalies in Fields 2, 3 and 4, indicative of ceramic field drain systems. Some, particularly in Field 2, follow the course of the ridge and furrow anomalies; it seems probable that these were lain within extant furrows. Further sections, particularly those in the west of Field 1 and the south of Field 3, yield a markedly stronger response than elsewhere, suggesting a non-ceramic material such as soakaways with hardcore containing a significant ferrous component.

A much stronger linear response with alternating polarity in the southern corner of Field 6 indicates a buried utility pipe. A series of large haloes crosses the survey area c40-60m from the boundary with Normandy Way, correlating with wooden telegraph poles carrying overhead wires. A spur of this extends north-west across Fields 4 and 5 towards Middlefield Farm.

Small magnetic dipoles have been detected across the survey area, caused by ferrous objects in the ploughsoil, most of which will be insignificant pieces of rubbish and agricultural scrap. A large collection of strong dipolar responses in the south-west of Field 5 indicates a spread of building rubble from the former Neal's Farm. Two very small groups of weaker dipoles in the northeast may indicate dumps of material with a reasonably high ferrous component.

The survey data also shows very subtle changes in magnetic response, broadly aligned north to south across the field and corresponding approximately to the mapped edges of the deposits of sands and gravels (BGS 2022). A scatter of discrete positive anomalies across Fields 5 and 6 probably indicate lesser variations in the underlying geology, although there is a possibility that some might represent man-made pits. Some short, linear anomalies in the north-west of Field 5, close to Middlefield Farm, may also have a geological origin. A pattern of speckling in the east corresponds with the level ground near the brook, and likely relates to the alluvium recorded by the BGS.

5 CONCLUSION

The survey has detected a small cross-shaped feature which is suspected to be a trench for the 'cross-tree' foundation of a medieval or later windmill. This interpretation is lent credibility by the appropriately exposed and windy aspect of the Hinckley site, and fundamentally rests on the similarity of the detected feature to a recently excavated post mill at Bulkington (Preece 2021). Further windmill cross-tree foundations have also been uncovered during excavations at Tansor in Northamptonshire (Chapman 1997), Humberstone in Leicestershire (Thomas 2008) and Fernwood in Nottinghamshire (Shaffrey 2020).

The cited examples of windmills were each surrounded by ring ditches. The survey data does not confirm that the Hinckley example was similarly surrounded, but there is possible evidence for a ring ditch nearby to its north. This might indicate two separate phases of windmill on the site, perhaps a post-mill with a cross tree and a subsequent tower mill with a surrounding ditch but no detectable foundation, though such a suggestion is inevitably rather speculative.

Elsewhere, the survey has detected a few scattered features in the centre of Field 4 and north-east of Field 5 which may suggest discrete short ditches and pits. The date of these features is unknown, but they do not match with any known features from historic OS maps of the area. There are, in contrast, several strong responses from boundary ditches in the south-east and east which correlate with former field boundaries depicted on early 20th-century mapping (NLS 2022).

Medieval or post medieval ridge and furrow have also been detected across the survey area, along with multiple iterations of field drains. Although widespread and well-defined elsewhere, it may be significant that there is an area devoid of ridge and furrow around the putative windmills.

Other features detected by the survey include some weak geological anomalies, corresponding to the changes in bedrock recorded by the BGS and probable alluvium along the eastern brook, a set of anomalies corresponding to extant telegraph poles and part of an underground utility.

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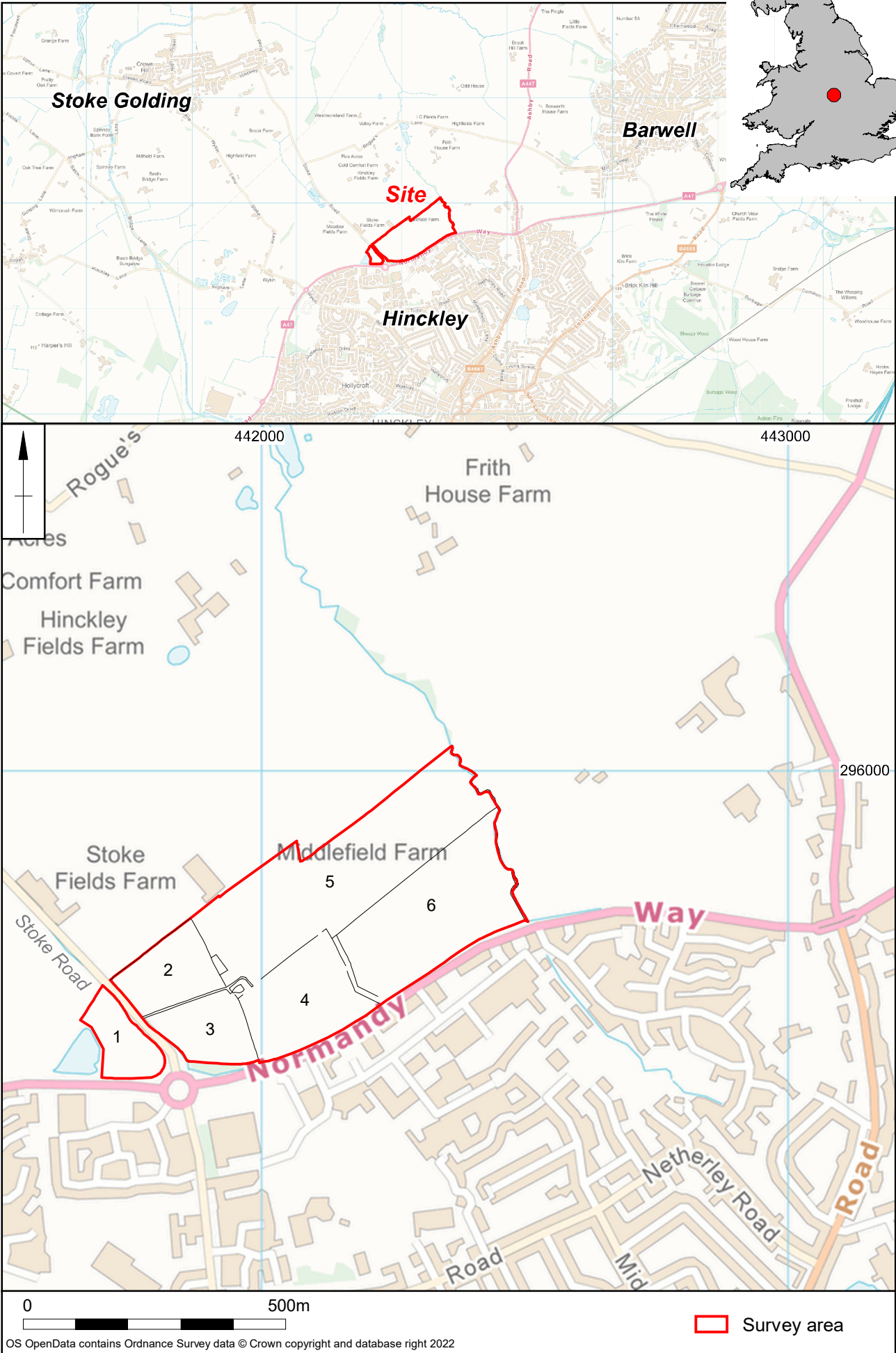
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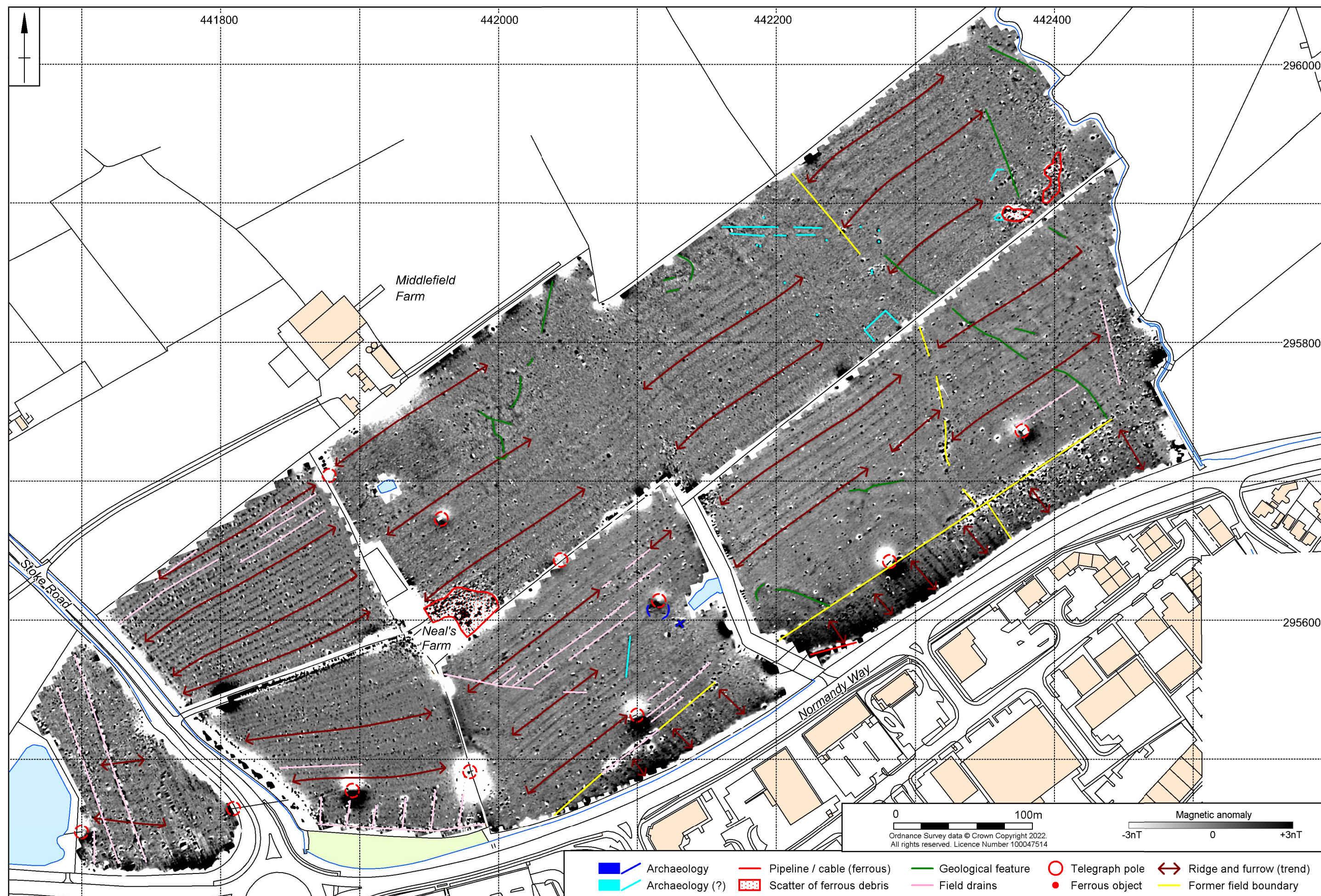
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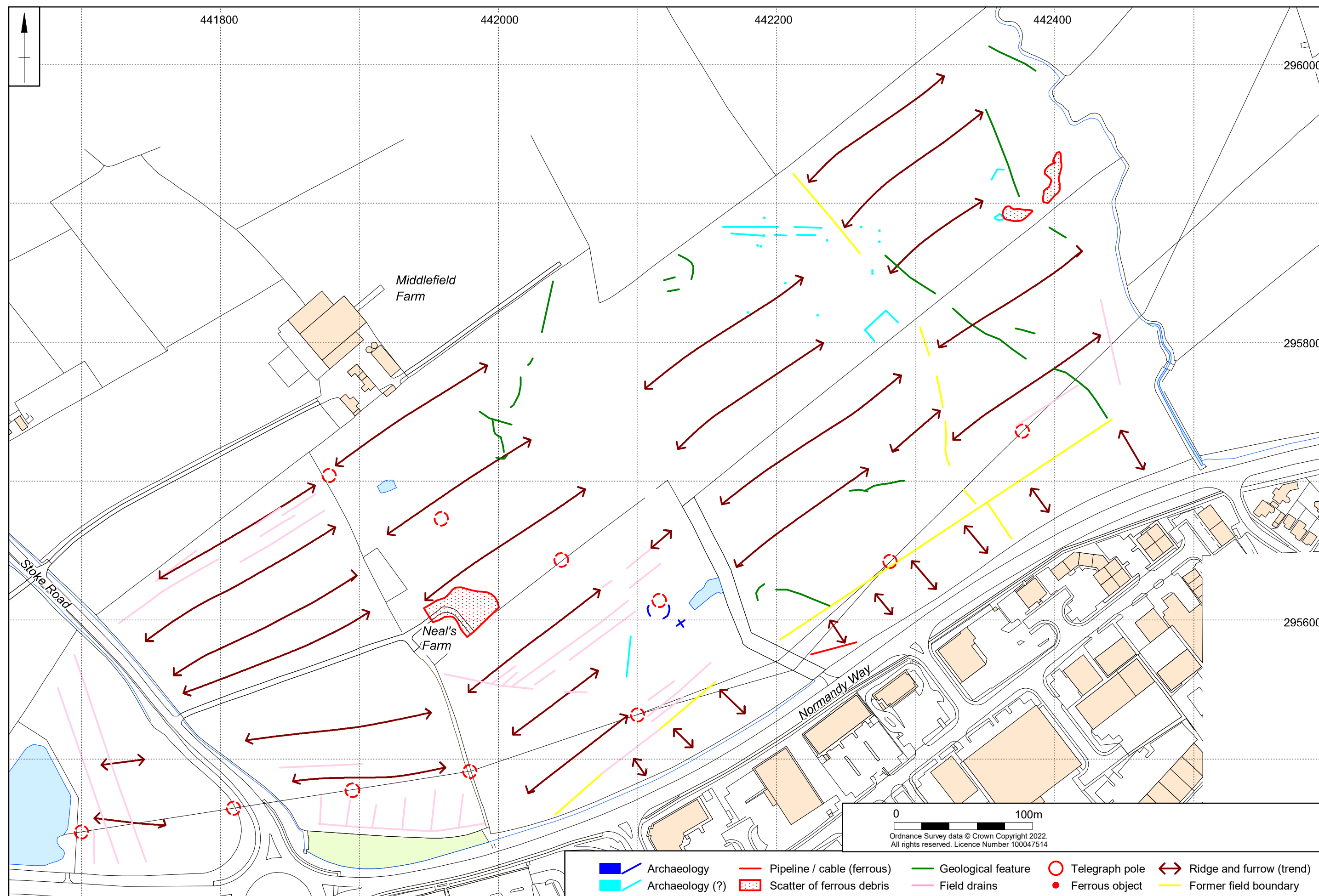


Scale 1:10,000 (A4)

Site location Fig 1











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