

Archaeological geophysical survey at Anstey Lane, Groby Leicestershire May 2022

Accession No. X.A76.2022

Report No. 22/057

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Project: Groby, Anstey L	ane	OASIS No: molanort1-506846		
ACTIVITY TYPE				
Project/Activity type	Geophysical survey			
Reason for investigation	Planning: Pre application			
Development type	Industrial building			
Planning reference ID	-			
PROJECT LOCATION	l			
National grid rof	SK 535 078			
Site name	Groby Apstey Lane			
	Globy, Alistey Lane			
	Leisestershire and Dutland Historia	Environment Decord		
National organisation	Leicestersnire and Rutiand Historic	Environment Record		
WORK UNDERTAKEN				
Methodological summary	Magnetometer survey with a cart- 1000L fluxgate gradiometers.	mounted array of Bar	tington Grad-01-	
Previous work?	Yes	Future works?	Yes	
Dates - Start date:	05-05-2022	End date:	16-05-2022	
GEOPHYSICS				
	Edwalton Member - Sidmouth Muc	Istone formation Sune	rficial denosits:	
Geology	Oadby Diamicton, Thrussington Dia	amicton, Alluvium	nicial deposits.	
Land use (i.e. arable)	Arable			
Survey type	Magnetometer survey			
Size of survey area	c57ha			
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				
	Archaeological geophysical survey	at Anstev Lane. Groby	. Leicestershire.	
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Author(s)	Graham Arkley and Chris Manktelo	W		
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Report release delay?	Six months			
PEOPLE				
Organisation	MOLA			
Project manager	John Walford			
Project supervisor	Chris Manktelow			
Funding body	IM Properties PLC			
KEYWORDS				
	Enclosure – Iron Age and Roman			
	Possible kiln – Roman?			
Monuments found/ date	Ring ditch – Undated (Late prehistoric?)			
	Ridge and furrow – Medieval			
RESULTS				
	Six clusters of archaeological rem	ains were detected ac	cross the survey	
	area. They chiefly comprised enclo	sures and ring ditches	, with scatters of	
	pits and at least one possible kiln also present. Some fragmentary ditches			
Description of outcomes	of unknown dates lay around the cores of activity. Evidence for medieval			
	or post medieval ridge and turrow cultivation and later field drain systems			
	was detected across the whole survey area. At least live puried utilities were also detected			
	Neza			
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ABSTRACT

MOLA (Museum of London Archaeology) was commissioned to undertake a magnetometer survey of c57ha of land lying north of the junction between Anstey Lane and the A50, Groby, Leicestershire. Six clusters of archaeological remains were detected across the survey area. They chiefly comprised enclosures and ring ditches, with scatters of pits and at least one possible kiln also present. Some fragmentary ditches of unknown dates lay around the cores of activity. Evidence for medieval or post medieval ridge and furrow cultivation and later field drain systems was detected across the whole survey area. At least five buried utilities were also detected.

1 INTRODUCTION

MOLA (Museum of London Archaeology) was commissioned by Wardell Armstrong, on behalf of the client IM Properties PLC, to undertake an archaeological geophysical survey across six arable fields lying north of the junction between Anstey Lane and the A50 at Groby, Leicestershire (NGR SK 535 078) (Fig 1). The purpose of the survey was to identify and map any archaeological remains that may be affected by a proposed development scheme.

The survey comprised a magnetometer survey and was conducted over eight days between 5th and 16th May 2022. Its methodology was set out in a Written Scheme of Investigation (MOLA 2022) which took account of Chartered Institute for Archaeologists and European Archaeological Council guidelines (CIfA 2020 and Schmidt *et al* 2015).

Leicestershire County Council's Museums Service and Historic Environment Team were both informed of the intended work, and the former will accept the project archive under Accession No. X.A76.2022.

2 BACKGROUND

2.1 Location, topography and geology

The survey covered six fields to the north of the A50 near Groby; four of these lying west of Anstey Lane (Fields 1 to 4) and two others to the east (Fields 5 and 6) (Fig 1). The fields are surrounded and subdivided by hedgerows and farm tracks, with a public footpath bisecting Field 1 and continuing around the south of Field 2.

At the time of survey the fields lay under *c*30cm high wheat, with discrete obstructions including two wind turbines in the north of Field 2, wooden telegraph poles across the south of Field 2 and a row of raised service hatches in the south of Fields 3 and 5.

The survey area stands largely between 70m and 100m above Ordnance Datum (aOD), with the land sloping down to the west and south. A small stream flows around

the western and southern sides of the survey area before crossing the south-eastern part of the area in an easterly direction, towards Rothley Brook.

The solid geology of the area is the Edwalton Member of the Sidmouth Mudstone Formation (formerly known as the Keuper Marl). This is partially overlain by a variety of drift deposits, including Oadby Diamicton on the highest ground, Thrussington Diamicton locally below this, and alluvium in the stream valley. Minor deposits of terrace gravel and colluvium are also present (BGS 2022).

2.2 Historical and archaeological background

A desk-based assessment of the survey area has been completed by The Environmental Dimension Partnership Ltd (EDP 2019); what follows is a summary of its findings.

Whilst the survey contains no designated heritage assets such as listed buildings, scheduled monuments, or registered battlefields, the Leicestershire and Rutland Historic Environment Record (HER) notes a number of non-designated sites located within and around the area. These date from the Mesolithic to the post medieval period.

Prehistoric

Two flint blade cores were found in the south-east of the survey area during a field walking exercise in 1992 (MLE7054 / ELE2517). A Bronze Age flint arrowhead has also been discovered within the survey area (MLE 21003), whilst a late Mesolithic/early Neolithic retouched flint blade (MLE15734) has been found adjacent to its eastern boundary.

An Iron Age settlement (MLE411) adjacent to the eastern boundary of the survey area has been the subject of two evaluations. An Iron Age ditch was recorded in 1993 (ELE5397) and roundhouses, pottery and struck flint were later discovered in 1994 (ELE5398). A lower stone of a beehive quern (MLE 6553) was ploughed up by a farmer to the north-east of the survey area.

A Corieltavian Iron Age stater (MLE9386) was discovered to the south of the survey area during the construction of the A46 bypass.

Roman

Two Roman sites are located within the survey area (MLE2770 and MLE6554), and another is located to the east (MLE413).

One of the Roman sites (MLE2770) is located to the south-east of Sheet Hedges Wood in the northern part of the survey area. Pottery, slate, tile and kiln bars have been found here, as has part of a human skull. A geophysical survey in the same area identified several possible kilns (ELE877).

Another Roman site, 'Blacklands Field' (MLE6554), is located towards the centreeast of the survey area. Five quern stones were discovered in 1977 as well as some Roman pottery. A further two or three querns were found in 1986.

A third Roman site (MLE413) has been identified to the east of the survey area. An evaluation in 1993 (ELE5398) identified some wooden buildings surrounded by a large enclosure ditch. Roughly twenty coins and two brooches were also found in the area.

Medieval and later

Medieval ridge and furrow is known to have existed within the survey area although none survives as earthworks. No other medieval features are present within the survey area.

The village cores of Anstey (MLE402), to the north, and Groby (MLE5991), to the south, both originated in the early medieval period. The scheduled monument of

Groby Castle (1010193) lies c900m east of the survey area. The castle was built in c1086 but was destroyed by Henry II in 1176. The site was then reused for a medieval manorial complex.

A dam (MLE2782) lies adjacent to the western boundary of the survey area just to the south of medieval fishponds (MLE2783) and the site of a watermill (MLE 2784). Another fishpond called Groby Pool (MLE19074) lies to the west of the survey area; this is thought to have supplied fish to Leicester Abbey and to have held a head of water for a nearby watermill (MLE2777). Other fishponds have been recorded to the north of Groby Castle (MLE763).

A medieval wood bank (MLE729) is located to the north-east of the survey area, between Sheet Hedges Wood and Groby Pool, and was surveyed in 1985.

There are several buildings dating from the 16th century within Groby (MLE15231, MLE15345, MLE11724) and Anstey (MLE14138, MLE16363, MLE14130). There are also a number of buildings built during the 17th, 18th, and 19th centuries. Twenty-four listed buildings lie within 1km of the survey area, but none are located within.

The turnpike (MLE20653), now known as the A50, runs adjacent to the south of the survey area.

Previous archaeological works

In the north of the survey area, trial trenching (ELE7687) undertaken during the erection of two wind turbines found a single undated ditch (MLE19828) (Richards 2011).

A geophysical survey and subsequent trial trench evaluations completed to the east of the survey area discovered areas of ridge and furrow within the former medieval open field system and post-medieval field boundaries (Walford & Simmonds 2011, Bush 2012, Buttery & Swales 2015).

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 +/-4nT) which have been rotated and scaled to fit against topographic basemapping at a scale of 1:2500 (Figs 2 – 4). An interpretive overlay highlights notable anomalies for discussion, presented over the greyscale images (Figs 5 – 7). A minimally processed data plot for the magnetometer survey is presented at a range of +/-10nT (Figs 8 – 10) as a comparison to the final de-striped results.

4 SURVEY RESULTS

4.1 Archaeology

The survey has detected six sites of probable archaeological origin across the survey area. Several of these correspond to site previously recorded on the Leicestershire HER, but others are new discoveries.

The largest site (Site A, Figs 2 and 5) is largely defined by a 1.3ha group of linear and rectilinear anomalies in the west of Field 2. These appear to represent an incompletely resolved set of enclosure ditches, within which there is a scattering of discrete positive anomalies probably indicating pits or small areas of burnt soil. The largest of these discrete anomalies, in the south-east of the cluster and within a small sub-rectangular enclosure, could indicate a kiln or similar structure. The site as a whole is equivalent to HER site MLE2770, which is believed to be Roman in date.

Site B (Figs 2 and 5), located in the north of Field 2, *c*160m north-east of Site A, is marked by a set of positive rectilinear anomalies representing a pair of rectangular enclosures. The south-east and north-west corners of the enclosures have been masked by magnetic responses from the wind turbines and a buried utility. Some short curvilinear responses may indicate sections of ditches in the north-west of the southern enclosure. It seems likely that the undated ditch previously observed during the construction of the wind turbines (MLE19828) was a small part of this site.

A series of positive linear anomalies have been detected along the west of Field 1 (Site C, Figs 2 and 5). These appear to form the eastern edge of a series of enclosures lying mostly beyond the western boundary of the survey area. A number of discrete positive anomalies in the same general area may represent large pits.

A cluster of positive curvilinear anomalies in the north-west of Field 4 represent a group of small, conjoined enclosures focused around a central enclosure or ring ditch that measures 23m in diameter (Site D, Figs 3 and 6). Several weak anomalies may represent parts of small, ditched enclosures to the west and north-east of the main group, but the evidence is inconclusive. The location of these remains matches with the previously known 'Blacklands Field' Roman site (HER No. MLE6554).

Site E (Figs 3 and 6) is marked by a single, weakly-defined sub-circular anomaly in the south-east of Field 3. This measures roughly 20-22m in diameter, with a large south-eastern opening and a smaller opposing gap in the west. It is possible that it represents either an enclosure or an incomplete ring ditch. To it east and south-west there are some by weak, disjointed portions of linear anomalies which may represent ditches, though alternative causes such as modern drains may also apply.

In the north-east of Field 5 the survey has detected a pair of partially overlapping sub-circular anomalies, measuring up to 47m and 29m in diameter (Site F). These are likely to represent a pair of ditched enclosures, and are associated with a few small positive anomalies which may represent pits. The larger enclosure features a broad gap in the north-west, while both anomalies peter out towards un-flanked gaps in the south-east and south-west. There are possible indications of further ditches to the north-east of the enclosures, but these could also be geological features. This site lies adjacent to, and is probably a continuation of Iron Age settlement site MLE411.

4.2 Possible archaeology

Further weak, or otherwise less well-defined portions of linear, curvilinear and discrete anomalies have been detected in various scattered locations. These are deemed most likely to have an archaeological origin, similar to their better-defined counterparts, but there is a margin of uncertainty whether some may instead relate to geological variations or to agricultural features such as drains.

4.3 Medieval ridge and furrow cultivation

Groups of parallel linear anomalies have been detected across much of the survey area, with the exception of Field 2 (where only short lengths have been detected in the north-east) and Field 6 (which is heavily disturbed). These anomalies largely exhibit the reverse-S curves that are typical of medieval to early post-medieval ridge and furrow cultivation, and are laid in a number of different orientations which tend to reflect the local topography of the fields.

4.4 Former field boundaries

Several positive linear anomalies, which are visually similar to those arising from archaeological ditches, relate to former field boundaries and small streams depicted on early 20th-century Ordnance Survey maps. Where a direct correlation has been found, these have been categorised as "former field boundary" on the interpretation figures.

A number of the detected boundaries respect the layout of the ridge and furrow discussed above, demonstrating a measure of continuity between the pre- and post-Enclosure field systems.

4.5 Field drains

The survey has detected thin linear anomalies with weak alternating polarity in Fields 2, 4 and 5. These are indicative of ceramic field drains and occur as single drains and as systems with various dendritic, herringbone and intersecting patterns.

4.6 Ferrous material

General

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 pieces of farming equipment and general rubbish.

Backfilled pond

A small but dense concentration of strong dipolar anomalies in the north of Field 2 directly corresponds to the site of a pond depicted on early 20th century Ordnance Survey mapping (Figs 2 and 5). The response is typical for a pit-like feature containing a substantial ferrous component within its backfill.

Made ground

The data from Field 6 (Figs 4 and 7) is entirely dominated by a dense collection of particularly strong, large dipolar responses, suggesting a significant amount of dumped ferrous material. A number of the largest responses also display a broad,

"soft" edge, suggesting they may be buried deeper than the usual topsoil layer. Overall, such a response is typical of a deposit of modern construction spoil or similar 'made ground'.

Pylons and telegraph poles

Two 'button'-shaped anomalies, comprising large negative haloes around groups of four strong positive anomalies, represent the buried footings of former electricity pylons in Fields 2 and 3 (Figs 2-3 and 5-6).

A row of broad, diffuse dipolar anomalies across the south of Field 2 and west of Field 3 relate to the metal brackets attached to a set of telegraph poles (Figs 2 and 5). A stronger response on the same line marks where a buried cable from the wind turbines joins to the overhead lines.

4.7 Buried utilities

Three strong positive linear anomalies within broad, strong negative haloes have been detected across the site, and indicate substantial buried utilities. Two are known to relate to water mains, whilst the third, to the east of Anstey Lane, relates to a sewer.

A row of large dipolar responses across the south-west of Field 3 relate to raised access hatches for another known sewer (Figs 3 and 6). The survey has not detected the course of the sewer itself, suggesting that the pipe is a non-metallic one (perhaps concrete). Several irregularly spaced dipolar between the hatches may relate to buried metal fittings.

A strong linear anomaly with alternating polarity occurs in the north of Field 2 (Figs 2 and 5). It presumably represents a run of electrical cable ducting, as it extends between the bases of the two wind turbines then continues south-east to terminate against a line of overhead wires.

4.8 Uncertain

A moderately strong positive linear anomaly in the south-west of Field 3 (Figs 3 and 6) most probably represents a field boundary or a related feature such as a drain, although there is no map evidence to confirm this. Its eastern portion is marked by a reasonably uniform positive linear anomaly that closely parallels a known historic boundary. Further west it turns away from this line and exhibits a more granular response of strong positive and negative anomalies. If it does arise from a boundary it is possible that this western end relates to a grubbed-out hedge rather than a ditch.

An isolated positive linear anomaly can be seen in the north-west corner of Field 6 (Figs 4 and 7). The observable section may indicate a ditch or drain, although the particularly noisy data across this field precludes any confident interpretation.

4.9 Geology

Rounded areas of slightly positive magnetic response in the south-west of Field 1 probably indicate minor variations in the character of the underlying geology (Figs 2 and 5). A much stronger dipolar anomaly in the same vicinity is hard to interpret with confidence but might relate to a large buried boulder of igneous rock.

A set of sinuous linear anomalies in the east of Field 2 (Figs 2 and 5) probably relate to a former stream channel, as do some weaker positive anomalies at the southern edge of Field 3.

5 CONCLUSION

The survey has detected six areas of archaeological activity (Sites A to F) which can provisionally be ascribed prehistoric to Roman origins. The remains comprise possible ring ditches, enclosures, pits and a possible kiln. Three of the sites were known prior to the survey, and a fourth may be an extension of a site recorded to the immediate east of the survey area. Basic details of all six sites are tabulated below:

Site	Field	HER No	Notes
Α	2	MLE2770	Probable Roman enclosures, with possible evidence for kilns
В	2	MLE19828	Undated ditched enclosures
С	1	-	Undated ditches and pits
D	4	MLE6554	Probable Roman enclosures
E	3	-	Undated enclosure or ring ditch
F	5	? MLE411	Two enclosures, perhaps an extension of a known, adjacent,
			Iron Age site

The suggested dating of Sites A and D as Roman and Site F as Iron Age rests on previously recorded finds referred to on the relevant HER records. The other three sites are strictly undated, although Site B has an Iron Age or Roman appearance and Sites C and E, which are less diagnostic, can be very broadly attributed to a prehistoric or Roman date.

There is some possibility that the circular enclosure at the heart of Site D, and the sub-circular enclosure in Site E were originally prehistoric (Neolithic or Bronze Age) ring ditches, marking the sites of round barrows. However, it is equally possible that that are later (Iron Age or Roman) enclosure ditches.

Medieval or post medieval ridge and furrow has been detected across much of the survey area, as have various historic (19th to 20th century) field boundaries. The site of a small pond, depicted on early 20th century Ordnance Survey mapping, has also been detected in the north of Field 2.

Other features detected by the survey include a former stream channel, buried utilities, the foundations of old pylons, and extant telegraph poles and service hatches. Furthermore, the whole of Field 6 has been found to be overlain by a spread of spoil containing ferrous material; this seems most likely to have originated from construction works for the neighbouring A50 dual carriageway.

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Scale 1:6000 (A4)







Scale 1:2000 (A3)

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Unprocessed magnetometer data (north) Fig 8





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