Archaeological geophysical survey of the Northampton South Western Expansion site west of Collingtree Northamptonshire July 2023

Report Number: 23/060

Event Number: ENN111414

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NGR: SP 739 567

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Quality control and sign off**:**

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3	15/08/2023	-	-	John Walford	Change of site name
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OASIS REPORT FORM

Collingtree, Northampton South Western Expansion			**OASIS No: molanort1-517426**	
ACTIVITY TYPE				
Project/Activity type	Geophysical survey			
Reason for investigation	Planning requirement: pre-application			
PROJECT LOCATION				
National grid ref	SP 739 567			
Site name	Collingtree, 'Parcel LAA1144'			
REVIEWERS/ ADMIN				
HER for project	Northamptonshire Historic Environment Record			
National organisation	Historic England			
WORK UNDERTAKEN				
Methodological summary	Magnetometer survey with a cart-mounted array of Bartington Grad601 fluxgate gradiometers.			
Previous work?	Yes		Future works?	Not known
Dates - Start date:	06-07-2023		End date:	10-07-2023
GEOPHYSICS				
Geology	Whitby Mudstone Dyrham Siltstone and Mudstone Marlstone Rock Formation Limestone Oadby Diamicton			
Land use	Grassland – Pasture			
Survey type	Magnetometer survey			
Size of survey area	18ha			
Instrumentation	Bartington Grad-01-1000L			
Configuration	Multiple			
Spatial resolution	Traverse spacing	0.8m	Sample interval	0.25m
Resolution (data values)	0.1nT			
BIBLIOGRAPHY				
Title	Archaeological geophysical survey of the Northampton South Western Expansion site, west of Collingtree, Northamptonshire, July 2023			
Author(s)	Manktelow, C. and Emery, S.			
Publisher, place and date	MOLA Northampton / Northampton / 2023			
Report number	23/060			
Report release delay?	6 months			
PEOPLE				
Organisation	MOLA Northampton			
Project manager	John Walford			
Project supervisor	Chris Manktelow, Graham Arkley			
Funding body	RPS Consulting UK and Ireland			
KEYWORDs				
Monuments found/ date	Enclosure – Iron Age or Roman Bedding trench - Roman Ridge and furrow - Medieval			
RESULTS				
Description of outcomes	The survey detected a sub-rectangular enclosure with D-shaped internal compartments and roundhouses, perhaps dating from the Iron Age or Roman period. Possible Roman cultivation trenches and medieval to post-medieval ridge and furrow were also detected.			
ARCHIVES				
Accession ID	ENN111414			
Paper Archive repository	None			
Digital Archive repository	Archaeology Data Service			
No finds made during survey - no finds archive to be deposited				

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Archaeological geophysical survey of the Northampton South Western Expansion site, west of Collingtree, Northamptonshire July 2023

ABSTRACT

MOLA (Museum of London Archaeology) was commissioned to conduct a geophysical survey on the proposed 'Northampton South Western Expansion' site, located west of Collingtree and south of East Hunsbury, Northamptonshire. The survey detected a sub-rectangular enclosure with D-shaped internal compartments and roundhouses, perhaps dating from the Iron Age or Roman period. Possible Roman cultivation trenches and medieval to post-medieval ridge and furrow were also detected.

1 INTRODUCTION

MOLA (Museum of London Archaeology) was commissioned by RPS Consulting to conduct a magnetometer survey on *c*18ha of land located west of Collingtree and south of East Hunsbury, Northamptonshire (NGR SP 739 567) (Fig 1). The aim of the survey was to identify and characterise any archaeological remains that could be affected by the implementation of the proposed 'Northampton South Western Expansion' development scheme.

Although a part of the survey area had been previously surveyed in 2013, the client chose to instruct a fresh survey of the entire area as to obtain a single, uniform, data set collected according to modern survey techniques.

The survey took place from 6th to 10th July 2023 and was conducted according to the methodology set out in MOLA's standard method statement for surveys in Northamptonshire (MOLA 2023). The details of the methodology were informed by the Chartered Institute for Archaeologists and European Archaeological Council guidelines (CIfA 2020 and Schmidt *et al.* 2015).

The work has been recorded by the Northamptonshire Historic Environment Record (NHER) under event number ENN111414.

2 BACKGROUND

2.1 Location, topography and geology

The survey took place to the east of Towcester Road, on a 18ha block of land lying between the villages of Collingtree, *c*1.3km to the south-east, and Milton Malsor *c*0.8km to the south. The site was bounded to the south by M1 and to the west by the London & North Western Railway line. The survey area comprised several grass fields used as pasture which have been labelled Fields 1-6 on Figure 1.

Much of the survey area is situated on a gentle north-east facing slope heading toward the Wootton Brook, a tributary of the River Nene. It lies between 70m and 85m above Ordnance Datum.

The geology for the majority of the survey area comprises Whitby mudstone, with areas of Dyrham formation siltstone and mudstone and Marlstone rock formation limestone near Wootton Brook in the north-west. These deposits are covered in a superficial layer of Oadby Diamicton (BGS 2023).

2.2 Historical and archaeological background

Archaeology within the survey area

The previous geophysical survey (Walford 2013) identified a sub-rectangular enclosure with an internal division and a roundhouse, believed to be of Iron Age date. This was located on the eastern half of Field 3, as labelled in this report (Fig 1). A few minor features of less certain archaeological interest were also identified, along with medieval or later ridge and furrow.

Other nearby archaeology

A previous archaeological evaluation identified a Roman enclosure complex *c*0.6km to the east of the present survey area, sited on the first terrace above Wootton Brook (Muldowney, 2013) (MNN164470). This evaluation found large quantities of Roman pottery as well as roof, brick, and floor tiles dating to the late 1st to early 2nd century AD. A full excavation has recently been undertaken by MOLA, and an initial analysis of the results confirms that although the site may have had Iron Age origins its main development and use occurred in the Roman period (Carol Simmonds *pers comm*). The most notable discovery was a springhead structure, believe to have functioned as a water tank.

Further evidence of a Roman presence was found *c*0.9km west of the site at Milton Ham, where a Roman 'ladder' enclosure was excavated on land now occupied by MH Star UK Ltd (Carlyle, 2010). The enclosures were likely to be in operation throughout the 2nd, 3rd, and 4th centuries AD, and the site appears to be used for solely agricultural purposes (MNN160740). Roman cultivation trenches were subsequently excavated on the south side of the ladder settlement and are thought to indicate either vine or fruit hedge cultivation. Four Saxon inhumations and a single sunken-featured building were found within the same area (Leslie and King 2021). The first of these two excavations also found Neolithic cremations, radiocarbon dated to the late 4th millennium BC, which are likely to be part of a wider Neolithic cemetery (MNN168700).

A sub-circular ditched enclosure was also identified by the previous geophysical survey (Walford, 2013) *c*0.9km to the east of the site, on Collingtree Park Golf Course. This feature was suggested to be Iron Age in date (MNN164466).

Prehistoric worked flints were recovered by fieldwalking closer to the village of Collingtree, *c*1.1km east of the survey area (MNN24851).

Sherds of early to middle Saxon pottery discovered in association with a sunken featured building, suggests a possible Saxon settlement to the east of the village of Collingtree, *c*1.9km to the east of the survey area (MNN6255).

Cropmarks from aerial photography have identified two rectangular enclosures of unidentified date to the east of the village of Milton Malsor, *c*1.0km to the south of the site (MNN6129).

The late-13th to mid-14th century AD Church of the Holy Cross is located *c*1.0km to the south of the site within the historic core of the village of Milton Malsor. Medieval and post-medieval settlement is likely to have been focused around this area; the only evidence of medieval activity within the survey area itself comprises ridge and furrow earthworks of the open field system (MNN105193).

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 GPS readings and applying offset corrections based on the array geometry and projected 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 mis-matches 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 survey data is presented in this report as greyscale raster images which have been rotated and scaled to fit against Ordnance Survey base-mapping. The processed data is presented at a greyscale range of -/+3nT (Fig 2) and the raw data at -/+10nT (Fig 4).

The interpretation of the data has been undertaken in a qualitative manner, based on the recognition of distinctive anomaly types and patterns. The interpretation figure (Fig 3) shows the main anomalies but omits some minor anomalies of trivial significance, including magnetic halos and the majority of small ferrous dipoles.

4 SURVEY RESULTS

4.1 Archaeological features

The survey detected a sub-rectangular enclosure in the east of Field 3, formed by a series of ditches represented by positive linear anomalies (Figs 2-3). The enclosure is *c*60m long and *c*50m wide with two D-shaped internal compartments abutting the eastern edge and south-western corner. The remains of two roundhouses, in the centre and north-west of the enclosure, were also detected. A penannular feature, located just to the west of the enclosure, could possibly represent another roundhouse, but could also be of geological origin. Several pits were detected within the vicinity with the majority being located towards the west of the enclosure. A ditch detected in the far north-east corner of Field 3 is one of a series of disjointed ditch segments detected in the previous survey which were interpreted collectively as defining parts of a trackway (Walford 2013).

Some possible archaeological features were detected in the north of the survey area, in Field 2, comprising a possible roundhouse, ditch segments and pits. The presumed roundhouse is represented by a weak positive anomaly which might alternatively be caused by small variations in the underlying geology. Little can be said about the possible ditch and pits because of their simple forms and isolated nature.

A set of parallel north-east to south-west aligned positive linear anomalies in the south-east of Field 3 are suggestive of Roman cultivation trenches. The evidence is inconclusive, as modern field drains could produce very similar anomalies, but in this case it would seem most sensible for field drains to respect the alignment of the ridge and furrow earthworks in the field, and the fact that they do not implies that Roman cultivation trenches are the more likely cause.

4.2 Historic features

Medieval to post-medieval ridge and furrow survives as earthworks across parts of the survey area, especially in Field 6. Both these earthworks and other, ploughed-down, areas of ridge and furrow are represented by sets of parallel, slightly curved, positive linear anomalies. The furrows are mostly oriented north to south, with some examples of north-east to south-west orientated ridge and furrow in Fields 4 and 6.

One short positive linear anomaly in Field 3 matches part of the location of a field boundary marked on 19th century Ordnance Survey maps. A backfilled pond was also detected towards the south-west of the same field. The increased magnetic response of the pond is caused by magnetic material (rubble, metal fragments, litter etc.) in the backfill deposits.

4.3 Utilities

Two utilities, aligned west-north-west to east-south-east, lie next to each other across Field 2. They are represented by two, strong, parallel alternating linear anomalies with magnetic halos emanating from either side. Gas pipeline markers were seen in this location during the survey (*pers obs*).

A weak negative linear anomaly located just to the north of these pipelines, orientated north-east to south-west, is representative of a utility trench housing a non-magnetic cable or pipe.

4.4 Ferrous material

Small magnetic dipoles are scattered throughout the survey area. Such anomalies are ferrous in origin and generally caused by modern fragments of iron buried in the topsoil. As they are so abundant, and so minimally significant, only representative examples are depicted on the interpretation figure (Figure 3). A few larger magnetic halos are also present into the data, due to upstanding metal features, such as fences and cattle feeders.

4.5 Geology

The survey has detected two distinct areas where geological anomalies are present. Irregular shaped positive anomalies located on the Wootton Brook floodplain in the north of the survey area may represent patches of alluvial deposits. Other geological anomalies detected in the south of the survey area possibly represent variations in the composition of the superficial diamicton deposit.

4.6 Uncertain

Two short negative linear anomalies in Field 1B have an uncertain origin. Similar responses are sometimes recorded over backfilled trenches, and it may be that the anomalies relate to some form of recent ground disturbance although this cannot be said with any certainty.

5 CONCLUSION

This survey has better resolved the archaeological features previously detected during the 2013 survey of the site (Walford 2013) and has detected some additional features which that earlier survey missed. The new results confirm the presence of a sub-rectangular enclosure with internal compartments, plus several roundhouses and numerous pits. The smaller of those features, including many of the pits, were not recognised by the previous survey due to the lower resolution and less accurate positioning of its data compared to those of the latest survey. The general character of the enclosure could be consistent with either an Iron Age or a Roman date.

The survey has also identified some possible Roman cultivation trenches in the south-west of Field 3. As noted in the results section, above, this type of feature can appear very similar to more recent field drains but these particular examples lie obliquely to a set of ridge and furrow earthworks whereas modern drains might be expected to lie directly along the bases of the furrows.

Apart from the above features, the survey has detected doubtful evidence for archaeology further north in the survey area, where there are possible traces of ditches, pits and a roundhouse. These features are too disjointed and uncertain to be discussed in detail.

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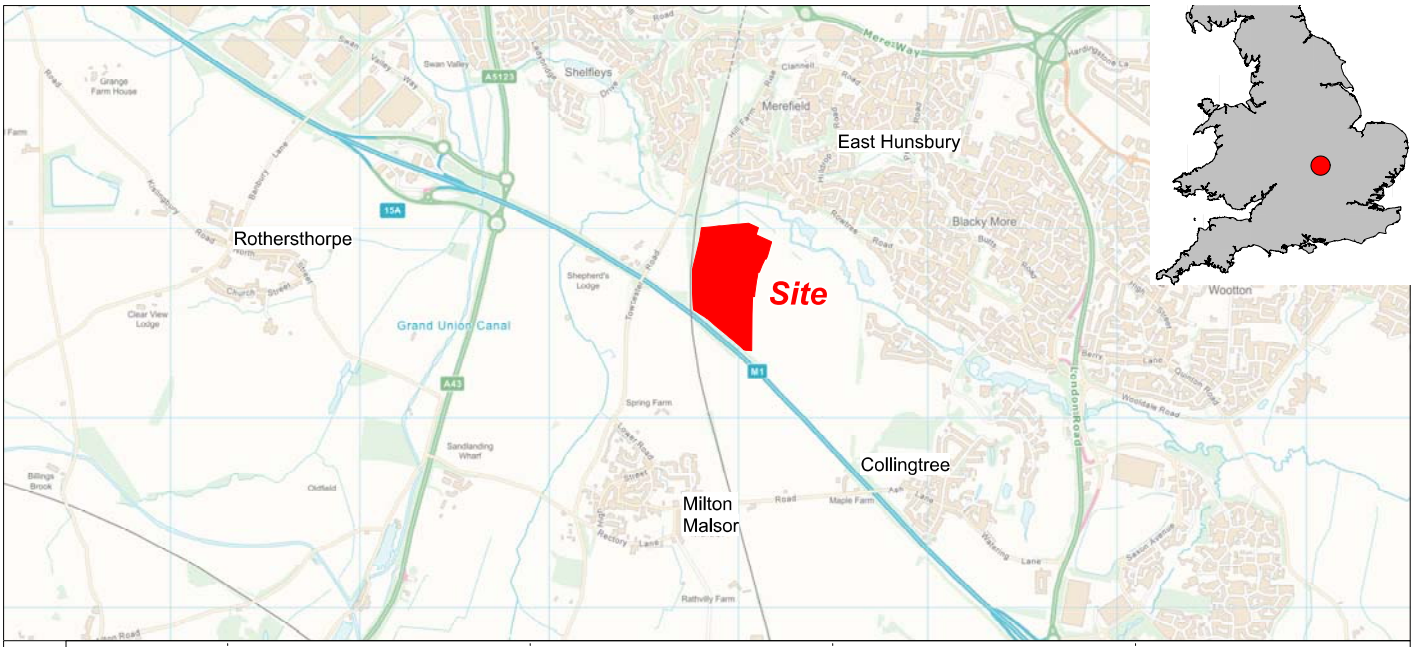
MOLA
August 2023

Event number: ENN111214



0 250m

Survey area

Scale 1:5000 (A4)

Site location Fig 1

473800

474000

257000

256800

256600

256400

F1

F2

F3

F4

F5

F6

0 100m -3nT Magnetic anomaly +3nT

Scale 1:2000 (A3)

Magnetometer survey results Fig 2

473800

474000

257000

256800

256600

256400

F1

F2

F3

F4

F5

F6

0 100m

Archaeology
Archaeology (?)
Ridge and furrow (trend)
Former field boundary
Utility
Scatter of ferrous debris
Ferrous object
Geological feature
Backfilled pond

Scale 1:2000 (A3)

Magnetometer survey interpretation Fig 3

473800

474000

257000

256800

256600

256400

F1

F2

F3

F4

F5

F6

0 100m -10nT Magnetic anomaly +10nT

Scale 1:2000 (A3)

Unprocessed magnetometer data Fig 4

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