

**Archaeological geophysical survey at
Mill Road, Cranfield
Bedfordshire
January 2015**

Report No. 15/11

Authors: Adam Meadows
John Walford

Illustrators: Adam Meadows
John Walford



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OASIS REPORT

PROJECT DETAILS		Oasis No. molanort1-201732
Project name	Archaeological geophysical survey at Mill Road, Cranfield, Bedfordshire	
Short description	MOLA Northampton was commissioned to carry out a detailed magnetometer survey on a proposed development site at Mill Road, Cranfield, Bedfordshire. The survey detected an unusual circular anomaly which perhaps represents an irregular ring-ditch or the site of a windmill mound. Extensive medieval ridge and furrow cultivation and two old field boundaries were also detected.	
Project type	Geophysical survey	
Site status	None	
Previous work	Desk-based assessment (Gailey 2014)	
Current Land use	Arable	
Future work	Unknown	
Monument type/ period	Undated possible ring-ditch, enclosure or windmill mound, Medieval ridge and furrow	
Significant finds	None	
PROJECT LOCATION		
County	Bedfordshire	
Site address	Mill Road, Cranfield	
Study area	10.9ha	
OS Easting & Northing	SP 958 429	
Height OD	c 110m aOD	
PROJECT CREATORS		
Organisation	MOLA Northampton	
Project brief originator	No curatorial brief provided to contractor	
Project design originator	MOLA Northampton	
Director/Supervisor	Adam Meadows	
Project Manager	John Walford	
Sponsor or funding body	CgMs Consulting	
PROJECT DATE		
Start date	7 January 2015	
End date	9 January 2015	
ARCHIVES	Location	Content
Physical	N/A	
Paper	MOLA Northampton	Site survey records
Digital	BEDFM 2014.89	Geophysical survey & GIS data
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report	
Title	Archaeological geophysical survey at Mill Road, Cranfield, Bedfordshire, January 2015	
Serial title & volume	MOLA Northampton Reports 15/11	
Author(s)	Adam Meadows	
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Archaeological geophysical survey at Mill Road, Cranfield, Bedfordshire January 2015

ABSTRACT

MOLA Northampton was commissioned to carry out a detailed magnetometer survey on a proposed development site at Mill Road, Cranfield, Bedfordshire. The survey detected an unusual circular anomaly which perhaps represents an irregular ring-ditch or the site of a windmill mound. Extensive medieval ridge and furrow cultivation and two old field boundaries were also detected.

1 INTRODUCTION

MOLA Northampton was commissioned by CgMs Consulting to undertake a detailed magnetometer survey on a proposed development site at Mill Road, Cranfield, Bedfordshire (NGR SP 958 429; Fig 1). The fieldwork covered an area of 10.9ha and was undertaken from 7th to 9th January 2015. It has been recorded by Bedford Museum under the accession number BEDFM 2014.89.

2 BACKGROUND

2.1 Location and geology

The survey area is located to the north-west of Cranfield, between the village and Cranfield Airport (Fig 1). It comprises a single arable field lying south of Crawley Road and west of Mill Road. The field is bounded by drainage ditches to the west and residential properties along its north and eastern borders (Fig 1).

The survey area stands at an elevation of around 110m aOD and has a fairly level topography. Its geology consists of Stewartby Member Mudstone (Middle Oxford Clay) overlain by glacial Diamicton (Boulder Clay) of Pleistocene date (BGS 2015).

2.2 Historical and archaeological background

An archaeological desk-based assessment of the survey area has identified no known archaeological remains within its boundaries but does refer to an archaeological evaluation located immediately south of the survey area. There, evidence of an Iron Age ditched enclosure with indications of further settlement activity in the area were excavated (Bedfordshire Event Number: EBD1143) (Gailey 2014).

Further evidence of Iron Age occupation is present 600m to the south-east of the survey area, on the eastern edge of Cranfield Airport. Finds from this site provided evidence of earlier activities through Neolithic/Bronze Age pottery sherds and flint artefacts within an Iron Age settlement surrounded by associated field systems (HER Number: 11866). There is evidence that this area was occupied into the early Roman period, while 500m north of the airfield a large mid-4th century Roman coin hoard was discovered near Wharley Farm (HER: 46).

To the east of the survey area the medieval settlement of Broad Green is located surrounding the still extant triangular green positioned along Mill Road (HER: 16932).

3 METHODOLOGY

The magnetometer survey was conducted with Bartington Grad 601-2, twin sensor array, vertical component fluxgate gradiometers (Bartington and Chapman 2003). These are standard instruments for archaeological survey and can resolve magnetic variations as slight as 0.1 nanoTesla (nT).

An network of 30m grid squares was established across survey area. The grids were set out with a tape measure and optical square and were tied in to the Ordnance Survey National Grid by means of a Leica Viva RTK GPS. The gradiometers were carried at a brisk but steady pace through each grid square, collecting data along 1m spaced traverse lines. Measurements were automatically triggered every 0.25m along the traverses, giving a total of 3600 measurements per square. All fieldwork methods complied with the guidelines issued by English Heritage and by the Chartered Institute for Archaeologists (EH 2008; CIfA 2014) .

The survey data was largely processed using Geoplot 3.00v software. Most of the striping was removed using the 'Zero Mean Traverse' function but some areas had to be de-striped separately, using a spreadsheet based routine, in order to preserve linear anomalies lying parallel to the traverse direction. Destaggering of the data was performed where necessary. The processed data is presented in this report in the form of a greyscale plot at a range of +4nT (black) to -4nT (white). This has been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Fig 2). An interpretive overlay is presented in Figure 3 and a plot of the unprocessed survey data is presented in Figure 4.

4 SURVEY RESULTS

The geophysical survey has detected an unusual circular anomaly, approximately 20m in diameter, in the southern end of the survey area. It appears diffuse; its inner edge is well defined but its outer edge is very irregular. It is possible that it represents an unevenly excavated circular enclosure or ring ditch associated with the Iron Age settlement located in the field to the south. However, an alternative interpretation could be that it marks the site of a windmill mound and that the positive anomalies represent small irregular quarry pits from which the mound material was extracted.

Parallel, weakly positive linear anomalies are ubiquitous across the survey area. They represent parts of four furlongs of medieval to early post-medieval ridge and furrow, the layout of which broadly corresponds to the partial depiction of the pre-enclosure landscape on an 1807 map of Cranfield (Gailey 2014, fig 3). The greater part of the survey area is covered by a single furlong in which the furrows are aligned east-north-east to west-south-west, but in the north-western corner of the area there are parts of three other furlongs with furrows aligned more or less north to south. The furlongs do not appear to overlap and towards the western portion of the site the edges of two of them turn to avoid crossing. This strongly indicates that the multiple directions of ploughing were all contemporary.

In the north-east of the survey area there is a positive linear anomaly which runs along the headland between two furlongs, then continues south-south-east, cutting across other furrows as it does so. Its position and orientation match closely with a former field boundary depicted on the 1840 Cranfield Enclosure Map (Gailey 2014, fig 4). Another linear anomaly crosses the centre of the survey area on a west-south-west to east-north-east alignment and can be correlated with a field boundary depicted on the first edition Ordnance Survey map (1882).

The survey has detected a number of small dipolar anomalies that indicate small pieces of ferrous and ceramic debris within the ploughsoil. There is a particular concentration of these along the eastern edge of the survey area, presumably indicating a concentration of domestic rubbish or building waste from the adjacent properties. A smaller concentration occurs near the western edge of the survey area, immediately south of the former field boundary, and this may represent a former hardstanding or a deposit of hardcore within a gateway.

5 CONCLUSION

The survey has detected a circular feature which is tentatively suggested to be either a windmill mound or a circular enclosure/ring-ditch of unusually irregular form. Evidence of ridge and furrow relating to the former medieval open field system of cultivation has also been detected, as have two 19th-century field boundaries.

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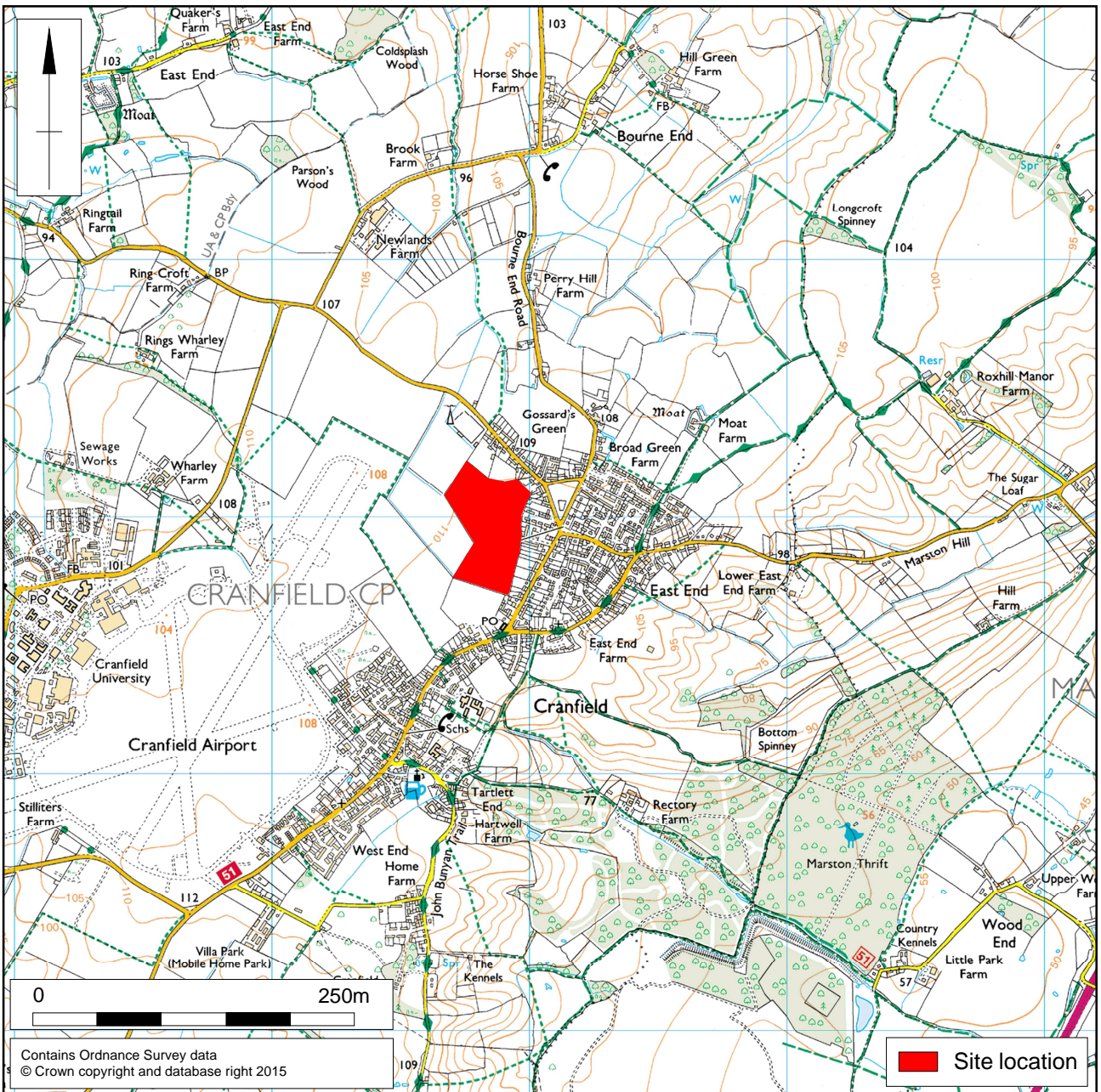
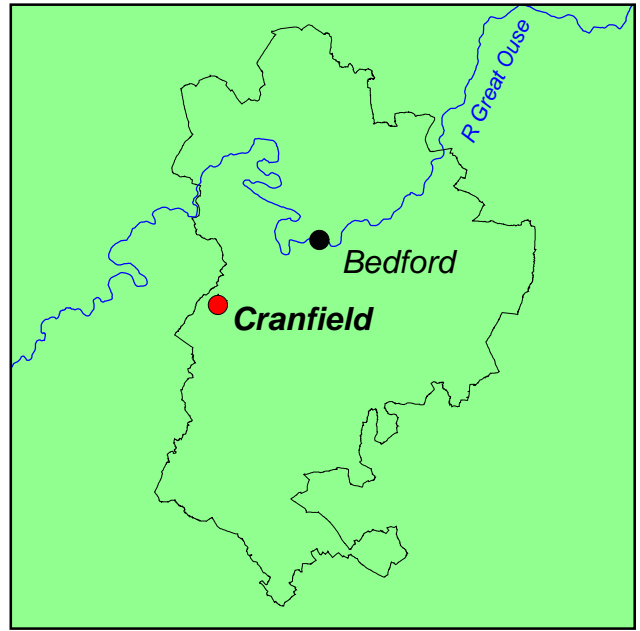
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MOLA
28 January 2015



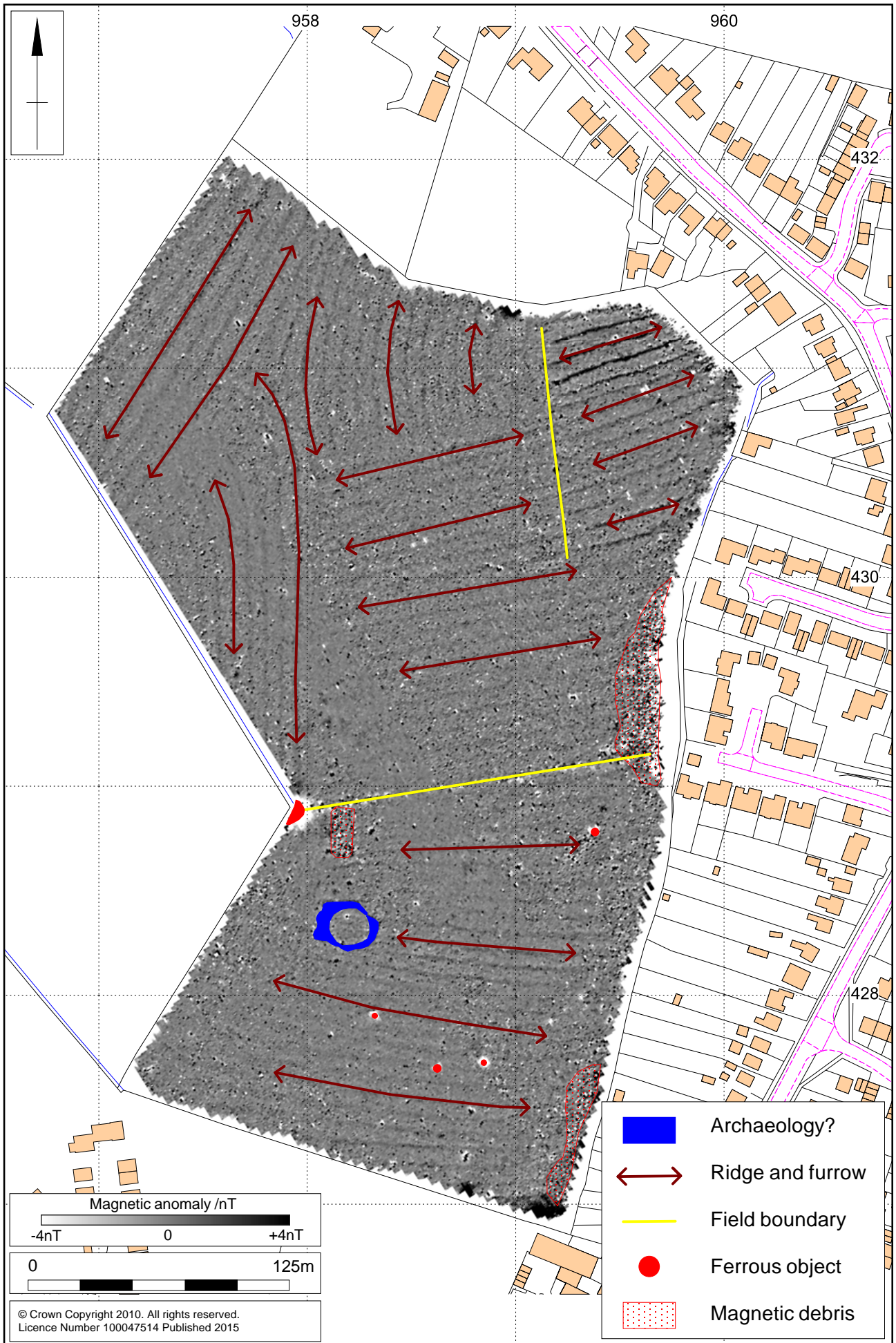
Scale 1:25,000

Site location Fig 1



1:2500

Magnetometer survey results Fig 2



1:2500

Magnetometer survey interpretation Fig 3



1:2500

Unprocessed magnetometer data Fig 4

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