



## Archaeological geophysical survey west of Biggleswade Road, Potton, Bedfordshire October 2016

Accession number: BEDFM 2016.78

Report No: 16/186

Authors: Graham Arkley  
John Walford

Illustrator: John Walford



# Archaeological geophysical survey west of Biggleswade Road, Potton, Bedfordshire October 2016

Event number: BEDFM 2016.78

Report No: 16/186

Quality control and sign off:

<b>Issue No.</b>	<b>Date approved:</b>	<b>Checked by:</b>	<b>Verified and approved by:</b>	<b>Reason for Issue:</b>
1	27/10/16	Rob Atkins	Mark Holmes	Client approval

Authors: Graham Arkley and John Walford

Illustrator: John Walford

© MOLA Northampton 2016

MOLA  
Bolton House  
Wootton Hall Park  
Northampton  
NN4 8BN  
01604 809 800  
[www.mola.org.uk](http://www.mola.org.uk)  
[sparry@mola.org.uk](mailto:sparry@mola.org.uk)

**STAFF**

Project Manager: John Walford MSc

Fieldwork: Graham Arkley MSc  
Gareth Carmichael BA

Text: Graham Arkley  
John Walford

Illustrations: John Walford

**OASIS REPORT**

PROJECT DETAILS		<b>Oasis No. molanort1-266651</b>	
Project name	Archaeological geophysical survey of land west of Biggleswade Road, Pottton, Bedfordshire		
Short description	MOLA (Museum of London Archaeology) were commissioned to undertake a magnetometer survey of c 5ha of land immediately west of Biggleswade Road, Pottton, to the north of the John O'Gaunt Golf Club. The survey detected a rectilinear set of boundary ditches, which both predates and is distinct from the modern field layout. The survey also mapped suspected modern service trenches and field drains.		
Project type	Geophysical survey		
Site status	None		
Previous work	DBA (Gailey 2016)		
Current land use	Horse paddocks		
Future work	Not known		
Monument type/ period	Undated ditches		
Significant finds	None		
PROJECT LOCATION			
County	Bedfordshire		
Site address	Biggleswade Road, Pottton		
Study area	c 5ha		
OS Easting & Northing	TL 219 487		
Height OD	c 40m - 45m aOD		
PROJECT CREATORS			
Organisation	MOLA		
Project brief originator	Central Bedfordshire Council Archaeologist		
Project design originator	MOLA		
Director/Supervisor	Graham Arkley		
Project Manager	John Walford		
Sponsor or funding body	CgMs Consulting		
PROJECT DATE			
Start date	17th October 2016		
End date	18th October 2016		
ARCHIVES		Location	Content
Physical	N/A		
Paper	MOLA Northampton.	Site survey records	
Digital	BEDFM 2016.78	Geophysical survey & GIS data	
BIBLIOGRAPHY			
	Journal/monograph, published or forthcoming, or unpublished client report		
Title	Archaeological geophysical survey west of Biggleswade Road, Pottton, Bedfordshire October 2016		
Serial title & volume	MOLA Northampton Reports 16/186		
Author(s)	Graham Arkley and John Walford		
Page numbers	4		
Date	27th October 2016		

# Contents

1	INTRODUCTION	1
2	BACKGROUND	1
	2.1 Topography and geology	
	2.2 Historical and archaeological background	
3	METHODOLOGY	2
4	SURVEY RESULTS	3
5	CONCLUSION	4
	BIBLIOGRAPHY	4

## Figures

Cover	Magnetometer survey results (extract)	
Fig 1	Site location	1:25,000
Fig 2	Magnetometer survey results	1:2000
Fig 3	Magnetometer survey interpretation	1:2000
Fig 4	Unprocessed magnetometer data	1:2000
Back cover	View of overgrown northernmost field, looking west	

# Archaeological geophysical survey west of Biggleswade Road, Potton, Bedfordshire October 2016

## ABSTRACT

*MOLA (Museum of London Archaeology) were commissioned to undertake a magnetometer survey of c 5ha of land immediately west of Biggleswade Road, Potton, to the north of the John O'Gaunt Golf Club. The survey detected a rectilinear set of boundary ditches, which both predates and is distinct from the modern field layout. The survey also mapped suspected modern service trenches and field drains.*

## 1 INTRODUCTION

MOLA (Museum of London Archaeology) were commissioned by CgMs Consulting to conduct a magnetometer survey of approximately 5ha of land to the west of Biggleswade Road, Potton, Bedfordshire (NGR TL 219 487; Fig 1). The purpose of the survey was to investigate the nature and extent of any archaeological remains present within this area. This information would then be used in order that a programme of further works could be devised to mitigate the archaeological impacts of a proposed development.

The survey was undertaken over the 17th and 18th October 2016, in response to a requirement from Hannah Firth, the Central Bedfordshire Council Archaeologist. Bedford Museum has been notified of the work and has recorded it under accession number BEDFM 2016.78.

## 2 BACKGROUND

### 2.1 Topography and geology

The survey area comprises approximately c 5ha located to the south of the village of Potton, west of the end of row of houses on Biggleswade Road. To the south the perimeter borders the northern boundary of the John O'Gaunt Golf Club. This area extends across seven adjacent horse paddocks, although the middle fields have been heavily subdivided to create a total of thirteen fields surveyed.

A trackway extending across the area, separating the southernmost field from the rest, was not wide enough to be surveyed due to overgrown brambles. Similarly, the northernmost field (which includes a hollow) was heavily overgrown to the north, west and southern edges (see back cover image). Two small blocks of land in the middle fields were also unable to be surveyed due to trees, and banked material north of the training paddock.

The survey area crests the western flank of Potton Brook's broad shallow stream valley, sloping from c 45m aOD in the west to c 40m aOD in the east. The geology of the area is predominantly bedrock of Woburn Sands Sandstone. As this is locally cemented to carstone and/or iron-pan, both potentially magnetic materials, it is probable that the data will include interference from these geological variations. Superficial deposits of head (rock formed from accumulated downslope hill-wash material) overlay this on the eastern edge of the site, having collected in the remains of small basins or valleys (BGS 2016).

## 2.2 Historical and archaeological background

The survey area has been the subject of a recent desk-based assessment or DBA (Gailey 2016) to which the reader is referred for a full account of the archaeological background to this project. The main conclusions of this assessment were that the area had a modest archaeological potential for prehistoric settlement features and is likely to contain evidence of medieval and post-medieval ploughing.

Approximately 75m to the south-east lie archaeological earthworks attributed to medieval field boundaries, although there exists the possibility that they may instead relate to a modern military camp c 1940. Two local sites have provided significant evidence, through geophysical surveys and excavations, for medieval and post-medieval ploughing, both within c 200-300m east and north-east of the area.

There are no designated assets or recorded findspots upon the survey area. The nearest listed building is a Victorian railway shed (HER 1944) associated with the Sandy to Potton line, some 125m to the north. The Central Bedfordshire Historic Environment Record (HER) lists limited undesignated features in the immediate surroundings: a linear cropmark of undetermined origin (HER 15105) is recorded immediately west of the survey area, and to the east is the site of a removed spigot mortar base (HER 17963).

## 3 METHODOLOGY

The survey was undertaken with the MOLA magnetometer cart. This is a lightweight, two-wheeled structure designed to be pushed by hand. It incorporates a bank of six vertically-mounted Bartington Grad601 magnetic sensor tubes, spaced at half-meter intervals along a bar aligned crossways to the direction of travel, and also incorporates a Leica Geosystems Viva GPS antenna mounted on the central axis, 0.5m astern of the sensors. The magnetic sensors each output data at a rate of six readings per second and the GPS antenna outputs NMEA format data (GGA messages) at a rate of one position every second. These data streams are fed into a laptop computer where they are compiled into a single raw data file by MultiGrad601 logging software specifically designed for that purpose.

The cart was pushed along straight and parallel traverses across the survey area, with data logging being manually 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 average speed of coverage was c 1.5m/s and the effective data resolution thus approximated to 0.25m x 0.50m.

The raw survey data was initially processed with MLGrad601 software, which calculated an actual UTM co-ordinate for each data point by interpolating the GPS 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 mis-matches in the calibration of the individual magnetic sensors. This was removed in TerraSurveyor by applying the median destripe function to runs of data from each sensor. The processed data is presented in this report as greyscale raster plots (range +10nT to -10nT / black to white), rotated and scaled for display against the Ordnance Survey base mapping (Fig 2). An interpretive overlay is presented in Figure 3 and plots of the unprocessed survey data in Figure 4.

## 4 SURVEY RESULTS

The survey data is generally quite ‘noisy’, with an intricate background of geological anomalies and many small magnetic halos from fences and other modern ferrous objects. Despite this, some probable archaeological features can be discerned in the northern half of the data and there is also evidence for a number of probable drains and services.

The probable archaeology is indicated by a rectilinear set of positive magnetic anomalies, which seem to represent the boundary ditches of some enclosures or small fields. Although these share a similar alignment to the modern fields they do not, for the most part, fit congruently with them and neither do they correspond to any boundaries depicted on eighteenth or nineteenth century maps of the area (Gailey 2016, figs 2-10) (Old-Maps 2016). This suggests that they may be earlier; perhaps related to the nearby medieval fields noted above in Section 2.2. However, neither the form nor the magnetic characteristics of the anomalies provides any firm evidence to support an accurate dating, and the possibility of a pre-medieval date cannot be completely ruled out.

The second field from the north is bisected by a magnetically negative double linear anomaly which corresponds with a slight earthwork or parch mark visible on aerial photographs (Google Earth coverage dated 31/12/2000, etc). Although this does not correspond to any feature depicted on historic maps, such as those included in the DBA (Gailey 2016, figs 2-10), the fact it lies perpendicular to the long axes of the modern field, neatly bisecting it, and does not extend into the adjacent fields strongly suggests that it represents a recent boundary.

Also evident in the results are four positive linear anomalies aligned north-west to south-east, more or less following the direction of slope. The southernmost two of these are joined at acute angles by weaker, less defined branches, forming the “herringbone” pattern of spines and feeders often characteristic of modern field drains. A qualification to this is that the “spine” anomalies are significantly broader than a typical field drain anomaly, with an appearance somewhat similar to that which might be expected from a ditch.

Across the survey area are small groupings of discrete magnetically positive anomalies with forms and dimensions that could support an interpretation as pits. These are most evident in: the centre of the southern field; west end of the second field from the north, where they seem to be bounded by two of the aforementioned ditches; and immediately south of the training paddock. However, as mentioned in Section 2.1, the survey results are likely to have been influenced by the underlying geology, and it is likely that many of these “pit” anomalies actually relate to pockets of ironstone within the Woburn Sand. These features in the southern half of the middle field tend to become less distinct, in an area with reduced background magnetic “noise” to the south-west of the middle field. This change is not indicative of archaeological features itself, but alters the clarity of contrast between features and the background.

The survey results also show an ill-defined, broad swathe of diffuse linear trends curving across the northernmost field, following the topography of the dry valley. This has no obvious archaeological explanation and can be better attributed to underlying geology.

Two weak magnetically negative linear anomalies appear across the study site, one each in the northern and southern fields. Such anomalies often represent service trenches with non-magnetic pipes or cables, backfilled with the excavated topsoil and subsoil. As these both align towards the sewerage works to the south-east of the survey



area, it would be reasonable to assume these service trenches may contain modern concrete sewer pipes.

The series of magnetically negative circular anomalies in the southern field located in a line north to south from the corner of the open sided barn arise from a series of modern metal gates and fixtures, sited along a fence separating the main field from a smaller plot of land. Similarly, a number of large magnetically positive or negative haloed anomalies across the site indicate the location of modern fences, sheds, etc.

Small dipolar anomalies are scattered across the site, though with a higher concentration in the middle fields. These likely represent insignificant metallic debris near the surface of the top-soil, such as horseshoes or other modern litter.

## 5 CONCLUSION

The survey results indicate the presence of a set of rectilinear ditches in the northern half of the survey area. These are likely to represent the boundaries of enclosures or small fields. They cannot be firmly dated but, as they do not correlate with anything depicted on the historic mapping of the area, a medieval or early post-medieval date would be plausible.

The survey results also show the location of two probable service trenches, which run towards the nearby sewerage treatment facility. In addition to these features are portions of a “herringbone” pattern of weakly magnetic anomalies, which are aligned respecting the downslope of the fields, typical of modern field drains. A double linear feature in the second field from the north, bisecting the field perpendicularly to the current axis of the field, appears to represent the location of a modern boundary which has been removed.

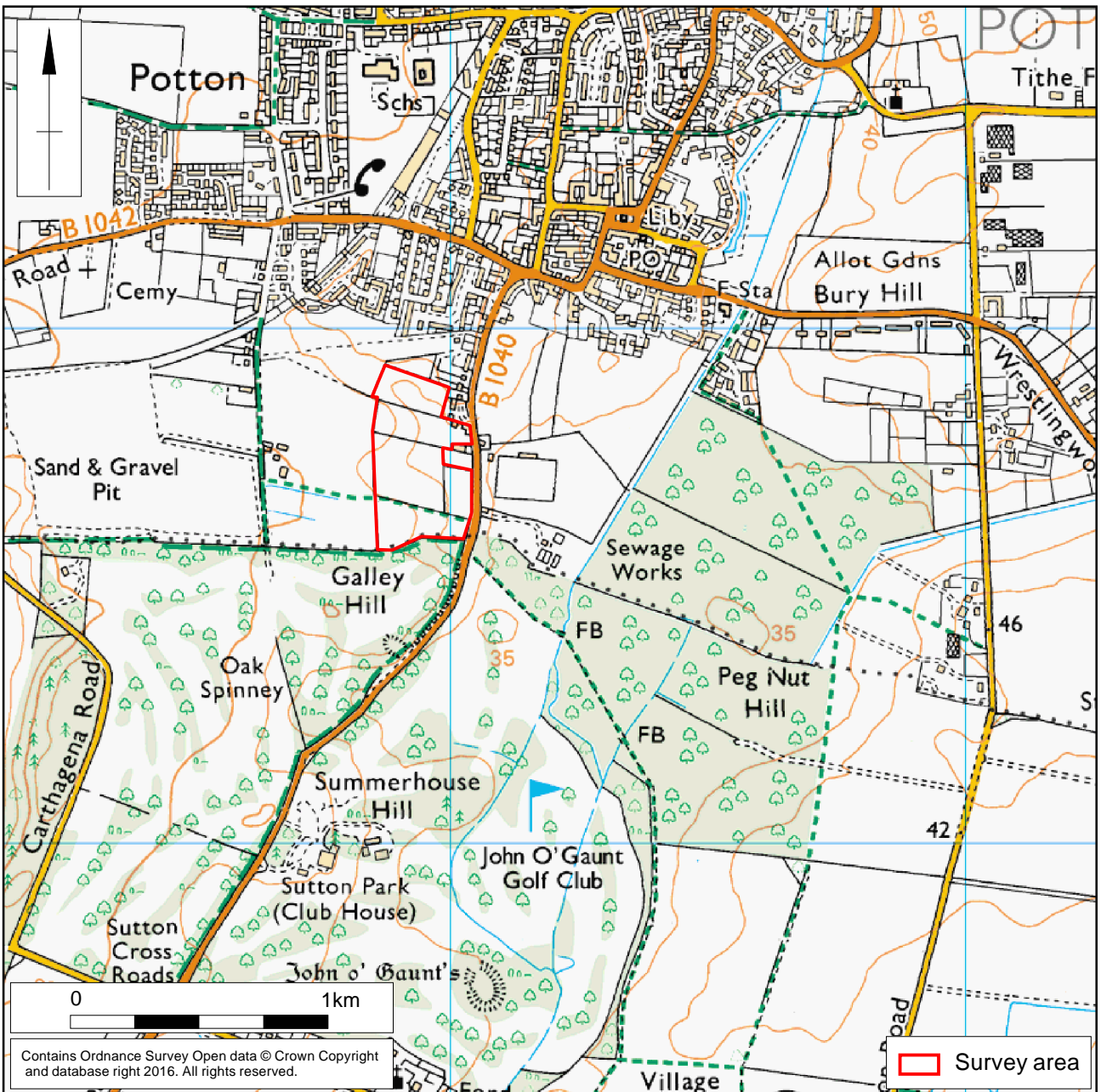
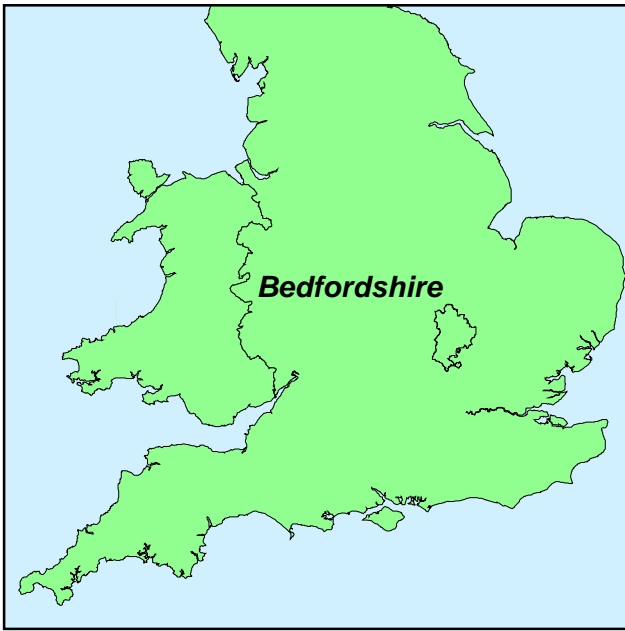
## BIBLIOGRAPHY

BGS 2016 *Geology of Britain Viewer*, <http://mapapps.bgs.ac.uk/geologyofbritain>, British Geological Survey, consulted October 2016

Gailey, S, 2016 *Archaeological desk-based assessment: Land at Biggleswade Road, Potton, Bedfordshire*, CgMS Consulting report **21532**

Old-Maps 2016 *Old-Maps: The online repository of historic maps*, <https://www.old-maps.co.uk/#/>, Old-Maps, consulted October 2016

MOLA  
27th October 2016



Scale 1:25,000

Site location Fig 1



1:2000

Magnetometer survey results Fig 2





1:2000

Magnetometer survey interpretation Fig 3



1:2000

Unprocessed magnetometer data Fig 4



MOLA  
Bolton House  
Wootton Hall Park  
Northampton  
NN4 8BN  
01604 700 493  
[www.mola.org.uk](http://www.mola.org.uk)  
[sparry@mola.org.uk](mailto:sparry@mola.org.uk)