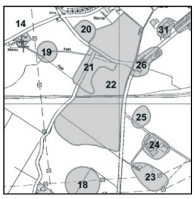
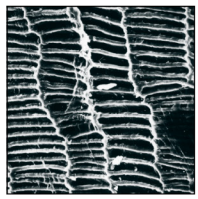
PRCA19










PROSPECT ROAD, CASTLETHORPE, MILTON KEYNES

GEOPHYSICAL SURVEY

commissioned by Bovis Homes Ltd

June 2019

HEADLAND ARCHAEOLOGY

REGISTERED ORGANISATION CIfA

PROSPECT ROAD, CASTLETHORPE, MILTON KEYNES

GEOPHYSICAL SURVEY

commissioned by Bovis Homes Ltd

June 2019

This report adheres to the quality standard of ISO 9001:2015

PROJECT INFO:

HA Project Code **PRCA19** / NGR **SP 7972 4414** / Parish **Castlethorpe** / Local Authority **Milton Keynes** / OASIS Ref. **headland5-356278**

PROJECT TEAM:

Project Manager **David Harrison** / Author **Ross Bishop** / Fieldwork **Krasimir Dyulgerski, Phoebe Utting** / Graphics **Beata Wieczorek-Oleksy, Rafael Maya-Torcelly, Ross Bishop**

Approved by **David Harrison** D Harrison .....

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HEADLAND ARCHAEOLOGY

REGISTERED ORGANISATION CIfA

ASCB Accreditation Services Worldwide

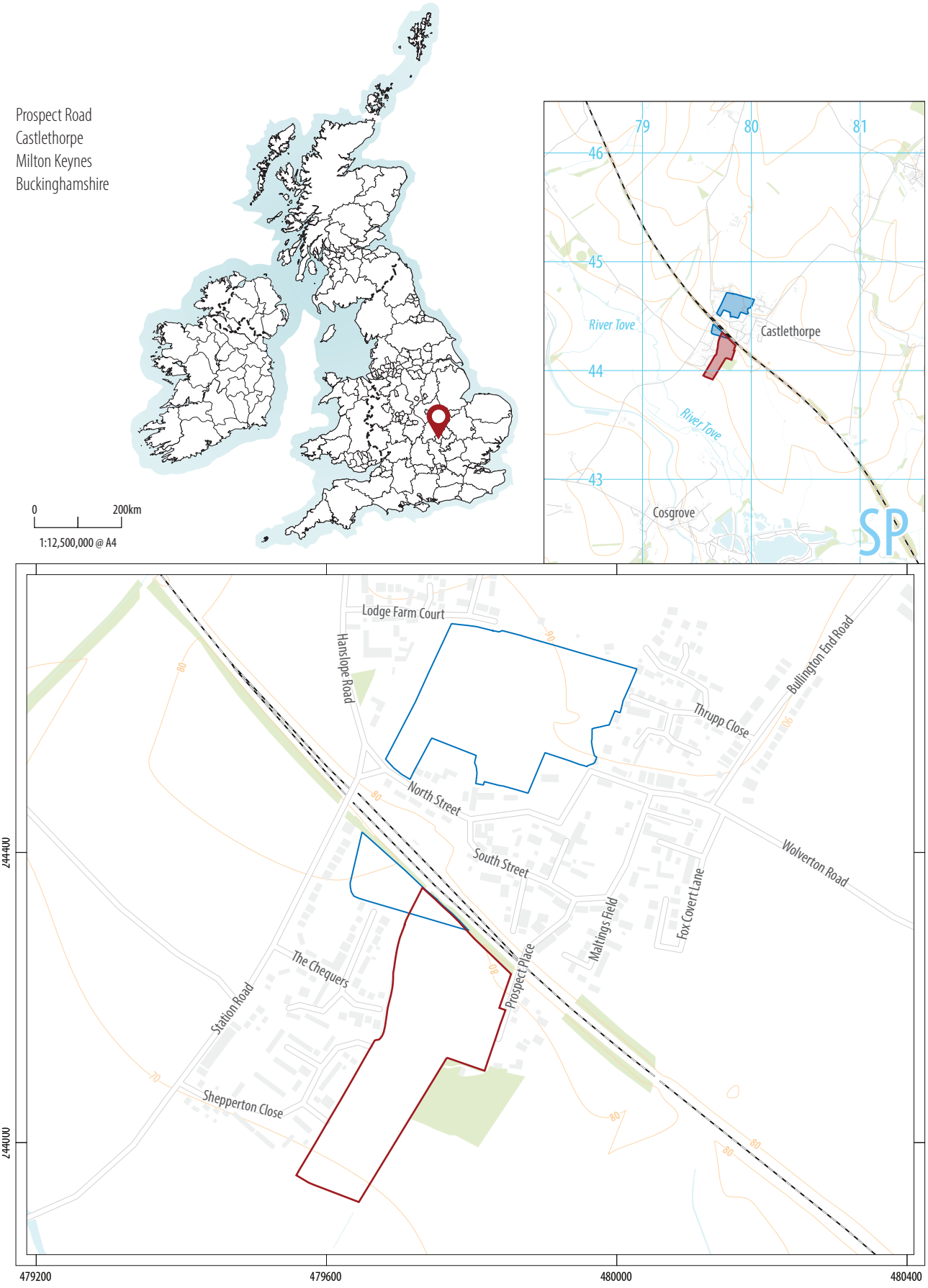
ISO 9001

PROJECT SUMMARY

Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey over 5 hectares on land off Prospect Road, Castlethorpe, Milton Keynes. The survey has identified a localised complex of fragmented linear and curvilinear anomalies (soil-filled ditches) at the southern end of the site which are assessed as of likely archaeological origin, probably forming patterns of enclosure and land division. Parallel rectilinear anomalies along the south-western site boundary may be due to a double ditch extending west beyond the survey limit. However this interpretation is tentative and part of the anomalies may be due to the ridge and furrow cultivation which is present throughout this part of the site. No anomalies of definite archaeological origin have been identified within the north of the site and none within Castlethorpe Castle Scheduled Monument, part of which extends into the northern tip of the site.

CONTENTS

LIST OF ILLUSTRATIONS



ILLUS 1 Site location

PROSPECT ROAD, CASTLETHORPE, MILTON KEYNES

GEOPHYSICAL SURVEY

1 INTRODUCTION

Headland Archaeology (UK) Ltd was commissioned by The Environmental Dimension Partnership Ltd (the Consultant) on behalf of Bovis Homes Ltd (the Client), to undertake a geophysical (magnetometer) survey of land at Castlethorpe, Milton Keynes. The southern limit of Castlethorpe Castle Scheduled Monument (Historic England List Entry 101129) was included within the geophysical survey to provide further information on the nature and extent of any buried archaeological deposits. A Section 42 licence was granted prior to undertaking the work (see Appendix 6).

The work was undertaken in accordance with a Written Scheme of Investigation (Webb 2019) submitted to and agreed with Historic England, with guidance within the National Planning Policy Framework (MHCLG 2018) and in line with current best practice (Chartered Institute for Archaeologists 2016, Europae Archaeologia Consilium 2016).

The survey was carried out on 13 May 2019.

1.1 SITE LOCATION, TOPOGRAPHY AND LAND-USE

The Geophysical Survey Area (GSA) is located on the southern side of Castlethorpe village, centred on SP 7972 4414 (Illus 1). It comprises two sub-rectangular fields (F1 and F2) within an irregularly-shaped block of land which is bound to the north by a railway line, to the west and north-east by existing residential development, to the south-east by woodland and to the south by farmland (Illus 4).

The site is located on the south-facing upper slopes of a shallow valley which slopes towards the River Tove, from c.75m Above Ordnance Datum (AOD) in the north to c.70m AOD in the south.

At the time of the survey the fields were under permanent pasture (Illus 2 and Illus 4).

1.2 GEOLOGY AND SOILS

The bedrock geology broadly mirrors the topography of the site with the northern end being underlain by Blisworth Limestone and the southern end by Whitby Mudstone (Illus 5). These are separated in the centre by parallel bands of Wellington Limestone Member, Stamford Member sandstone and siltstone, and Rutland Mudstone Formation. The bedrock is overlain in the north by Oadby Member (diamicton) and by River Terrace Deposits (sand and gravel) in the south (NERC 2019)

The soils are classified in the Soilscape 8 association, characterised as slightly acid loams and clays with impeded drainage (Cranfield University 2019).

2 ARCHAEOLOGICAL BACKGROUND

A small portion of the Castlethorpe Castle Scheduled Monument is contained within the north-west corner of the GSA. This possibly represents the partial remains of a 13th century or later fishpond/ garden. The remainder of the monument lies to the north of the railway line and comprises an earlier motte and bailey castle and associated features.

Non-designated remains within the GSA include two sherds of Roman pottery (MMK535) which were recovered from a black layer of soil within a pipe trench during a watching brief in 1993 (Bonner et al 1997). Selective excavation in the north-west of the GSA during

the same programme of works identified a number of medieval pits and a single Romano-British pit.

A Desk-Based Assessment (EDP 2019) has concluded that:

> *'Given the site's topographic location and the presence of previous finds in the centre, the north field is considered to have a moderate potential to contain remains related to the prehistoric and Roman periods. The north-westernmost corner will also have a high potential to contain medieval remains, as reflected by its inclusion within the scheduled monument… Otherwise the site in general has a low potential to contain archaeological remains from any other period, apart from medieval and later features and deposits related to former farming practices'.*

3 AIMS, METHODOLOGY AND PRESENTATION

The general aim of the geophysical survey was to provide sufficient information to establish the presence/absence, character and extent of any archaeological remains within the GSA. This will therefore enable an assessment to be made of the impact of any future development on any sub-surface archaeological remains, if present.

The specific archaeological objectives of the geophysical survey were:

- to provide information about the nature and possible interpretation of any magnetic anomalies identified;
- to therefore model the presence/absence and extent of any buried archaeological features; and
- to prepare a report summarising the results of the survey.

3.1 MAGNETOMETER SURVEY

Magnetic survey methods rely on the ability of a variety of instruments to measure very small magnetic fields associated with buried archaeological remains. A feature such as a ditch, pit or kiln can act like a small magnet, or series of magnets, that produce distortions (anomalies) in the earth's magnetic field. In mapping these slight variations, detailed plans of sites can be obtained as buried features often produce reasonably characteristic anomaly shapes and strengths (Gaffney & Gater 2003). Further information on soil magnetism and the interpretation of magnetic anomalies is provided in Appendix 1.

The survey was undertaken using four Bartington Grad601 sensors mounted at 1m intervals (1m traverse interval) onto a rigid carrying frame. The system was programmed to take readings at a frequency of 10Hz (allowing for a 10–15cm sample interval) on roaming traverses (swaths) 4m apart (Illus 3). These readings were stored on an external weatherproof laptop and later downloaded for processing and interpretation. The system was linked to a Trimble R8s Real Time Kinetic (RTK) differential Global Positioning System (dGPS) outputting in NMEA mode to ensure a high positional accuracy for each data point.

MLGrad601 and MultiGrad601 (Geomar Software Inc.) software was used to collect and export the data. Terrasurveyor V3.0.32.4 (DWConsulting) software was used to process and present the data.

3.2 REPORTING

A general site location plan is shown in Illus 1 at a scale of 1:7,500. Illus 2 and 3 are site condition photographs. Illus 4 is a 1:2,500 survey location plan showing the direction of survey as GPS swaths, the Scheduled Monument and HER data. Illus 5 is a 1:2,500 survey location plan showing geology data. Large scale minimally processed (XY trace plot) data, fully processed (greyscale) data and an accompanying interpretative plot are presented at a scale of 1:1,250 in Illus 6–8 inclusive.

Technical information on the equipment used, data processing and magnetic survey methodology is given in Appendix 1. Appendix 2 details the survey location information and Appendix 3 describes the composition and location of the site archive. Data processing details are presented in Appendix 4. A copy of the OASIS entry (Online Access to the Index of Archaeological Investigations) is reproduced in Appendix 5.

The survey methodology, report and any recommendations comply with the Written Scheme of Investigation (Webb 2019), guidelines outlined by Europae Archaeologia Consilium (EAC 2016) and by the Chartered Institute for Archaeologists (CIfA 2016). All illustrations from Ordnance Survey mapping are reproduced with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

The illustrations in this report have been produced following analysis of the data in 'raw' and processed formats and over a range of different display levels. All illustrations are presented to most suitably display and interpret the data from this site based on the experience and knowledge of management and reporting staff.

4 RESULTS AND DISCUSSION

Ground conditions were very good across the survey area (Illus 2–3) leading to a high standard of data throughout.

The survey has detected a homogeneous magnetic background throughout. Against this background, numerous anomalies have been identified and these are discussed below and cross-referenced to specific examples on the interpretive figures, where appropriate.

4.1 FERROUS AND MODERN ANOMALIES

Ferrous anomalies, characterised as individual 'spikes', are typically caused by ferrous (magnetic) material, either on the ground

surface or in the plough-soil. Little importance is normally given to such anomalies, unless there is any supporting evidence for an archaeological interpretation, as modern ferrous debris is common on most sites, often being present as a consequence of manuring or tipping/infilling. There is no obvious clustering to these ferrous anomalies which might indicate an archaeological origin. Far more probable is that the 'spike' responses are likely caused by the random distribution of ferrous debris in the upper soil horizons.

Two isolated high magnitude spikes (TP1 and TP2; Illus 8) within F1 are caused by telegraph poles whereas the large spike (AF1) in the east of F2 is due to an animal feeder.

The broad area of magnetic disturbance (FC1) in the north and east of F1 corresponds to a former construction compound which is shown on satellite imagery from 2004 (Infoterra Ltd & Bluesky 2019). The disturbance is caused by the presence of gravels and other magnetically enhanced material within the topsoil following the remediation of the compound back to pasture. The same image also shows an access track aligned north/south along the eastern limit of the GSA which manifests in the data as a linear band of magnetic disturbance (FT1).

In the south of F2 a single negative linear trend, aligned north-west/south-east corresponds to the route of a sewer.

Magnetic disturbance at the perimeter of the GSA is caused by ferrous material within, or adjacent to, the field boundaries and is of no archaeological interest.

4.2 AGRICULTURAL ANOMALIES

Broadly-spaced parallel sinuous anomalies are identified north/south throughout F2 and east/west within the north of F1. These anomalies are characteristic of the medieval and post-medieval practice of ridge and furrow cultivation. The anomalies are caused by the magnetic contrast between the infilled furrows and the former ridges. More closely-spaced parallel linear anomalies are identified east/west throughout the south of F1. These are likely to be more recent in origin.

A series of negative linear trend anomalies orientated east/west throughout F1 are due to land drains with possible field drains also identified north-west/south-east in the northern half of F2.

Parallel linear trends (FP1) aligned north/south in the west of F1 correspond to a footpath which is shown on the first edition OS map.

4.3 GEOLOGICAL ANOMALIES

Numerous discrete low-magnitude anomalies have been identified throughout the survey area. The anomalies are thought to be caused by localised variation in the depth and composition of the soils and the superficial deposits from which they derive.

4.4 POSSIBLE ARCHAEOLOGICAL ANOMALIES

A complex of linear and rectilinear anomalies is identified over the river terrace deposits in the southern half of F2. The anomalies are

ILLUS 2 F1, looking NE

ILLUS 3 F2, looking SW

likley archaeological in origin being due to soil-filled cut features, such as ditches, and forming patterns of land division and enclosure. However, the anomalies are only identified within a relatively narrow field, appearing to extend east, west and south beyond the GSA and no coherent archaeological pattern is discernible. Parallel rectilinear anomalies close to the western limit of F2 may locate a double ditch extending westwards beyond the GSA limit, but this interpretation is cautious as the anomalies may be caused, or masked by, medieval and later ploughing. Towards the centre of F2 a broad high magnitude sub rectangular anomaly may locate a building.

In contrast, no anomalies of any archaeological potential have been identified over the majority of F1 with the exception of a fragmented north-east/south-west anomaly in the north-west corner of the field. This anomaly may be due to a soil-filled ditch and an archaeological origin must be considered particularly considering the close proximity of the Scheduled Monument. Several discrete anomalies to the north-west of the ditch and south of the Scheduled Monument are ascribed as possibly archaeological in origin, perhaps being due to pits. However, other than their proximity to the Scheduled Monument, there is nothing to distinguish them from the general spread of geological anomalies, so an alternate origin is possible.

No anomalies of archaeological potential have been identified within the Scheduled Monument itself with the data being dominated by magnetic interference from the adjacent boundaries and ferrous contamination of the upper soil horizon. No survey was possible over the earthworks themselves due to the steep gradient and tree cover.

5 CONCLUSION

The survey has successfully evaluated the survey area and has identified a complex of fragmented linear and curvilinear anomalies (soil-filled ditches) localised to the south of the site which are assessed as of likely archaeological origin, probably forming patterns of enclosure and land division. Parallel rectilinear anomales along the south-western site boundary may be due to a double ditch extending west beyond the survey limit. However, this interpretation is tentative and part of the anomalies may be due to the ridge and furrow cultivation. No anomalies of definite archaeological origin have been identified within the north of the site and none within Castlethorpe Castle Scheduled Monument, part of which extends into the northern tip of the site.

6 REFERENCES

Bonner D Parkhouse J and Smith N (1997) 'Archaeological Investigations of the Medieval Earthworks at Castlethorpe, Buckinghamshire' ***Records of Buckinghamshire*** Vol 37 79–99

Chartered Institute for Archaeologists (ClfA) 2016 ***Standard and guidance for archaeological geophysical survey*** (Reading) http://www.archaeologists.net/sites/default/files/ClfAS%26GGeophysics_2.pdf accessed 9 May 2019

Cranfield University 2018 ***Cranfield Soil and Agrifood Institute Soilscapes*** http://www.landis.org.uk/soilscapes/ accessed 9 May 2019

Europae Archaeologia Consilium 2016 ***EAC Guidelines for the use of Geophysics in Archaeology*** Archaeolingua 2015

Gaffney C & Gater J (2003) ***Revealing the Buried Past: Geophysics for Archaeologists*** Stroud

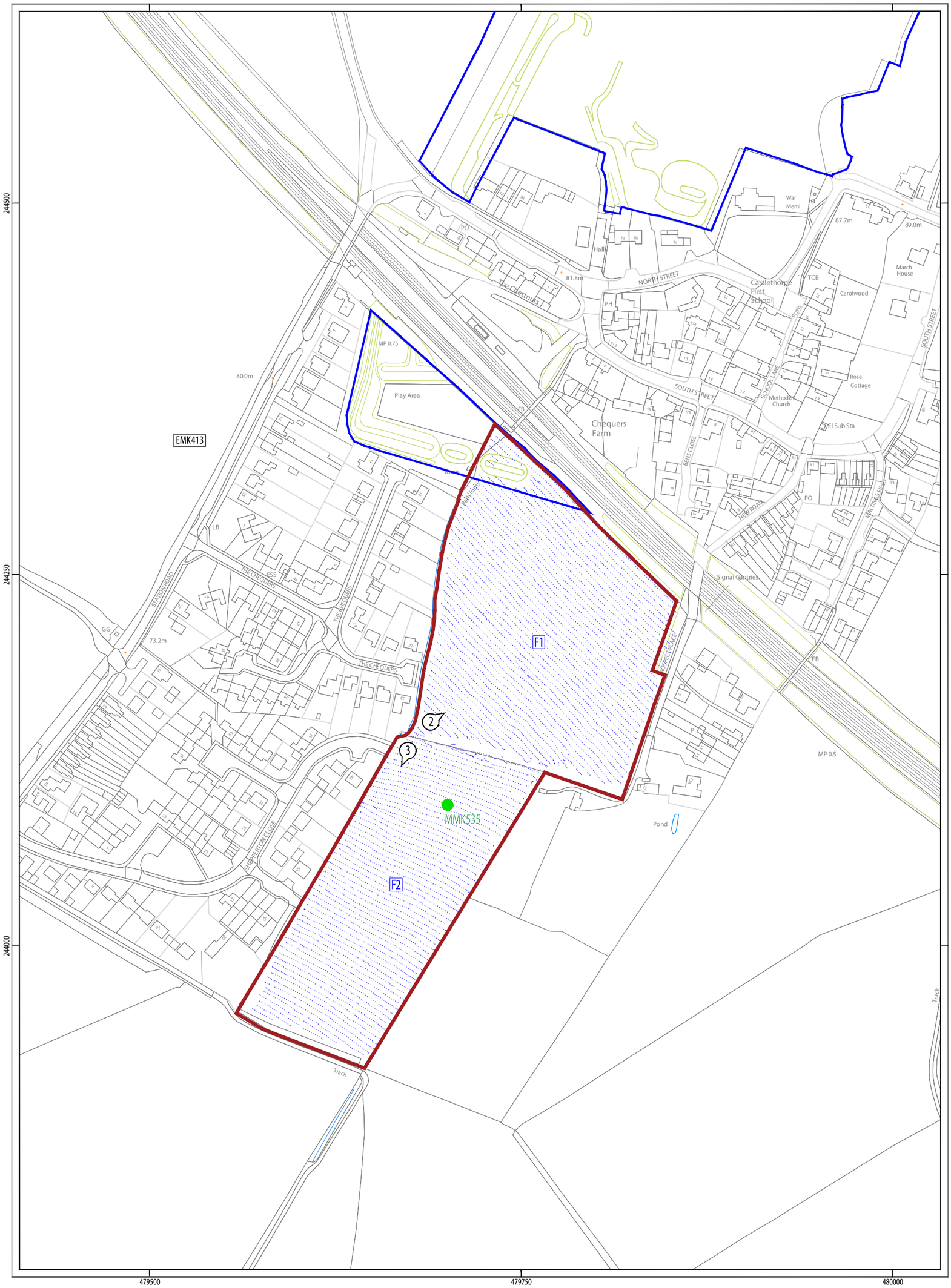
Infoterra Ltd & Bluesky 2019 Google Earth V 7.3.2.5776 (image date January 1 2004) [online] ***Castlethorpe*** (52°05'21.19"N 0°50'20.84"W, Eye alt 734m http://www.earth.google.com accessed 13 May 2019

Ministry of Housing, Communities and Local Government (MHCLG) 2018 ***National Planning Policy Framework*** https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf accessed 9 May 2019

Natural Environment Research Council (NERC) 2019 ***British Geological Survey*** http://www.bgs.ac.uk/ accessed 13 May 2019

The Environmental Dimension Partnership (EDP) 2019 ***Land at Castlethorpe; Archaeological and Heritage Assessment*** [unpublished client report] EDP Ref edp4308_r002b

Webb A 2019 ***Prospect Road, Castlethorpe, Milton Keynes; Written Scheme of Investigation for Geophysical Survey*** [unpublished client document] Headland Archaeology Ref PRCA19



- geophysical survey area
- Scheduled Monument - Castlethorpe Castle (101129)
- earthwork
- HER findspot
- GPS swaths
- location and direction of ILLUS 2-3

0 50m
1:2,500 @ A3

PROJECT PRCA19
Prospect Road
Castlethorpe
Milton Keynes

CLIENT Bovis Homes Ltd

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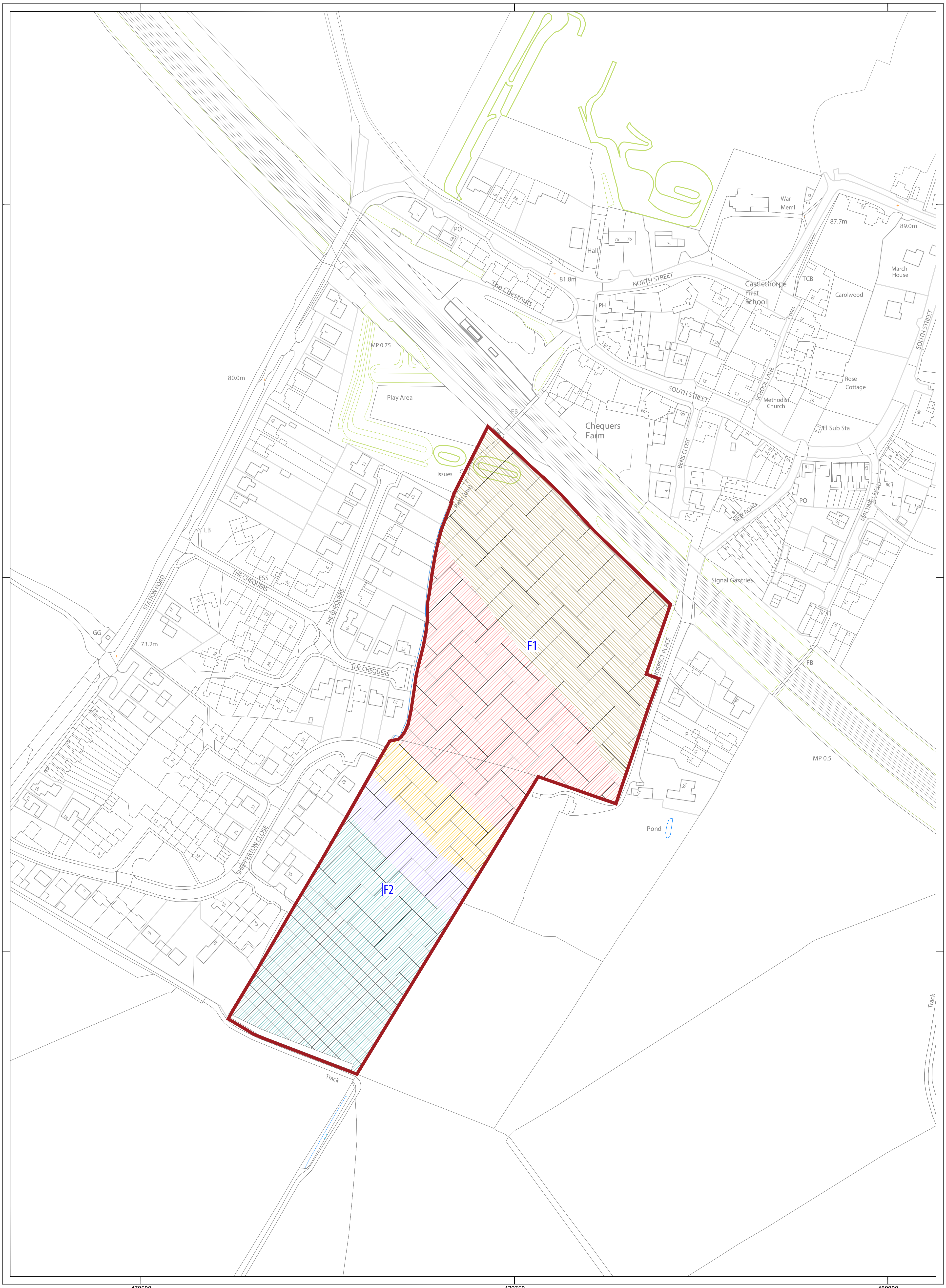
ILLUS 4 Survey location showing GPS swaths, Scheduled Monument and HER data



PROJECT PRCA19
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Milton Keynes

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ILLUS 5 Survey location showing geology data

nT
-2.0 3.0

0 25m
1:1,250 @ A3

PROJECT PRCA19
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Castlethorpe
Milton Keynes

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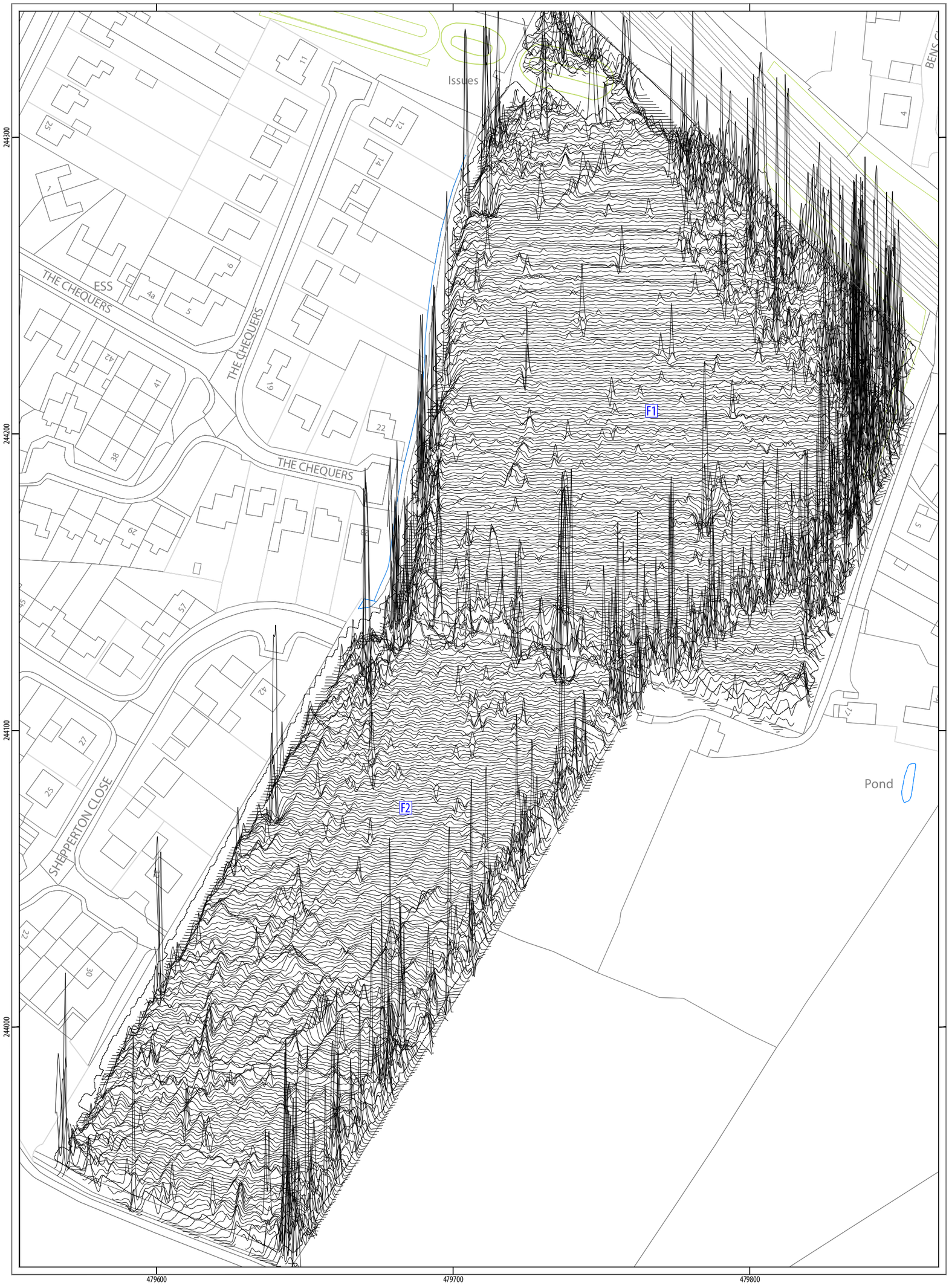
ILLUS 6 Processed greyscale magnetometer data



25.0nT/cm

0 25m

1:1,250 @ A3

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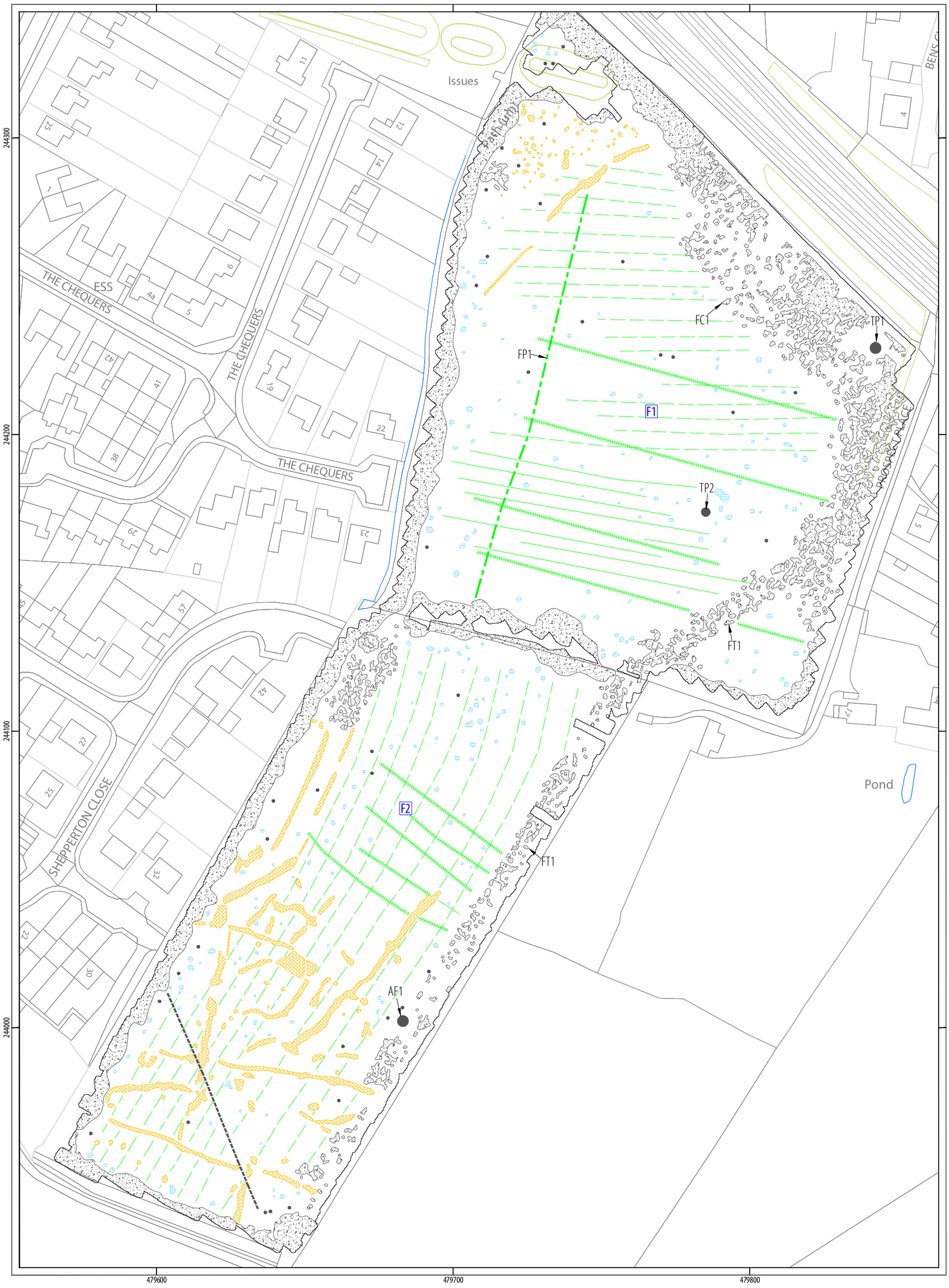
ILLUS 7 XY trace plot of minimally processed magnetometer data



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
linear	sewer
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	ridge and furrow
linear trend	agricultural

TYPE OF ANOMALY	INTERPRETATION
linear trend	field drain
linear trend	former footpath
magnetic enhancement	geology
magnetic enhancement	archaeology?

ABREVIATIONS	
AF	animal feeder
FC	former compound
FP	footpath
FT	former track
TP	telegraph pole

0 25m
1:1,250 @ A3

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ILLUS 8 Interpretation of magnetometer data

7 APPENDICES

APPENDIX 1 MAGNETOMETER SURVEY

Magnetic susceptibility and soil magnetism

Iron makes up about 6% of the earth's crust and is mostly present in soils and rocks as minerals such as maghaemite and haematite. These minerals have a weak, measurable magnetic property termed magnetic susceptibility. Human activities can redistribute these minerals and change (enhance) others into more magnetic forms so that by measuring the magnetic susceptibility of the topsoil, areas where human occupation or settlement has occurred can be identified by virtue of the attendant increase (enhancement) in magnetic susceptibility. If the enhanced material subsequently comes to fill features, such as ditches or pits, localised isolated and linear magnetic anomalies can result whose presence can be detected by a magnetometer (fluxgate gradiometer).

In general, it is the contrast between the magnetic susceptibility of deposits filling cut features, such as ditches or pits, and the magnetic susceptibility of topsoils, subsoils and rocks into which these features have been cut, which causes the most recognisable responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or the bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected.

The magnetic susceptibility of a soil can also be enhanced by the application of heat. This effect can lead to the detection of features such as hearths, kilns or areas of burning.

Types of magnetic anomaly

In the majority of instances anomalies are termed 'positive'. This means that they have a positive magnetic value relative to the magnetic background on any given site. However some features can manifest themselves as 'negative' anomalies that, conversely, means that the response is negative relative to the mean magnetic background.

Where it is not possible to give a probable cause of an observed anomaly a '?' is appended.

It should be noted that anomalies interpreted as modern in origin might be caused by features that are present in the topsoil or upper layers of the subsoil. Removal of soil to an archaeological or natural layer can therefore remove the feature causing the anomaly.

The types of response mentioned above can be divided into five main categories that are used in the graphical interpretation of the magnetic data:

Isolated dipolar anomalies (iron spikes)

These responses are typically caused by ferrous material either on the surface or in the topsoil. They cause a rapid variation in the magnetic response giving a characteristic 'spiky' trace. Although ferrous archaeological artefacts could produce this type of response, unless there is supporting evidence for an archaeological interpretation, little emphasis is normally given to such anomalies, as modern ferrous objects are common on rural sites, often being present as a consequence of manuring.

Areas of magnetic disturbance

These responses can have several causes often being associated with burnt material, such as slag waste or brick rubble or other strongly magnetised/fired material. Ferrous structures such as pylons, mesh or barbed wire fencing and buried pipes can also cause the same disturbed response. A modern origin is usually assumed unless there is other supporting information.

Linear trend

This is usually a weak or broad linear anomaly of unknown cause or date. These anomalies are often caused by agricultural activity, either ploughing or land drains being a common cause.

Areas of magnetic enhancement/positive isolated anomalies

Areas of enhanced response are characterised by a general increase in the magnetic background over a localised area whilst discrete anomalies are manifest by an increased response (sometimes only visible on an XY trace plot) on two or three successive traverses. In neither instance is there the intense dipolar response characteristic exhibited by an area of magnetic disturbance or of an 'iron spike' anomaly (see above). These anomalies can be caused by infilled discrete archaeological features such as pits or post-holes or by kilns. They can also be caused by pedological variations or by natural infilled features on certain geologies. Ferrous material in the subsoil can also give a similar response. It can often therefore be very difficult to establish an anthropogenic origin without intrusive investigation or other supporting information.

Linear and curvilinear anomalies

Such anomalies have a variety of origins. They may be caused by agricultural practice (recent ploughing trends, earlier ridge and furrow regimes or land drains), natural geomorphological features such as palaeochannels or by infilled archaeological ditches.

APPENDIX 2 SURVEY LOCATION INFORMATION

An initial survey base station was established using a Trimble VRS differential Global Positioning System (dGPS). The magnetometer data was georeferenced using a Trimble RTK differential Global Positioning System (Trimble R8s model).

Temporary sight markers were laid out using a Trimble VRS differential Global Positioning System (Trimble R8s model) to guide the operator and ensure full coverage. The accuracy of this dGPS equipment is better than 0.01m.

The survey data were then super-imposed onto a base map provided by the client to produce the displayed block locations. However, it should be noted that Ordnance Survey positional accuracy for digital map data has an error of 0.5m for urban and floodplain areas, 1.0m for rural areas and 2.5m for mountain and moorland areas. This potential error must be considered if coordinates are measured off hard copies of the mapping rather than using the digital coordinates.

Headland Archaeology cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party.

APPENDIX 3 GEOPHYSICAL SURVEY ARCHIVE

The geophysical archive comprises an archive disk containing the raw data in XYZ format, a raster image of each greyscale plot with associate world file, and a PDF of the report.

The project will be archived in-house in accordance with recent good practice guidelines (http://guides.archaeologydataservice.ac.uk/g2gp/Geophysics_3). The data will be stored in an indexed archive and migrated to new formats when necessary.

APPENDIX 4 DATA PROCESSING

The gradiometer data has been presented in this report in processed greyscale and minimally processed XY trace plot format.

Data collected using RTK GPS-based methods cannot be produced without minimal processing of the data. The minimally processed data has been interpolated to project the data onto a regular grid and de-striped to correct for slight variations in instrument calibration drift and any other artificial data.

A high pass filter has been applied to the greyscale plots to remove low frequency anomalies (relating to survey tracks and modern agricultural features) in order to maximise the clarity and interpretability of the archaeological anomalies.

The data has also been clipped to remove extreme values and to improve data contrast.

APPENDIX 5 OASIS DATA COLLECTION FORM: ENGLAND

OASIS ID: headland5-356278

Project details	
Project name	Prospect Road, Castlethorpe, Milton Keynes
Short description of the project	Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey of land off Prospect Road, Castlethorpe, Milton Keynes. The survey has identified a localised complex of fragmented linear and curvilinear anomalies (soil-filled ditches) at the southern end of the site which are assessed as of likely archaeological origin, probably forming patterns of enclosure and land division. Parallel rectilinear anomalies along the south-western site boundary may be due to a double ditch extending west beyond the survey limit. However this interpretation is tentative and part of the anomalies may be due to the ridge and furrow cultivation which is present throughout this part of the site. No anomalies of definite archaeological origin have been identified within the north of the site and none within Castlethorpe Castle Scheduled Monument, part of which extends into the northern tip of the site.
Project dates	Start: 13-05-2019 End: 13-05-2019
Previous/future work	Yes / Yes
Any associated project reference codes	101129 - SM No.
Any associated project reference codes	PRCA19 - Contracting Unit No.
Type of project	Field evaluation
Site status	Scheduled Monument (SM)
Current Land use	Grassland Heathland 5 - Character undetermined
Monument type	N/A None
Monument type	N/A None
Significant Finds	N/A None
Methods & techniques	"Geophysical Survey"
Development type	Housing estate
Prompt	National Planning Policy Framework - NPPF
Position in the planning process	Pre-application
Solid geology (other)	Blisworth Limestone, Whitby Mudstone, Wellington Limestone Member, Stamford Member, and Rutland Mudstone Formation
Drift geology	River terrace deposits
Drift geology (other)	Oadby Member - diamicton
Techniques	Magnetometry
Project location	
Country	England
Site location	BUCKINGHAMSHIRE MILTON KEYNES CASTLETHORPE Prospect Road, Castlethorpe, Milton Keynes

Study area	5 Hectares
Site coordinates	SP 7972 4414 52.089442479166 -0.836304541571 52 05 21 N 000 50 10 W Point
Project creators	
Name of Organisation	Headland Archaeology
Project brief originator	The Environmental Dimension Partnership
Project design originator	Headland Archaeology
Project director/manager	Harrison, D
Project supervisor	Dyulgerski, K.
Type of sponsor/funding body	Developer
Project archives	
Physical Archive Exists?	No
Digital Archive recipient	In house
Digital Contents	"none"
Digital Media available	"Geophysics","Survey"
Paper Archive Exists?	No
Project bibliography 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Prospect Road, Castlethorpe, Milton Keynes; Geophysical Survey
Author(s)/Editor(s)	Bishop, R.
Date	2019
Issuer or publisher	Headland Archaeology
Place of issue or publication	Leeds
Description	PDF[A]
Entered by	David Harrison (david.harrison@headlandarchaeology.com)
Entered on	19 June 2019

APPENDIX 6 SECTION 42 LICENCE TO CARRY OUT A GEOPHYSICAL SURVEY

Historic England

Mr Matthew Morgan
Environmental Dimension Partnership Ltd
Second Floor, Darwin House
67 Rodney Road
Cheltenham
Glucesterhire
GL50 1HX

Direct Dial: 0207 973 3700

Our ref: AA/060529

2 May 2019

Dear Mr Morgan

Ancient Monuments and Archaeological Areas Act 1979 (as amended) section 42 - licence to carry out a geophysical survey

CASTLETHORPE CASTLE, PROSPECT ROAD, CASTLETHORPE, MILTON KEYNES
Case No:SL00212191
Monument no: 1011299

I refer to your application dated 25 April 2019, to carry out a geophysical survey at the above site.

Historic England is empowered to grant licences for such activity and I can confirm that we are prepared to do so as set out below.

By virtue of powers contained in section 42 of the 1979 Ancient Monuments and Archaeological Areas Act (as amended by the National Heritage Act 1983) Historic England hereby grants permission for geophysical survey of CASTLETHORPE CASTLE, for the areas shown on the map that accompanied your application (copy attached). This permission is subject to the following conditions.

1. The permission shall only be exercised by Headland Archaeology (UK) Ltd. and by no other person. It is not transferable to another individual.

2. The permission shall commence on 29 April 2019 and shall cease to have effect on 10 May 2019.

3. A full report summarising the results of the geophysical survey and their interpretation shall be sent in hard copy to Jessica Laker at the address below and electronic (pdf) format to jessica.laker@historicengland.org.uk, copied to Paul.Linford@HistoricEngland.org.uk no later than 3 months after the completion of the survey.

4TH FLOOR, CANNON BRIDGE HOUSE, 25 DOWGATE HILL, LONDON EC4R 2YA
Telephone 020 7973 3700
HistoricEngland.org.uk

Historic England

4. The enclosed questionnaire shall be completed and appended to the survey report. For convenience an electronic version of this questionnaire can be downloaded from http://HistoricEngland.org.uk/advice/technical-advice/archaeological-science/geophysics.

5. A copy of the report shall also be sent (in their preferred format) to the local Historic Environment Record (HER). The local HER's contact details can be found at http://www.heritagegateway.org.uk/gateway/chr/default.aspx.

6. A record signposting your investigation shall be made with the Archaeology Data Service using their online OASIS Data Collection form no later than 3 months after completion of the survey. Please see http://oasis.ac.uk/ for details or contact oasis@HistoricEngland.org.uk for information and training.

This letter does not carry any consent or approval required under any enactment, bye-law, order or regulation other than section 42 of the 1979 Act (as amended).

You are advised that the person nominated under this licence to carry out the activity should keep a copy of this licence in their possession in case they should be challenged whilst on site.

Yours sincerely

Jessica Laker

Jessica Laker
Business Officer
E-mail: jessica.laker@historicengland.org.uk

Historic England

Historic England Geophysical Survey Summary Questionnaire

Survey Details

Name of Site: CASTLETHORPE CASTLE

County: MILTON KEYNES

NGR Grid Reference (Centre of survey to nearest 100m): 797200,441400

Start Date: 13-05-2019 **End Date:** 13-05-2019

Geology at site (Drift and Solid):
Solid - Blisworth Limestone, Whitby Mudstone, Wellington Limestone Member, Stamford Member, and Rutland Mudstone Formation
Drift – River Terrace Deposits and Oadby Member - diamicton

Known archaeological Sites/Monuments covered by the survey
(Scheduled Monument No. or National Archaeological Record No. if known)
101129

Archaeological Sites/Monument types detected by survey
(Type and Period if known. "?" where any doubt).
Romano-British?

Surveyor (Organisation, if applicable, otherwise individual responsible for the survey):
Headland Archaeology

Name of Client, if any:
Bovis Homes Ltd

Historic England

Purpose of Survey:
The general aim of the geophysical survey was to provide sufficient information to establish the presence/absence, character and extent of any archaeological remains within the survey area. This will therefore enable an assessment to be made of the impact of any future development on any sub-surface archaeological remains, if present.

Location of:

a) Primary archive, i.e. raw data, electronic archive etc:
Headland Archaeology

b) Full Report:
Headland Archaeology

Historic England

Technical Details

(Please fill out a separate sheet for each survey technique used)

Type of Survey (Use term from attached list or specify other):
Magnetometer

Area Surveyed, if applicable (In hectares to one decimal place):
5

Traverse Separation, if regular: 1m **Reading/Sample Interval:** 10Hz

Type, Make and model of Instrumentation:
Bartington GRAD601

For Resistivity Survey:

Probe configuration:

Probe Spacing:

Land use at the time of the survey (Use term/terms from the attached list or specify other):
Grassland-Pasture

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Additional Remarks (Please mention any other technical aspects of the survey that have not been covered by the above questions such as sampling strategy, non standard technique, problems with equipment etc.):

List of terms for Survey Type

Magnetometer (includes gradiometer)

Resistivity

Resistivity Profile

Magnetic Susceptibility

Electro-Magnetic Survey

Ground Penetrating Radar

Other (please specify)

List of terms for Land Use:

Arable
Grassland - Pasture
Grassland - Undifferentiated
Heathland
Moorland
Coastland - Inter-Tidal
Coastland - Above High Water
Allotment
Archaeological Excavation
Garden
Lawn
Orchard
Park
Playing Field
Built-Over
Churchyard
Waste Ground
Woodland
Other (please specify)

Headland Archaeology South & East
Building 68C | Wrest Park | Silsoe | Bedfordshire MK45 4HS
t 01525 861 578
e southandeast@headlandarchaeology.com

Headland Archaeology Midlands & West
Unit 1 | Clearview Court | Twyford Rd | Hereford HR2 6JR
t 01432 364 901
e midlandsandwest@headlandarchaeology.com

Headland Archaeology North
Unit 16 | Hillside | Beeston Rd | Leeds LS11 8ND
t 0113 387 6430
e north@headlandarchaeology.com

Headland Archaeology Scotland
13 Jane Street | Edinburgh EH6 5HE
t 0131 467 7705
e scotland@headlandarchaeology.com

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