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ARCHAEOLOGICAL

S E R V I C E S

**Land at Ascot Road, Holyport,
Maidenhead, Berkshire**

Geophysical Survey (Magnetic)

by Kyle Beaverstock

Site Code: ARM 17/225

(SU 8950 7824)

Land at Ascot Road, Holyport, Maidenhead, Berkshire

Geophysical Survey (Magnetic) Report

For **Beaulieu Homes Limited**

by Kyle Beaverstock

Thames Valley Archaeological Services Ltd

Site Code ARM 17/225

September 2018

Summary

Site name: Land at Ascot Road, Holyport, Maidenhead, Berkshire

Grid reference: SU 8950 7824

Site activity: Magnetometer survey

Date and duration of project: 21st - 24th of September 2018

Project coordinator: Tim Dawson

Site supervisor: Kyle Beaverstock

Site code: ARM 17/225

Area of site: c.14ha

Summary of results: Although the south-western part of the site appears to have been heavily impacted by modern activity several magnetic anomalies of possible archaeological origin anomalies were identified in the site's north-eastern area.

Location of archive: The archive is presently held at Thames Valley Archaeological Services, Reading in accordance with TVAS digital archiving policies.

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Report edited/checked by: Steve Ford✓ 4.10.18 Tim Dawson✓ 4.10.18
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Land at Ascot Road, Holyport, Maidenhead, Berkshire A Geophysical Survey (Magnetic)

by Kyle Beaverstock

Report 17/225b

Introduction

This report documents the results of a geophysical survey (magnetic) carried out at land adjacent to Ascot Road, Holyport, Maidenhead, Berkshire (SU 8950 7824) (Fig. 1). The work was commissioned by Ms Liz Alexander of Bell Cornwell LLP, Oakview House, Station Road, Hook, RG27 9TP, on behalf of Beaulieu Homes Limited, 4b Market House, 19-21 Market Place, Wokingham, RG40 1AP.

Planning permission (1703857/OUT) has been sought from the Royal Borough of Windsor and Maidenhead for the construction of new housing on c.14ha hectare plot of land. This is in accordance with the Department for Communities and Local Government's *National Planning Policy Framework* (NPPF 2012) and the County's policies on archaeology. The field investigation was carried out to a specification approved by Roland Smith Archaeology Officer for Berkshire Archaeology. The fieldwork was undertaken by Kyle Beaverstock, John Tierney and Ashley Kruger between the 21st and the 24th of September 2018 and the site code is ARM17/225.

The archive is presently held at Thames Valley Archaeological Services, Reading in accordance with TVAS digital archiving policies.

Location, topography and geology

The site is located in the small town of Holyport, to the south of Maidenhead and west of Windsor, in the parish of Bray in eastern Berkshire. The site lies on agricultural land between Holyport road and Ascot road (A330) to the south of the M4 motorway and to north of the historic core of Holyport. The site occupies an elevation of approximately 26m above Ordnance Datum. According to the British Geological Survey (BGS 1981) the underlying geology consists of Taplow Gravel at the northern end of the site and Reading Beds at the southern end of the site. Weather and ground conditions during the survey were largely dry and clear (Pl. 1-4).

Site history and archaeological background

The archaeological potential of the site has been highlighted in a desk-based assessment (Elliott 2017). In summary the site lies within the archaeologically rich Thames Valley with a range of sites and finds recorded

locally. Examples of local sites comprise Neolithic occupation recorded at Canon Hill to the east (Bradley et al 1976) with an Early Mesolithic occupation site and Saxon features to the north (Ames 1993). In particular, recent fieldwork (subsequent to production of the desktop study) has recorded Late Neolithic pits, Early Saxon occupation and a Bronze Age ring ditch levelled burial mound at Braywick to the north with Bronze Age occupation at Bray to the west (Galleano 2018).

The centre of the site itself is occupied by what is considered to be a medieval moated manor house and LiDAR has suggested the presence of ring ditches (levelled round barrows). A recent aerial photograph has also revealed the presence of another ring ditch as a cropmark. A former prisoner of war camp is also believed to have occupied the western part of the site, with scattered visible remains across this area.

As a consequence of the possibility of archaeological deposits existing on the site which may be damaged or destroyed by development the results of an evaluation has been requested to determine the nature of this potential and allow appropriate mitigation to take place if necessary.

Methodology

Sample interval

Data collection involved the traversing of the survey area along straight and parallel lines using two cart-mounted Bartington Grad601-2 fluxgate gradiometers. Even coverage was achieved with the use of regularly spaced markers at the ends of traverses and the real-time positional trace plot. Readings were taken at 0.25m intervals along traverses 1m apart, providing an appropriate methodology balancing cost and time with resolution. Traverses were walked at an alternating east to west zig-zag orientation across the northern survey area and north-west to south-east in the eastern field. Whilst the large north-eastern field was clear of any significant obstacles the smaller south-western fields contained numerous obstacles that prevented some areas from being surveyed. A public footpath running along the south western boundary which has been fenced off could not be accessed. On the western side of the site an area of walled orchard was thickly wooded, this was surrounded by the remains of several concrete buildings believed to be associated with the former prisoner of war camp. The field was also recently subject of a brush fire and so some interference from this is possible.

The Grad 601-2 has a typical depth of penetration of 0.5m to 1.0m. This would be increased if strongly magnetic objects have been buried in the site. Under normal operating conditions it can be expected to identify buried features >0.5m in diameter. Features which can be detected include disturbed soil, such as the fill of a ditch, structures that have been heated to high temperatures (magnetic thermoremnance) and objects made from

ferro-magnetic materials. The strength of the magnetic field is measured in nano Tesla (nT), equivalent to 10^{-9} Tesla, the SI unit of magnetic flux density.

Equipment

The purpose of the survey was to identify geophysical anomalies that may be archaeological in origin in order to inform a targeted archaeological investigation of the site prior to development. The survey and report generally follow the recommendations and standards set out by both English Heritage (2008) and the Chartered Institute for Archaeologists (2002, 2011, 2014).

Magnetometry was chosen as a survey method as it offers the most rapid ground coverage and responds to a wide range of anomalies caused by past human activity. These properties make it ideal for the fast yet detailed surveying of an area.

The detailed magnetometry survey was carried out using two dual sensor Bartington Instruments Grad 601-2 fluxgate gradiometers mounted upon a Bartington non-magnetic cart. A two-wheeled lightweight structure pushed by hand, the cart consisted a bank of four vertically-mounted Bartington Grad601-2 magnetic sensor tubes at 1m apart and a Trimble Geo 7x centimetre edition GPS. Readings were collected by two Bartington Grad601-2 loggers and collated using MLgrad601 software on a Linx 12x64 tablet running Windows 10 mounted at the rear of the cart. This enables readings to be taken of both the general background magnetic field and any localised anomalies with the difference being plotted as either positive or negative buried features. All sensors are calibrated to cancel out the local magnetic field and react only to anomalies above or below this base line. On this basis, strong magnetic anomalies such as burnt features (kilns and hearths) will give a high response as will buried ferrous objects. More subtle anomalies such as pits and ditches can be seen from their infilling soils containing higher proportions of humic material, rich in ferrous oxides, compared to the undisturbed subsoil. This will stand out in relation to the background magnetic readings and appear in plan following the course of a linear feature or within a discrete area.

The Trimble Geo7x centimetre edition GPS system with centimetre real-time accuracy was used to tie the cart traverses into the Ordnance Survey national grid. This unit offers both real-time correction and post-survey processing; enabling a high level of accuracy to be obtained both in the field and in the final post-processed data.

Data gathered in the field was processed using the TerraSurveyor software package. This allows the survey data to be collated and manipulated to enhance the visibility of anomalies, particularly those likely to be of

archaeological origin. The table below lists the processes applied to this survey, full survey and data information is recorded in Appendix 1.

Process	Effect
Clip from -14.8 to 15.2 nT south-western fields -1.8 to 2.2 nT north-eastern field	Enhance the contrast of the image to improve the appearance of possible archaeological anomalies.
De-stripe: median traverse	Removes the striping effect caused by differences in sensor calibration, enhancing the visibility of potential archaeological anomalies.
De-spike: threshold 1, diameter 3	Compresses outlying magnetic points caused by interference of metal objects within the survey area.
De-stagger: 100cm; shift positions	Cancels out effects of site's topography on irregularities in the traverse speed.

The raw data plot is presented as a greyscale plot shown in relation to the site (Fig. 3) with the processed data then presented as a second figure (Fig. 4), followed by a third plan to present the abstraction and interpretation of the magnetic anomalies (Fig. 5). Anomalies are shown as colour-coded lines, points and polygons.

The greyscale plot of the processed data is exported from TerraSurveyor in a georeferenced portable network graphics (.PNG) format, a raster image format chosen for its lossless data compression and support for transparent pixels, enabling it to easily be overlaid onto an existing site plan. The data plot is combined with grid and site plans in QGIS 3.2.1 and exported again in .PNG format in order to present them in figure templates in Adobe InDesign CS5.5, creating .INDD file formats. Once the figures are finalised they are exported in .PDF format for inclusion within the finished report.

Results

Several anomalies were recorded over the course of the survey (Fig. 4), although some are likely to be archaeological in nature many are due to interference from later disturbance. The majority of the disturbance appears to be in the south-western fields. These include what appears to be the remains of a perimeter fence [Fig. 5: 1] in the western field, a further outer perimeter fence running north-east to south-west in the field to the east [2] as well as several other shorter strong linear anomalies which may be service lines. All these anomalies are represented by dipolar linear anomalies which are caused by a high ferrous content.

In the upper portion of the western field is a large area of magnetic debris [3], this in an area where there are several visible remains of concrete buildings is most likely the remains of a demolition layer associated with the prisoner of war camp, this is represented by a mottled dipolar pattern.

In the north-eastern field the survey recorded several positive magnetic anomalies that may represent buried archaeological features. Near the centre of the field is a possible ring ditch or levelled barrow [4], this positive anomaly is round with a diameter of approximately 18m. Immediately to the east of this is a smaller, weaker penannular positive anomaly [5] which may indicate another such feature. To the north of this is an area containing several weak positive linear anomalies [6]; the majority run north-west to south east but one bows out to the north-east in its centre [7]. These are crossed almost perpendicularly by a negative magnetic anomaly [8] which may represent a buried earthwork-type feature. To the south-east of these is a weak positive linear [9] which appears to be a possible ditch corner running north-west to south-east for c. 6m before turning to the north-east and running for c. 5m. These linears together may represent an agricultural field system as indicated by the crop marks on the aerial photography. To the south of these a long weak positive linear anomaly stretches for c.125m towards the field's western corner [10].

The south-eastern half of the field is characterised by several shorter linear positive anomalies. If they represent contemporary archaeological features then several of these appear to form corners of rectangular enclosures [11, 12, 13] while others are penannular, possibly indicating the remains of roundhouses or burial mounds [14, 15, 16]. In amongst these anomalies are longer sections of linear weak positive anomaly, one straight [17, 18] and some curved [19, 20]. Near the centre of the south-eastern boundary is weak positive anomaly [21], this sub-rounded anomaly measures c.10m in diameter may represent a large pit. Another weak positive anomaly appears to be four sub-circular shapes in close proximity [22] which may represent a group of buried pits. Although these anomalies appear weak they do seem to correspond to cropmarks seen from recent aerial photography.

Surrounding the edge of the south-eastern field was a standing fence which caused some magnetic interference in these areas which may mask possible archaeological features. Within the northern corner and on the south-western boundary of this field were two large square areas of magnetic disturbance which may represent subsurface deposits relating to the prisoner of war camp. All areas of the survey contained strong magnetic spikes which could indicate the presence of ferrous objects within the subsoil.

Conclusion

Much of the south-western area of the site appears to have been heavily disturbed by modern activity relating to the prisoner of war camp that reportedly occupied this part of the site, and possibly the recent field fire which affected the entire south-western area. However, several anomalies of possible archaeological nature were

identified in the north-eastern field. These include potential ring ditches, an agricultural field system and small enclosures. These all suggest prehistoric activity, possibly Bronze Age, although a precise date will require further investigation.

References

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Appendix 1. Survey and data information

Programme:

Name: TerraSurveyor
Version: 3.0.34.4

South-western fields

Raw data

Survey corner coordinates (X/Y):
Northwest corner: 489380.868263439, 178225.361851139 m
Southeast corner: 489688.838263439, 177964.321851139 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 2 @ 1.00 m spacing.
Dummy Value: 32702

Source GPS Points: 111663

Dimensions

Composite Size (readings): 2369 x 2008
Survey Size (meters): 308 m x 261 m
Grid Size: 308 m x 261 m
X Interval: 0.13 m
Y Interval: 0.13 m

Stats

Max: 107.65
Min: -109.76
Std Dev: 25.38
Mean: -2.85
Median: -0.07
Composite Area: 8.0392 ha
Surveyed Area: 3.5195 ha

Processed data

Stats
Max: 16.77
Min: -16.30
Std Dev: 7.08
Mean: -0.47
Median: 0.02

GPS based Processes 7

- 1 Base Layer.
- 2 Unit Conversion Layer (Lat/Long to UTM).
- 3 DeStripe Median Traverse:
- 4 Despike Threshold: 1 Window dia: 3
- 5 DeStagger by: 100.00cm, Shift Positions
- 6 Clip at 3.00 SD
- 7 Clip from -14.80 to 15.20

North-eastern field

Raw data

Survey corner coordinates (X/Y):
Northwest corner: 489488.392516422, 178442.429252301 m
Southeast corner: 489786.872516422, 178058.669252301 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 2 @ 1.00 m spacing.
Dummy Value: 32702

Source GPS Points: 150927

Dimensions

Composite Size (readings): 2296 x 2952
Survey Size (meters): 298 m x 384 m
Grid Size: 298 m x 384 m
X Interval: 0.13 m
Y Interval: 0.13 m

Stats

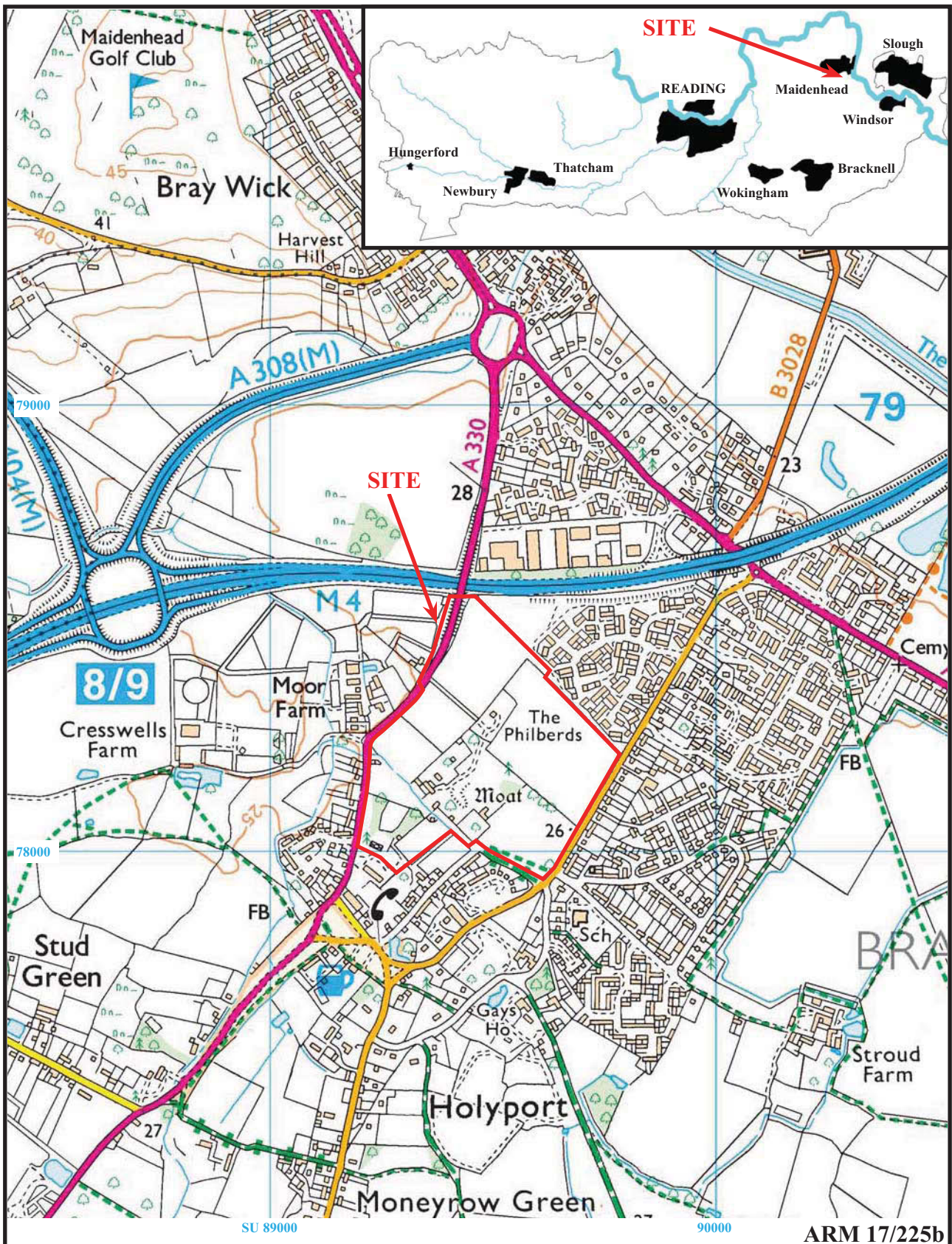
Max: 107.44
Min: -109.75
Std Dev: 8.35
Mean: -1.51
Median: -0.69
Composite Area: 11.454 ha
Surveyed Area: 5.5256 ha

Processed data

Stats
Max: 3.52
Min: -3.10
Std Dev: 1.07
Mean: -0.05
Median: 0.02

GPS based Proce10

- 1 Base Layer.
- 2 Unit Conversion Layer (Lat/Long to UTM).
- 3 DeStripe Median Traverse:
- 4 Despike Threshold: 1 Window dia: 3
- 5 DeStagger by: 100.00cm, Shift Positions
- 6 Clip at 2.00 SD
- 7 Clip from -2.80 to 3.20
- 8 DeStagger by: 100.00cm, Shift Positions
- 9 DeStripe Median Traverse:
- 10 Clip from -2.80 to 3.20



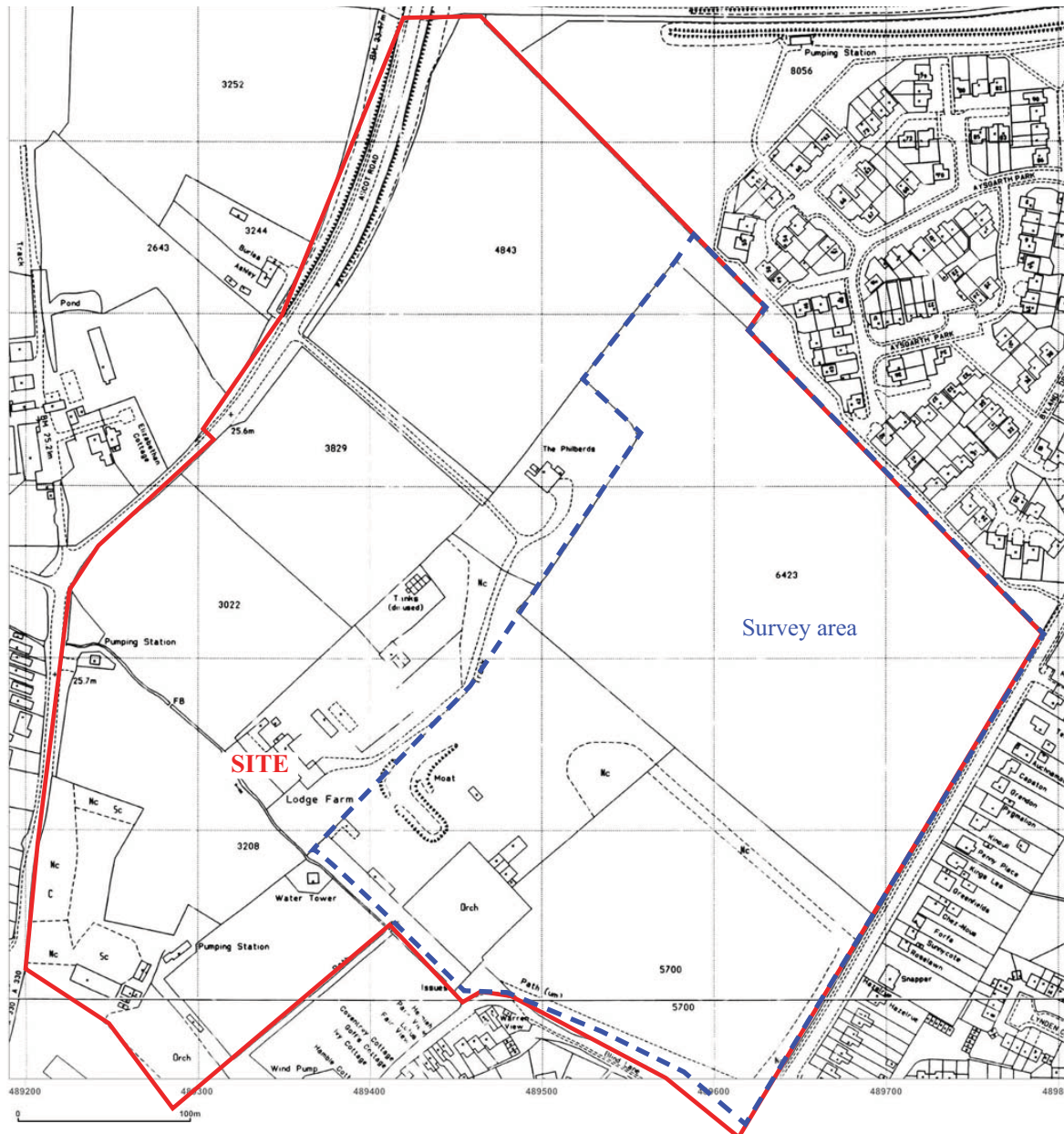
**Land at Ascot Road, Holyport,
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Geophysical Survey (Magnetic)**

Figure 1. Location of site within Holyport and Berkshire.

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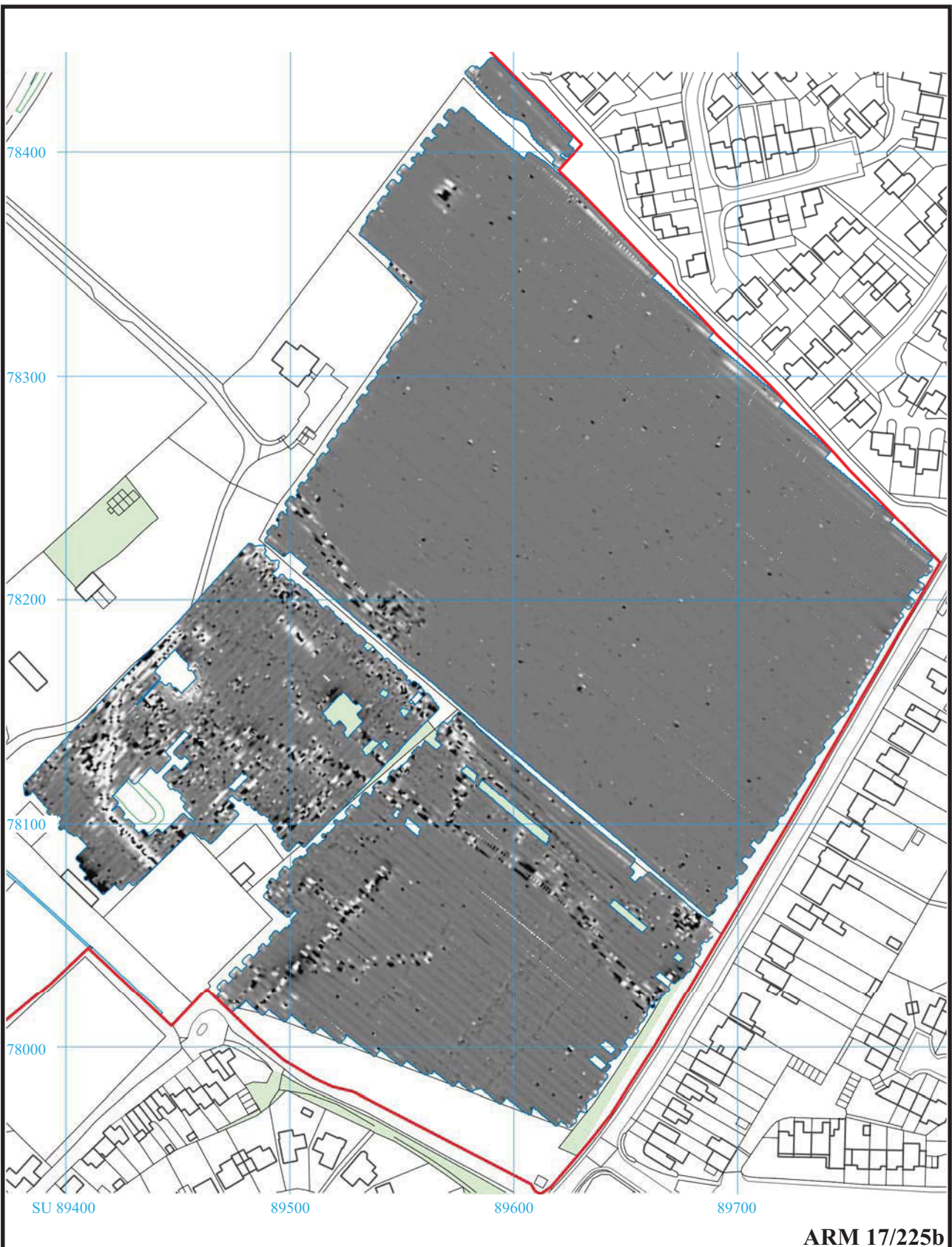


ARM 17/225b



**Land at Ascot Road, Holyport,
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Figure 2. Location of survey area within wider site.

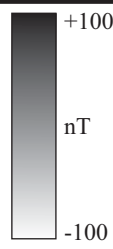
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**Land at Ascot Road, Holyport,
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Geophysical Survey (Magnetic)**
Figure 3. Plot of raw gradiometer data.



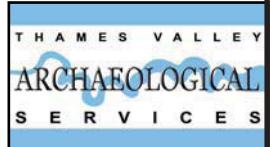


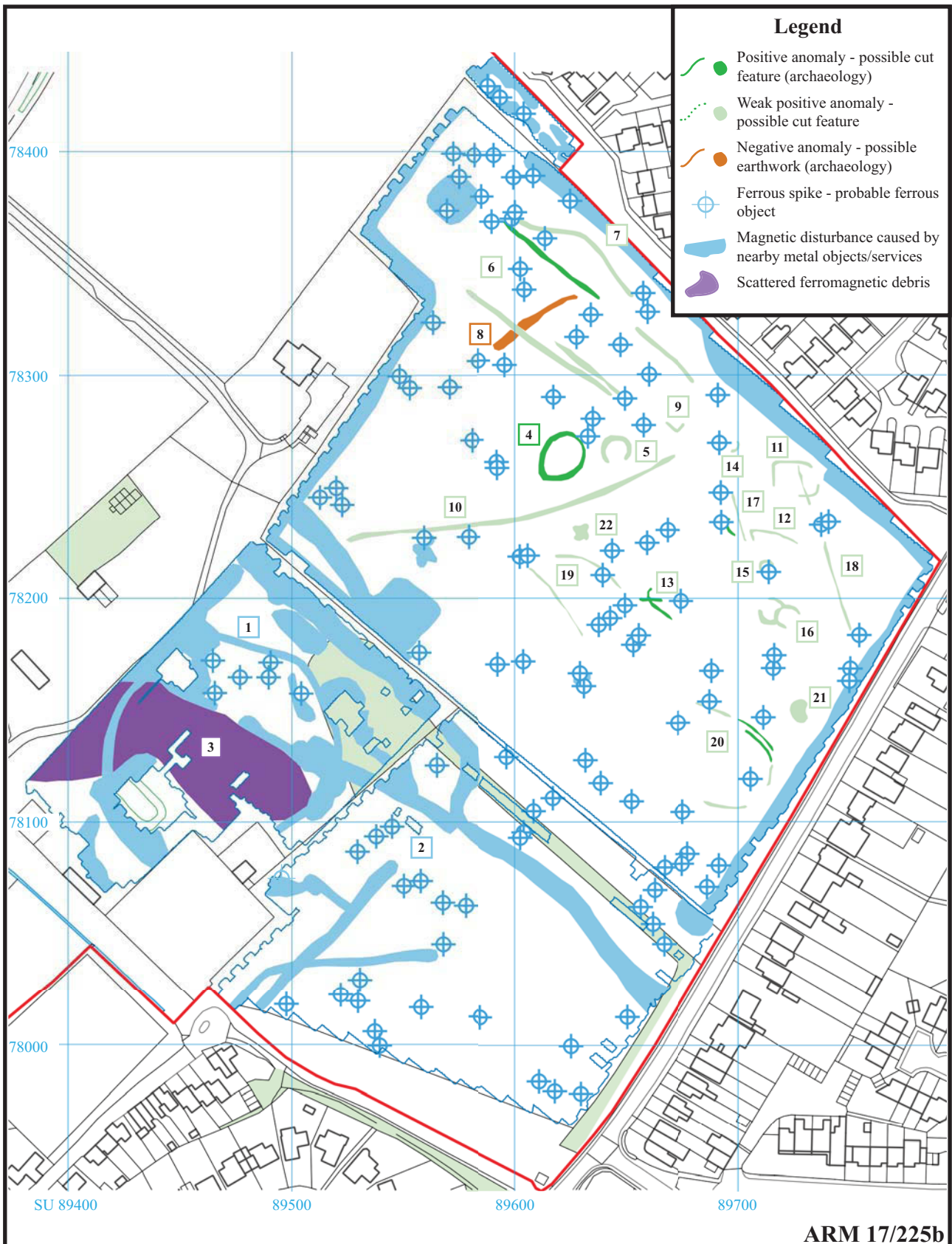
ARM 17/225b



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Figure 4. Plot of minimally processed gradiometer data.





**Land at Ascot Road, Holyport,
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Figure 5. Interpretation plot.**



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Plate 1. The south-western area, looking north-east.



Plate 2. One of the structures present in the south-western area, also showing the burnt ground, looking north-east.



Plate 3. The north-eastern field, looking north-west.



Plate 4. The north-eastern field, looking east.

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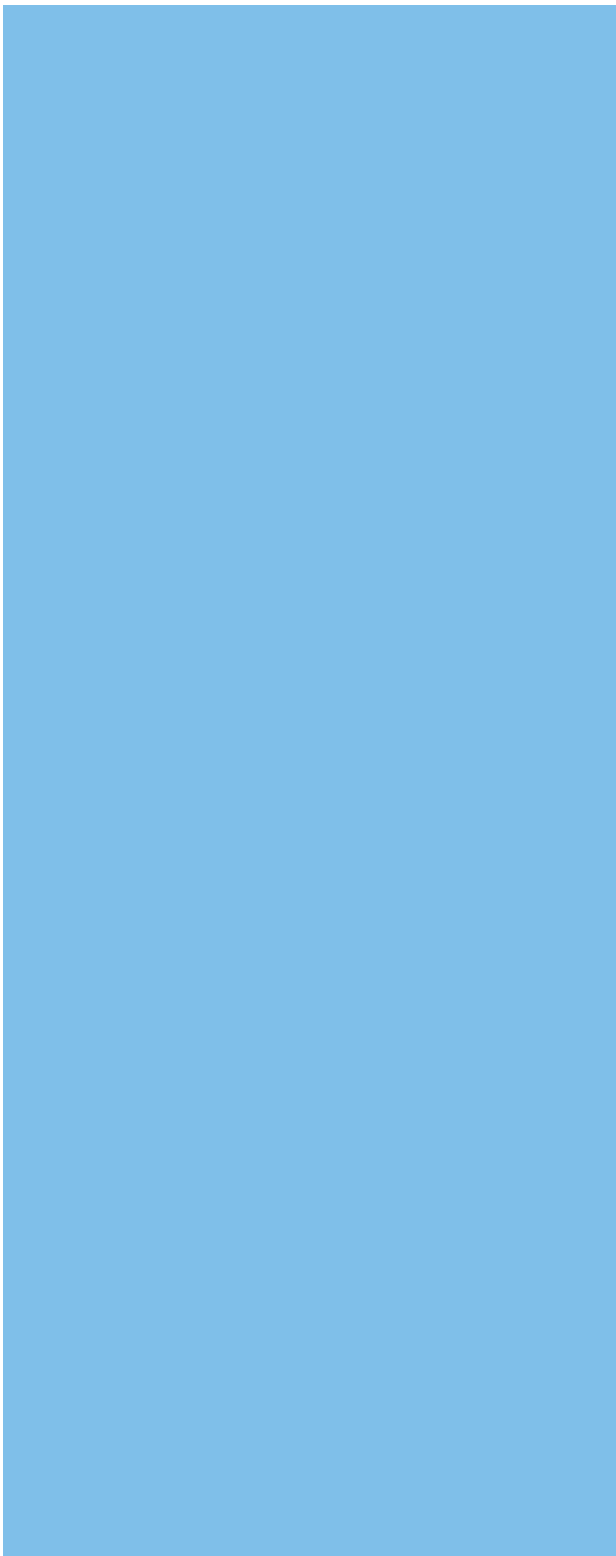
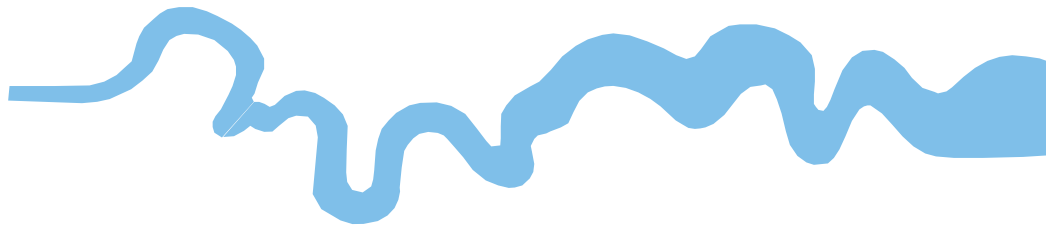
**Land at Ascot Road, Holyport,
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Geophysical Survey (Magnetic)**
Plates 1 to 4.

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TIME CHART

	Calendar Years
Modern _____	AD 1901
Victorian _____	AD 1837
Post Medieval _____	AD 1500
Medieval _____	AD 1066
Saxon _____	AD 410
Roman _____	AD 43 AD 0 BC
Iron Age _____	750 BC
Bronze Age: Late _____	1300 BC
Bronze Age: Middle _____	1700 BC
Bronze Age: Early _____	2100 BC
Neolithic: Late	3300 BC
Neolithic: Early	4300 BC
Mesolithic: Late	6000 BC
Mesolithic: Early	10000 BC
Palaeolithic: Upper	30000 BC
Palaeolithic: Middle	70000 BC
Palaeolithic: Lower	2,000,000 BC





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