

**Archaeological geophysical survey at
Arborfield Garrison
Berkshire
December 2014 - January 2015**

Report No. 15/21

Authors: John Walford
Adam Meadows

Illustrators: John Walford
Adam Meadows
Olly Dindol



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Quality control and sign off:

Issue No.	Date approved:	Checked by:	Verified by:	Approved by:	Reason for Issue:
1	09/02/15	Pat Chapman	-	Andy Chapman	Client approval
2	18/02/15	-	-	-	Minor revisions

Authors: John Walford
Adam Meadows

Illustrators: John Walford
Adam Meadows
Olly Dindol

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MOLA
Bolton House
Wootton Hall Park
Northampton
NN4 8BN
01604 700 493
www.mola.org.uk
sparry@mola.org.uk

STAFF

Project Manager: John Walford MSc

Fieldwork: Adam Meadows BSc
Olly Dindol BSc
George Everest-Dine BA MA
Paulina Galewska BA
Karen McCusker BA
Adam Reid BSc MSc
Adam Starachowski BA
Piotr Szczepanik BA
James West BSc MA

Text: John Walford
Adam Meadows

Illustrations: John Walford
Adam Meadows
Olly Dindol

ARBORFIELD GARRISON

OASIS REPORT FORM

PROJECT DETAILS		OASIS No: molanort1_203279	
Project name	Archaeological geophysical survey at Arborfield Garrison, Berkshire		
Short description	MOLA Northampton was commissioned to carry out an archaeological geophysical survey on c 51ha of land in and around Arborfield Garrison, Berkshire. Approximately 40ha of this land proved suitable for survey. A few minor features of possible archaeological interest were detected, but the majority of the results related to modern land use.		
Project type	Geophysical survey		
Site status	None		
Previous work	Desk-based assessment (O'Gorman 2014)		
Current Land use	Pasture, sports pitches and other grassland		
Future work	Unknown		
Monument type/ period	Possible undated ditches		
Significant finds	None		
PROJECT LOCATION			
County	Berkshire		
Site address	Arborfield Garrison		
Study area	c 51ha (c 40 ha of which was surveyed)		
OS Easting & Northing	SU 770 655 (Northern area) SU 772 639 (Southern area)		
Height aOD	c50 - 65m aOD		
PROJECT CREATORS			
Organisation	MOLA Northampton		
Project brief originator	No curatorial brief issued		
Project Design originator	MOLA Northampton		
Director/Supervisor	Adam Meadows		
Project Manager	John Walford		
Sponsor or funding body	Crest Nicholson PLC		
PROJECT DATE			
Start date	5 December 2014		
End date	22 January 2015		
ARCHIVES	Location	Content	
Physical	N/A	None	
Paper	MOLA Northampton	Site survey records	
Digital	MOLA Northampton	Geophysical survey & GIS data	
BIBLIOGRAPHY			
Title	Archaeological geophysical survey at Arborfield Garrison, Berkshire, December 2014 – January 2015		
Serial title & volume	MOLA 15/21		
Author(s)	Adam Meadows and John Walford		
Page numbers	7		
Date	18 February 2015		

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Archaeological Geophysical Survey at Arborfield Garrison, Berkshire December 2014 - January 2015

ABSTRACT

MOLA Northampton was commissioned to carry out an archaeological geophysical survey on c 51ha of land in and around Arborfield Garrison, Berkshire. Approximately 40ha of this land proved suitable for survey. A few minor features of possible archaeological interest were detected, but the majority of the results related to modern land use.

1 INTRODUCTION

MOLA Northampton was commissioned by Crest Nicholson to carry out an archaeological geophysical survey of land at Arborfield Garrison in the parishes of Arborfield, Barkham and Finchampstead, Berkshire (Fig 1). The survey covered two distinct areas: a group of small parcels of land around the garrison itself ('The Northern Area', NGR SU 770 655) and a more compact block of land c 1.5km to the south around West Court Farm ('The Southern Area', NGR SU 772 639). The combined extent of the proposed survey areas was c 51ha, of which c 40ha were actually available for survey.

The fieldwork, which comprised a detailed magnetometer survey, was conducted in two stages. The majority of the site was surveyed from 5 to 18 December 2014, and the remainder from 19 to 22 January 2015. Parts of the work required escorted access on to sensitive military land, and thanks are due to Adam Bamford of Intrinsic Facilities Engineering Ltd for facilitating this.

2 TOPOGRAPHY AND GEOLOGY

2.1 General comments

The survey area comprises several dispersed parcels of land located at Arborfield Garrison in the Wokingham district of Berkshire (Fig 1). These parcels are distributed across a low-lying watershed between the Rivers Lodden and Blackwater. The northern part of the survey area is gently undulating at an elevation of around 50m - 65m aOD and the southern part is almost flat at an elevation of 52m aOD. The local geology consists predominantly of London Clay, but an outcrop of Bagshot Sand is mapped in the north-eastern corner of the survey area (BGS 2015).

It should be noted that London Clay is not considered to be a particularly favourable geology for magnetic survey (Gaffney and Gater 2003, 79; EH 2008, 15). The success of the technique depends to a large extent on the presence of clear contrasts in magnetic enhancement between the topsoil and subsoil, and such contrasts develop to an erratic and unpredictable extent over London Clay. Good and informative survey results can sometimes be obtained, but not as reliably as over many other sedimentary geologies.

2.2 The northern area

The survey of the northern area targeted multiple parcels of land which were distributed in three distinct groups (Fig 1). The eastern and central groups lay within the garrison itself, and comprised a mixture of sports pitches and other open grassland. The western group consisted of rough pasture fields lying outside of the garrison and fronting onto the A327. Some of the land parcels showed evidence of modern landscaping and several incorporated areas which were unsuitable for survey. These included a rifle range in the north-east of the survey area and a derelict plant nursery in the north-west. A much larger area in the south-east was also excluded from the survey, as it was entirely covered by woodland and scrub vegetation.

2.3 The southern area

The southern area comprised a block of six fields, c 23ha in extent, entirely surrounding West Court (Fig 1). West Court itself is in military use, serving as an officers' mess, but the surrounding land is used as pasture for sheep. The original survey proposal also envisioned the survey of narrow strips of land extending westwards along the drive to West Court, but these proved to be unsurveyable due to tree cover.

3 ARCHAEOLOGICAL BACKGROUND

3.1 General comments

Parts of the survey area have been the subject of a previous geophysical survey which comprised topsoil magnetic susceptibility mapping followed up by small areas of magnetometer survey (Haddrell 2008). The susceptibility survey covered approximately 90ha, extending south from the main garrison area to the northern edge of the present survey area around West Court. Susceptibility values were found to vary in the range of 0 - 30 SI units, and magnetometer survey was targeted on a number of the more susceptible 'hotspots'. However, the results were largely uninformative and no definite archaeological features were identified.

A desk-based assessment of the survey area was undertaken in 2014, drawing together Historic Environment Record data, aerial photography and historic mapping (O'Gorman 2014). The key information provided in the assessment report is summarised below.

3.2 The northern area

The earliest evidence of occupation in the vicinity comes from Mesolithic flint flakes found just over a kilometre north-west of the northern survey area (HER No. MWK8594). South-west of this find spot two Bronze Age burial urns were uncovered suggesting the presence of a Bronze Age cemetery. Also, an Iron Age coin has been discovered within a garden c 300 metres north-east of the survey area (MWK8592).

Just outside the western end of the survey area a number of archaeological investigations were carried out prior to a recent housing development. In 1998, Thames Valley Archaeological Services (TVAS) carried out an investigation at the Whitehall Brick and Tile Works. This consisted of a number of phases including trial trenching and targeted open area excavations which uncovered evidence of activity from the late Iron Age to at least the mid 3rd century AD. Further investigations by TVAS were carried out between 2001 and 2002 and in 2011 provided evidence of Iron Age and Roman features in the area including enclosures, round houses and drainage gullies. Finds included sherds of pottery and a fair quantity of iron slag suggesting that metal working was being carried out in the area (O'Gorman 2014, 9-12).

During the medieval and post-medieval periods, the survey area lay within a zone of dispersed settlement at a distance from any nucleated village. There was one small moated site (Scheduled Monument No. 1009886) within the survey area itself, and this became Biggs's Farm in the post-medieval period. This was renamed Old Biggs's Farm in the late 19th century, following the construction of a new 'Biggs's Farm' approximately 500m to the south. The farmhouse at Old Biggs's Farm, which had stood within the moated enclosure, was developed and replaced by Moat House in 1906. This new building served as the residence for the commanding officer of the newly established Arborfield Army Remount Service depot (O'Gorman 2014, 16). The depot developed throughout the 20th century into the present Arborfield Garrison, expanding to cover the sites of other farms including Ellis's Farm and the new Biggs's Farm (O'Gorman 2014, figs 11-16).

3.3 The southern area

The area surrounding West Court contains a variety of historical features and artefact findspots, the oldest of which is the findspot of a Palaeolithic flint tool discovered c 800m south-east of the survey area (HER No MWK8608). The survey area itself straddles the line of the Devils Highway Roman road, which is thought to follow the drive from the A327 to West Court and continuing beneath the buildings and across the eastern field (Fig 1). Supposedly, there is also a concentration of Roman remains in the north-western part of the survey area. However, this appears to be a spurious impression caused by the attribution of imprecisely located antiquarian finds to the nearest plausible 1km grid point on the HER mapping (MWK12608, MWK12609, MWK12610).

West Court itself is a Grade II listed building which dates from at least the 17th century and was extensively renovated in the 19th and mid-20th centuries (List No. 1118093). It may have replaced an earlier medieval house, and it is depicted on the Finchampstead enclosure map (1817) as surrounded by a partial moat. This moat has since been backfilled and does not appear on more recent historic mapping. To the south of the house, historic maps show a long tree-lined avenue running southwards through the former gardens and, whilst this is now disused, its line can still be traced as a low causeway earthwork across the fields.

4 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 independent network of 30m grid squares was established within each of the fields to be surveyed. 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 Institute for Archaeologists (EH 2008; IfA 2011).

The survey data were processed using Geoplot 3.00v software. Striping, caused by slight imbalances between the sensor probes, was removed using the 'Zero Mean Traverse' function and destaggering of the data was performed where necessary.

The processed data is presented in this report in the form of greyscale plots at individually appropriate display ranges, and some is presented at two different display ranges to highlight different types of anomaly. All the plots have been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Figs 2, 4, 5, 7, and 9) and are also presented with interpretive overlays (Figs 3, 6, 8 and 10).

5 SURVEY RESULTS

5.1 The northern area (east) (Figs 2-3)

The two northern fields in this area are currently employed as sports pitches, and the survey has detected a large number of magnetic anomalies relating to this land use. However, a few anomalies of earlier origin have also been detected. These include two pairs of weakly positive linear anomalies which correspond to 19th-century field boundaries depicted on the first edition Ordnance Survey map (O'Gorman 2014, fig 11), and various other disjointed linear anomalies which may represent ditches of indeterminate date. There is also one small and ill-defined rectangular anomaly in the north-western field which could possibly represent a pit.

Three large, slightly elongated dipolar anomalies in the north-western field and one in the north-eastern field correspond to football goalposts. The latter field also contains a moderately intense linear anomaly which corresponds to a cricket crease and a very large rectangular negative anomaly which corresponds to a hoarding surrounding a football pitch. The survey may also have detected a small area of under-pitch drainage, represented by a distinctive 'herringbone' pattern of weak linear anomalies at the eastern end of the area

Two intense linear anomalies of alternating polarity represent pipes running beneath the northern fields, and two other pipes are represented by similar anomalies in the larger of the southern fields. In the smaller southern field there are two intense but non-alternating linear anomalies which may also represent pipes.

Much of the data from these four fields exhibits magnetic 'noise', comprising dense clusters of large of dipolar anomalies and a more widespread scatter of small dipoles and monopoles. These anomalies indicate the presence of abundant magnetic debris including ferrous objects as well as more weakly magnetic materials such as brick rubble and clinker. Some of this material is likely to comprise demolition rubble and residual foundations from the buildings that occupied the southern fields in the 1960s (O'Gorman 2014, fig 15), and the rest is most probably incorporated in layers of made ground under the northern sports pitches.

5.2 The northern area (central) (Figs 4-6)

Three parcels of land were surveyed in this area. They comprise a set of rugby pitches in the west, a cricket pitch south of the rugby pitches, and an area of rough, scrubby grassland in the east. The scheduled moat adjacent to Old Biggs's Farm also lies in this area but was not covered by the survey.

The data from the eastern end of the rugby pitches exhibits very intense magnetic noise indicative of dense scatters of ferrous debris, brick rubble and other magnetic materials.

It is possible that some of this is associated with the remnants of Old Biggs Farm, several buildings of which stood in the area from at least the mid-18th century (O’Gorman 2014, figs 7-15). However, the data is too incoherent for any specific archaeological features to be discerned, or for any debris of archaeological interest to be securely distinguished from modern debris and made ground. Other magnetic noise and discrete ferrous anomalies occur elsewhere, particularly at the western end of the pitches, but these can be more confidently interpreted as modern debris and/or made ground.

One very weak positive linear anomaly which occurs close to the centre of the rugby pitches possibly represents a ditch of indeterminate date. Several other linear anomalies, even weaker and less distinct, may represent further ditches underlying the cricket pitch to the south. These include two possible ditches which follow parallel north-south alignments, perhaps defining the edges of a former trackway.

Other anomalies across the rugby and cricket pitches can be attributed to various modern causes. One narrow positive anomaly along the south-western edge of the cricket pitch perhaps represents a drain, and an intense linear anomaly with alternating magnetic polarity which runs from south-west to north-east across the pitch represents a pipe or cable. On the rugby pitches there is one positive linear anomaly relating to a tarmac path, another representing a recent field boundary and another in the south-west of the pitches which corresponds to the foot of an embankment. There are also a series of intense, alternating linear anomalies representing further pipes or cables.

The four massive positive magnetic halos on the rugby pitches can be attributed to the sets of rugby goalposts. It is possible that some of the smaller paired ferrous dipoles detected on the same pitches represent iron sockets for other goalposts, although this is less certain. On the cricket pitches, there is a rectilinear arrangement of various ferrous anomalies which seemingly relate to the crease.

The survey data from the other area, to the east of the pitches, shows very extensive evidence for modern disturbance. Its western half is occupied by a large mound of modern spoil, which has given rise to an incoherent mass of magnetic ‘noise’. Similar noise extends to the east of the mound, where the survey has also detected four pipes and the footings of a building which stood in the area in the 1960s (O’Gorman, fig 15). The building was perhaps steel-framed, as it is represented by a rectangular arrangement of intense magnetic dipoles such as might arise from the buried stumps of girders.

5.3 The northern area (west) (Figs 7-8)

The survey data from this area is dominated by a virtually ubiquitous scatter of small dipolar and monopolar anomalies which suggest the presence of abundant magnetic debris in the topsoil. It is possible that this debris could be material derived from the former brickworks which once occupied the land to the immediate north-east. Alternatively, it could be modern domestic rubbish which has been introduced onto the land in loads of so-called ‘green waste’ compost.

Apart from the magnetic noise, the survey of this area has detected only a few anomalies of note. Two intense linear anomalies of alternating magnetic polarity represent pipes or cables running towards the derelict house at the centre of the northern field, and a small group of localised positive anomalies at the northern end of the southern field could represent either patches of burnt soil or, more probably, moderately large ferrous objects buried at depth. In the latter area there is also an area of slightly increased magnetic noise which probably represents a deposit of hardcore reinforcing the approach to the adjacent gateway.

5.4 The southern area (Figs 9-10)

The survey of this area has detected a few anomalies of minor archaeological interest. Many of these correspond to field boundaries and other post-medieval landscape features recorded on historic mapping, and none need be any earlier than post-medieval in date.

In the field to the west of West Court and south of the drive, the survey has detected a parallel pair of positive linear anomalies and a rather disjointed group of smaller positive anomalies. The two parallel anomalies are each around 12m long and attain maximum intensities of c 20nT. This level of magnetic enhancement can sometimes arise from burnt soil or ceramic material, and one plausible, though very tentative, interpretation could be that the anomalies represent the scorched sides of a brick kiln or other small scale industrial feature. Such an interpretation is slightly strengthened by the tightly defined zone of magnetic noise that occurs to the west of these anomalies, in the corner of the field, as this resembles the typical response from a backfilled clay-pit or pond.

In the field to the south, the survey has detected one very distinct positive linear anomaly aligned from north to south. This corresponds to a ditch of unknown date which survives as a slight earthwork feature (*pers obs*). Further east in the same field there is weaker linear anomaly, also aligned from north to south, which corresponds to the causeway running up the centre of the former tree-lined avenue to West Court. The same avenue continues through the next field to the south, but here the single anomaly gives way to a pair of parallel anomalies which are more likely to represent ditches to either side of the causeway itself.

In the field to the east of West Court, there are two linear anomalies which correspond with former field boundaries. Both of these are moderately strong, with a number of intense dipolar anomalies along their lengths, and the facts suggests that they have large amount of ferrous scrap within their backfills. To their south-west they link up with a series of positive linear anomalies with sharply-angled junctions. The form and layout of these anomalies suggest that they represent modern features; possibly drains or minor boundaries not recorded on any available map.

To the north of West Court, the survey has detected a subtle linear anomaly aligned north-south which consists of a narrow band of enhanced magnetic noise. Another anomaly of comparable type branches off to the north-east. Neither anomaly corresponds to any feature on the available historic mapping, but their arrangement and position conform well to the layout of the surrounding modern field boundaries and thus suggest a relatively recent date.

At the far southern end of the area, the survey has detected a large tapering positive anomaly with weak negative halos which is seemingly associated with two much slighter positive anomalies to the north. Anomalies such as these are usually of geological origin, and the most likely interpretation in this case would be that the survey has detected part of a palaeochannel or other natural hollow cutting the surface of the bedrock strata.

In contrast to the results from the northern survey area, the results from the southern area show little evidence for modern ground disturbance. Four pipes or cables have been detected running towards West Court from the north, south-west and south-east, each one represented by a typically intense linear anomaly of alternating polarity. There is also one massive magnetic halo at the northern end of the survey area, surrounding an electricity pylon, and a background scatter of smaller magnetic dipoles indicating buried pieces of ferrous debris.

6 CONCLUSION

The geophysical survey has identified a few features which may be of minor archaeological interest, but these are generally small and difficult to interpret in terms of specific date or function. Those that can be confidently interpreted are mostly late post-medieval features, including former field boundaries and a probable pond or small clay-pit. The data provides no evidence of more substantial and extensive archaeological remains, although this apparent absence should not be accepted uncritically without considering the acknowledged limitations of geophysical survey (EH 2008, 14-15).

There is a clear contrast in the character of the survey results from the southern and northern survey areas. To the south, around West Court, the results indicate a typical greenfield site, with only slight and localised modern disturbance. To the north, the results from Arborfield Garrison itself indicate much more heavily disturbed ground. Much of this disturbance can be attributed to made ground and spreads of demolition debris associated with the development of the Garrison, but a few specific features can also be highlighted. These include a network of pipes and cables and the footings of a former building to the north of Biggs Lane.

The contrasting levels of modern disturbance on the different parts of the site may provide a crude indication of those areas where there is a greater or lesser potential for the survival of archaeological remains. Those that are apparently undisturbed will have the greatest potential, whereas those with evident disturbance may have a lesser potential. However, the correlation is unlikely to be precise, because there will be a difference of preservation between areas that have been heavily landscaped or cut by foundations and service trenches and those where the original ground surface is merely buried beneath layers of imported spoil. Thus the present survey results need to be considered alongside other sources of information, including geotechnical data and historic mapping, in order to build up the most reliable model of potential archaeological survival.

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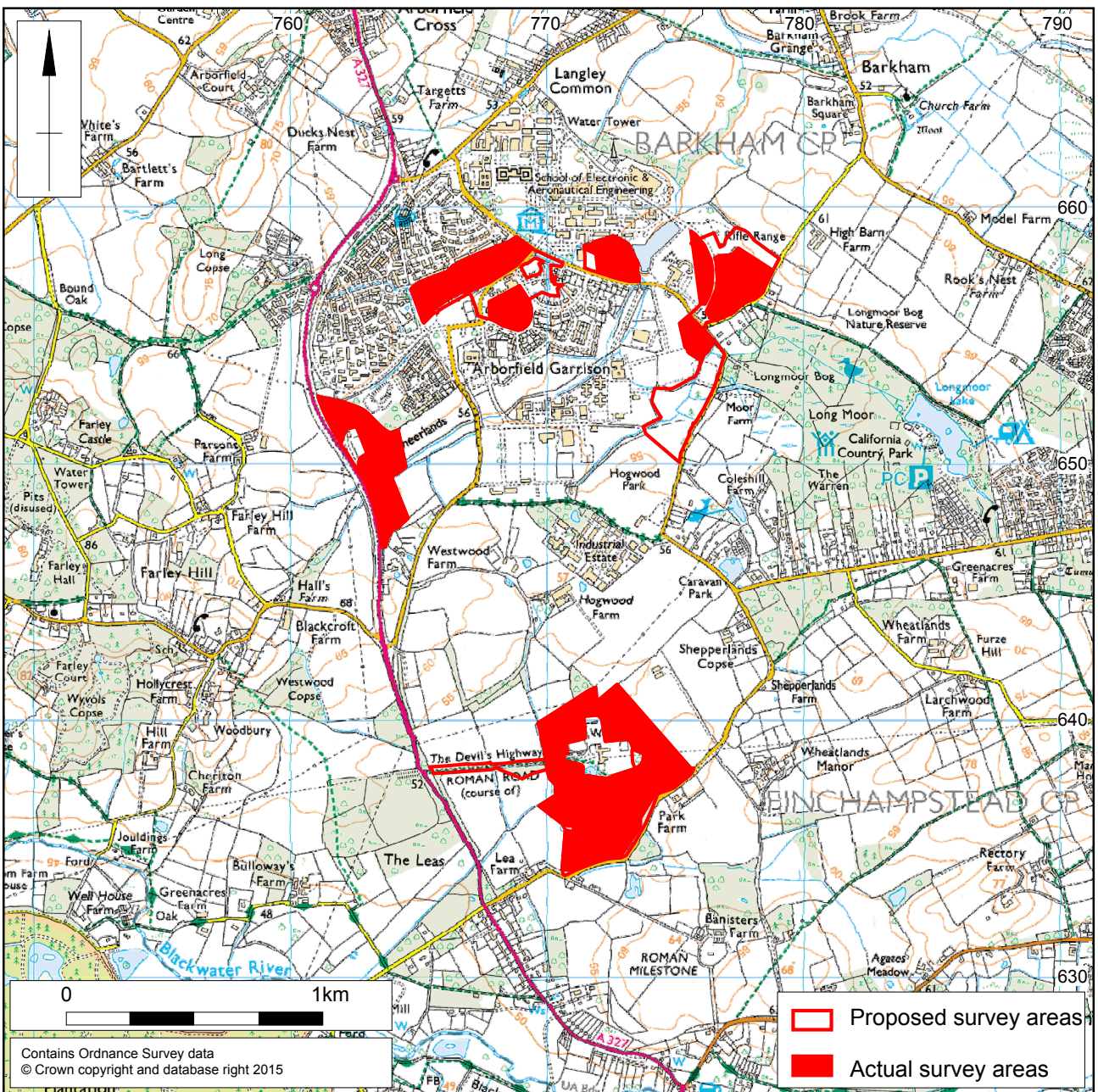
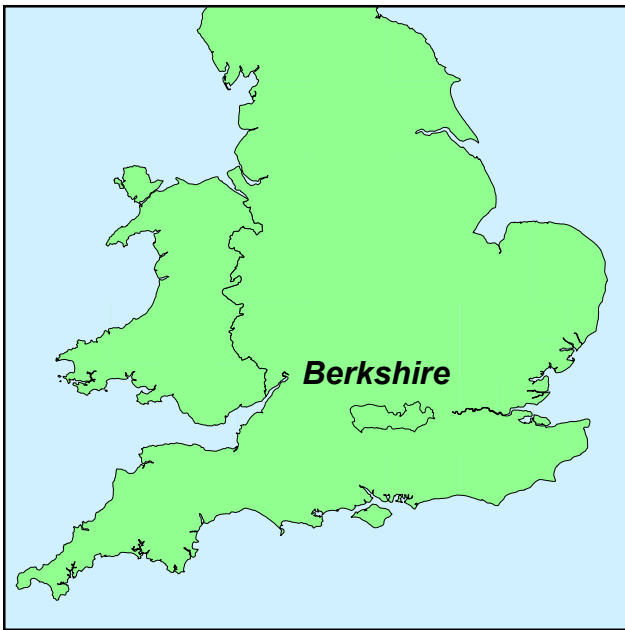
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18 February 2015



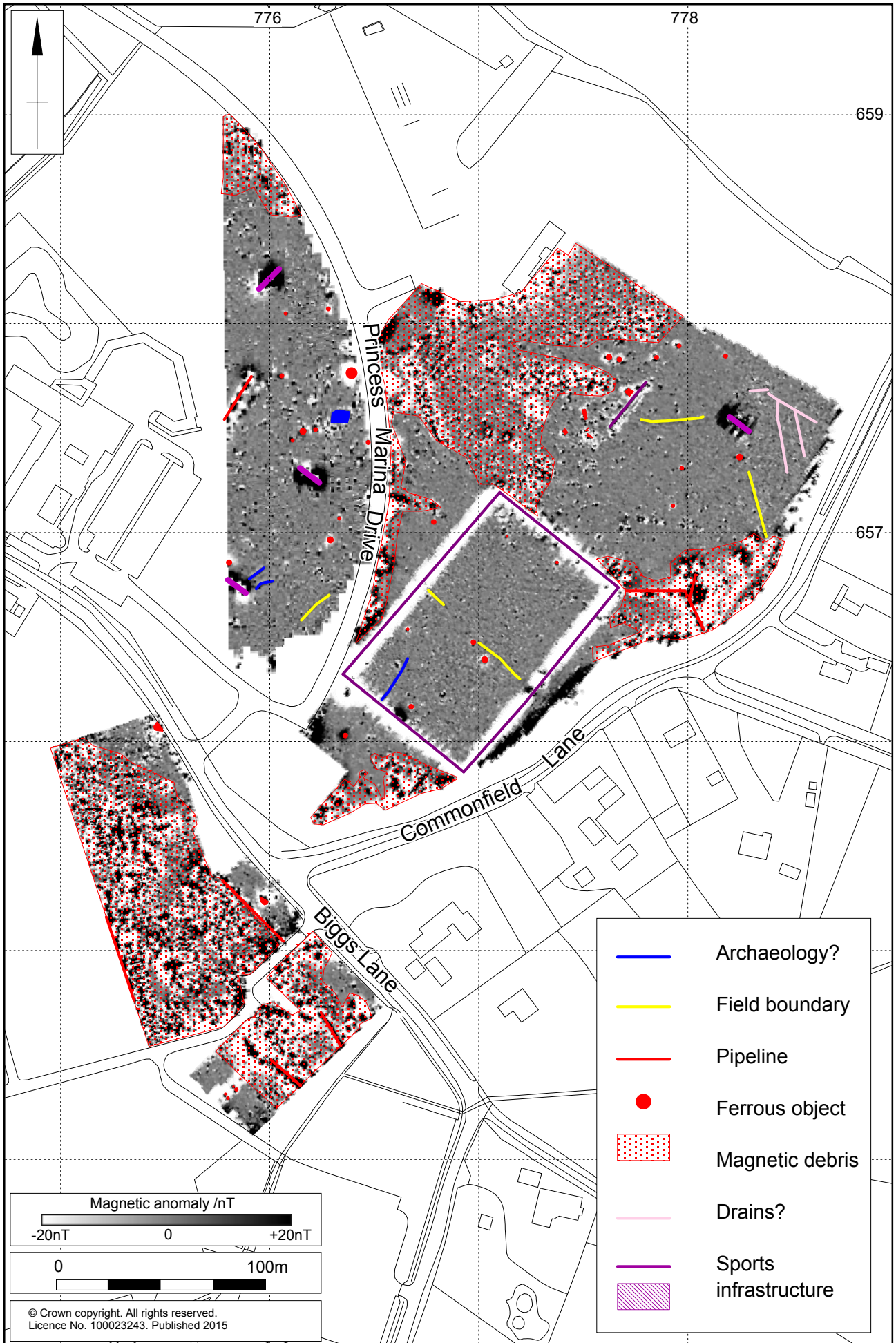
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Site location Fig 1



Scale 1:2500

Magnetometer survey results (north-east) Fig 2



Scale 1:2500

Magnetometer survey interpretation (North-east) Fig 3



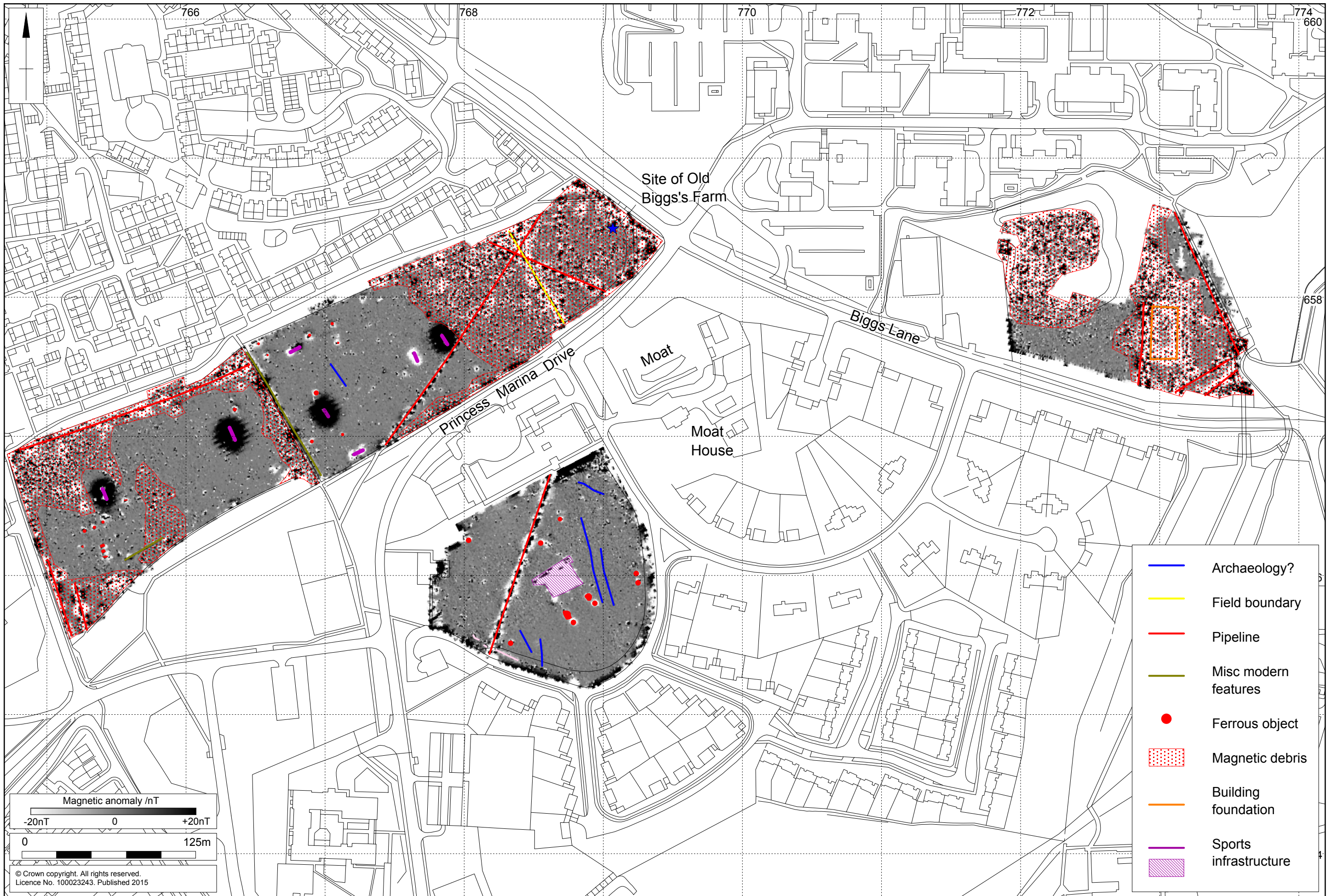
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Magnetometer survey results (north-central), 4nT range Fig 4



Scale 1:2500

Magnetometer survey results (north-central), 20nT range Fig 5



Scale 1:2500

Magnetometer survey interpretation (north-central) Fig 6



Scale 1:2500

Magnetometer survey results (north-west) Fig 7



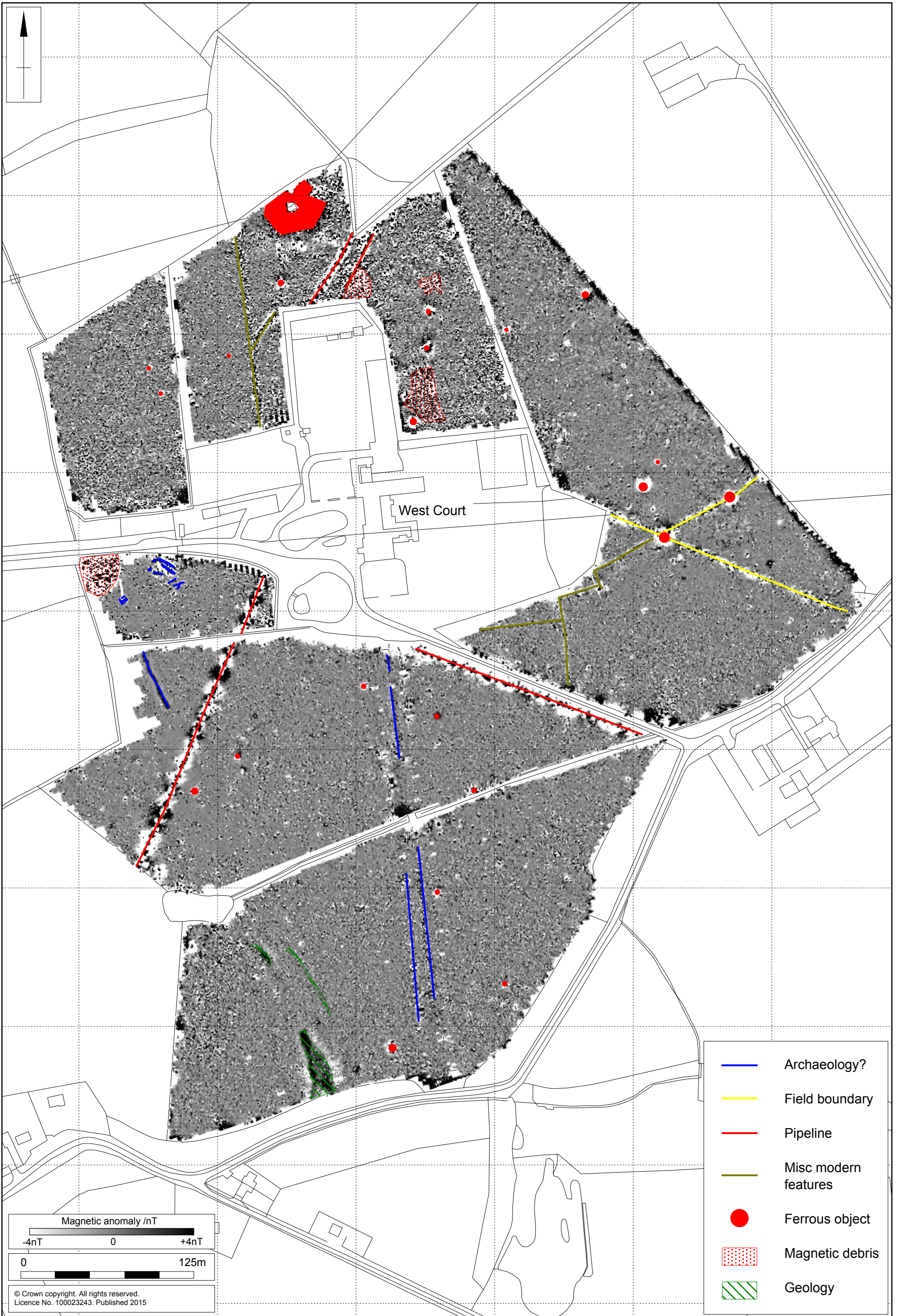
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Magnetometer survey interpretation (north-west) Fig 8

Scale 1:1250



Magnetometer survey results (south) Fig 9





MOLA
Bolton House
Wootton Hall Park
Northampton
NN4 8BN
01604 700 493
www.mola.org.uk
sparry@mola.org.uk