

## **Archaeological geophysical survey on Tooting Common, Wandsworth, London March 2015**

Site Code: TCM15

Report No. 15/54

Author: John Walford

Illustrators: Olly Dindol  
John Walford





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Quality control and sign off:

<b>Issue No.</b>	<b>Date approved:</b>	<b>Checked by:</b>	<b>Verified by:</b>	<b>Approved by:</b>	<b>Reason for Issue:</b>
1	24/04/2015	Pat Chapman	Mark Holmes	Andy Chapman	Client approval

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**OASIS REPORT**

PROJECT DETAILS		Oasis No. molanort1-209417	
Project name	Archaeological geophysical survey on Tooting Common, Wandsworth, London		
Short description	MOLA Northampton was commissioned to carry out a geophysical survey on Tooting Common as a contribution towards the Tooting Common Heritage Project. Two areas were targeted by the survey, one to the west of Tooting Bec Lido and the other to the north of Bedford Hill. Magnetometer survey of the former area identified some anomalies possibly relating to a Second World War anti-aircraft battery and one other anomaly which corresponds to a watercourse shown on mid-nineteenth century mapping. Magnetometer survey of the latter area identified one anomaly tentatively interpreted as a post-medieval brick clamp, and some other anomalies of uncertain origin. An earth resistance survey on the same site at Bedford Hill was minimally informative.		
Project type	Geophysical survey		
Site status	Registered common CL31		
Previous work	Desk-based assessment and LIDAR survey (Riggott 2015a; Riggott 2015b)		
Current land use	Amenity grassland		
Future work	Unknown		
Monument type/ period	WWII Anti-aircraft battery, nineteenth-century ditch, possible post-medieval brick clamp.		
Significant finds	None		
PROJECT LOCATION			
County	Greater London		
Site address	Tooting Common, Wandsworth, London		
Study area	c 3.3ha		
OS Easting & Northing	TQ 293 720 (Tooting Bec Lido site), TQ 292 724 (Bedford Hill site)		
Height OD	c 32-35m aOD		
PROJECT CREATORS			
Organisation	MOLA Northampton		
Project brief originator	Wandsworth Borough Council		
Project design originator	MOLA Northampton		
Director/supervisor	John Walford		
Project manager	John Walford		
Sponsor or funding body	Heritage Lottery Fund, via Wandsworth Borough Council		
PROJECT DATE			
Start date	16 March 2015		
End date	18 March 2015		
ARCHIVES	Location	Content	
Physical	N/A		
Paper	MOLA Northampton	Site survey records	
Digital		Geophysical survey & GIS data	
BIBLIOGRAPHY			
	Journal/monograph, published or forthcoming, or unpublished client report		
Title	Archaeological geophysical survey on Tooting Common, Wandsworth, London, March 2015		
Serial title & volume	MOLA Northampton Reports 15/54		
Author(s)	John Walford		
Page numbers	6		
Date	24 April 2015		

# Contents

<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>2</b>	<b>BACKGROUND</b>	<b>1</b>
2.1	Location and topography	
2.2	Geology	
2.3	Historical and archaeological background	
<b>3</b>	<b>METHODOLOGY</b>	<b>2</b>
3.1	Survey grid establishment	
3.2	Magnetometer survey	
3.3	Earth resistance survey	
3.4	Data processing and presentation	
<b>4</b>	<b>SURVEY RESULTS</b>	<b>3</b>
4.1	Tooting Bec Lido site - Magnetometer survey	
4.2	Bedford Hill site - Magnetometer survey	
4.3	Bedford Hill site - Earth resistance survey	
<b>5</b>	<b>CONCLUSION</b>	<b>5</b>
	<b>BIBLIOGRAPHY</b>	<b>6</b>

## Figures

Cover Magnetometer survey results (extract)

Fig 1	Site location	1:25,000
Fig 2	Magnetometer survey results, Tooting Bec Lido site	1:2000
Fig 3	Magnetometer survey interpretation, Tooting Bec Lido site	1:2000
Fig 4	Magnetometer survey results, Bedford Hill site	1:2000
Fig 5	Earth resistance survey results, Bedford Hill site	1:2000
Fig 6	Magnetometer survey interpretation, Bedford Hill site	1:2000
Fig 7	Earth resistance survey interpretation, Bedford Hill site	1:2000
Fig 8	Grid location, Tooting Bec Lido site	1:2000
Fig 9	Grid location, Bedford Hill site	1:2000

# **Archaeological geophysical survey on Tooting Common, Wandsworth, London March 2015**

## **ABSTRACT**

*MOLA Northampton was commissioned to carry out a geophysical survey on Tooting Common as a contribution towards the Tooting Common Heritage Project. Two areas were targeted by the survey, one to the west of Tooting Bec Lido and the other to the north of Bedford Hill. Magnetometer survey of the former area identified some anomalies possibly relating to a Second World War anti-aircraft battery and one other anomaly which corresponds to a watercourse shown on mid-nineteenth century mapping. Magnetometer survey of the latter area identified one anomaly tentatively interpreted as a post-medieval brick clamp, and some other anomalies of uncertain origin. An earth resistance survey on the same site at Bedford Hill was minimally informative.*

## **1 INTRODUCTION**

MOLA Northampton was commissioned by Wandsworth Borough Council to carry out an archaeological geophysical survey on Tooting Common. This work was a contribution towards the Heritage Lottery funded 'Tooting Common Heritage Project', which aims to explore the natural and cultural heritage of Tooting Common. The survey was envisioned as a pilot study, testing the effectiveness of geophysical techniques on the common by targeting two areas of suspected archaeological interest.

The fieldwork was undertaken from 16 to 18 March 2015. Magnetometer surveys were conducted across 2.16ha of land to the west of Tooting Bec Lido, at TQ 293 720, and 1.16ha of land to the north of Bedford Hill, at TQ 292 724 (Fig 1). An earth-resistance survey, 0.36ha in extent, was also conducted across the latter area. Both surveys have been registered with the London Archaeological Archive and Research Centre under site code TCM15.

## **2 BACKGROUND**

### **2.1 Location and topography**

Tooting Common is a large, irregularly-shaped area of public open space located in south London, between Tooting and Streatham (Fig 1). It measures 93ha in extent and is in mixed use with areas of sports pitches, woodland, ponds and open grassland. It has a generally subdued topography, with most of the central portion lying between 29m and 35m aOD and sloping down very gently to the west.

Both of the survey sites currently comprise areas of open grassland with irregular stands of trees and bushes around their edges. The site to the west of the Lido is laid out as football and hockey pitches but the Bedford Hill site is currently an empty field.

### **2.2 Geology**

The solid geology of Tooting Common comprises London Clay, which is capped by Quaternary drift deposits of head and Lynch Hill terrace gravels to the south of Bedford

Hill (BGS 2015). Cropmarks show that these drift deposits have been subject to periglacial disruption, giving rise to 'patterned ground' (Google Earth, coverage dated 27/6/2010 and 19/7/2013).

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 this survey 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.

## **2.3 Historical and archaeological background**

The history and archaeology of Tooting Common has been the subject of preliminary research, the results of which are presented in draft desk-based assessment (DBA) and LIDAR survey reports (Riggott 2015a, Riggott 2015b). The following site-specific summaries are based upon these sources, with some additional observations.

### ***Tooting Bec Lido site***

The DBA indicates a few features of minor archaeological interest on this site. A former ditch is shown here on the Ordnance Survey map of 1868-75 and can be plausibly equated to a watercourse that appears in a similar location on Roque's map of 1746 (Riggott 2015a, figs 5 and 7). Also, the Greater London Historic Environment Record lists this area as the location of a Second World War anti-aircraft rocket battery (GLHER 300065). Military style buildings (possibly Nissen huts) and a regular grid of unidentified grass-marks appear here on an aerial photograph dated 1946 (Riggott 2015a, fig 12) and are presumed to represent elements of this battery.

### ***Bedford Hill site***

The principal interest of this site derives from it being the closest part of the common to a nineteenth-century mock-gothic building identified as 'The Priory' on Stanford's Map of 1862 (Riggott 2015a, fig 6). This name suggests a possible commemoration of the site of the medieval Tooting Bec Priory. It should be noted, however, that Hughes (1962) has expressed scepticism about the historic significance of this name and, indeed, about the existence of any genuine priory buildings in Tooting at all.

A second reason for interest in this site was that the LIDAR survey had identified a long trapezoidal mound with flanking ditches here. As drawn on the interpretation diagram (Riggott 2015b, fig 3), this feature bore a superficial resemblance to a long barrow. However, such an interpretation appeared very doubtful and the survey results presented below emphatically disprove it.

## **3 METHODOLOGY**

### **3.1 Survey grid establishment**

A survey grid was set out across each survey area by means of a tape measure and optical square, and the locations of the grid points were recorded with a Leica Viva RTK GPS to a tolerance of less than +/- 10cm. The GPS was also used to plot the locations of well-defined points of detail in and around each survey area, so that the grids may be accurately re-established by simple taped measurements if necessary (Figs 8 and 9).

The areas set out for magnetometer survey were divided into 30m grid squares, which formed the basic units of survey. The earth resistance survey at Bedford Hill was



conducted in 20m grid units, which were established by re-dividing the existing 30m magnetometer grid. Each of these grid square sizes are standard for the respective techniques.

### **3.2 Magnetometer survey**

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). The gradiometer was 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.

### **3.3 Earth resistance survey**

The earth resistance survey was conducted with a Geoscan Research RM15 resistance meter. It was deployed in twin probe configuration with a mobile probe spacing of 0.5m and the remote probes spaced a similar distance apart. Measurements of earth resistance were recorded to a precision of 0.1Ω at 1m intervals across each survey grid. This instrument configuration and survey resolution is standard for archaeological survey and its use accords with the guidelines issued by English Heritage and by the Chartered Institute for Archaeologists (EH 2008; ClfA 2011).

### **3.4 Data processing and presentation**

Both sets of survey data were visualised and processed using Geoplot 3.00v software. The magnetometer data was processed with the 'Zero Mean Traverse' function to remove the striping caused by slight imbalance between the two sensor probes, and the 'Destagger' function to correct reading displacements caused by an uneven survey pace. The earth resistance data was processed with the 'Edge Match' function, which levelled out biases in the mean value of adjacent grids arising from the re-locating of the remote probes.

All sets of survey data are presented in this report in the form of greyscale plots scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Figs 2, 4 and 5). Interpretative overlays are presented in Figures 3, 6 and 7.

## **4 SURVEY RESULTS**

### **4.1 Tooting Bec Lido site - Magnetometer survey (Figs 2-3)**

The survey has detected a concentration of magnetic anomalies in the south-eastern corner of the survey area which are tentatively interpreted as relating to Second World War military activity. The main element is a rectangular space, c 50m long by 20m wide, which is defined by a series of positive linear anomalies. Within this is a row of moderately intense positive anomalies which, although individually irregular, form a coherent overall pattern. It possible that these could represent a series of hardcore bases for Nissen huts or other temporary structures, with the enclosing anomalies representing either a set of boundary ditches or a perimeter path surfaced with magnetic material such as clinker. To the east, there is a less clearly defined set of anomalies that may represent similar features extending beyond the edge of the survey area.

Immediately south of the possible hut bases there is a zone of random magnetic noise with a sharply defined northern edge. This could also represent a spread of hardcore or other debris associated with the wartime military structures.

Slightly north of the possible hut bases, the survey has detected an open-ended rectangular anomaly, approximately 4m across, which attains a maximum intensity of c 25nT. The strength and shape of this anomaly might be consistent with the footings of a brick structure or, else a mass of burnt soil or other magnetic debris concentrated in a large pit.

A weakly positive linear anomaly follows a dog-legged course across the centre of the survey area, marking the line of the former ditch recorded on the 1868-75 Ordnance Survey map. As noted in Section 3 above, this feature possibly represents a modified version of the natural watercourse shown on Roque's map of 1746. Other weak linear anomalies converge towards this ditch, and it is most probable that these represent field drains discharging into it.

At the north-western corner of the survey area there are a group of three other positive linear anomalies which are of uncertain significance. They could represent ditches, drains or, less probably, banding within the natural geology, but they are not diagnostic enough to allow a more specific interpretation.

An intense linear anomaly of alternating magnetic polarity represents a pipe crossing the northern half of the survey area. Two other pipes are represented by similar but much smaller anomalies at the southern end of the survey area.

Intense dipolar anomalies of various sizes have been detected widely across the survey area. The majority of these will relate to ferrous objects buried below the ground surface, although the two largest relate to football goalposts standing within the survey area.

#### **4.2 Bedford Hill site - Magnetometer survey (Figs 4 and 6)**

The magnetometer survey has detected a weak and slightly discontinuous linear anomaly crossing this survey area from north-west to south-east. This could represent either a backfilled ditch or field drain, but the evidence is insufficient to determine which.

In the south-western part of the survey area a sub-rectangular positive anomaly with a negative halo has been detected. This measures c 3m x 2.5m and attains a maximum intensity of 98nT. The cause of this anomaly is not known with certainty, but anomalies of similar form, size and intensity have sometimes proved to represent the remnants of late post-medieval brick clamps (eg Chinnock 2015). Such an interpretation would be quite plausible in this case, given the suitability of London Clay for brickmaking and the evident need for bricks in the construction of the nearby nineteenth-century houses.

The survey has also detected a series of localised positive anomalies of moderate strength and irregular form. These cannot be interpreted with confidence, but possible explanations could include small pits or hollows, areas of burnt soil, or pockets of iron mineralisation in the underlying geology.

Two very intense positive linear anomalies with massive negative halos dominate the entire western edge of the survey area. They clearly represent modern services, and at least one must correspond to the gas main which is known to run in this location (information via Scotia Gas Networks). The two anomalies have slightly divergent alignments which correlate very well with the two 'ditch' features noted here on the LIDAR survey (Riggott 2015b, fig 3). Thus the putative 'ditches' may be re-interpreted as slightly subsided hollows along the lines of the trenches in which these services lie.

#### **4.3 Bedford Hill site - Earth resistance survey (Figs 5 and 7)**

The earth resistance results are archaeologically uninformative. They are dominated by an irregularly spaced rectilinear pattern of slight, low resistance anomalies, some of which corresponded to parch-marks in the grass (*pers obs*). The incoherent arrangement of these anomalies argues against an interpretation as field drains, and a more plausible interpretation is that they represent a palimpsest of successive sports pitch layouts. The discovery of sports pitches by resistance survey is precedented, and it has been suggested that the anomalies arise where repeated applications of lime-based whitewash have affected the moisture-retaining capabilities of the soil (Gaffney and Gater 2003, 92).

A single high resistance anomaly occurs at the southern edge of the survey area, forming a halo around the site of a large bush. This probably reflects a patch of atypically dry ground, where the root system has drawn out moisture from the soil. A similar explanation may also account for the general trend towards higher resistance values at the eastern edge of the site, adjacent to Bedford Hill Woods. However, this trend could also be explained by a change in the geology from London Clay in the west to a slightly coarser and better drained head or gravel deposit in the east.

### **5 CONCLUSION**

The survey has identified a few features of minor archaeological interest. To the west of the Lido there is evidence for an infilled ditch or drain which may preserve the line of a former watercourse, and also for a set of features which are provisionally interpreted as a row of Second World War era hut bases. To the north of Bedford Hill, there is another possible drain or ditch and a feature tentatively suggested to represent a late post-medieval brick clamp. All of these features have been detected by magnetometer survey; the small earth resistance survey conducted at Bedford Hill provided no archaeologically useful information.

As well as the above findings, the survey has achieved its aim of investigating the putative bank and ditches identified by the LIDAR survey at the western edge of the Bedford Hill site. These can now be dismissed as spurious features caused by the slight subsidence of two almost parallel modern service trenches.

The results of this work thus show that geophysical survey does have some utility for the archaeological investigation of Tooting Common. However, it is recommended that some of the identified features should be ground-truthed by intrusive investigation to give a better indication of the reliability of the survey results and interpretation. Also, if any further survey were to be commissioned, careful consideration should be given to the fact that large parts of the Common (not including the present survey areas) have been disturbed by wartime and post-war allotments (Riggott 2015a, 13). The residual debris from these, comprising bonfire waste and small pieces of scrap metal, could potentially have an adverse effect on the success of any magnetometer surveys within the affected areas.

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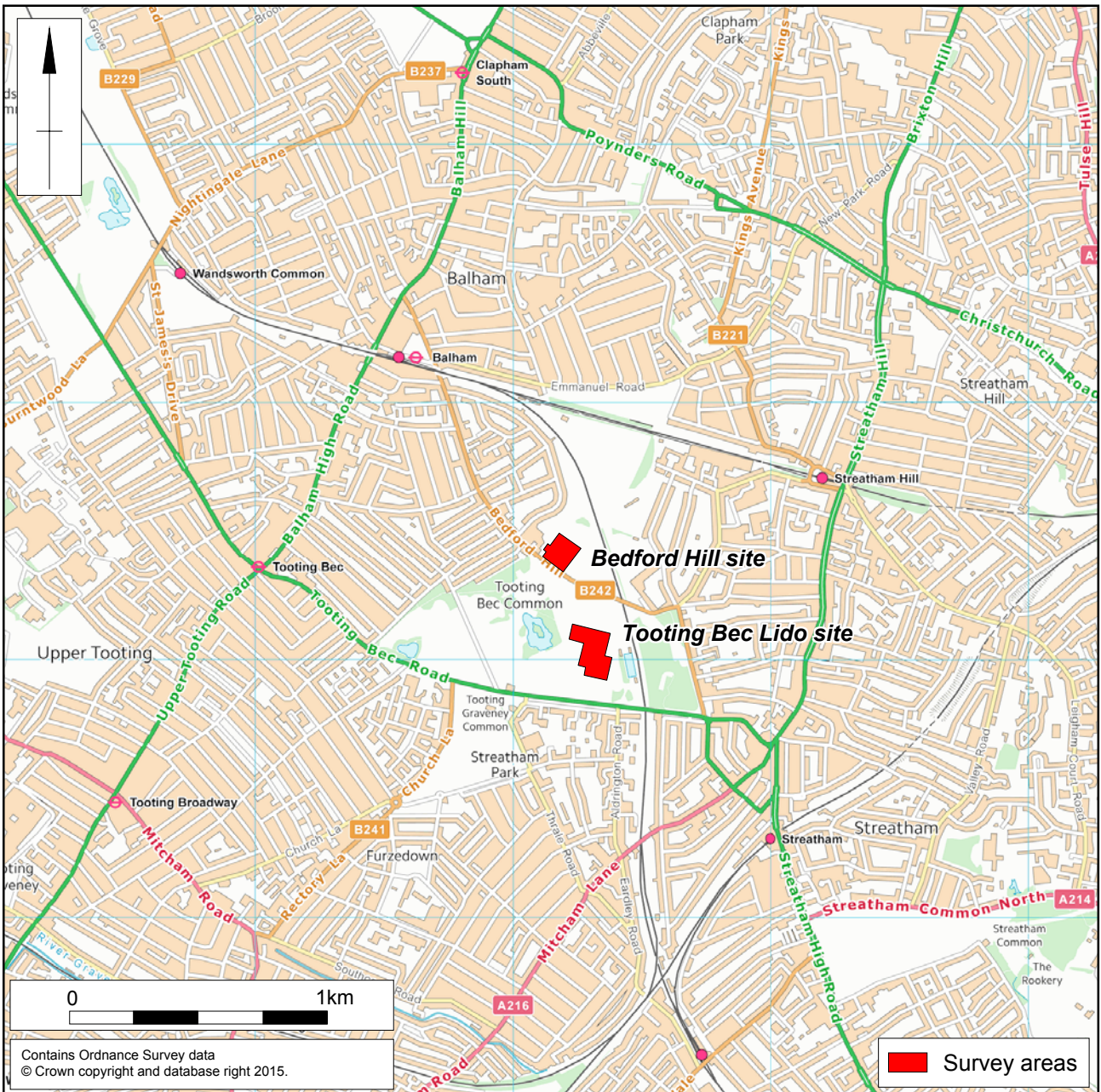
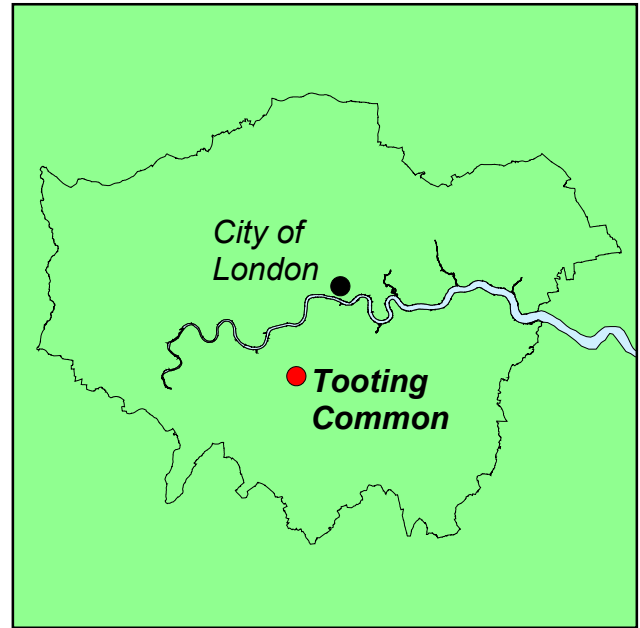
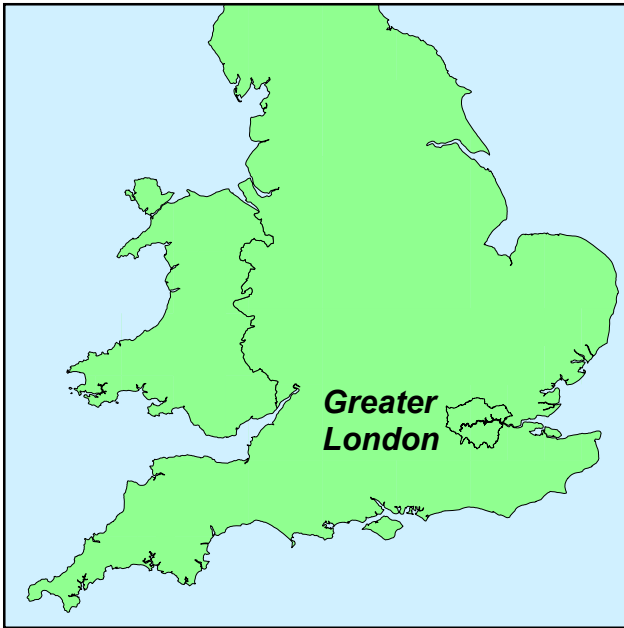
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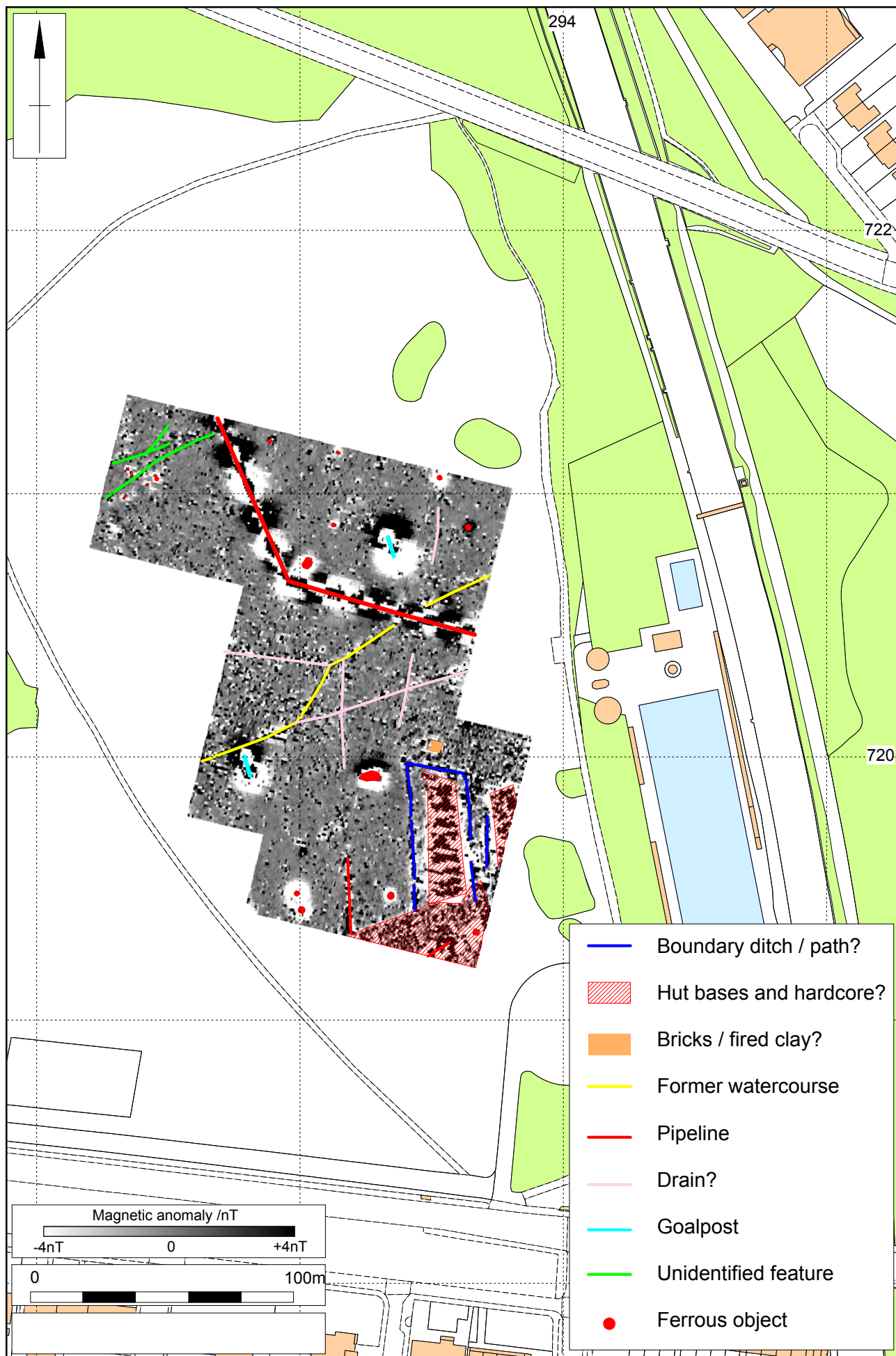
Site location Fig 1





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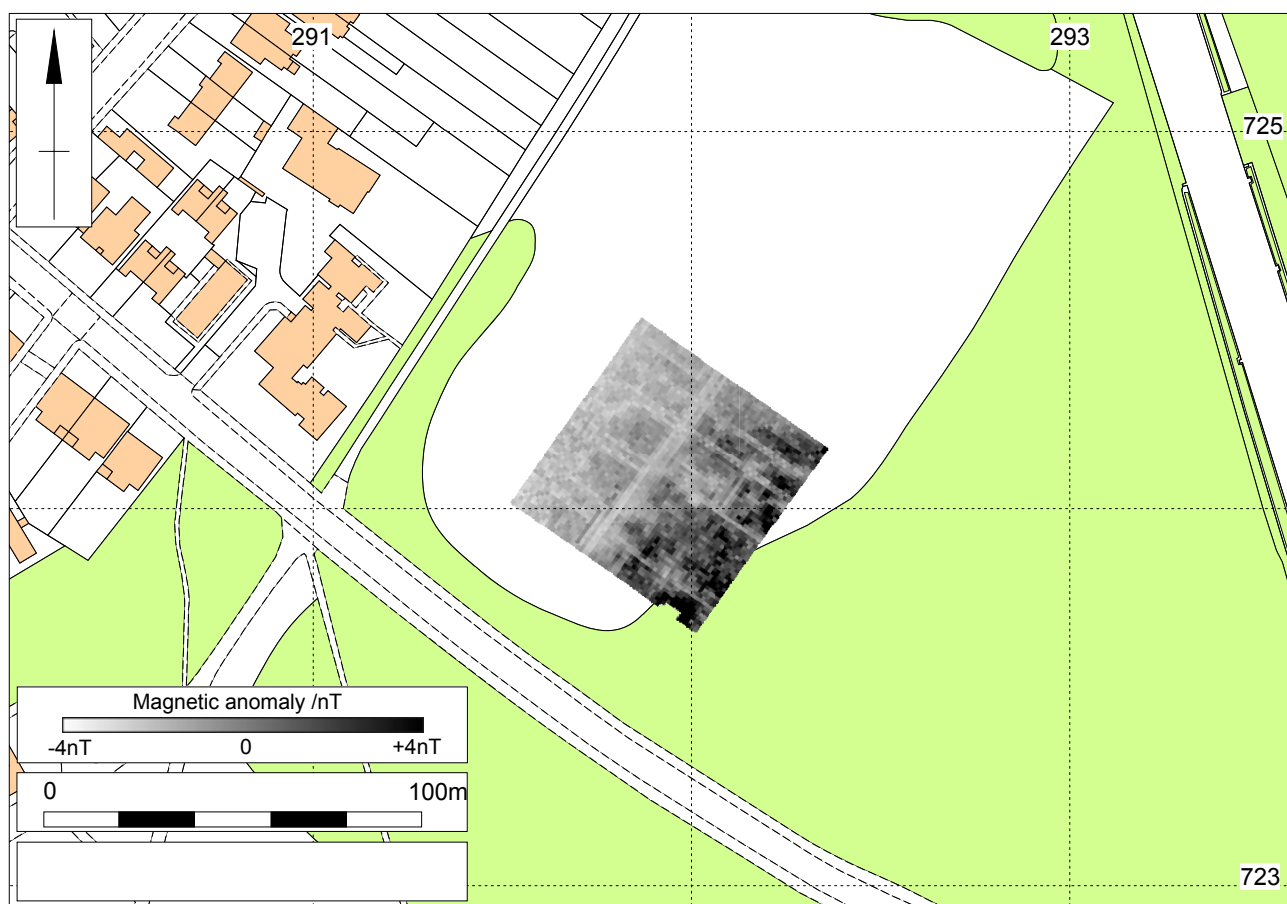
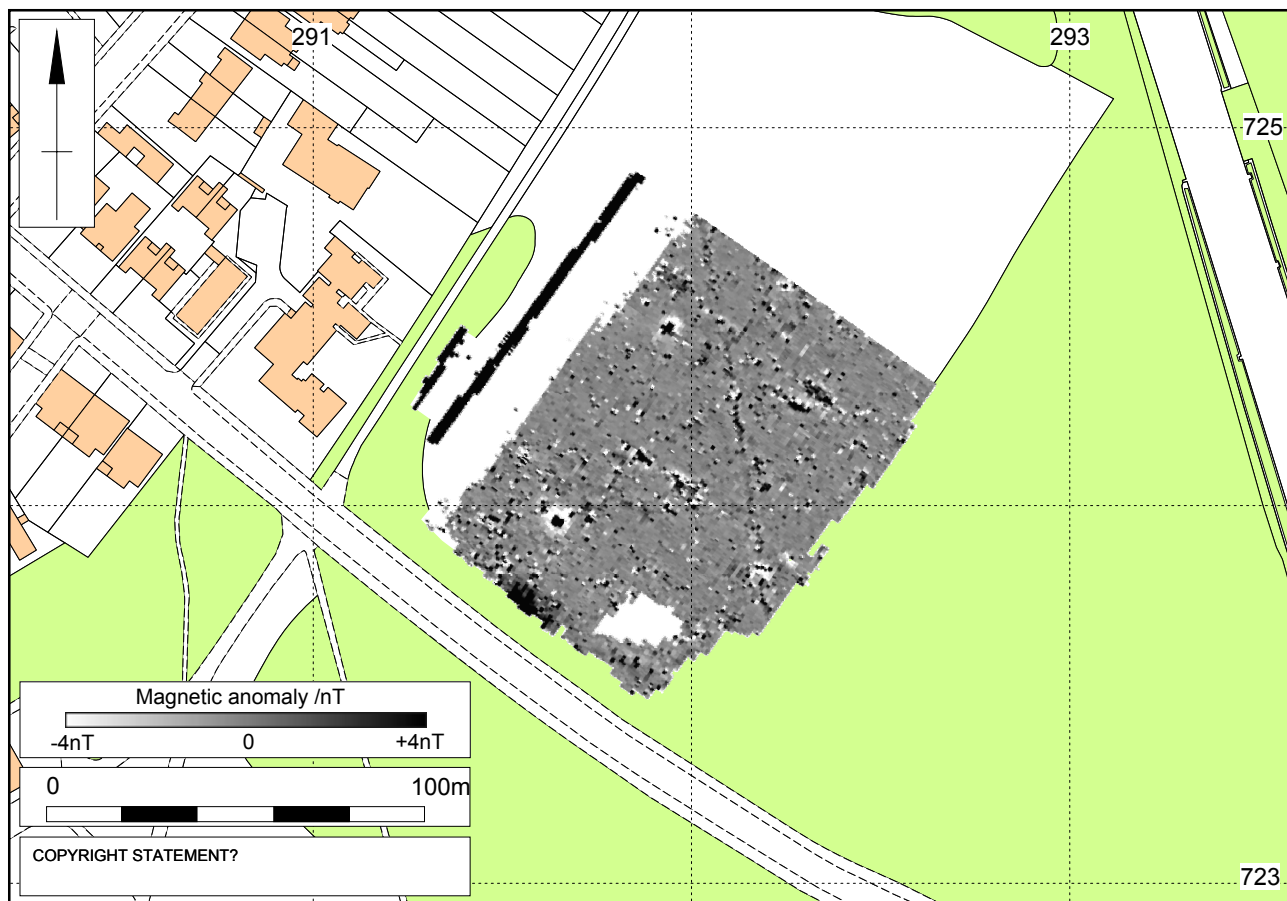
Magnetometer survey results, Tooting Bec Lido site Fig 2



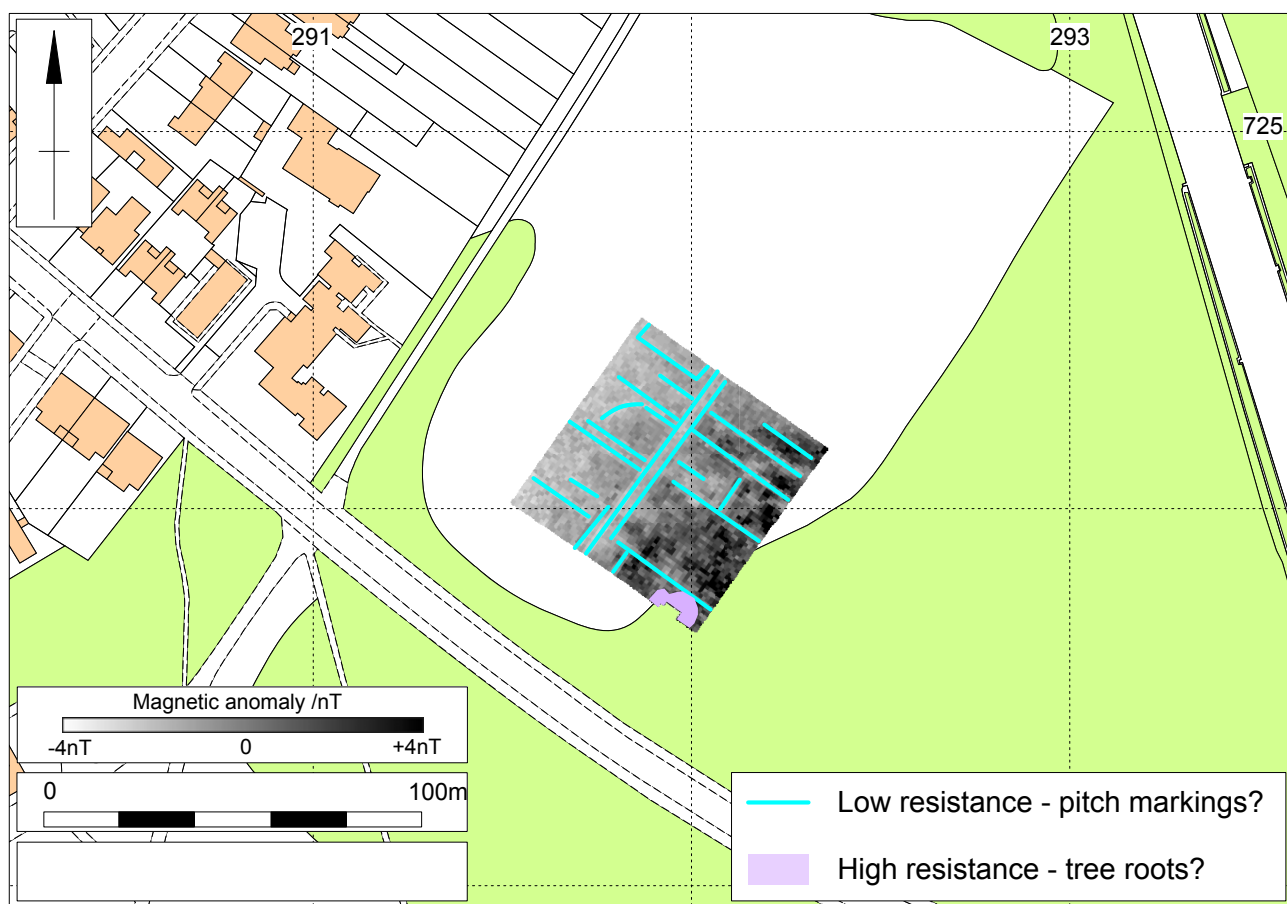
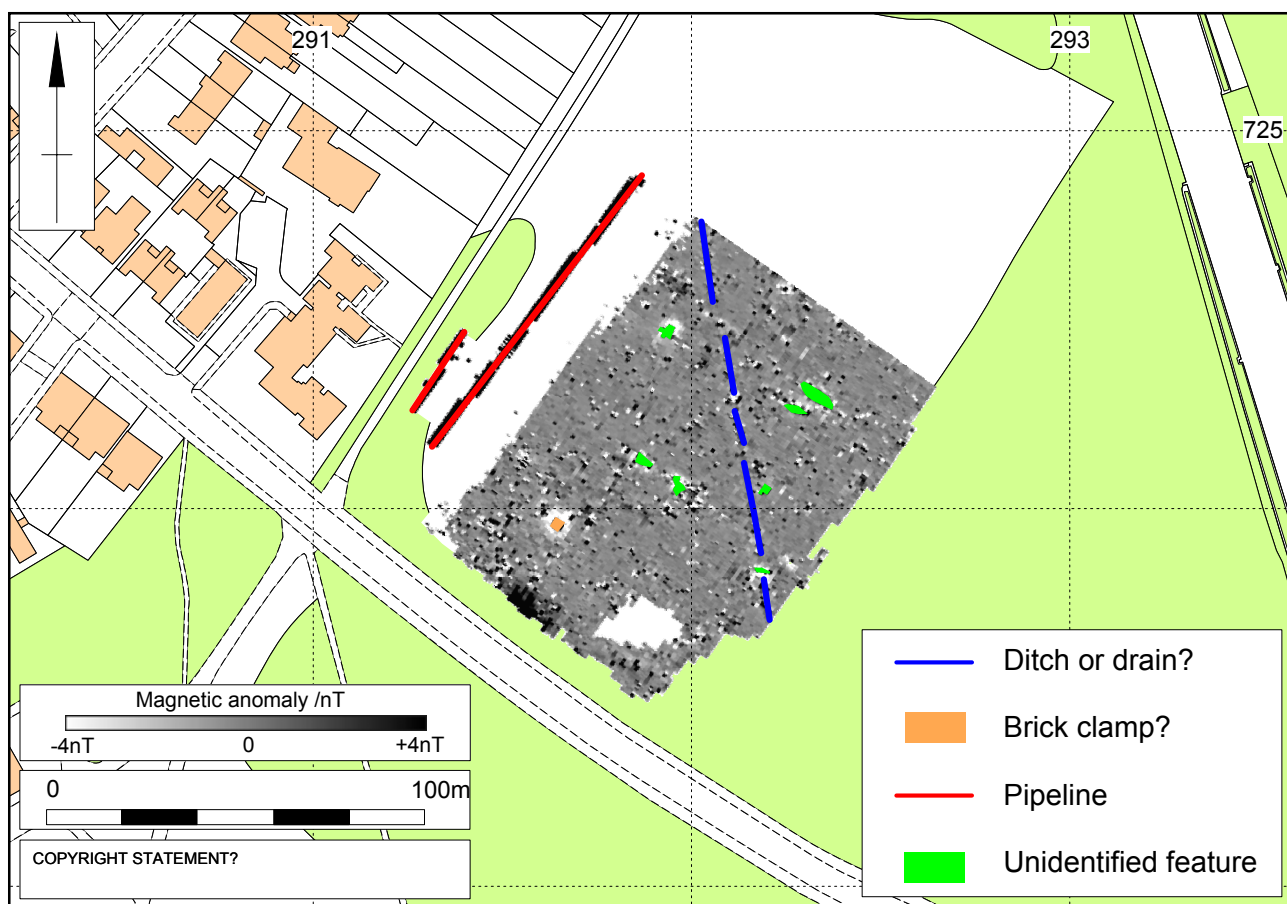
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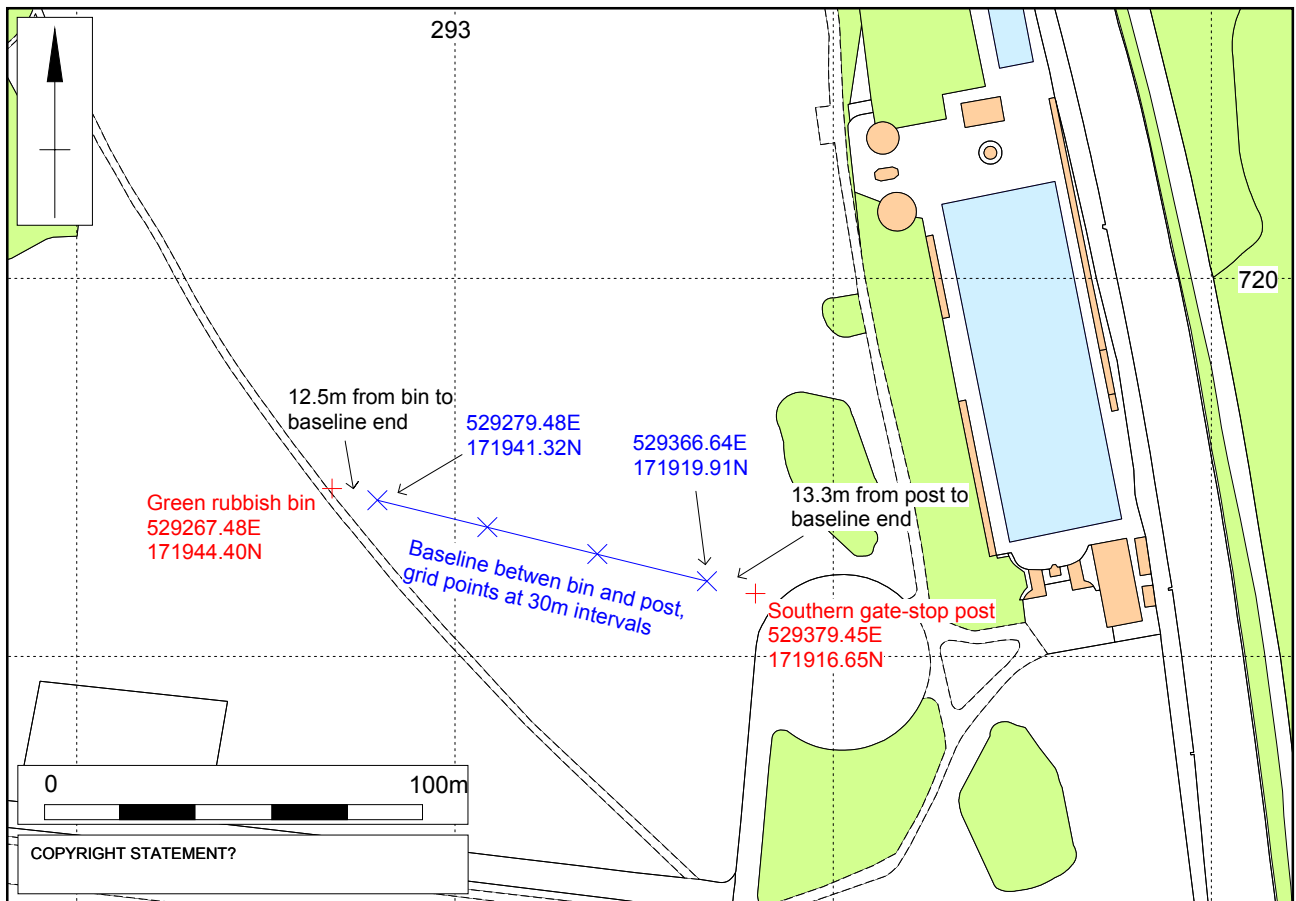
Magnetometer survey interpretation, Tooting Bec Lido site

Fig 3



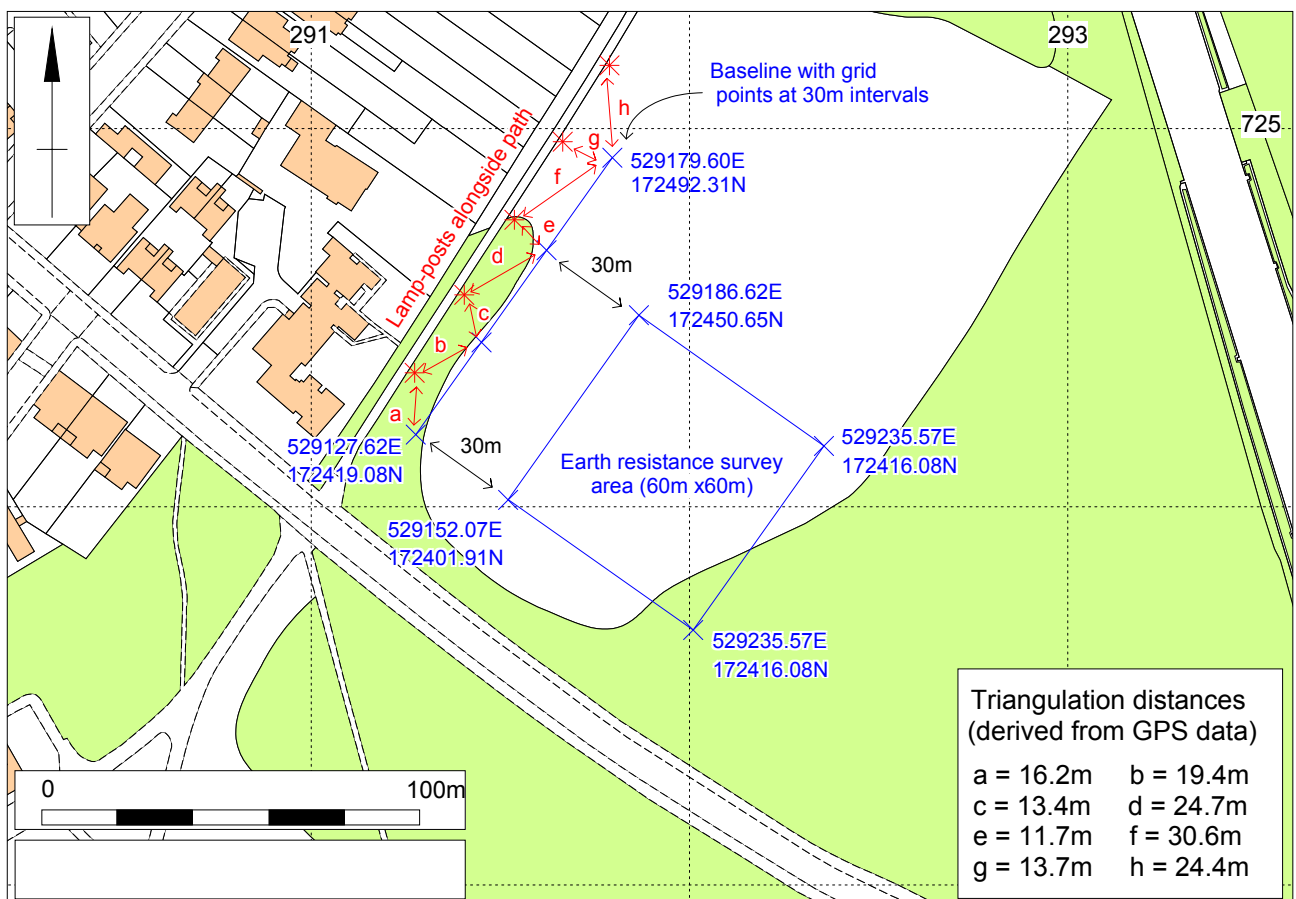






1:2000

Grid location, Tooting Bec Lido site Fig 8



1:2000

Grid location, Bedford Hill site Fig 9

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