

**TFL_PSF_9131 SITE
INVESTIGATIONS: SMALL SITES
INITIATIVE
LAND AT BRIDGE VIEW ROAD,
LONDON BOROUGH OF
HAMMERSMITH AND FULHAM,
W6 9DD**

Site Ref. 310

Geotechnical and Geo-Environmental Desk Study

OCTOBER 2017

Incorporating

EC HARRIS
BUILT ASSET
CONSULTANCY



LAND AT BRIDGE VIEW ROAD, LONDON BOROUGH OF HAMMERSMITH AND FULHAM, W6 9DD

Geotechnical and Geo-Environmental Desk Study

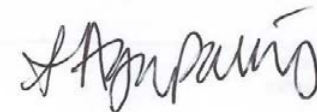
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This report dated 13 October 2017 has been prepared for Transport for London (TfL) (the "Client") in accordance with the terms and conditions of appointment dated 02 May 2017 (the "Appointment") between the Client and **Arcadis Consulting (UK) Limited** ("Arcadis") for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

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1 Introduction

1.1 Terms of Reference

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Transport for London (TfL) 'the Client' to undertake a number of technical surveys for a Land at Bridge View Road, Hammersmith ('the Site').

TfL is aiming to divest a number of small sites to enable prospective regeneration. The objective of the Small Sites Initiative is to provide robust and pragmatic advice that sensibly de-risks each of the sites such that unreasonable "abnormal" development costs are not included by developers.

The objective of this review is to identify potential abnormal development constraints due to geotechnical and geo-environmental conditions on Site based on the findings of this desk study.

The objective of this review are to:

- Review geo-environmental information regarding the Site and its surrounding area;
- Provide outline information on potential geo-environmental and geotechnical constraints which may impact on the land value or redevelopment potential for the site; and
- Identify potential development constraints due to geotechnical and geo-environmental conditions on Site.

The Site location is shown in Figure 1 below.

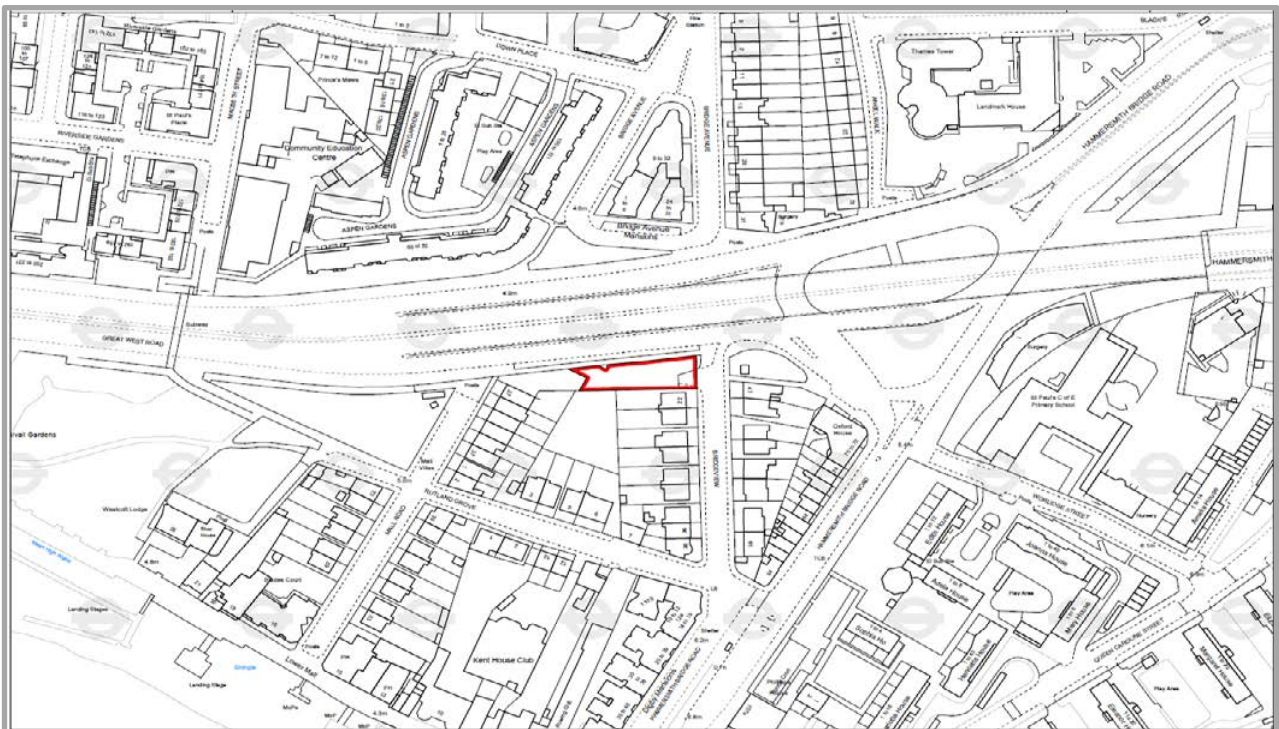


Figure 1: Site Location Plan provided by TfL

1.2 Sources of Information

As part of this desk study report various sources of information have been used and are detailed below:

- The on-line British Geological Survey (BGS) 1:50 000 scale geological map comprising the Site (Ref. 1);
- Historical borehole records available through BGS website and viewed (Ref. 1);
- Historical Ordnance Survey maps (included in Appendix A);
- Groundsure datasheets (GeoInsight and EnviroInsight) (Appendix B);
- The Environment Agency (EA) What's in Your Backyard Website (Ref. 2);
- Google maps and observations made during a site visit in June 2017 (Ref. 3);
- Zetica Regional Unexploded Ordnance Map (Appendix C); and
- National Archives (www.bombsight.org – Ref. 4).

1.3 Limitations and Expectations

This report has been prepared for the Client in accordance with the terms and conditions of appointment. Arcadis cannot accept any responsibility for any use of or reliance on the contents of this report by any third party. The copyright of this document, including the electronic format shall remain the property of Arcadis.

This report has been compiled from a number of sources, which Arcadis believes to be trustworthy. However, Arcadis is unable to guarantee the accuracy of information provided by others. The report is based on information available at the time. Consequently, there is a potential for further information to become available, which may change this report's conclusion and for which Arcadis cannot be responsible.

2 Site Setting and History

2.1 Site Location

Table 2.1 Details Relating to Site Location

Site Location / Address	Land at Bridge View (also referred to as Aspen Place), Hammersmith, W6 9DD
National Grid Reference	523025,178350
Approximate Site Area	The Site covers an area of approximately 0.05 hectares.
Description of Site	<p>The Site is roughly rectangular in shape and is located within the London Borough of Hammersmith and Fulham, approximately 0.45 km east of Hammersmith Tube Station. The Site is an area of highway verge, the majority of which comprises close mown amenity grass, groups of informally planted trees and mature shrubs within shrub beds. There are two bituminous tarmacdam covered car parking spaces in the east of the Site which is separated from the remainder of the Site by barriers.</p> <p>The Site adjoins a public footpath to the north, east and west and along the southern boundary is a brick boundary wall.</p>
Topography	The Site appears to be relatively level.
Surrounding Area	<p>The Site is located within a largely residential area of Hammersmith surrounded predominantly by housing with local amenities and parks.</p> <p>To the north is Hammersmith Bridge Road with the Hammersmith Flyover Great North (A4) beyond. To the east is Bridge View, to the south are the rear gardens of the properties along Bridge Road and Mall Road. To the west is Mall Road with Furnivall Gardens, beyond.</p> <p>The northern banks of the River Thames and the Hammersmith Bridge are present approximately 200m south and south-east of the Site respectively.</p>

2.2 Site History

A review of the available historical Ordnance Survey maps (Appendix A) has been undertaken to assess the historical development of the Site and surrounding areas.

It is not the intention of this report to provide a full history, but to identify those past uses on and within the vicinity of the Site that could have resulted in contamination of the soils and/or waters. Significant changes to the land use of the Site and surrounding areas are summarised in Table 2.2 below.

Table 2.2 History of Site and Surrounding Area

Date	Historical Development (Site and Surrounding Area)
1867-1870	The map shows the Site forms part of a larger area of open space with trees present in the west and south. The eastern part of the Site encroaches onto Bridge Avenue. Off-Site there is open space and houses within 200m of the Site and a railway line approximately 250m to the north.

Date	Historical Development (Site and Surrounding Area)
	The northern banks of the River Thames and Hammersmith Bridge are present approximately 200m south of the Site. Further away from the Site, on the northern banks of the river there are wharfs (200m south-west and 250m south-east) and on the southern banks there is a soap works (600m south-east) and the West Middlesex Water Works with filter beds (600m south-west).
1896-1897	<p>The 1896 map shows the development of two houses in the east and a further small structure (possibly an outbuilding) in the west. The houses within the Site form part of the residential development along Bridge Avenue (east), Rutland Road (south) and Mall Road (west). Much of the surrounding area is formed of residential properties.</p> <p>Further away, there is a tramway running along King Street West (later referred to as King Street) approximately 175m to the north and a graveyard approximately 200m north-east. An overflow pipe is recorded extending into the river from the northern bank approximately 200m south of the Site. Lead mills and boat houses are shown at the wharf approximately 250m south-west of the Site. The West Middlesex Water Works had expanded to within 350m of the Site (southern bank of the river) and approximately 300-450m south-east of the Site (on the northern bank of the river) there is a wharf with a distillery and an iron works.</p>
1915-1916	No significant changes are noted on-site or within the immediate surrounding area (up to 100m), although a large building (later identified as Bridge Avenue Mansions) had replaced the house approximately 80m north of the Site. A tank is recorded approximately 100m north-west of the Site adjacent to the 'Picture Theatre'.
1933, 1938, 1947	No significant changes are noted on-site or within the immediate surrounding area (up to 100m) which remains residential.
1950-1951	<p>The 1950 map shows the houses within the Site had been demolished. The houses along the northern parts of Mall Road and Bridge Avenue and within areas east of Bridge Avenue and west of Mall Road had been demolished, with one area being redeveloped into Aspen Gardens - residential housing (approximately 80m north-west).</p> <p>There are two larger circular structures (unknown use) approximately 120m south-east of the Site along Ship Lane (no longer shown after 1950). The tramway (175m north) is no longer present, a chimney has now been noted on the lead works and there is an engineering works approximately 250m south-west.</p> <p>There are 4 electrical substations between approximately 100m and 175m from the Site. Between 140m and 250m from the site there is a garage, telephone exchange and a number of works including a concrete, coach and engineering, and building materials works.</p>
1957	<p>The 1957 map shows the Site as open space with car parking / turning area in the eastern side of the Site (roughly in its current day layout). Great West Road had been constructed along the Site's northern boundary and Bridge Avenue / Mall Road are now a cul-de-sac with no direct access to Great West Road. By this time, the works / properties approximately 150m to the west had been demolished and Furnivall Gardens had established.</p> <p>Further away some of the works within 250m had been demolished becoming open spaces or redeveloped into housing.</p>

Date	Historical Development (Site and Surrounding Area)
1963, 1968, 1977, 1980	<p>The 1968 map shows no apparent changes within the Site except for occasional trees noted in the east. Bridge View was recorded along the eastern boundary by the 1963 map and allotments had established by 1977 immediately south of the Site.</p> <p>The Hammersmith Flyover (A306) had been constructed north of Great West Road by 1968. Also during this time, the lead mill and the concrete admixture works within 250m of the Site were no longer shown.</p>
1991-1993	No significant changes are apparent on-site or within the immediate surrounding area.
2010	No significant changes are noted.

2.3 Unexploded Ordnance

With reference to the Zetica Regional Unexploded Bomb Risk of East Central London (Appendix C), the Site is designated as lying within an area denoted as “medium” bomb risk area. Further reference has been made to the National Archives (www.bombsight.org – Ref. 4) which shows four high explosive bombs are recorded as having been dropped within 150m of the site; one near to Great West Road (approximately 150m west), two close to Aspen Gardens (approximately 100m and 150m north) and one close to Lower Mall (approximately 150m south).

Therefore, based on the information provided by Zetica and the National Archives, the Site may have been affected by Second World War bombing.

3 Physical and Environmental Setting

3.1 Published Geology, Hydrogeology and Hydrology

With reference to the sources of information detailed in Section 1.2, the following information has been obtained.

Table 3.1 Information Regarding Geology, Hydrogeology and Hydrology

Geology / Aquifer Status	<p>Superficial Deposit: Kempton Park Gravel Member described as sand and gravel and are classified as a Secondary A Aquifer.</p> <p>Solid Geology: London Clay Formation described as clay and silt are classified as an Unproductive Strata.</p> <p>There are no geological faults recorded within 250m of the Site.</p>
BGS Boreholes (within 100m of the Site)	<p>There are no records within the site. The closest five – (TQ27NW67, TQ27NW71, TQ27NW62, TQ27NW61 and TQ27NW153*) are located within 100m (north) of the Site, these were for the Cromwell Road Extension (roughly along the footprint of the Hammersmith Flyover) however no date is provided. Whilst there is little description, Made Ground (in some areas consisting of a thick layer of brick rubble) ranged between 0.3m to 2.1m thick, underlain by Kempton Park Gravel Member consisting of interbedded layers of sand / gravel which are occasional clayey to depths of 2.6m (TQ27NW153) and 7.5m (TQ27NW67), this is underlain by the London Clay which is described as blue clay.</p>
Within a Source Protection Zone	N/A
Licensed Groundwater Abstraction Points	There are no groundwater abstraction points noted within 500m of the Site.
Surface Water Feature	The River Thames is located approximately 200m south-west of the Site.
Likely Groundwater Flow Direction	Based on the proximity of the Site to the River Thames, it is inferred that groundwater flow will be in a southerly direction towards the river.

*units / dates have not been provided within this log therefore it has been assumed that depths quoted are feet and inches rather than metres.

3.2 Environmental Public Registers

Public register information from the Groundsure Report (Appendix B) for the Site and the surrounding area (within 250m radius) has been summarised in Table 3.2 below.

It is not the purpose of this section to provide a comprehensive account of the environmental data but only to detail those factors that are or could impact the Site.

Table 3.2. Environmental Data

Data type	Description	Distance (m) and Direction
Radon	The Site is not in a radon affected area, as less than 1% of properties are above the Action Level.	N/A

Data type	Description	Distance (m) and Direction
Landfill Sites	None identified within 250m of the Site.	N/A
Current Industrial Data	<p>An electricity transmission cable is mapped on the western side of Bridge View, although the Groundsure report states it has been decommissioned.</p> <p>There are eighteen industrial land uses listed within a 250m radius of the Site. Seven relate to electricity substations, four are mooring and unloading facilities, two publishing goods store, one airline services, one industrial coatings / finishers, one waste storage, processing and disposal facility, one telephone exchange and one unspecified works/factory.</p>	<p>The transmission cable is located approximately 20m east.</p> <p>The other industrial uses are located to the north, east, south and west ranging between 107m and 247m.</p>
Part A(2) and Part B Activities	No activities have been recorded within the 250m radius of the Site.	N/A

The site has been subject to redevelopment including the demolition of residential properties and therefore Made Ground is likely to be present within the Site. Made Ground associated with redevelopment of properties and roads adjacent to the Site is also anticipated. Whilst off-site industrial uses have been identified within approximately 100m of the Site, these are in localised areas with a larger number of industries (such as wharfs and mills) being mostly located on the banks of the river (250-450m south) from the Site, which may potentially be downgradient of the Site.

4 Preliminary Conceptual Site Model

Geo-environmental assessments are required in accordance with current regulatory guidance (CIRIA C552 - Ref. 4 and CLR11 – Ref. 7) to consider the significance of potential contamination in terms of plausible contaminant source-pathway-receptor contaminants linkages. As part of this process, it is necessary to develop a conceptual model of these potential contaminant linkages by identifying the potential contamination sources, sensitive receptors and any potential exposure pathways. A risk assessment is then undertaken to determine the likelihood and significance of these potentially complete contaminant linkages.

4.1 Potential Contaminant Sources

Based on the information obtained from the existing data and information obtained from historical and environmental research, there are a number of potential contaminative sources identified on- and off-site. These are detailed in the table below.

It should be noted that it is considered unlikely that all these substances would be present at significant concentrations across the Site.

Table 4.1: Potential Sources of Contamination On-Site

Source	Potential Contaminants
On Site	
Made Ground from phases of demolition and redevelopment	Metals, polycyclic aromatic hydrocarbon (PAH), hydrocarbons, asbestos, ground gas and vapours
London Clay	Sulphates
Off Site	
Made Ground associated with redevelopment adjacent to the Site	Metals, PAHs, hydrocarbons, asbestos, ground gas and vapours
Historical tramway and former tanks (including circular structures)	Metals, polycyclic aromatic hydrocarbon (PAH), hydrocarbons, asbestos, ground gas and vapours
Historical works, lead mills, tramway	
Electricity substation and local industries/factories	

4.2 Potential Receptors

The proposed land use is currently unknown. As a precaution the potential receptors detailed below take into consideration the future land use as residential properties with gardens and landscaped areas. It is considered possible that any potential contamination within the soils may be disturbed during the construction phase, or during gardening or landscaping undertaken by any future site users.

4.2.1 Human Health

- Site Users (residents, visitors, maintenance workers and contractors).

Contamination risks to construction workers are not appraised by chronic (long term) exposure human health risk assessments. There are no appropriate published criteria applicable to assessment of potential risks to construction workers. The potential risks should be addressed by a site-specific construction workers risk assessment and implementation of appropriate health and safety measures, to adequately mitigate any

potential risks. All works should be conducted in accordance with the CDM regulations 2015 (Ref. 7) or any other relevant guidance. Construction workers are not considered further site users

4.2.2 Controlled Waters

- Groundwater beneath the Site – Kempton Park Gravel Member
- River Thames.

It is noted that the Site is not within a groundwater protection zone within 500m radius of the Site.

4.2.3 Buildings

- Underground /structures/services (water pipes, concrete, foundations) including sulphate attack.
- Proposed buildings.

4.3 Potential Pathways

Potential pathways are the routes that link the receptor to the contamination. The potential pathways for this Site are summarised in the table below.

Table 4.2: Potential Contaminant Pathways

Receptor	Description
Human Health (residents, visitors, maintenance workers and contractors)	<p>Accidental ingestion of contaminants within soil, water and dust</p> <p>Inhalation of dust, vapours and ground gases</p> <p>Dermal contact with contaminants within soil, water and dust</p> <p>Ingestion of contaminated vegetables and soil attached to vegetables</p>
Controlled Waters (Secondary A Aquifer and River Thames)	<p>Leaching of potential contaminants in soil or Made Ground into groundwater</p> <p>Vertical migration of soluble contaminants through the unsaturated zone into groundwater beneath the Site</p> <p>Surface run-off and lateral migration</p>
Buildings	<p>Direct contact of building services or foundations with contaminants in the soil and Made Ground</p> <p>Gas and / or vapour accumulation in confined and poorly ventilated spaces</p> <p>Sulphate attack on buried concrete</p>

4.4 Preliminary Qualitative Risk Assessment

Primary sources of on-site contamination are considered to be associated with Made Ground (demolition / redevelopment / narrowing of the river). Off-site sources are likely to be associated with Made Ground from demolition and redevelopments adjacent to the site. In addition, commercial / industrial off-site sources of contamination (works, lead works, tanks, tramway, mills, wharfs etc) have been identified which may have migrated onto the Site however, although a number are located on the banks of the river which are inferred to be downgradient of the Site.

Within the Site, the Made Ground is likely to be present which could be a source of contamination. Human exposure could occur in gardens or soft landscaped areas, especially if soils are disturbed by activities such as digging/gardening. Ground gas / vapours could be generated by the Made Ground which could accumulate in confined spaces and poses potential risk to future site users.

Based on the historic use of the Site and surrounding area, gross contamination capable of impacting the built environment is not considered likely to be significant. In addition, the impacts from the electrical cable are also likely to be minimal and not considered to be mobile.

The London Clay is also a source of naturally occurring sulphates which could impact buried concrete.

5 Waste Management and Potential Development Constraints

5.1 Waste Management

Consideration should be given to a disposal of waste soils / Made Ground generated by any potential development. Chemical testing of soils / Made Ground is likely to be required to inform a waste classification assessment and determine the potential disposal options. It should be noted that the waste contractor may require testing of the actual material to be disposal prior to acceptance, and there is no obligation on a landfill operator to accept the waste.

Soils suspected of being contaminated should be segregated from soils which appear to be 'clean' and should not be used elsewhere on the site as fill or landscaping unless they can be proven to be fit for purpose.

Imported topsoil for gardens and landscaped areas should be clean, fit for purpose and validated as necessary.

5.2 Potential Development Constraints

The historical review reveals that development within the Site is limited to residential properties. Adjacent to the Site, redevelopment of the roads and houses have also been recorded as are localised areas of commercial / industrial uses that have been recorded as close as 100m from the Site.

Therefore, from experience, the potential for the need to undertake remediation should be limited given the Site has not previously been used for industrial or commercial use.

The following potential environmental conditions have been identified that will warrant further consideration and/or implementation:

- Buried obstructions (foundations and services) associated with the former buildings may be present and may require removal prior to redevelopment. Buried services may require removal, protection, diversion or chasing and plugging at the boundary.
- Gross contamination is not anticipated however, provisions should be allowed for the potential for unforeseen contamination (this can be a planning requirement);
- Asbestos, if encountered, will require testing and further assessment.
- Gas resistant membrane and contaminant resistant water supply pipes may be required but this would depend on the findings of the ground investigation;
- Provision of clean cover system in garden areas and public open space may be required subject to the findings of an investigation. Where possible, the Topsoil should be retained and incorporated within the redevelopment;
- Design specific ground investigation and consultancy advice to support planning obligations will be required.
- Reference should be made to the Arcadis Flood Risk Survey relating to the requirements for flood risk assessment.

6 Geotechnical Considerations

The anticipated geology is Made Ground, underlain by the Kempton Park Gravel Member, underlain by the London Clay Formation. Information from the five historic borehole logs indicated that within 100m of the Site the geology was relatively consistent. Though there was little description on the logs it was apparent that Made Ground (in some areas consisting of thick brick rubble) up to 2.1m thick, underlain by Kempton Park Gravel and in turn by London Clay.

Potential founding solutions will be dependent on the thickness of Made Ground and the geotechnical properties of the natural deposits. The Made Ground is generally considered unsuitable for foundations due to its variable composition and its potential for high total and differential settlement. Below ground structures and services associated with previous structures may be present and will require removal prior to redevelopment. Ground disturbance caused by the removal of historical structures may increase the thickness of Made Ground already present beneath the site locally. At this stage, conventional shallow foundations may not be appropriate for the site but this would depend on the thickness of the Made Ground and the underlying ground conditions. Deeper trench fill may be possible although the maximum practical extent of this type of foundation is in the region of 2-2.5m. In areas of deeper Made Ground, or where deeper soft / loose bands are recorded either piling or ground treatment e.g. vibro-stone columns should provide a suitable foundation solution. The advice of a specialist ground improvement contractor should be sought to verify the suitability of the ground for treatment.

Consideration will need to be given to the presence of existing trees that are removed, retained or the planting of future trees when considering the depths of the foundations (Ref. 8). In addition, the risks associated with the London Clay include high plasticity clay which are subject to shrinkage and swelling, sulphate attack and the potential for relict shear slip surfaces should be considered during the investigation / design.

7 Conclusions and Recommendations

The Site is an area of highway verge covered in grass and occasional trees / shrubs, located within a largely residential area of Hammersmith adjacent to the A4. The Site was most recently occupied by properties and potentially in the past, Bridge Avenue may have encroached onto the eastern section of the Site. Off-site, the desk study review revealed the presence of works / factories and substations and historical lead works, mills, a tramway tanks and works which are also considered to be potential sources of contaminants.

An intrusive site investigation has not been undertaken at this stage, however Made Ground is anticipated to be present from the former uses which include the demolition and redevelopment of the Site.

7.1 Design Considerations

Potential risks to human health, controlled waters and the built environment have been identified from potential on site Made Ground and ground gas / vapours and there are possible risks to human health from the off-site sources (Made Ground). It is recommended that an intrusive site investigation should be undertaken prior to redevelopment to quantify these risks. This should include for chemical testing of soils, groundwater monitoring and gas monitoring in accordance with the recommendations in CIRIA C665 (Ref. 6) and CLR 11 (Ref. 7) and foundations will need to consider shrinkage and swelling, sulphate attack and the potential for relict shear slip surfaces.

7.2 Construction Considerations

During construction, a watching brief should be undertaken to identify the presence of any unforeseen contamination. If contamination is encountered, all works should cease until the advice of a suitably qualified professional can be sought.

Construction / demolition workers should use appropriate PPE and follow the site-specific contractors risk assessment which should include risks to human health from potential contamination. Due to the historic phases of development and demolition consideration should be given to the presence of asbestos within the Made Ground.

Good site management practices should be adopted during the construction phase such as covering stockpiles to minimise surface runoff/dust creation.

A foundation works risk assessment may be required to assess the risks to the underlying if foundations or piling which penetrate the base of Made Ground are proposed and contamination is identified.

The site is in an area where 'medium' risk of encountering unexploded ordnance is present and further assessment is not considered necessary.

8 References

1. British Geological Survey (BGS) online <http://mapapps2.bgs.ac.uk/geoindex/home.html>
- Accessed June 2017
2. Environmental Agency (EA) What's in my backyard? http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=533500.0&y=165500.0&topic=groundwater&ep=map&scale=9&location=Croydon,Croydon&lang=_e&layerGroups=default&distance=&textonly=off
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<https://www.google.co.uk/maps/place/Bridge+View,+London+W6+9DD/@51.4904798,-0.2310076,17z/data=!3m1!4b1!4m5!3m4!1s0x48760fb426344d6f:0xc420687dfd30fca9!8m2!3d51.4904798!4d-0.2288189>
4. National Archives Bomb Sight <http://www.bombsight.org/#17/51.49051/-0.22565>
5. CIRIA C552 (2001) Contaminated land risk assessment. A guide to good practice.
6. DEFRA and the Environment Agency, 2004. Model Procedures for the Management of Land Contamination, Guidelines for Environmental Risk Assessment and Management, Contaminated Land Report 11 (CLR11).
7. The Construction (Design and Management) Regulations 2015.
8. National House Builders Council (NHBC), March 2007. Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present.

APPENDIX A

Historical Maps

Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1869

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1869
 Revised 1869
 Edition N/A
 Copyright N/A
 Levelled N/A

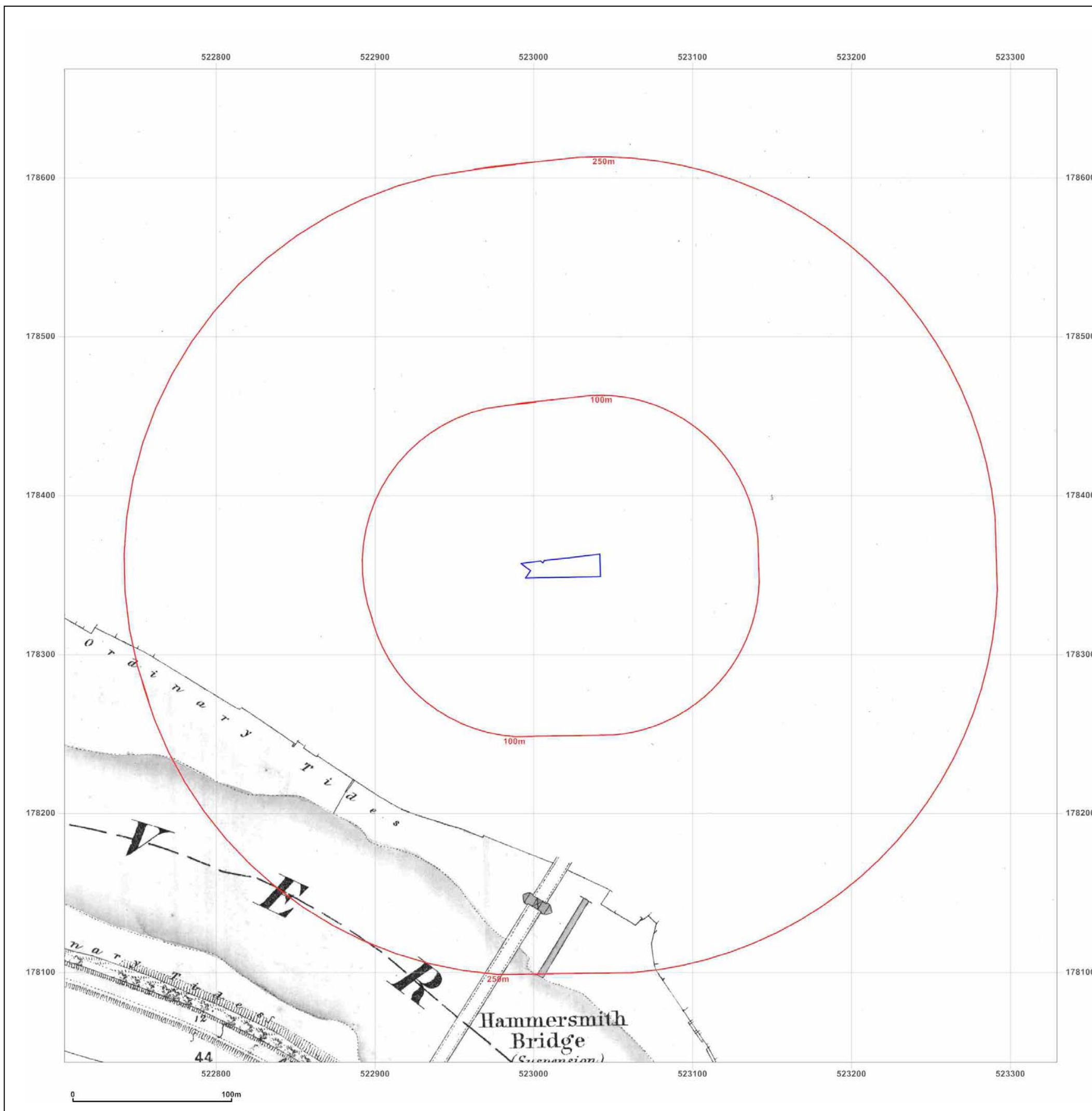


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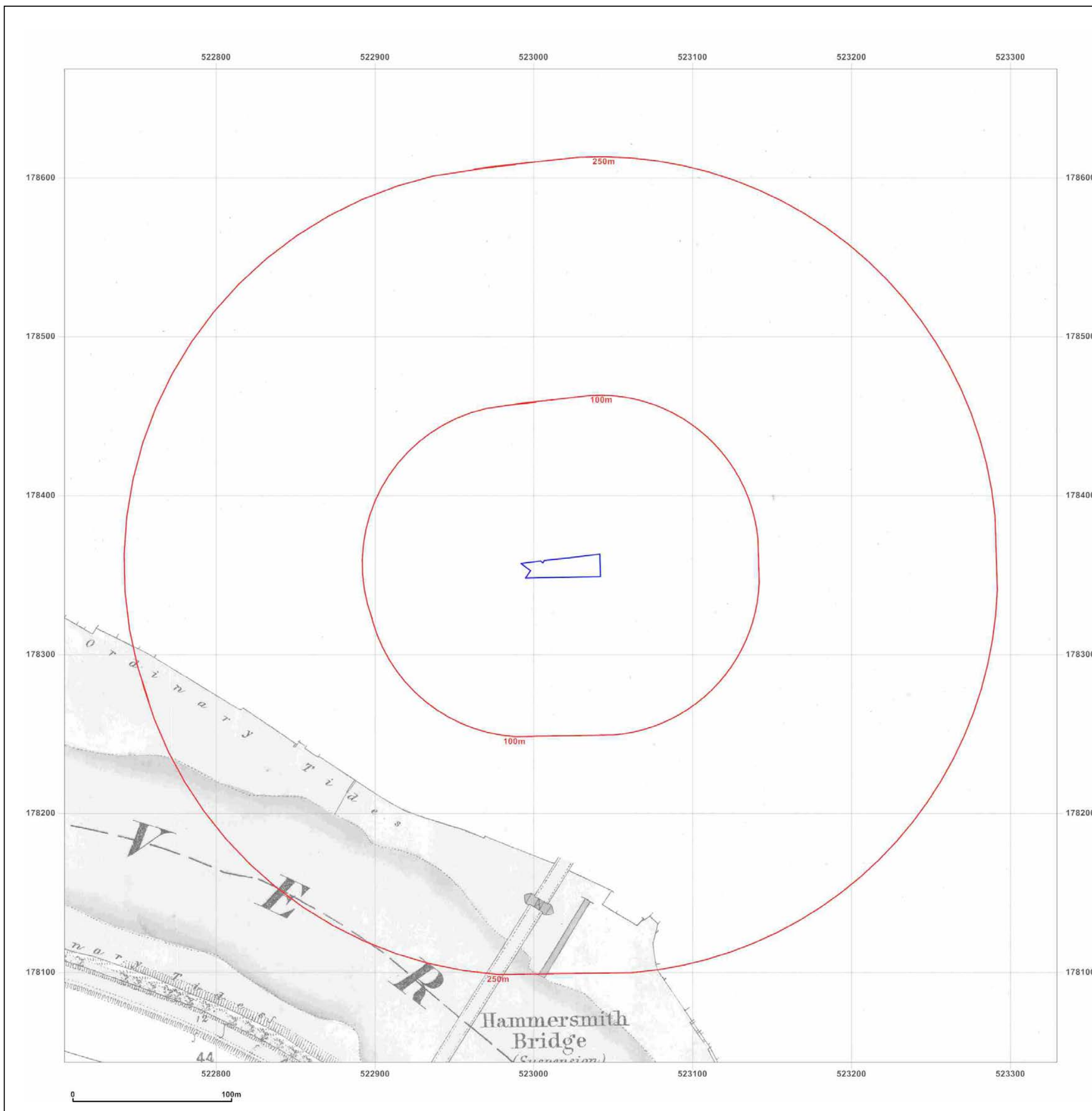


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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: 1056 Scale Town Plan

Map date: 1867-1870

Scale: 1:1,056

Printed at: 1:1,056



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1865
 Revised N/A
 Edition 1867
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Client Ref: PO0067007-1
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Map Name: 1056 Scale Town Plan

Map date: 1867-1870

Scale: 1:1,056

Printed at: 1:1,056



Surveyed 1866
 Revised N/A
 Edition 1870
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 Levelled N/A

Surveyed 1865
 Revised N/A
 Edition 1867
 Copyright N/A
 Levelled N/A



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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1867-1871

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1867
 Revised 1867
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1865
 Revised N/A
 Edition 1869
 Copyright N/A
 Levelled N/A

Surveyed 1868
 Revised 1868
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1865
 Revised 1871
 Edition 1869
 Copyright N/A
 Levelled N/A

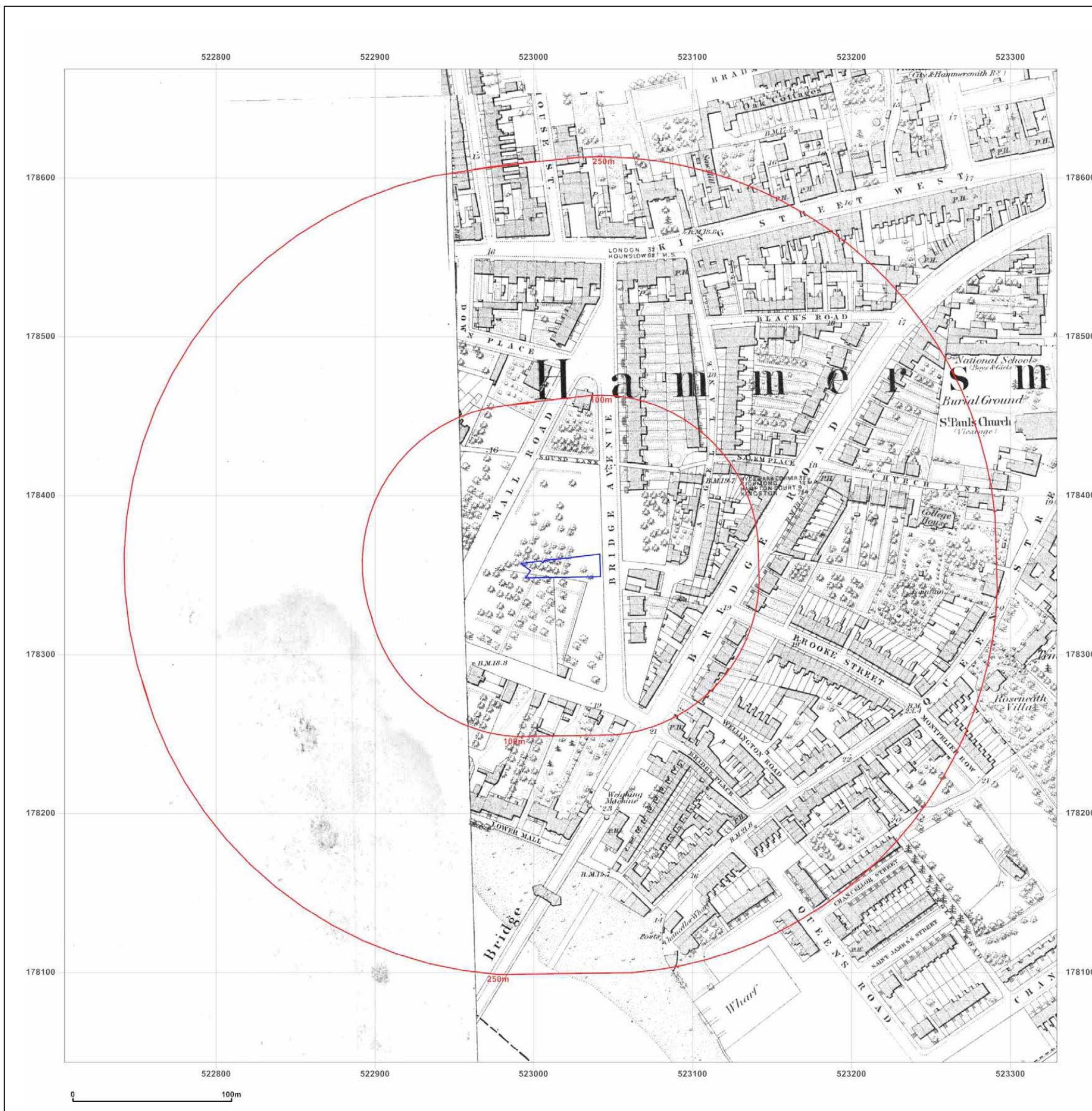


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

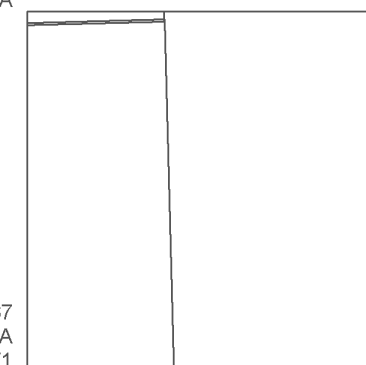
Map date: 1871

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1871
 Revised 1871
 Edition N/A
 Copyright N/A
 Levelled N/A



Surveyed 1867
 Revised N/A
 Edition 1871
 Copyright N/A
 Levelled N/A

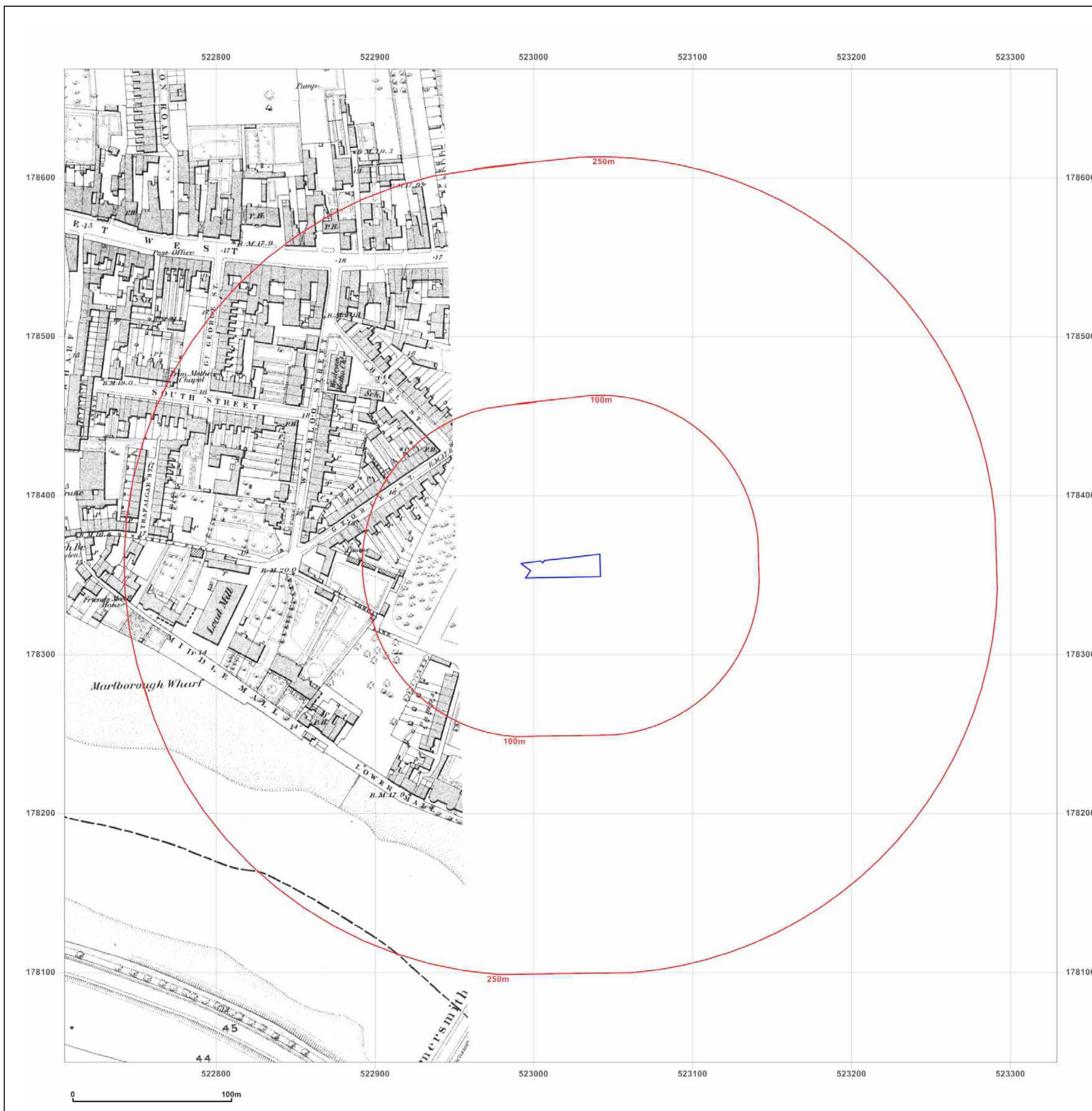


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: 1056 Scale Town Plan

Map date: 1896

Scale: 1:1,056

Printed at: 1:1,056



Surveyed 1893
Revised N/A
Edition 1896
Copyright N/A
Levelled N/A

Surveyed 1894
Revised N/A
Edition 1896
Copyright N/A
Levelled N/A

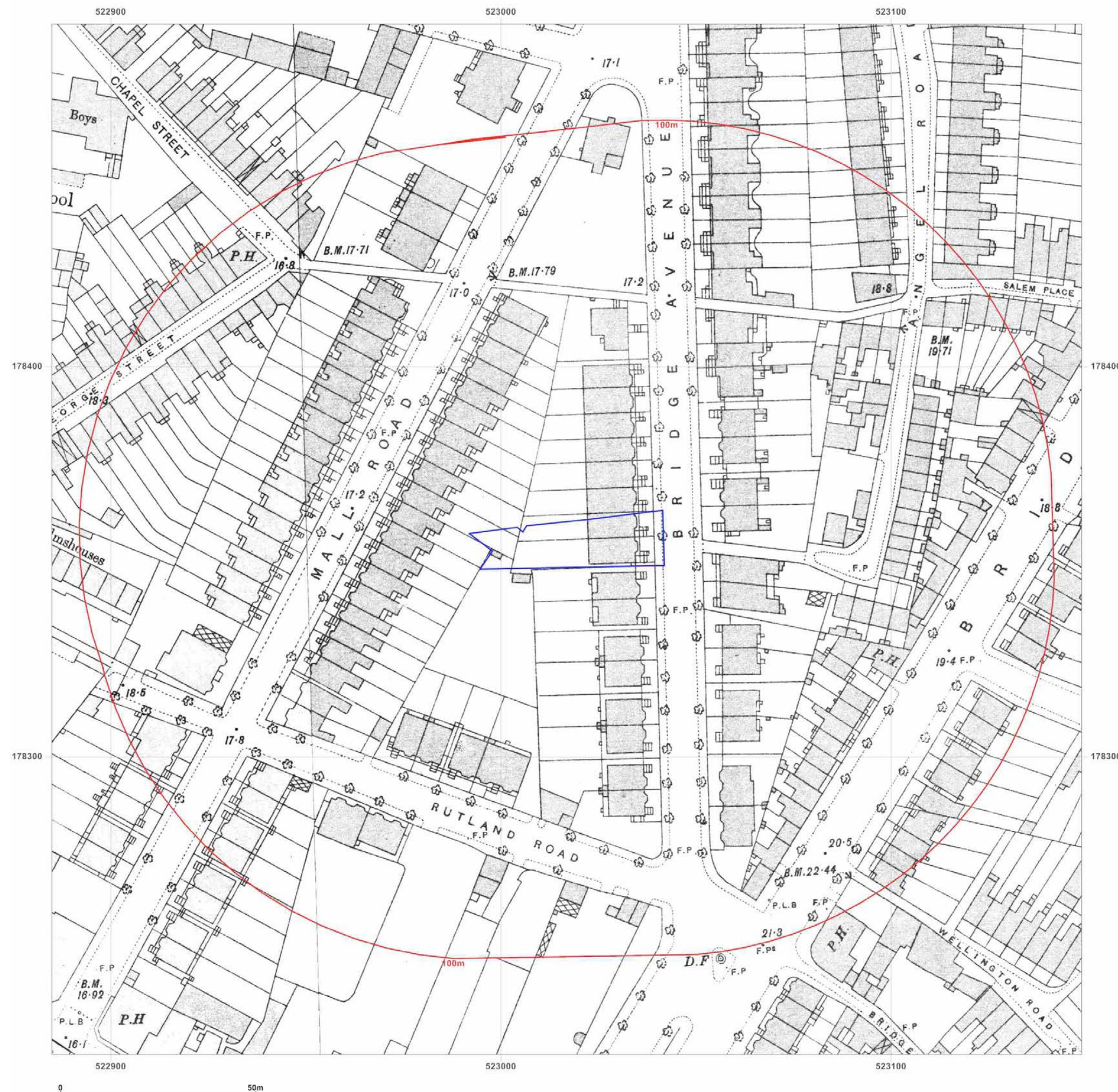


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1896-1897

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1896
 Revised 1896
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1896
 Revised 1896
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1893
 Revised 1896
 Edition 1897
 Copyright N/A
 Levelled N/A

Surveyed 1896
 Revised 1896
 Edition N/A
 Copyright N/A
 Levelled N/A



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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1913

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1913
 Revised 1913
 Edition N/A
 Copyright N/A
 Levelled N/A

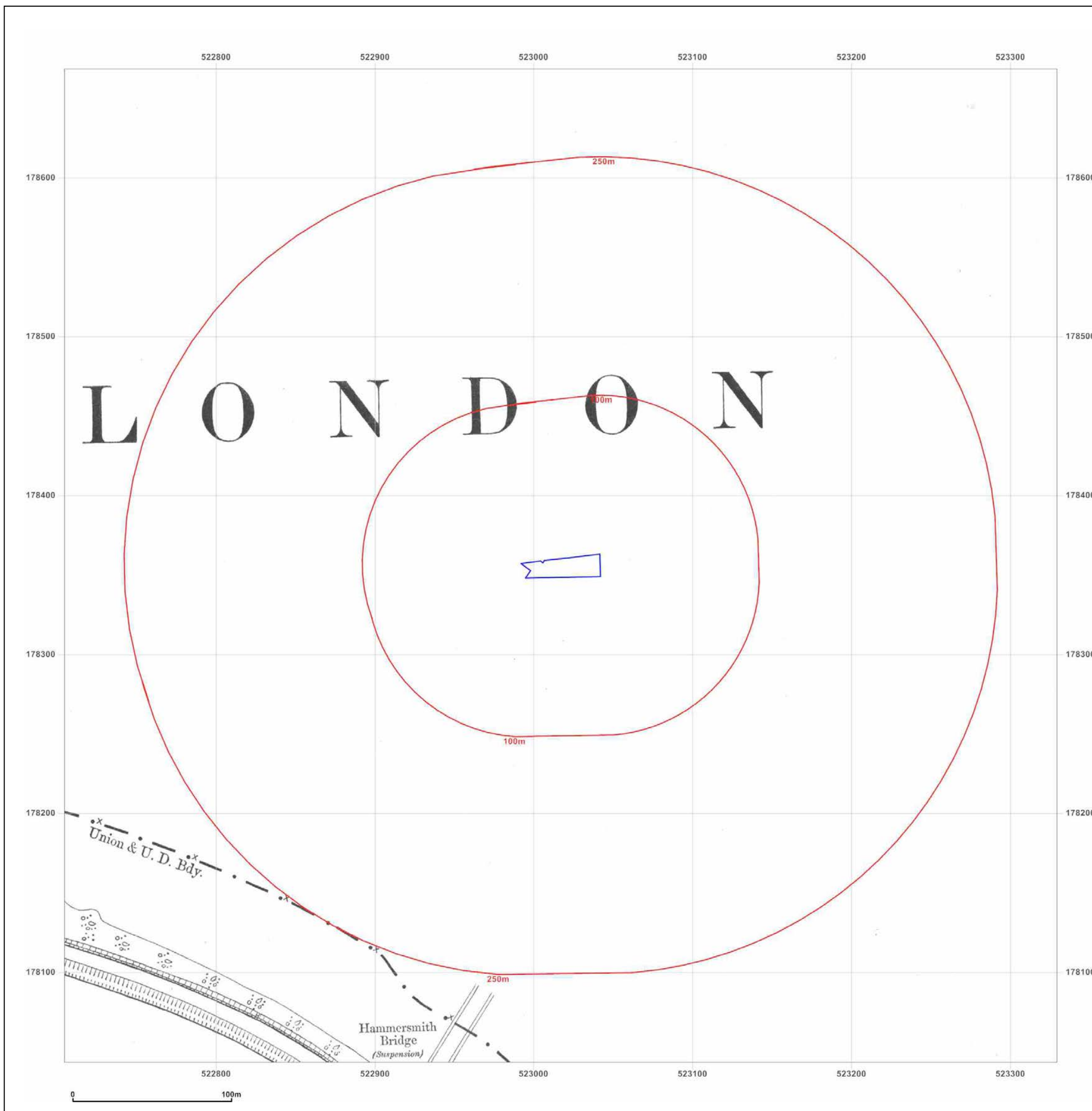


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1915-1916

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1915
 Revised 1915
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1916
 Revised 1916
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1915
 Revised 1915
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1916
 Revised 1916
 Edition N/A
 Copyright N/A
 Levelled N/A

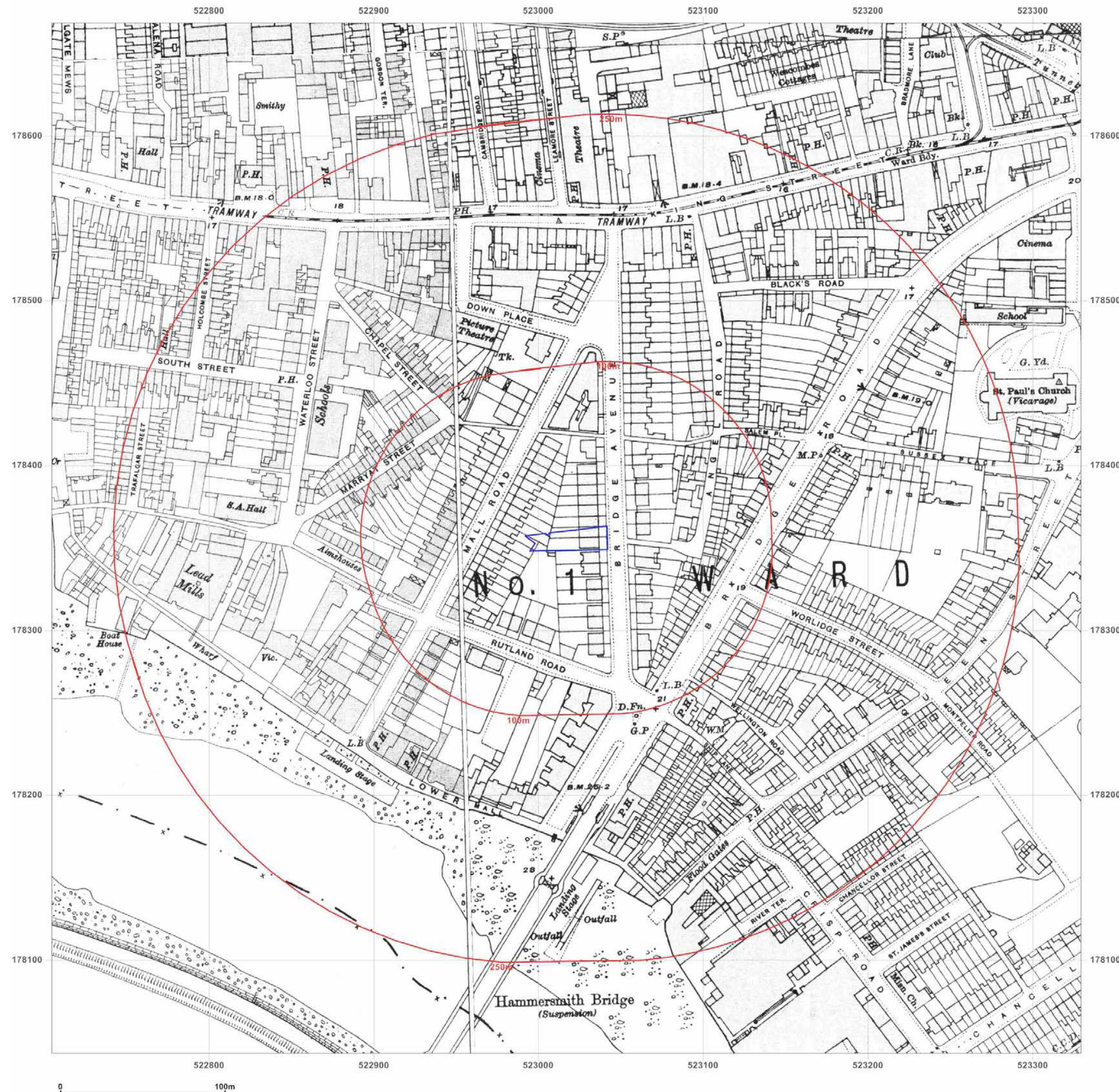


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1933

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1933
 Revised 1933
 Edition N/A
 Copyright N/A
 Levelled N/A

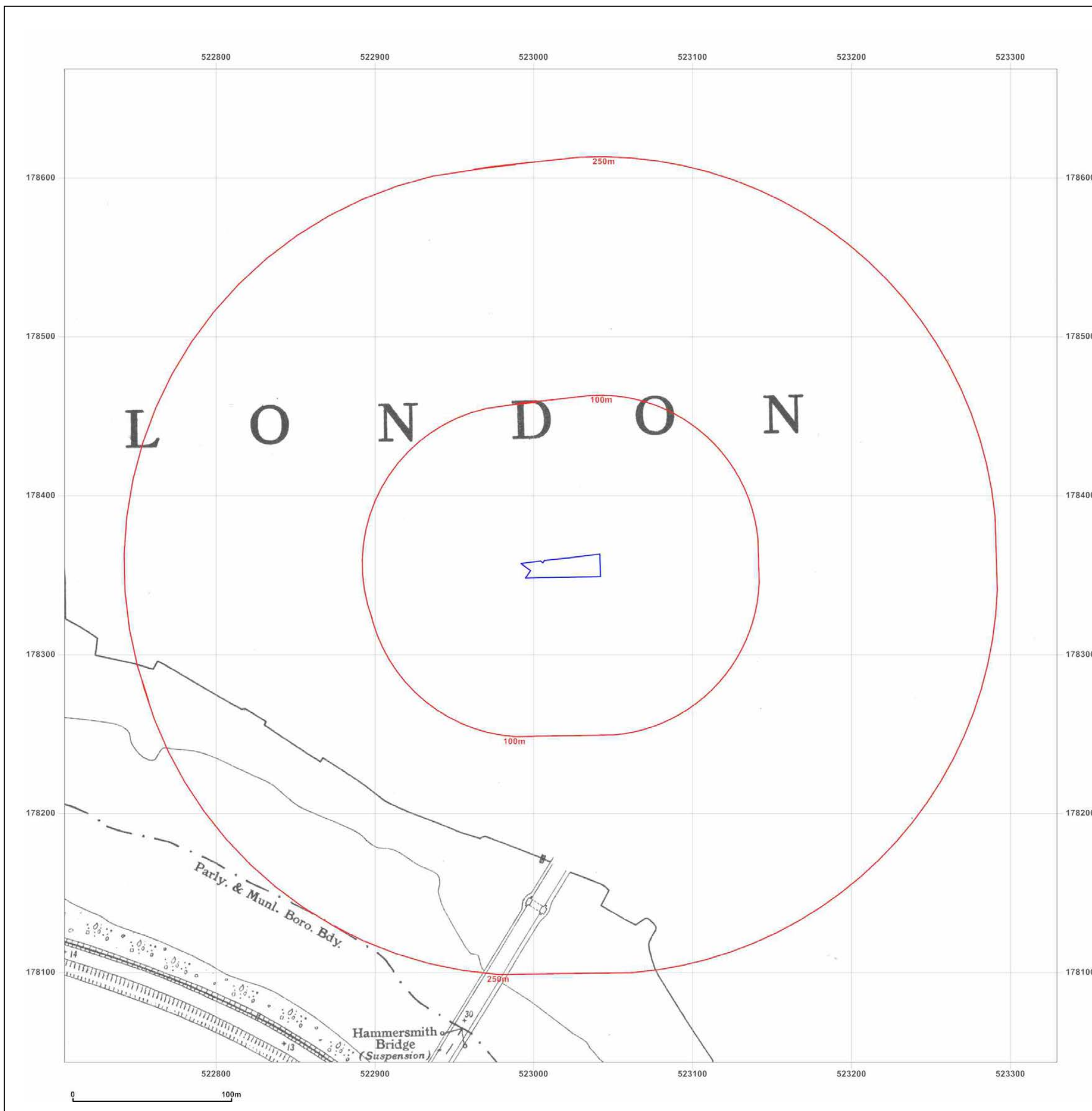


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1940

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1940
 Revised 1940
 Edition N/A
 Copyright N/A
 Levelled N/A

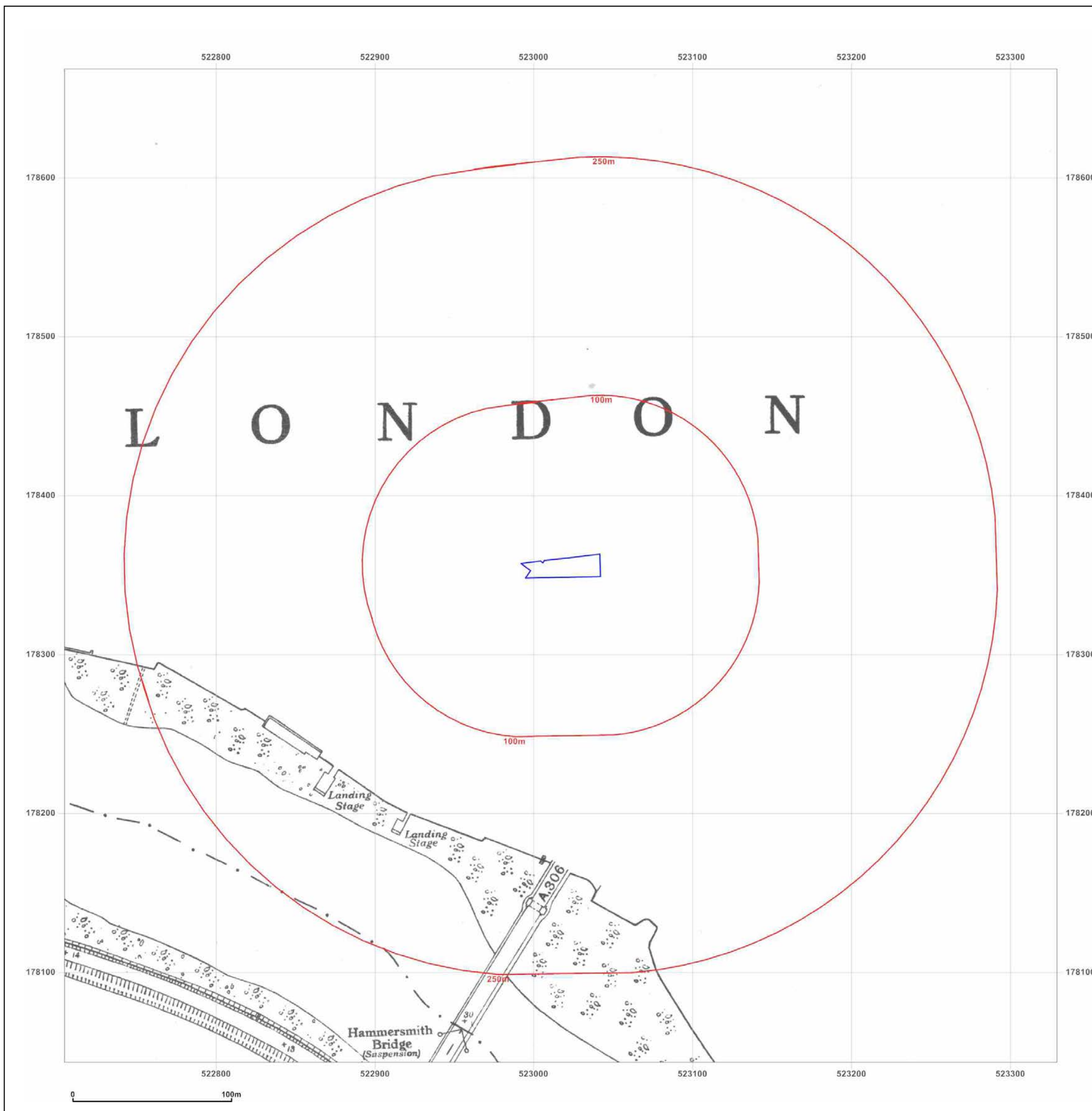


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1950

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1950
 Revised 1950
 Edition N/A
 Copyright N/A
 Levelled 1934

Surveyed 1950
 Revised 1950
 Edition N/A
 Copyright N/A
 Levelled 1934

Surveyed 1950
 Revised 1950
 Edition N/A
 Copyright N/A
 Levelled 1934

Surveyed 1950
 Revised 1950
 Edition N/A
 Copyright N/A
 Levelled 1934

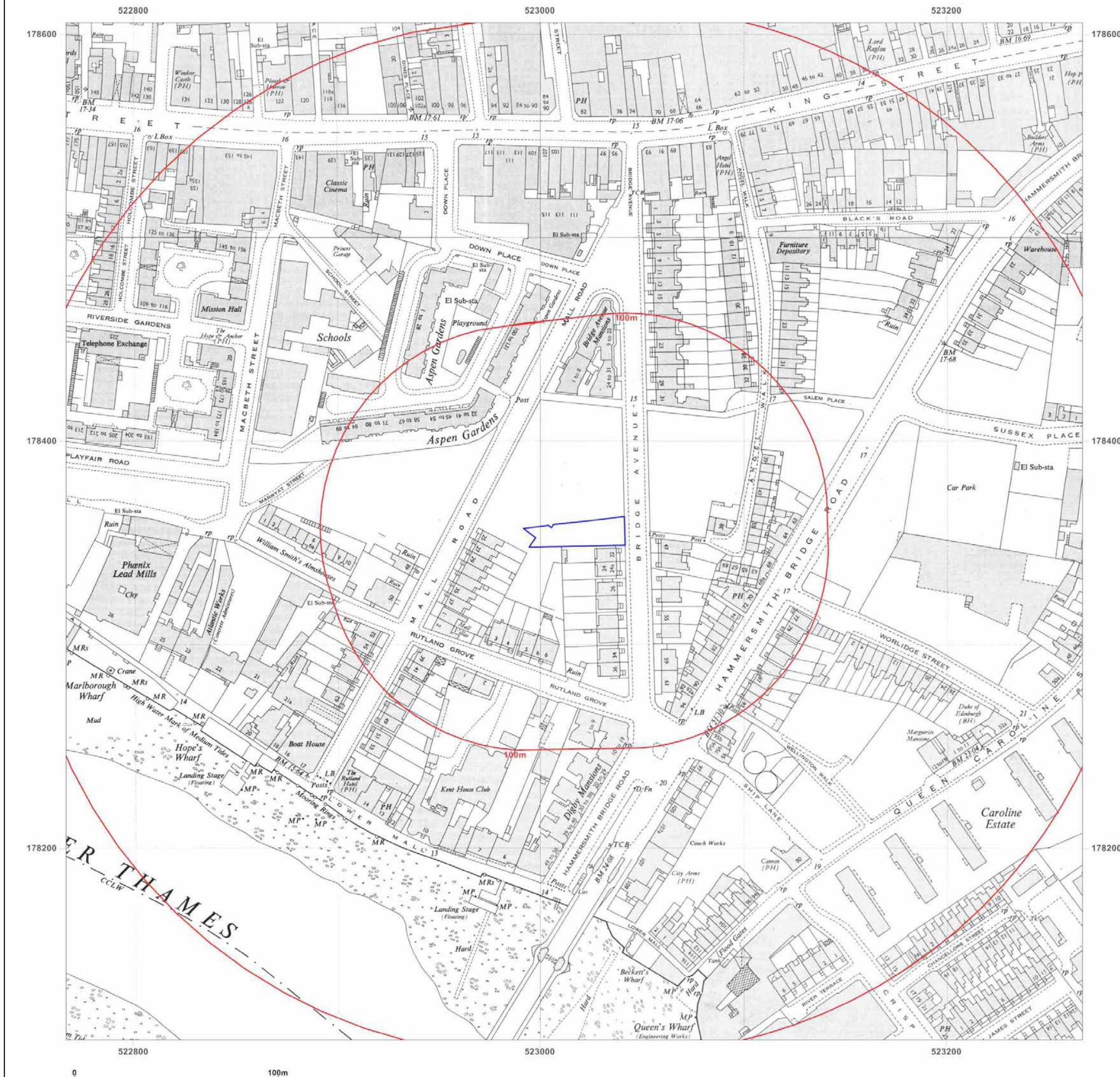


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1950

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled 1934

Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled 1934



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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1950

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1950
 Revised 1950
 Edition N/A
 Copyright N/A
 Levelled 1934

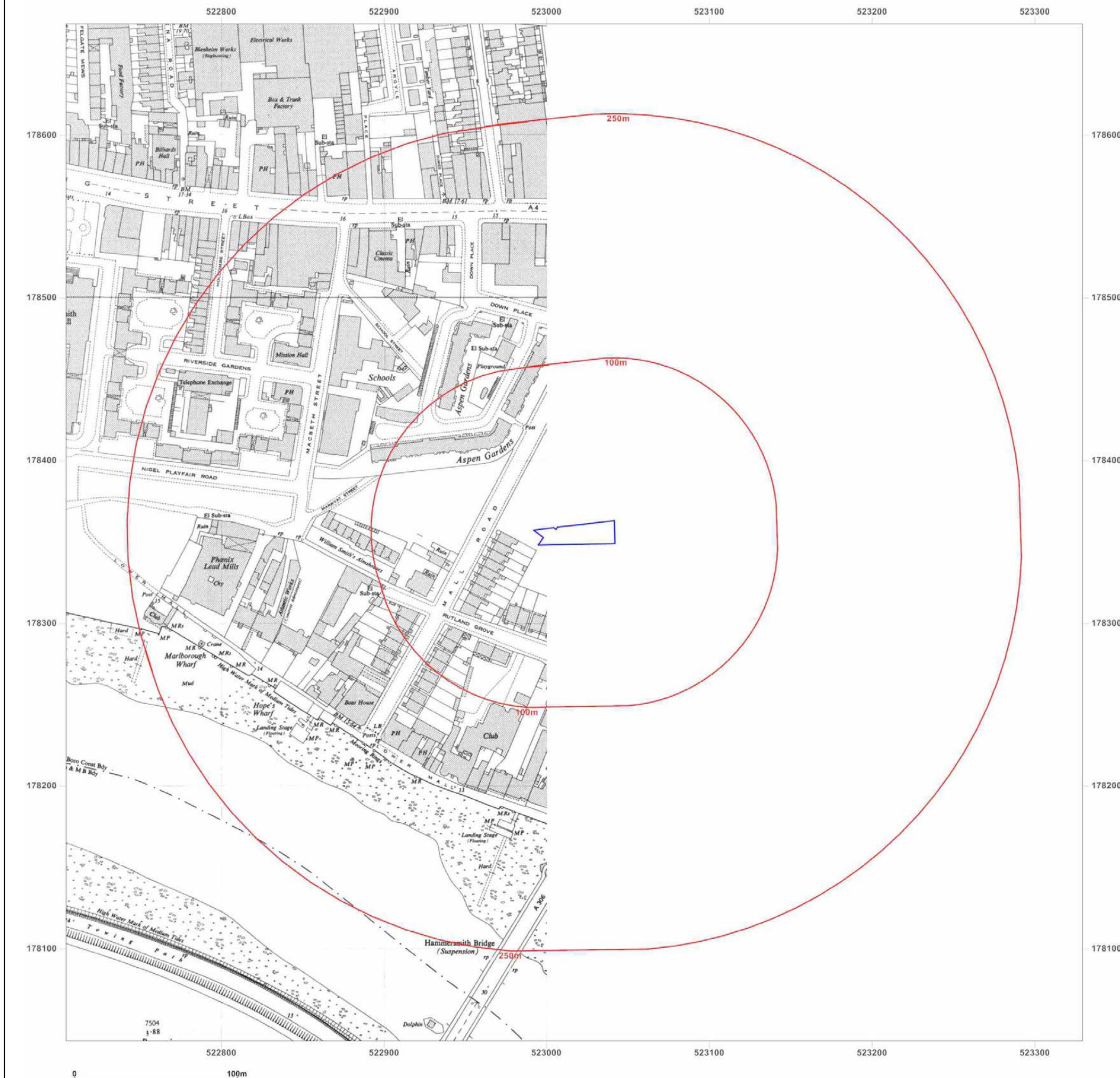


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1951

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

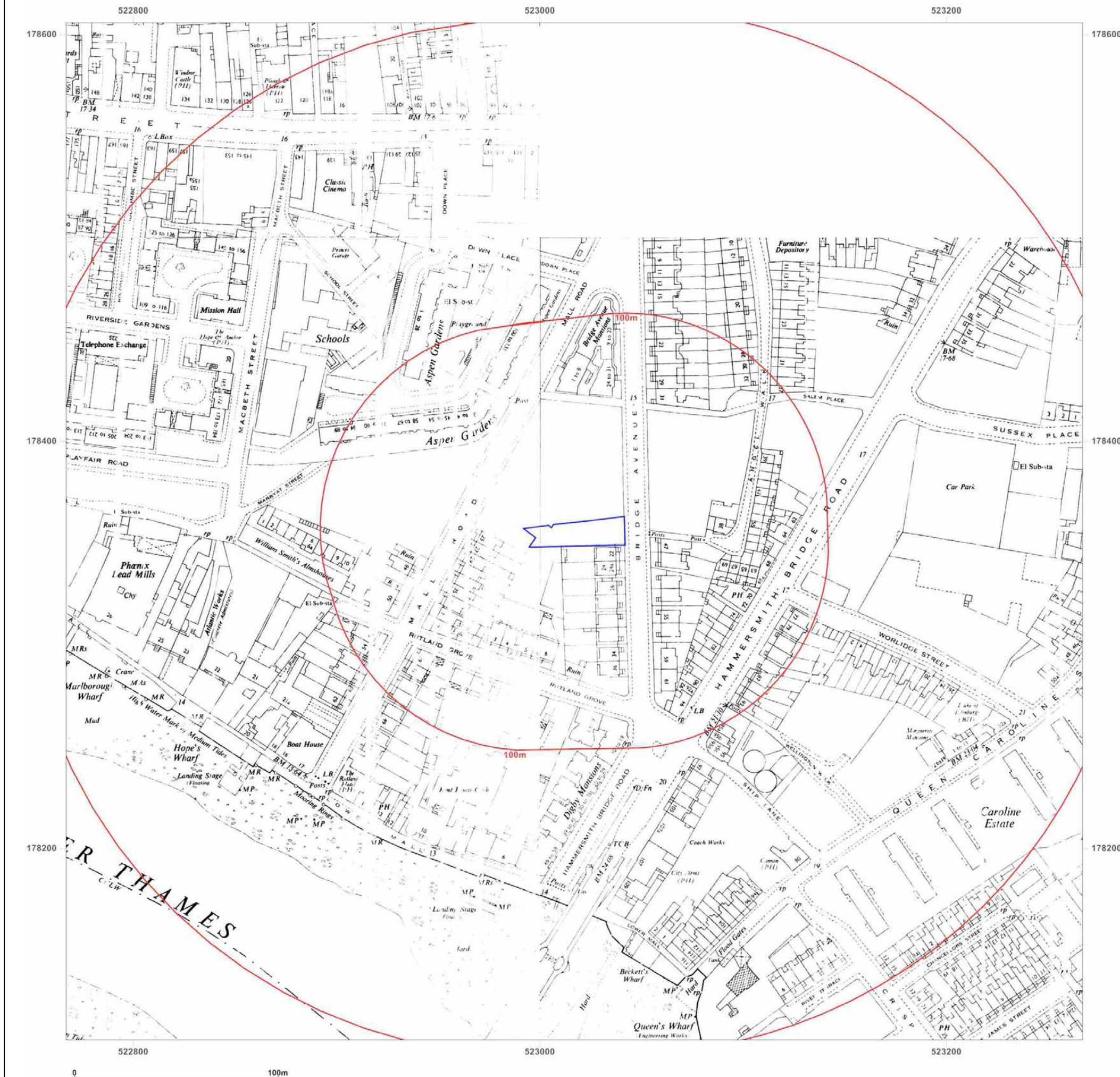


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1957

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
 Revised 1957
 Edition N/A
 Copyright N/A
 Levelled 1954

Surveyed 1950
 Revised 1957
 Edition N/A
 Copyright N/A
 Levelled 1954

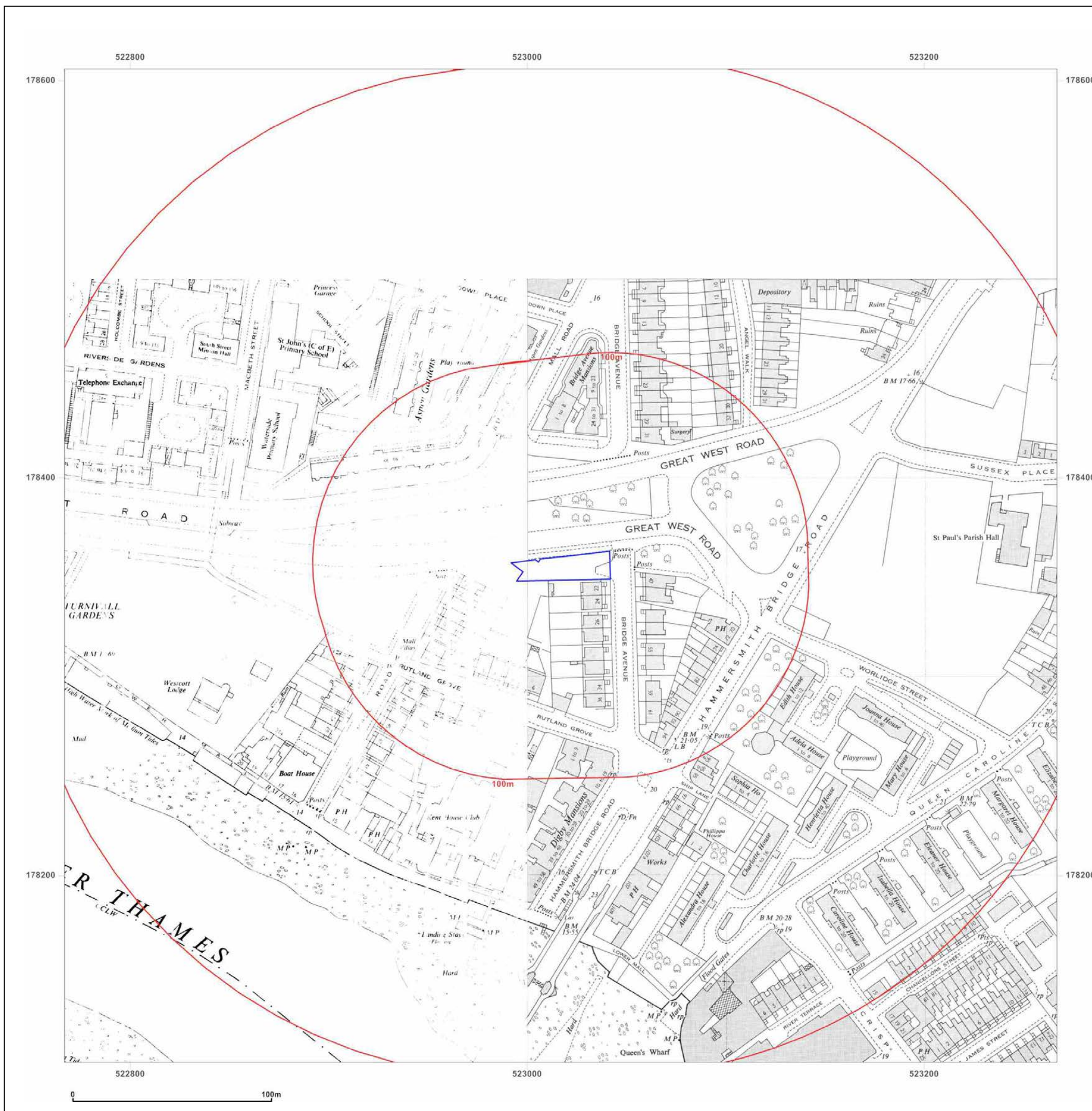


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1957

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1950
 Revised 1957
 Edition N/A
 Copyright N/A
 Levelled 1954

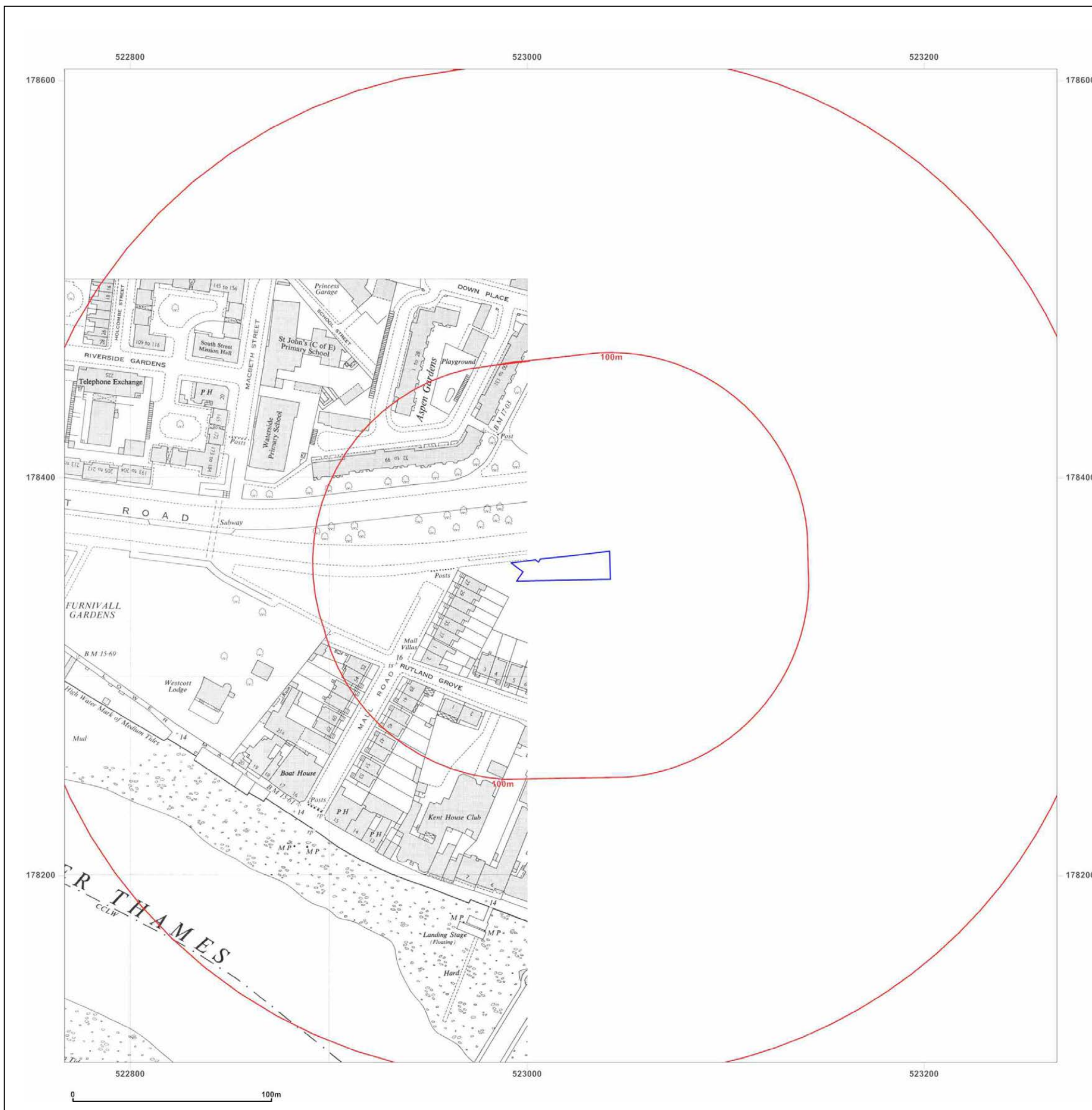


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1963

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1962
 Revised 1962
 Edition N/A
 Copyright 1963
 Levelled 1954

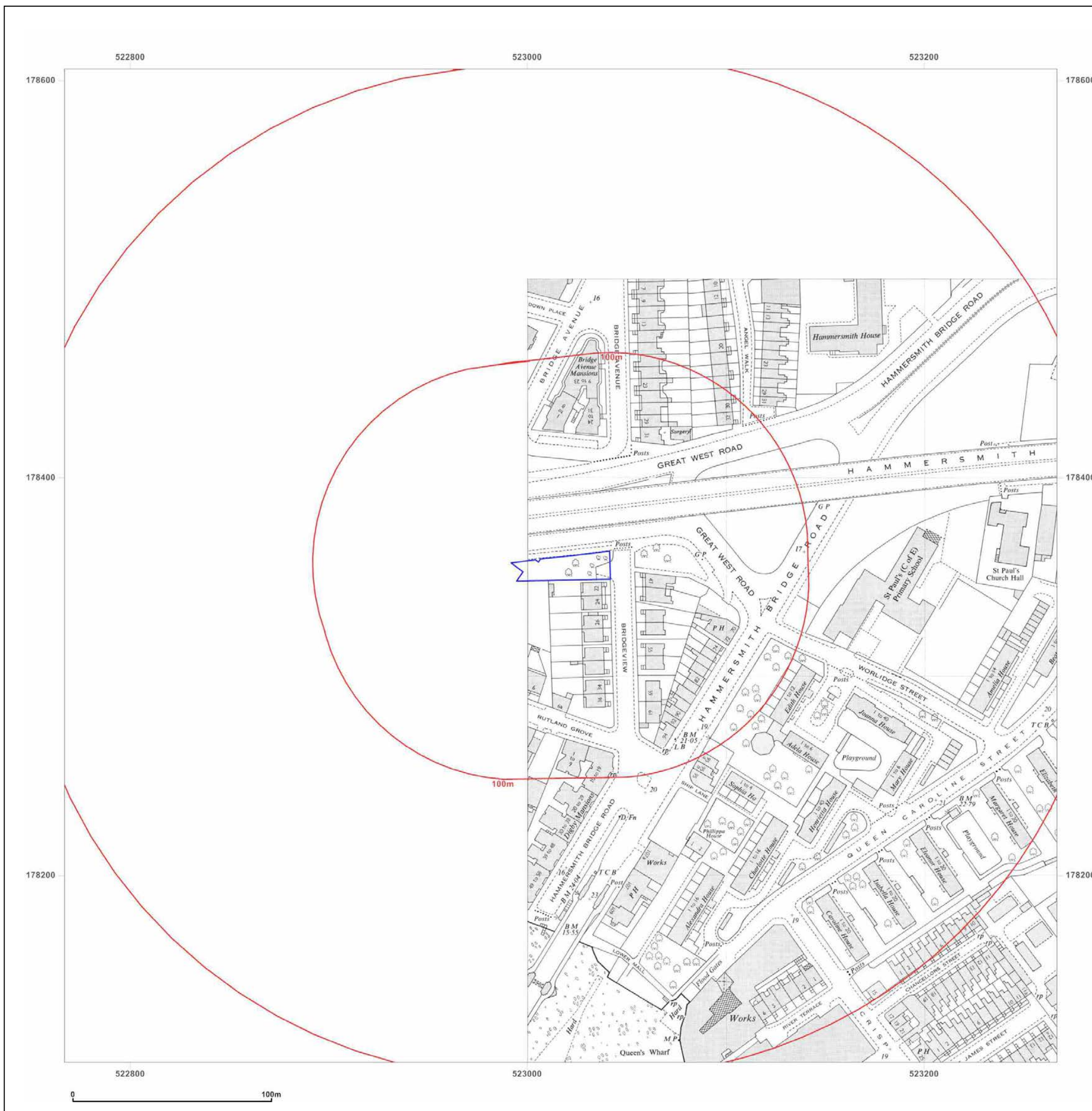


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Production date: 16 May 2017

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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1963-1967

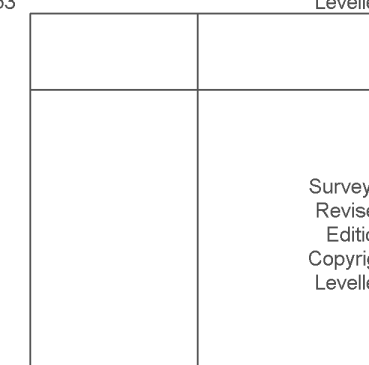
Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1950
 Revised 1966
 Edition N/A
 Copyright 1967
 Levelled 1953

Surveyed 1962
 Revised 1962
 Edition N/A
 Copyright 1963
 Levelled 1954



Surveyed 1950
 Revised 1962
 Edition N/A
 Copyright 1963
 Levelled 1954

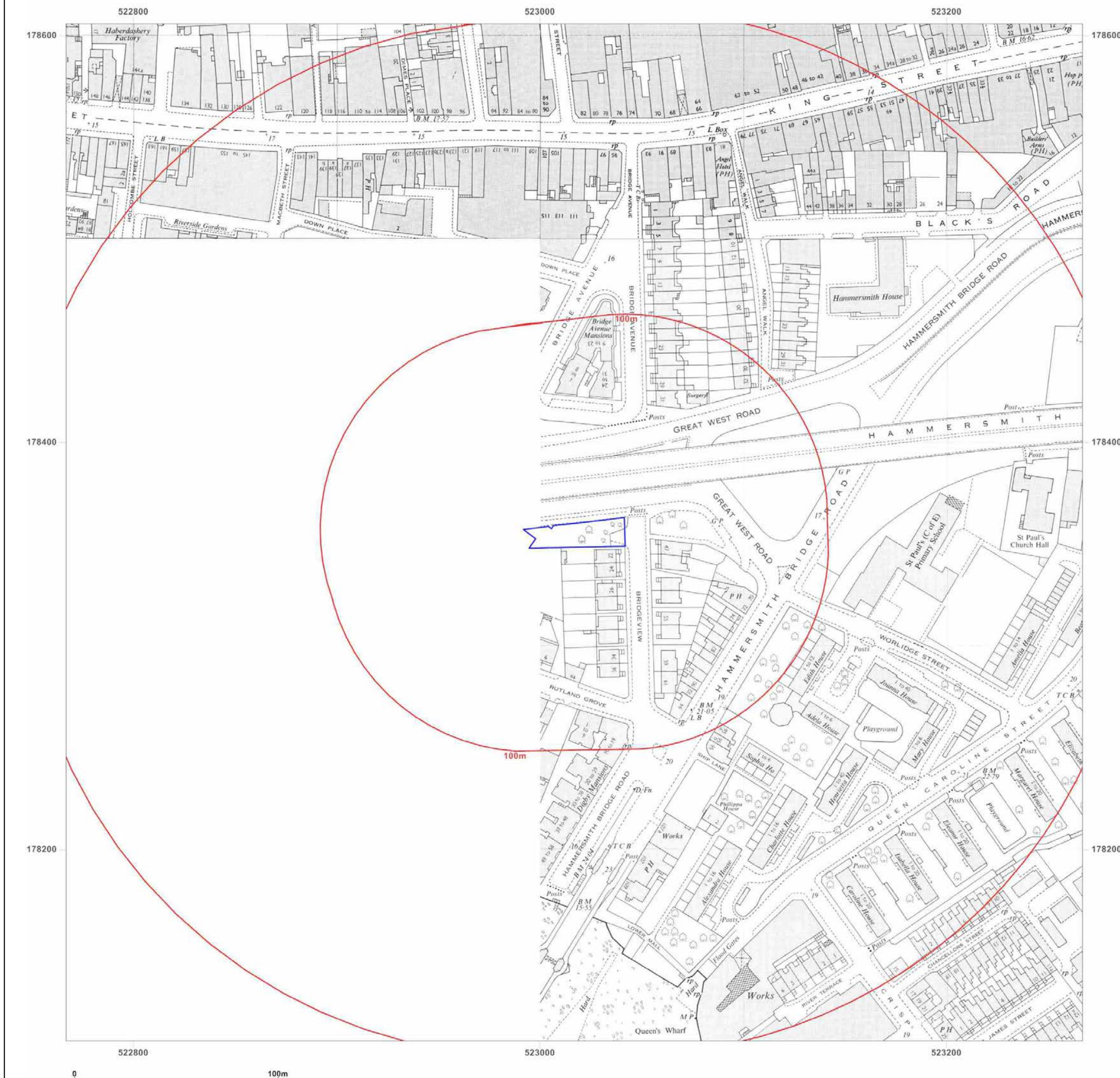


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1968

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright N/A
 Levelled N/A

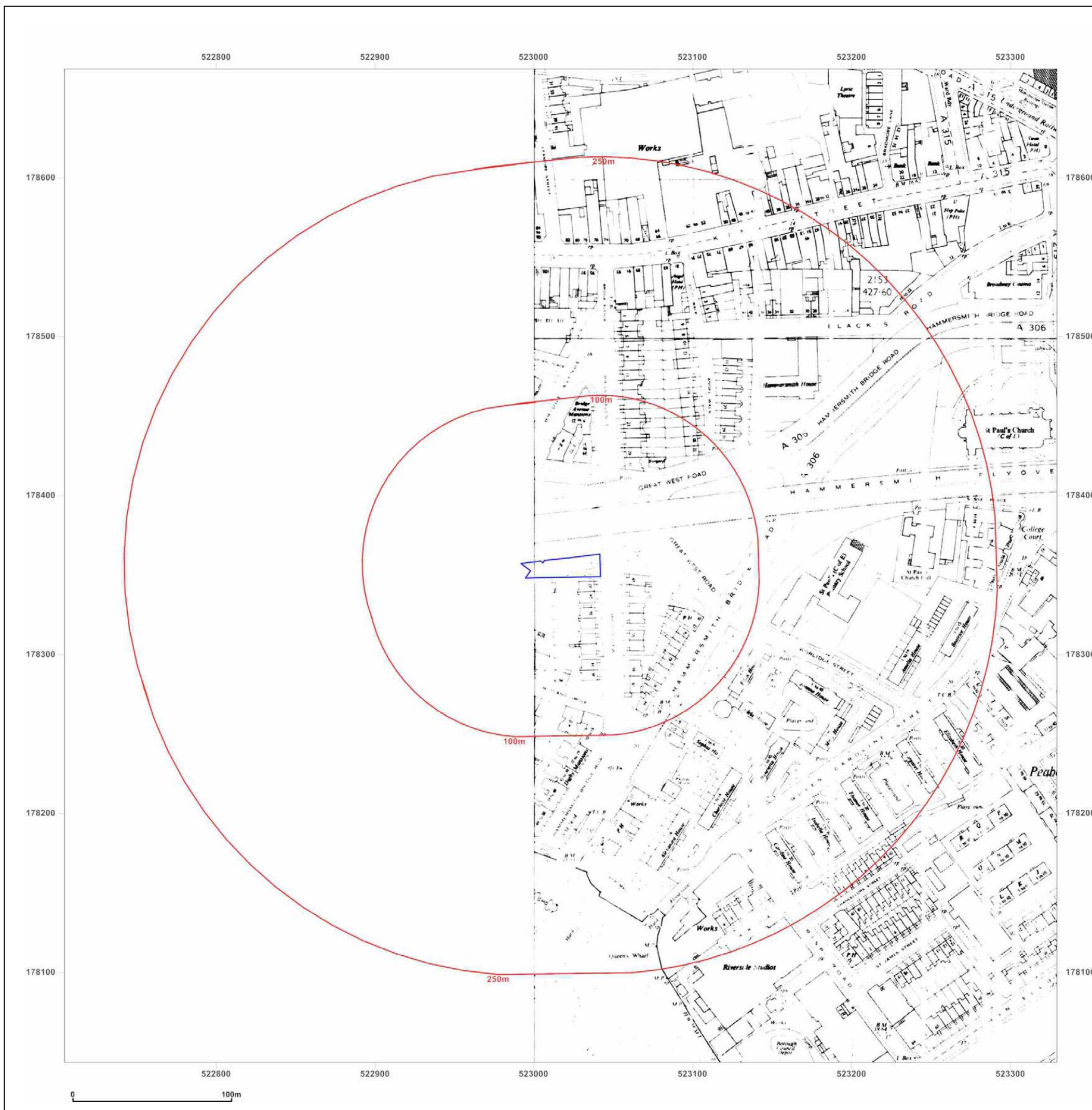


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1968

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1967
 Revised 1967
 Edition N/A
 Copyright 1968
 Levelled 1954

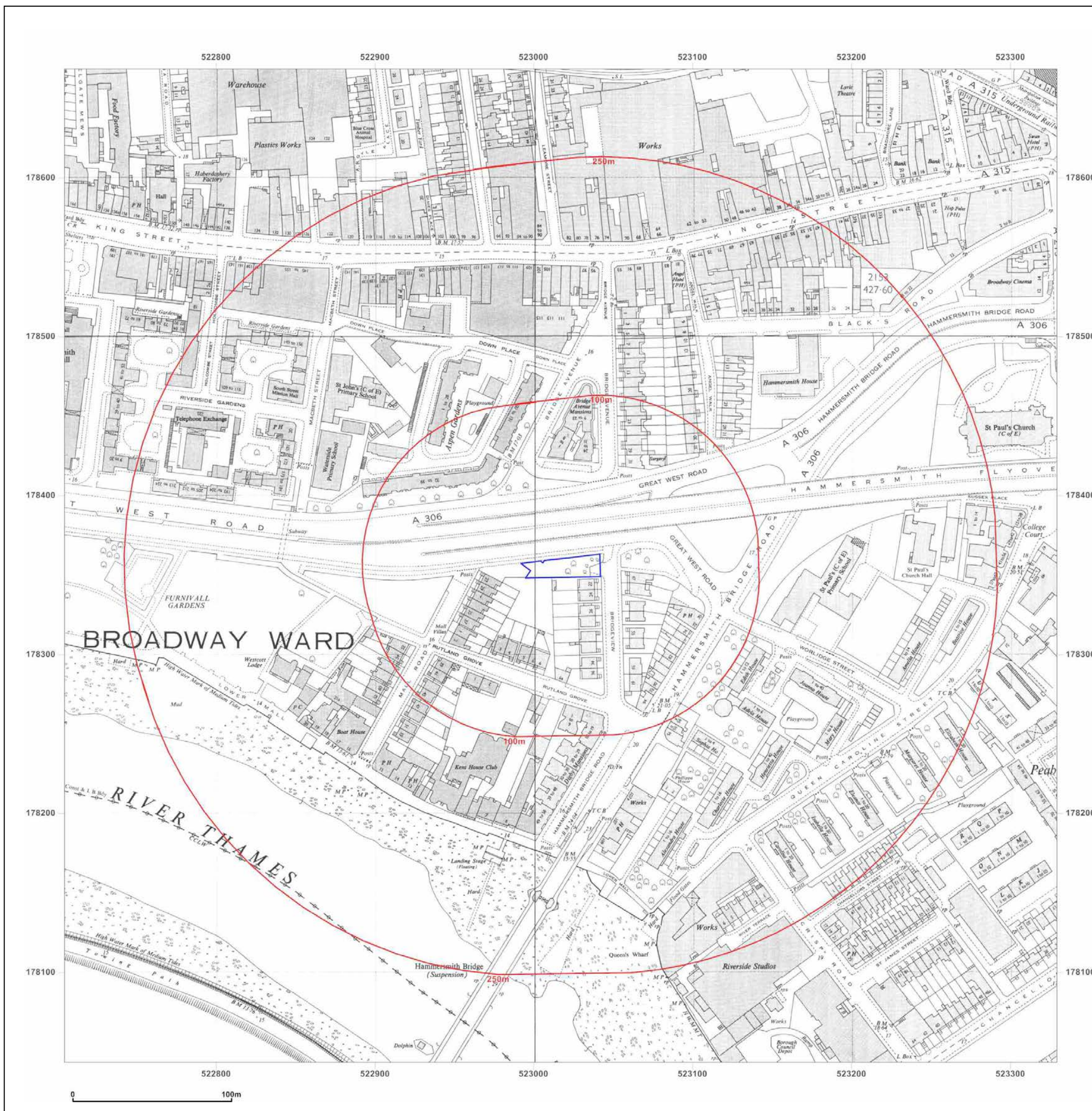


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1977

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

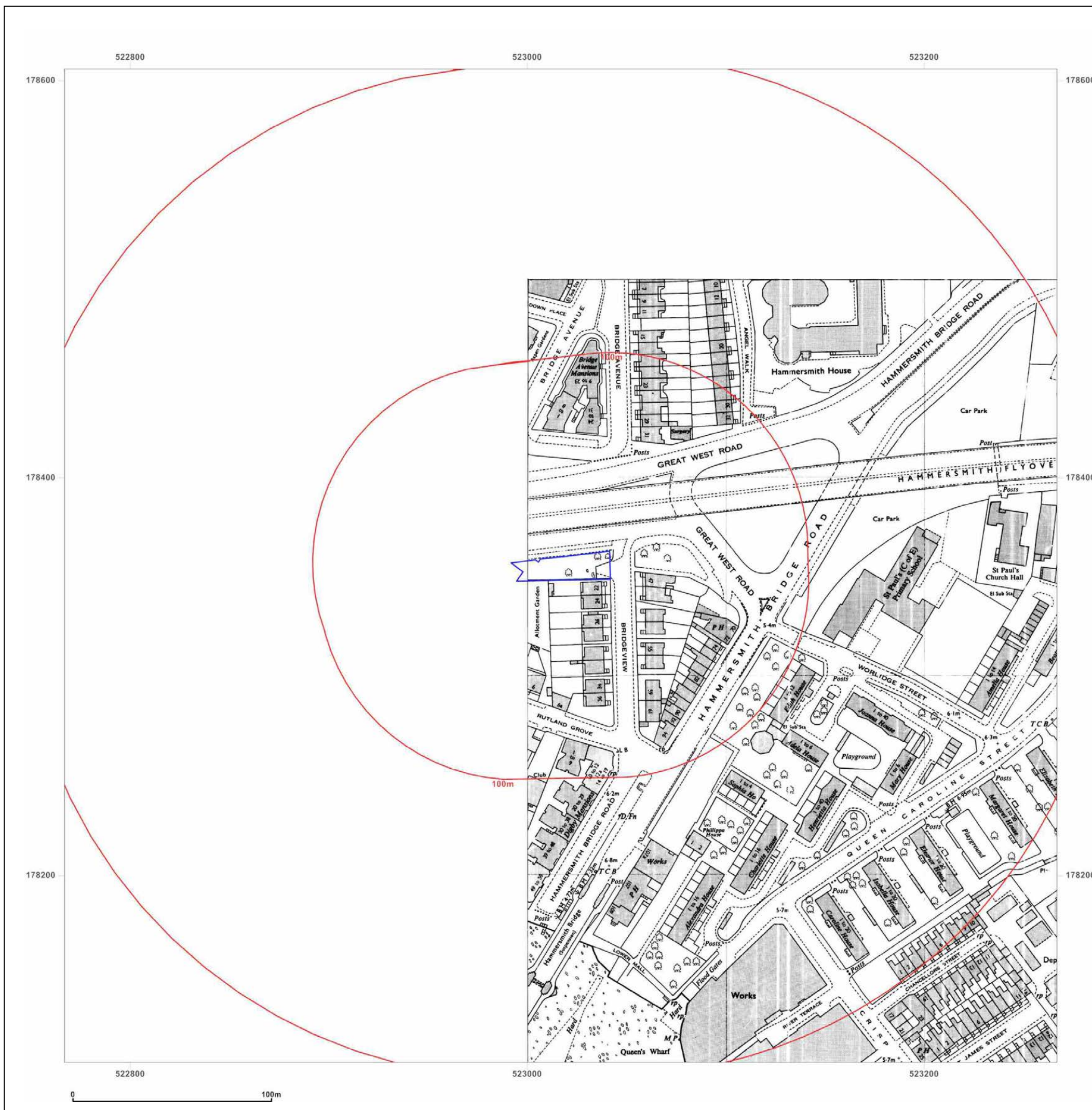


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1974-1979

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1979
 Revised 1979
 Edition N/A
 Copyright 1979
 Levelled N/A

Surveyed N/A
 Revised 1975
 Edition N/A
 Copyright 1963
 Levelled 1954

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright N/A
 Levelled N/A

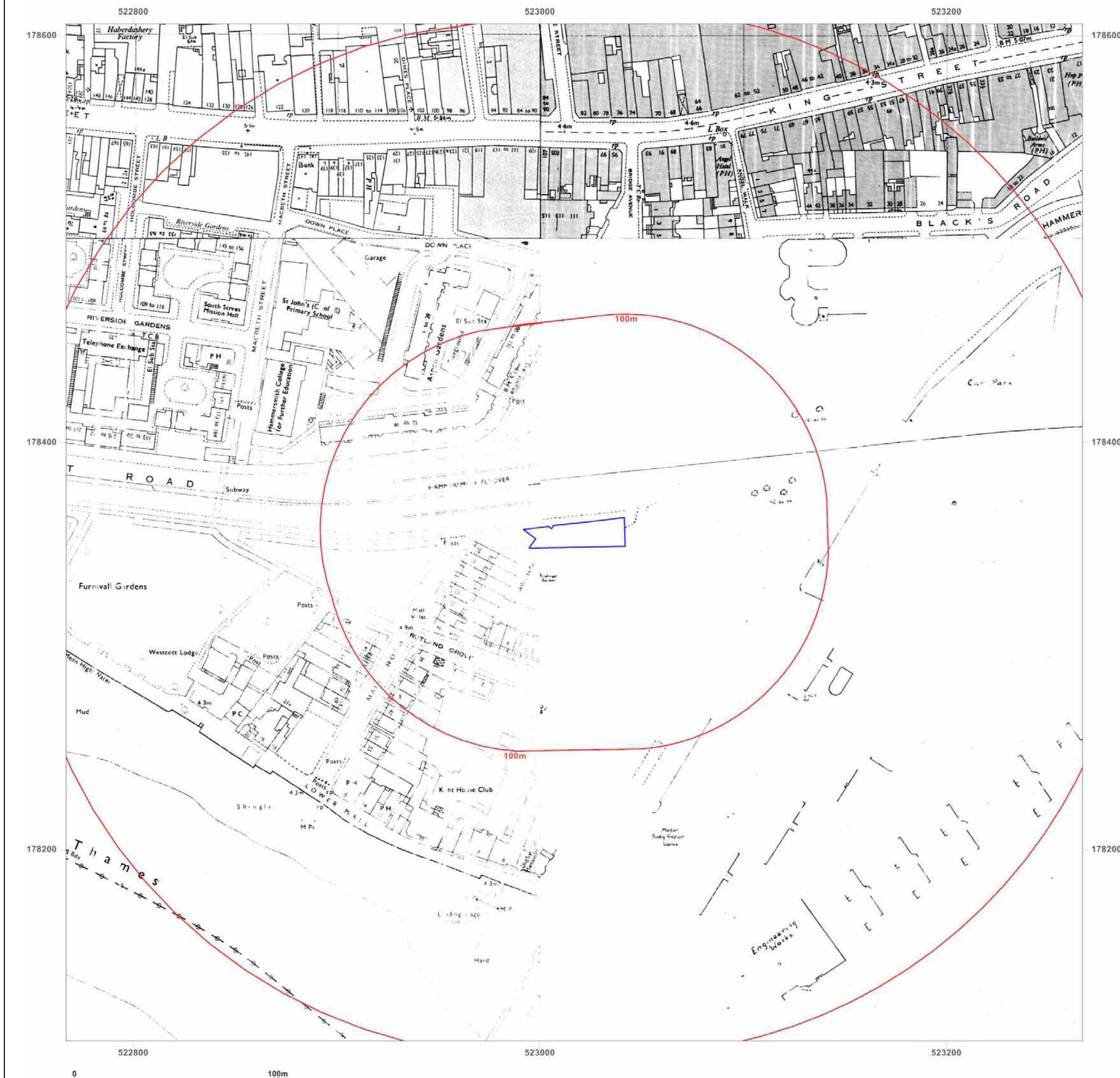


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1971-1980

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1980
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1971
Levelled N/A

Surveyed 1976
Revised 1976
Edition N/A
Copyright N/A
Levelled N/A

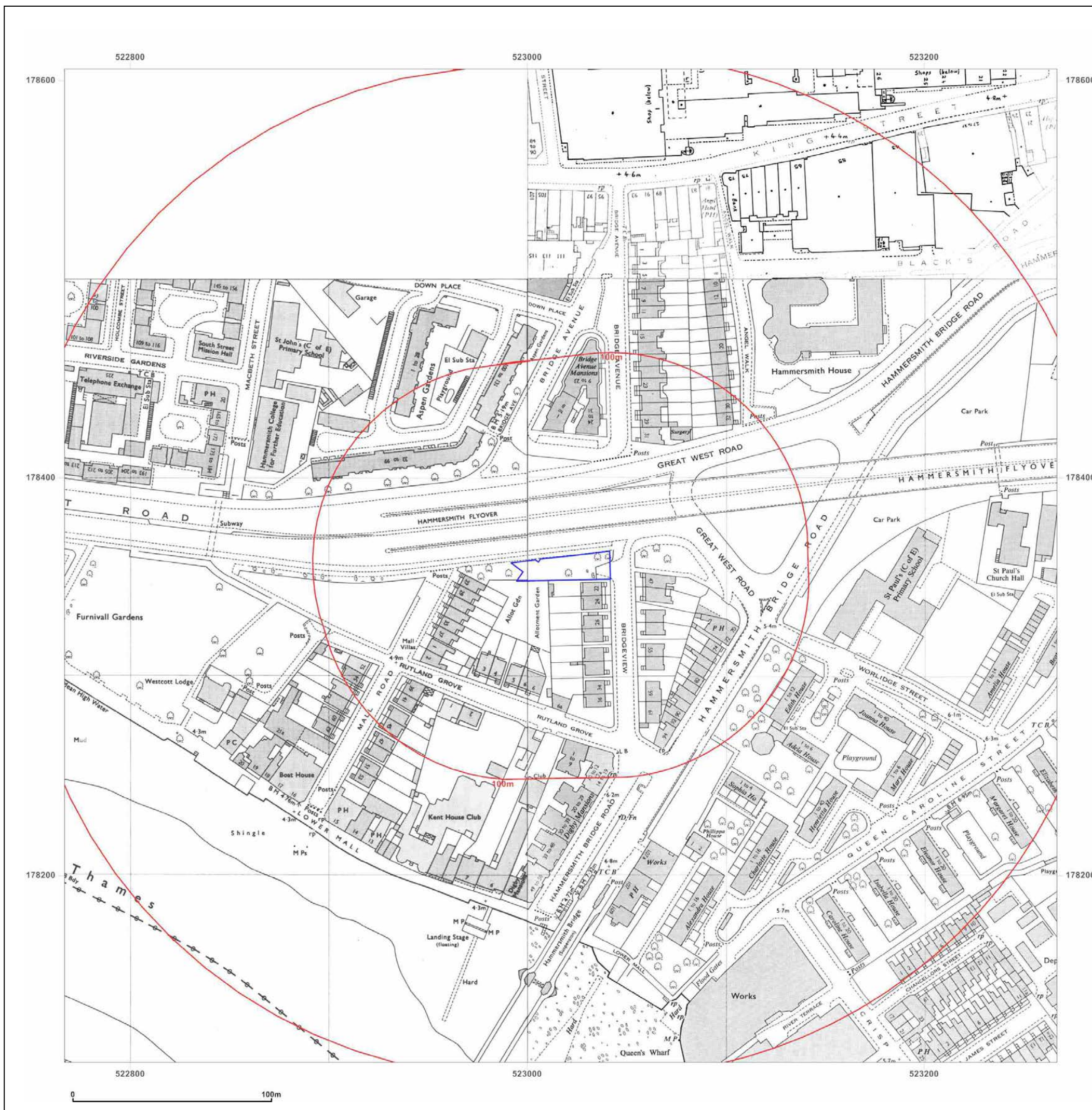


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1987-1991

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1991
 Levelled N/A

Surveyed N/A
 Revised 1985
 Edition N/A
 Copyright 1987
 Levelled 1973

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1991
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1991
 Levelled N/A

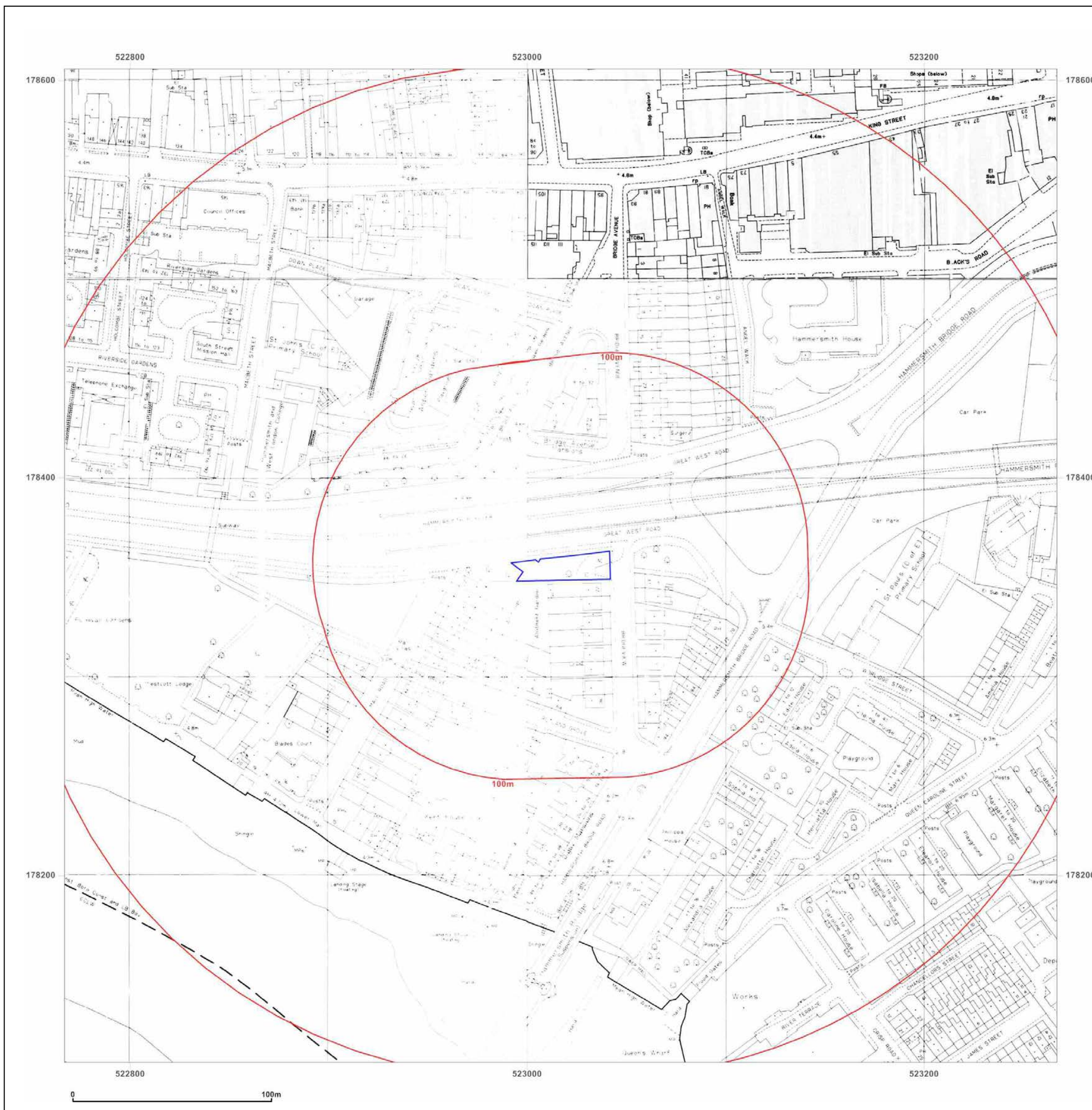


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1991
 Revised 1991
 Edition N/A
 Copyright 1991
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1991
 Levelled N/A

Surveyed 1991
 Revised 1991
 Edition N/A
 Copyright 1991
 Levelled N/A

Surveyed 1991
 Revised 1991
 Edition N/A
 Copyright 1991
 Levelled N/A

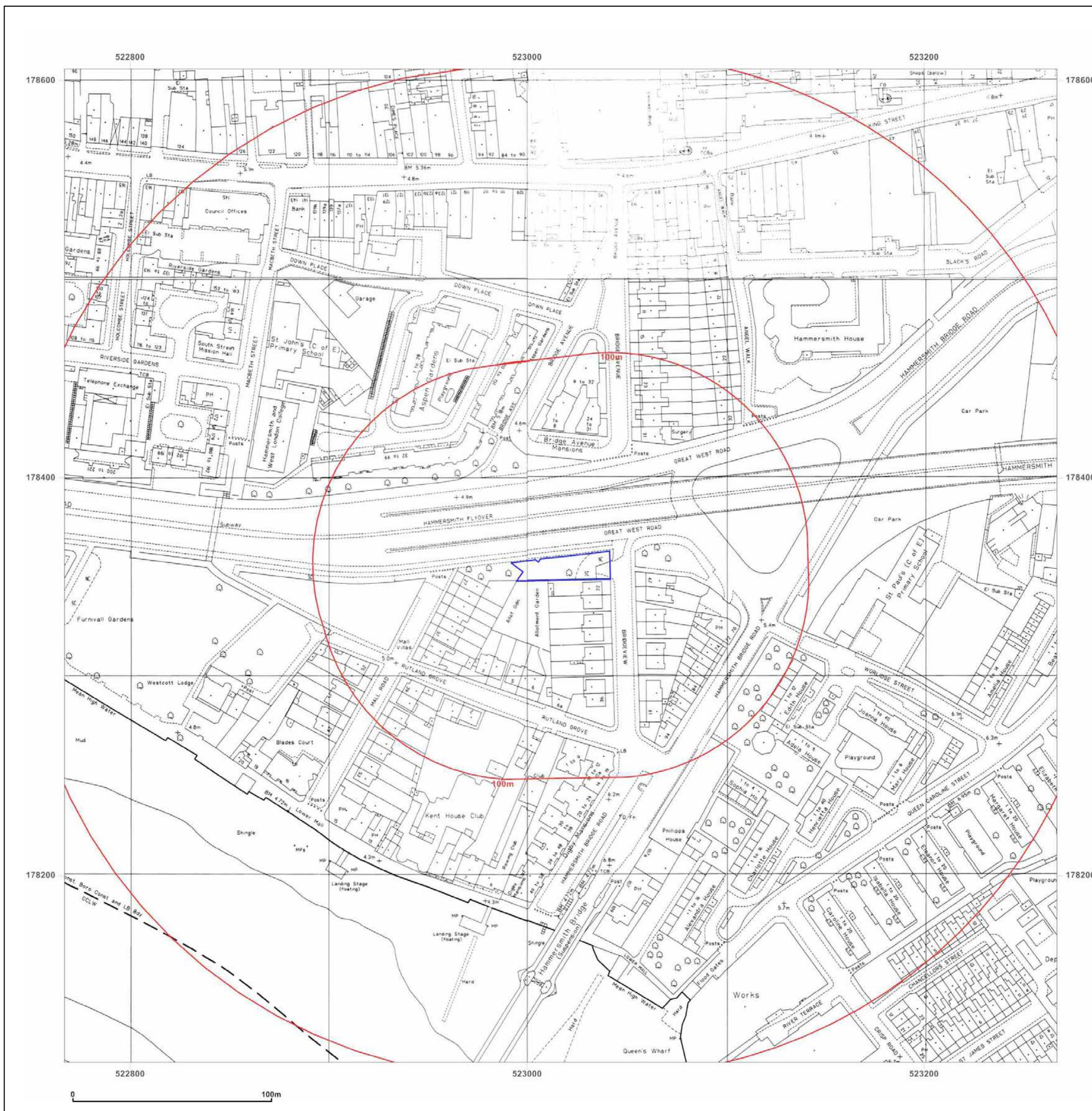


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1991-1993

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1992
 Levelled N/A

Surveyed 1991
 Revised 1991
 Edition N/A
 Copyright 1991
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1993
 Levelled N/A

Surveyed 1991
 Revised 1991
 Edition N/A
 Copyright 1991
 Levelled N/A

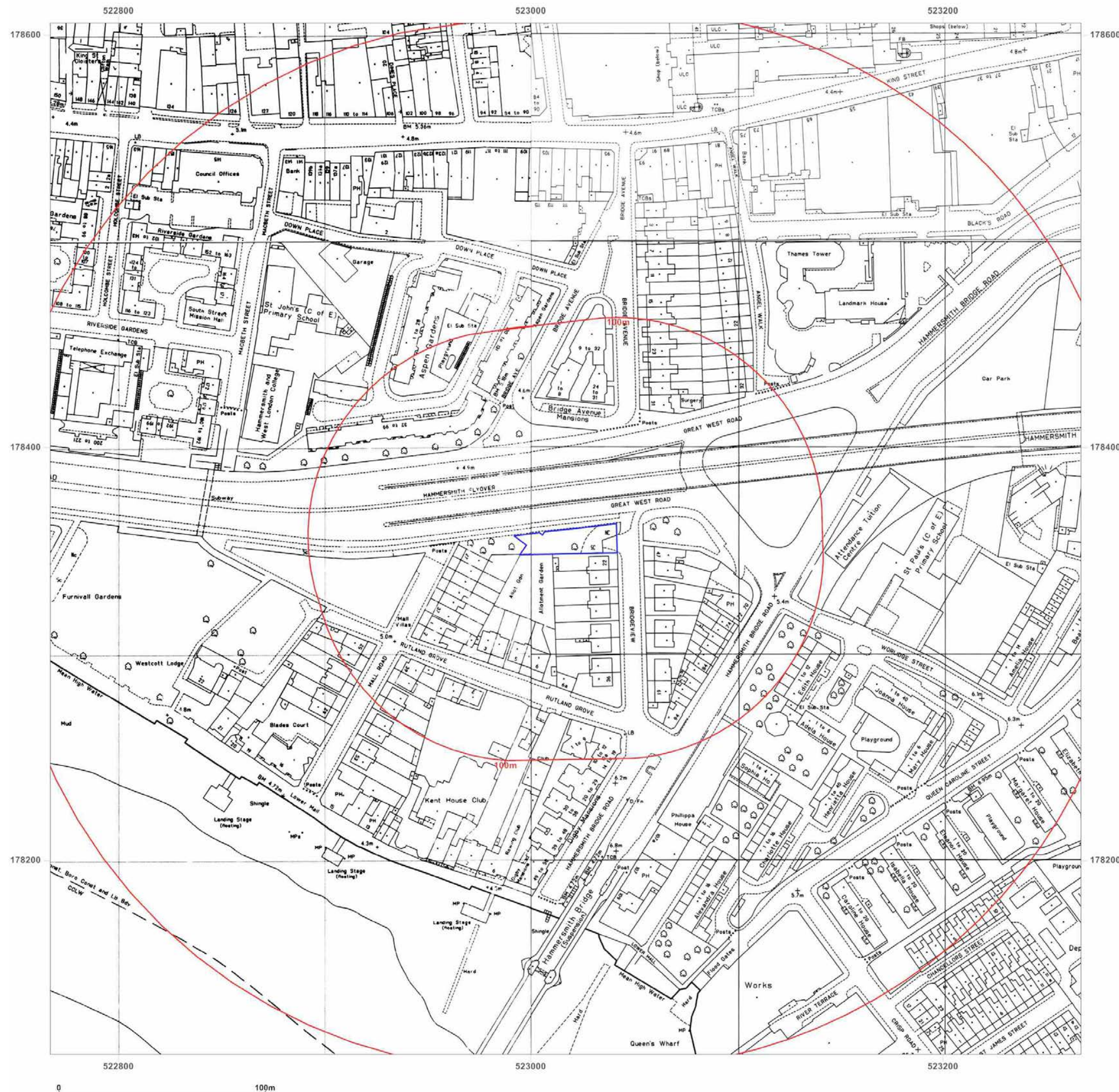


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1992-1993

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1992
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1993
 Levelled N/A

Surveyed 1993
 Revised 1993
 Edition N/A
 Copyright 1993
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1992
 Levelled N/A

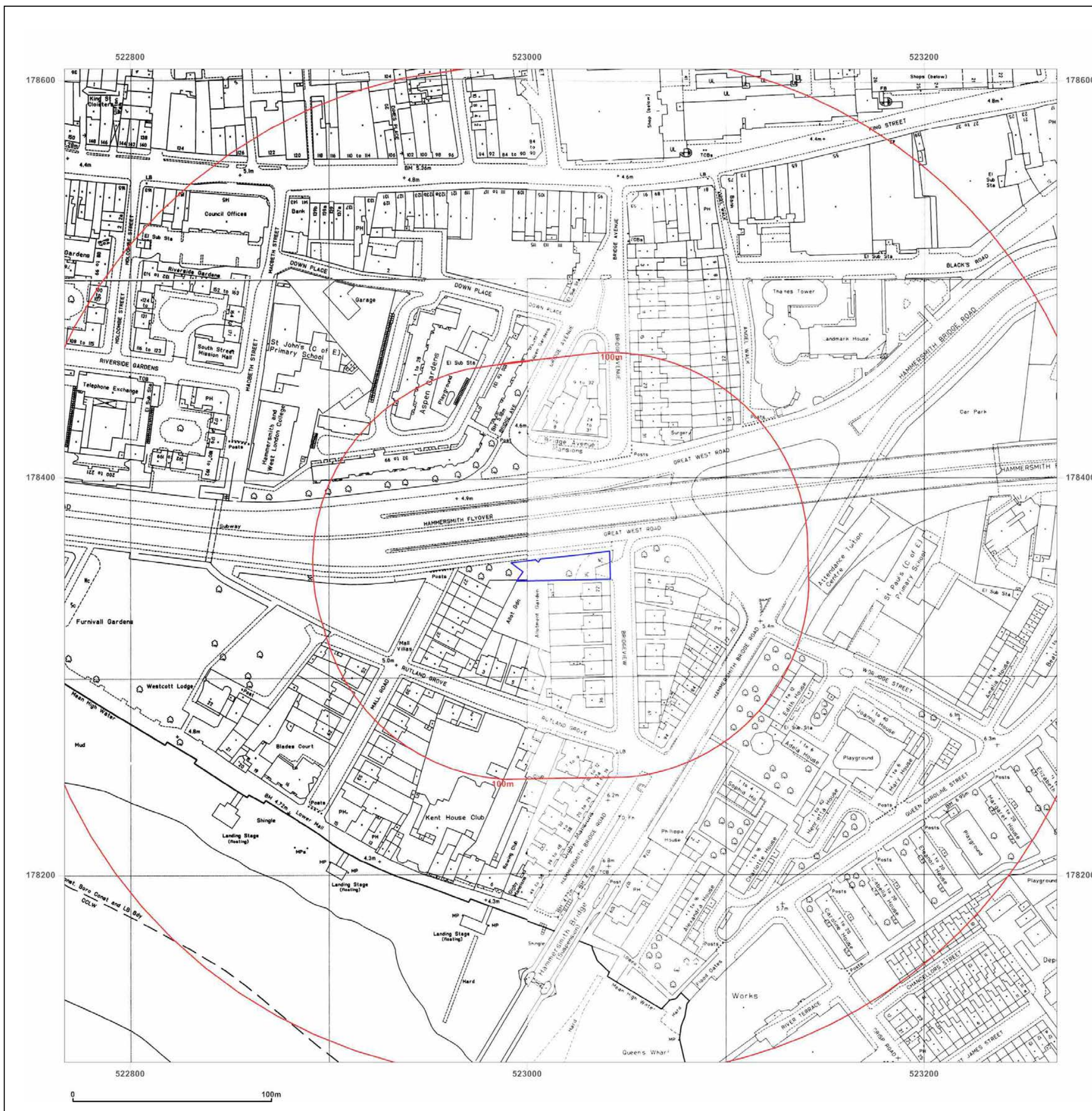


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Site Details:

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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1993-1995

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1995
 Levelled N/A

Surveyed 1993
 Revised 1993
 Edition N/A
 Copyright 1993
 Levelled N/A

Surveyed 1993
 Revised 1993
 Edition N/A
 Copyright 1993
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1995
 Levelled N/A

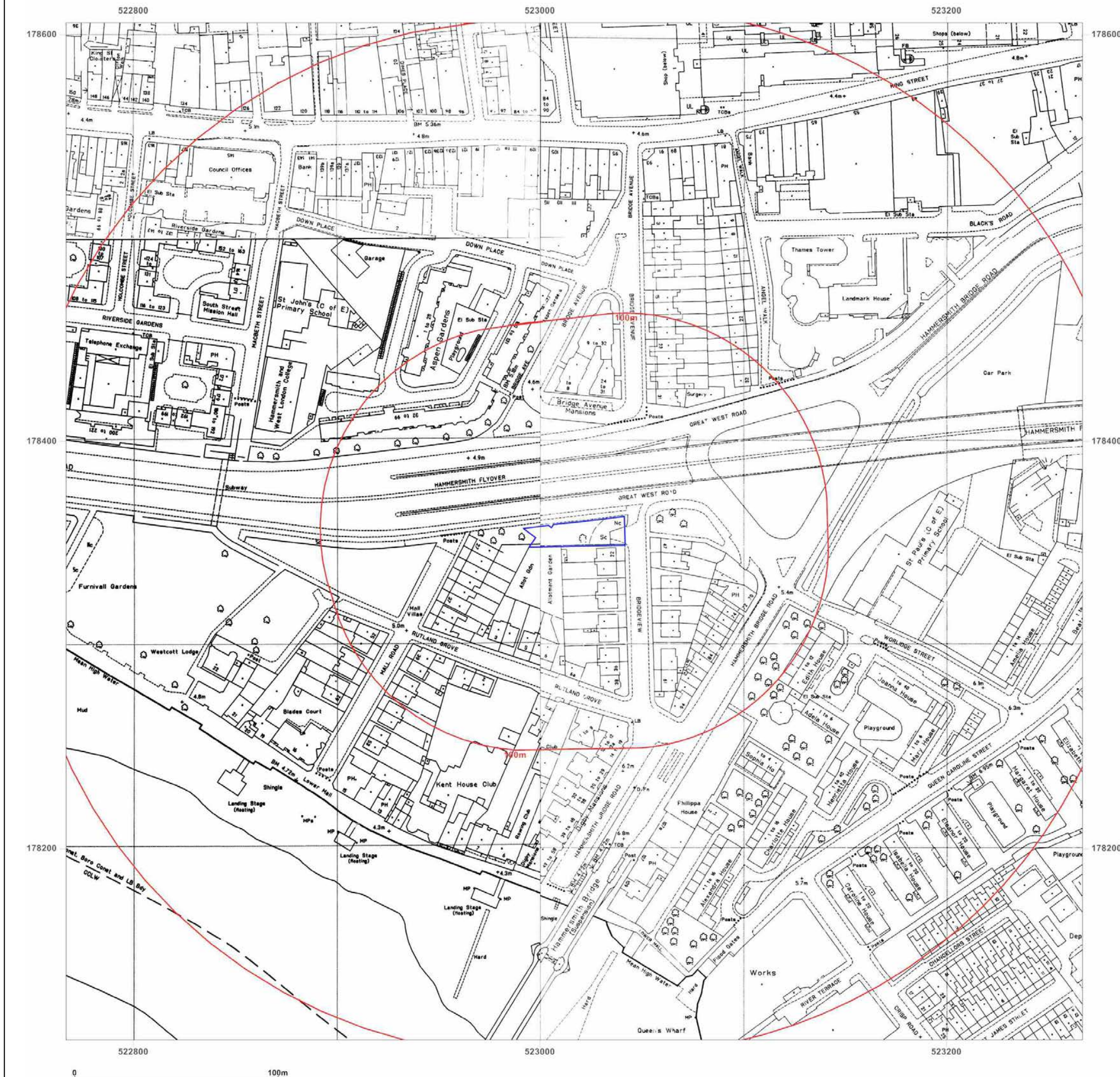


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Site Details:

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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1995

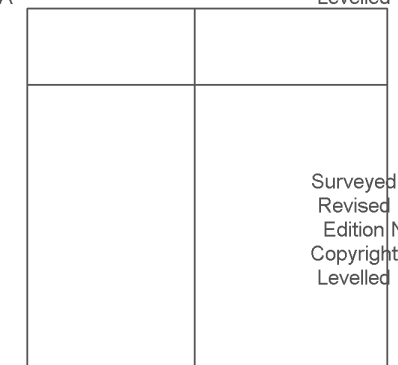
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Printed at: 1:2,000



Surveyed 1995
 Revised 1995
 Edition N/A
 Copyright 1995
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1995
 Levelled N/A



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright N/A
 Levelled N/A

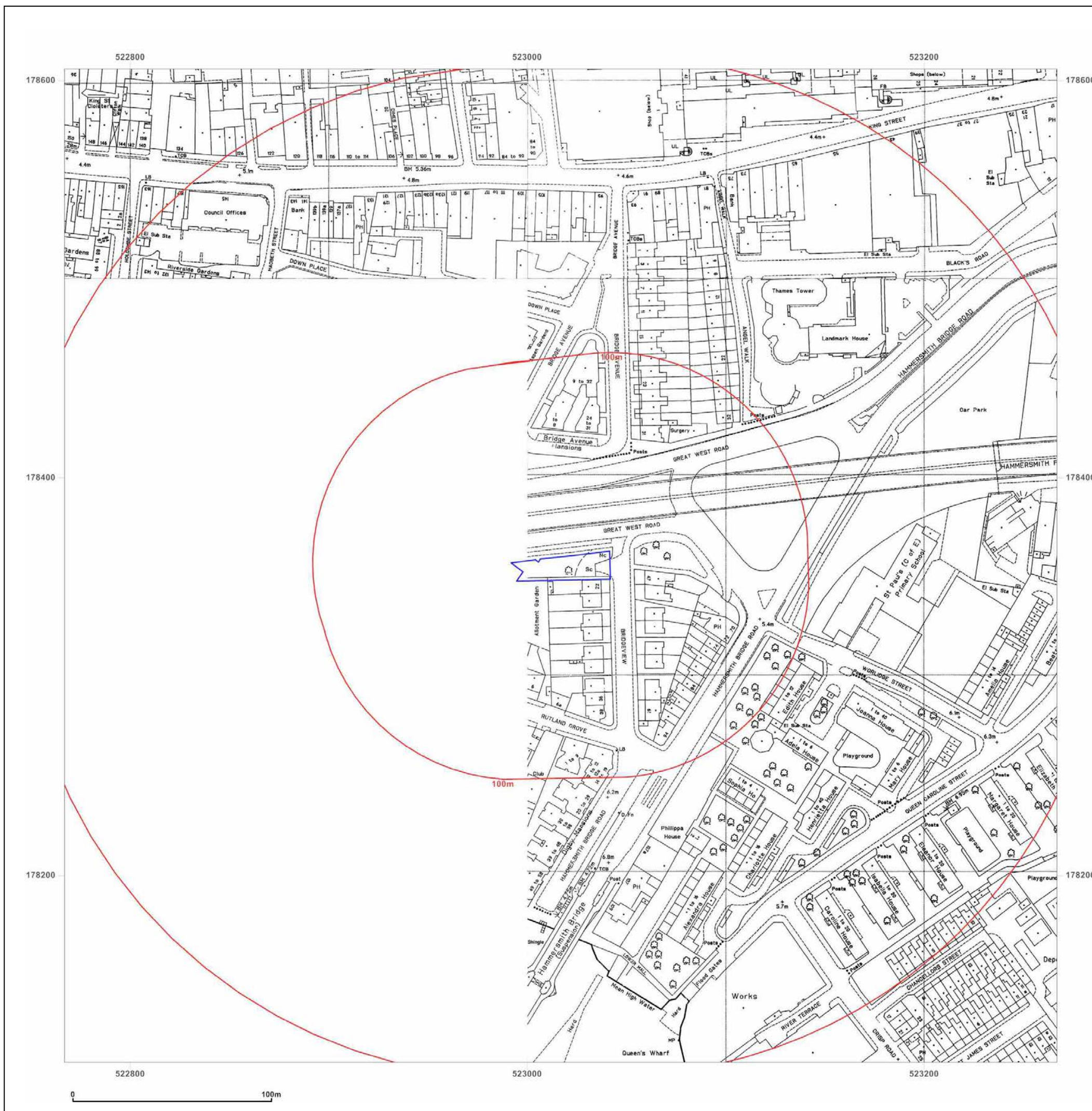


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Site Details:

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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1866

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1866
Edition N/A
Copyright N/A
Levelled N/A

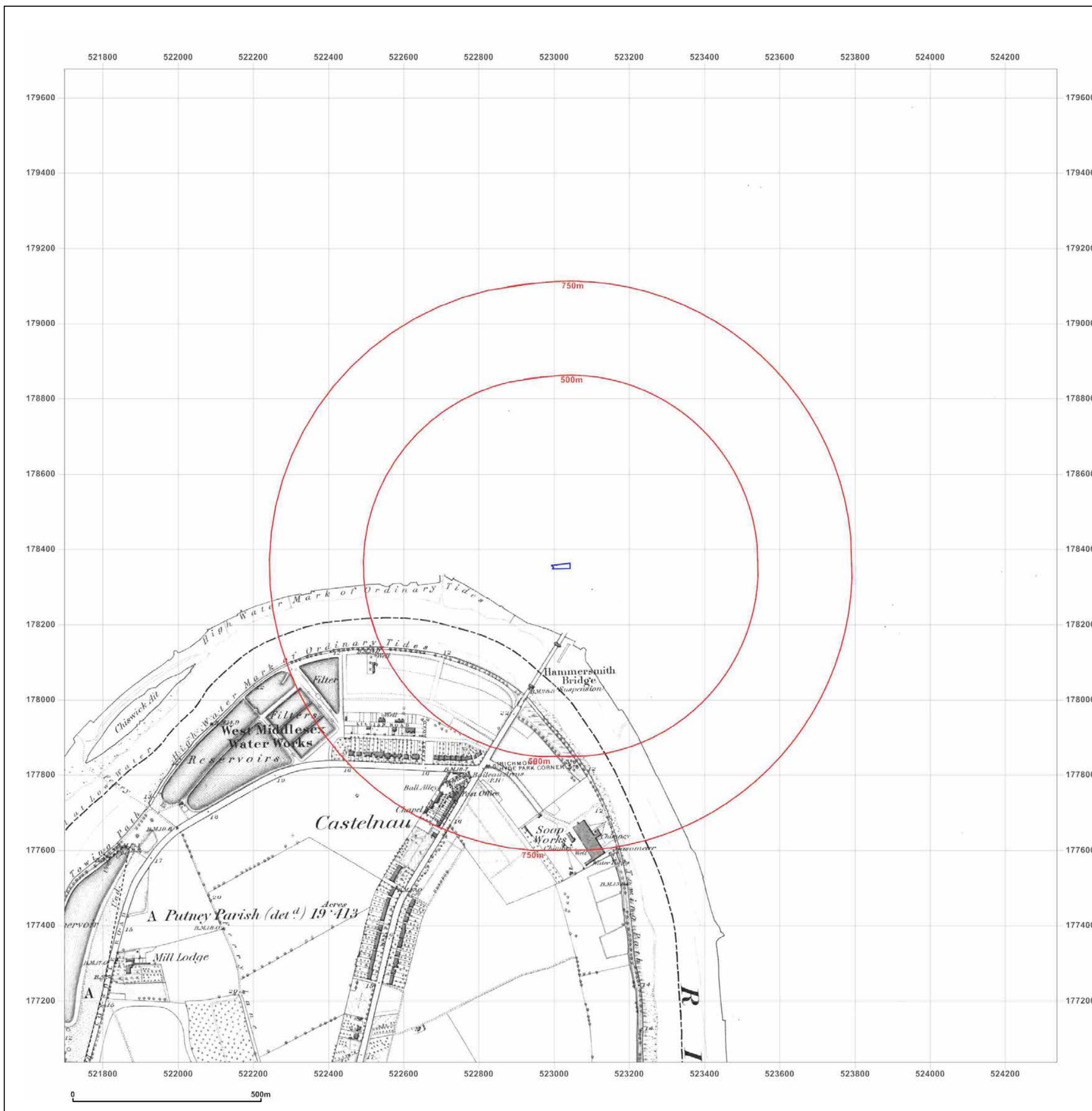


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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1873-1874

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1874
Edition N/A
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Surveyed 1866
Revised 1873
Edition N/A
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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1893-1894

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1894
 Revised 1894
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1894
 Revised 1894
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1893
 Revised 1893
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1894
 Revised 1894
 Edition N/A
 Copyright N/A
 Levelled N/A

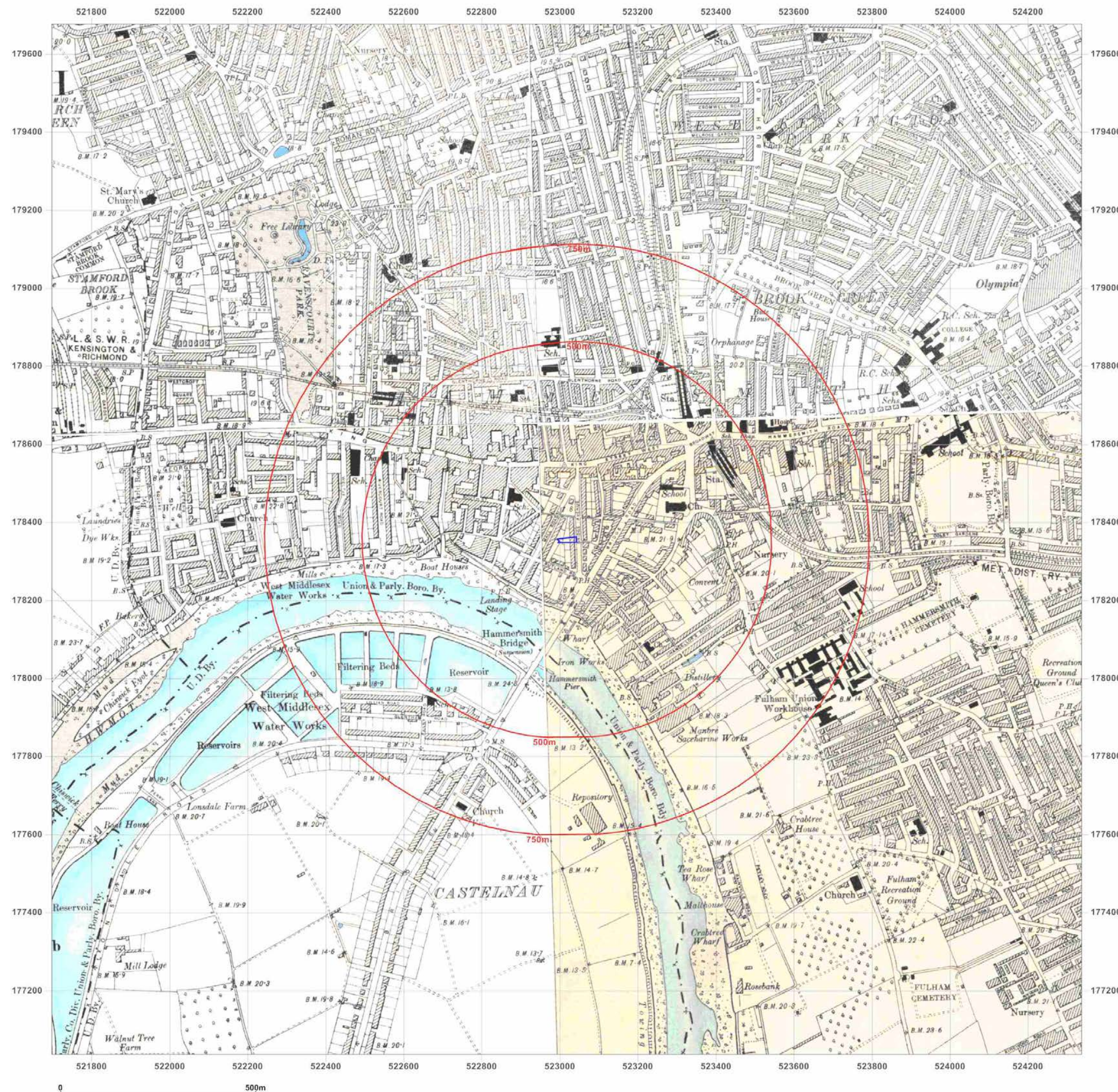


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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1894-1895

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

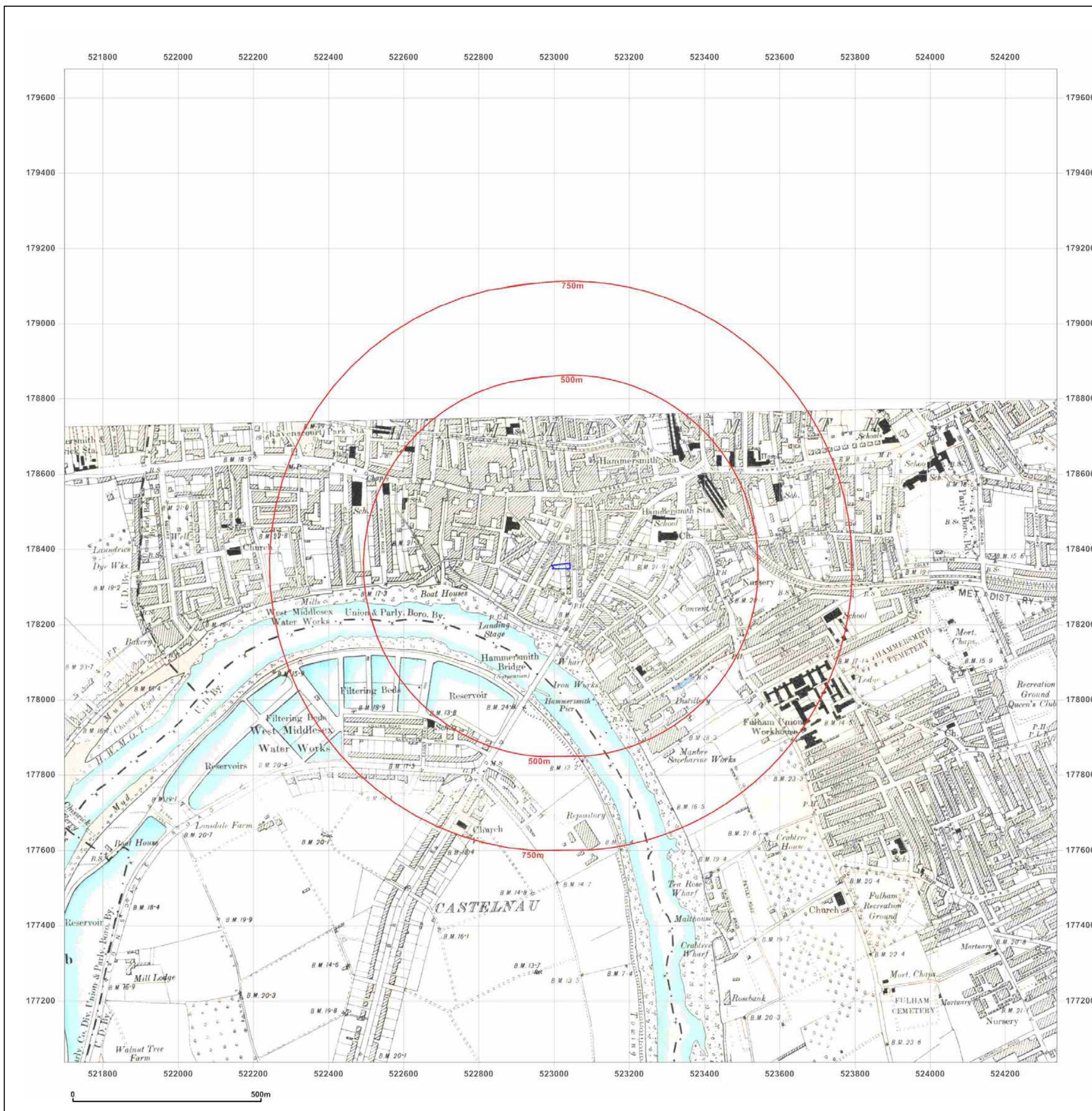


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

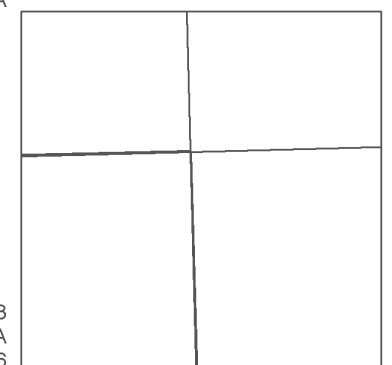
Map date: 1896

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1894
 Revised N/A
 Edition 1896
 Copyright N/A
 Levelled N/A



Surveyed 1893
 Revised N/A
 Edition 1896
 Copyright N/A
 Levelled N/A

Surveyed 1896
 Revised 1896
 Edition 1896
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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1894-1898

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

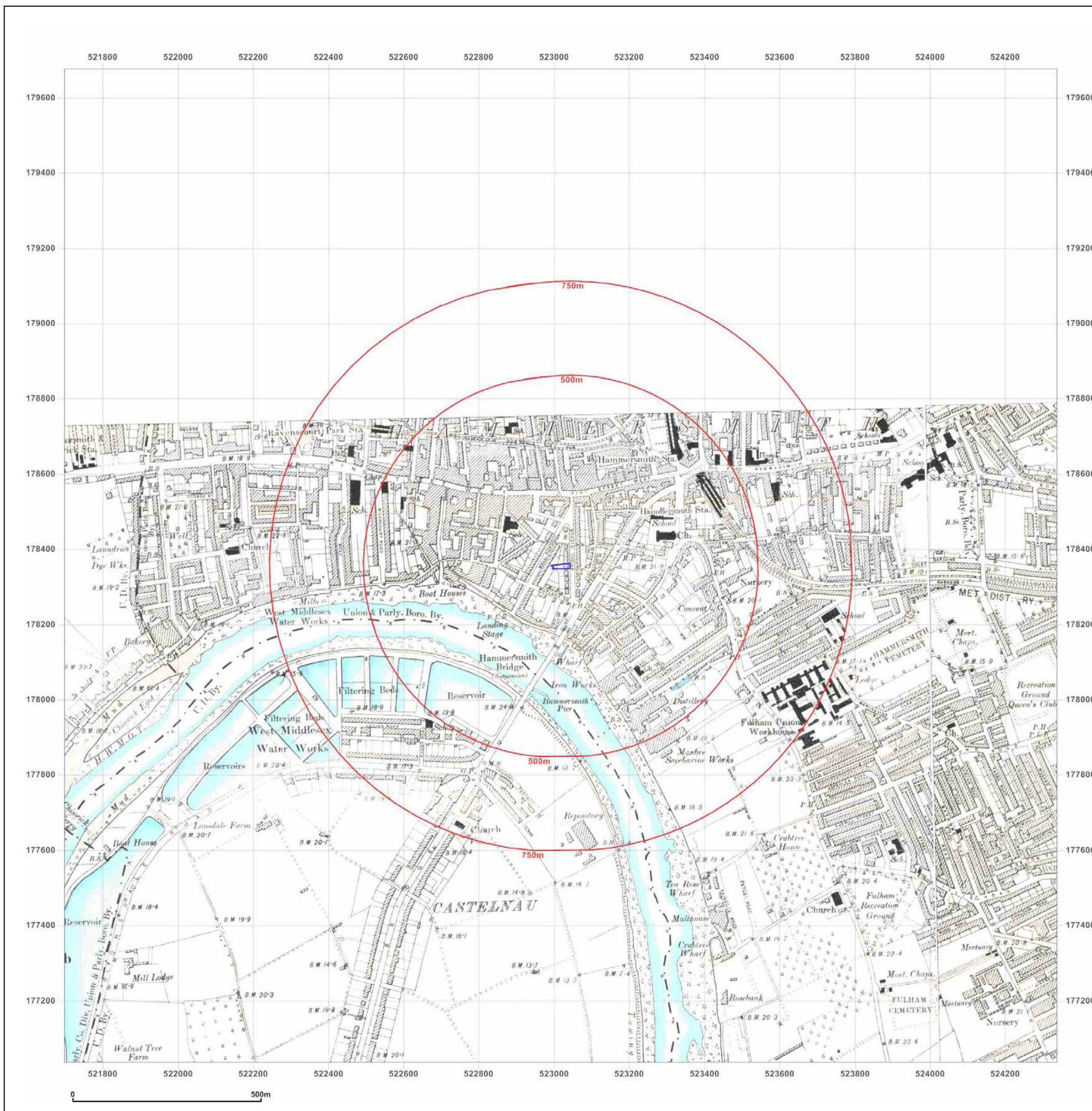


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Site Details:

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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

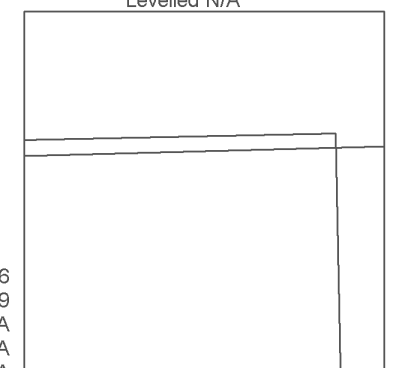
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Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1865
 Revised 1920
 Edition N/A
 Copyright N/A
 Levelled N/A



Surveyed 1866
 Revised 1919
 Edition N/A
 Copyright N/A
 Levelled N/A

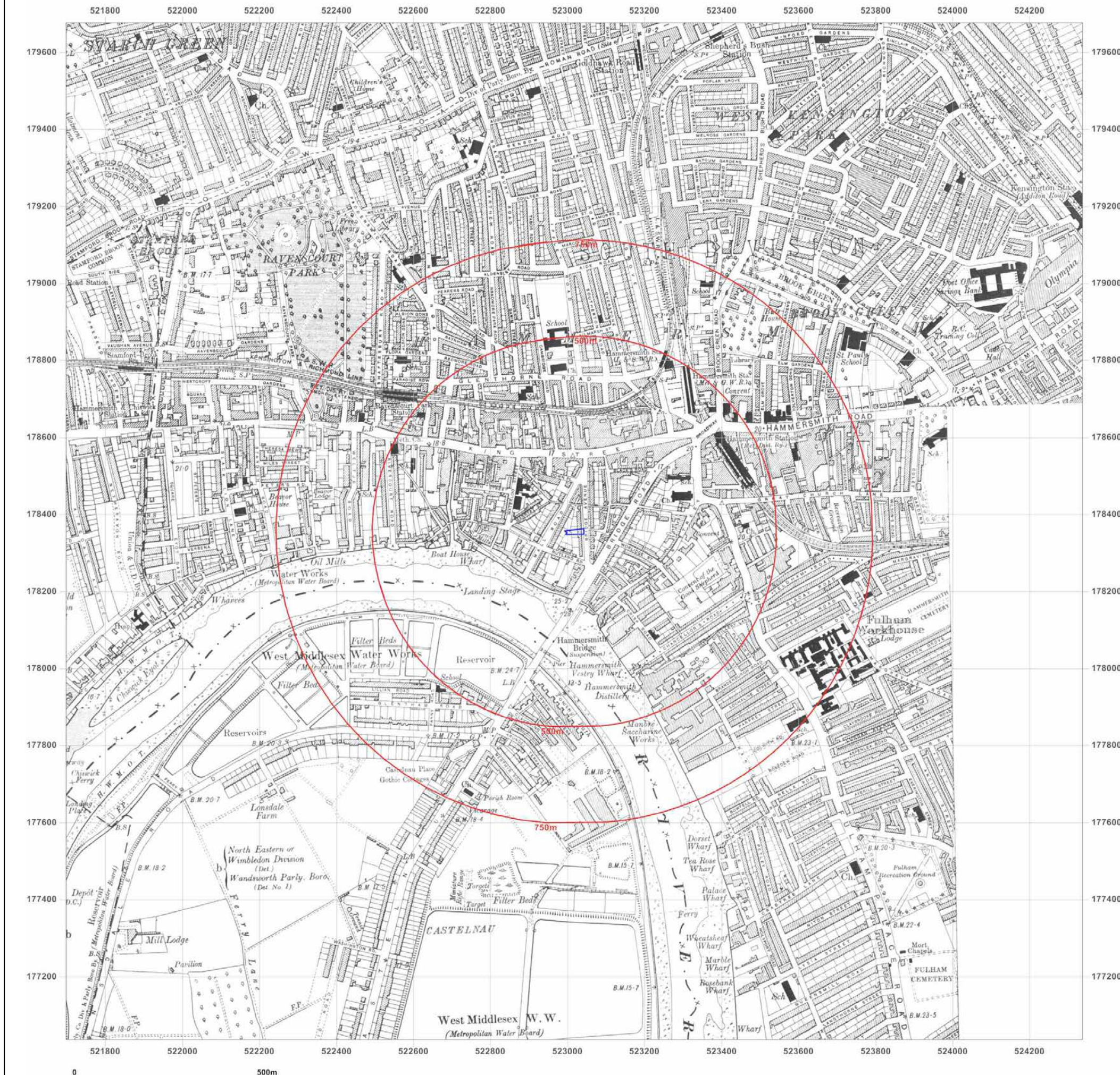


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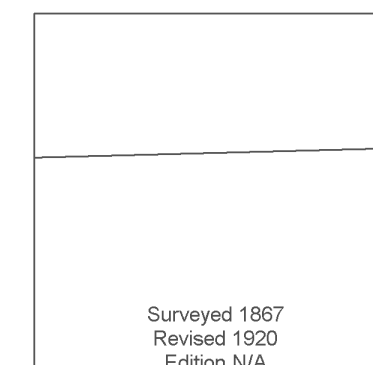
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Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1920

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1867
 Revised 1920
 Edition N/A
 Copyright N/A
 Levelled N/A

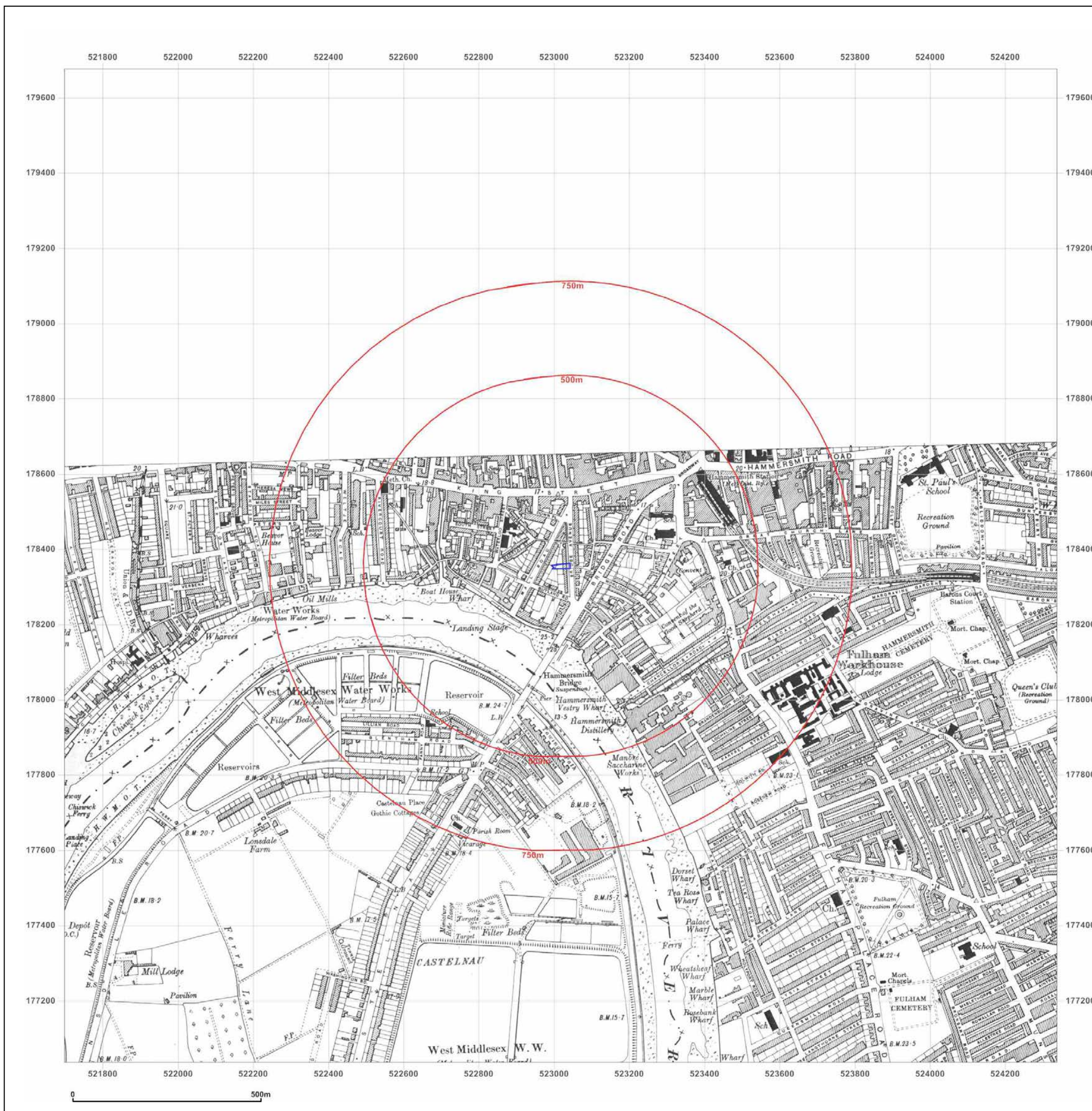


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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1933

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A

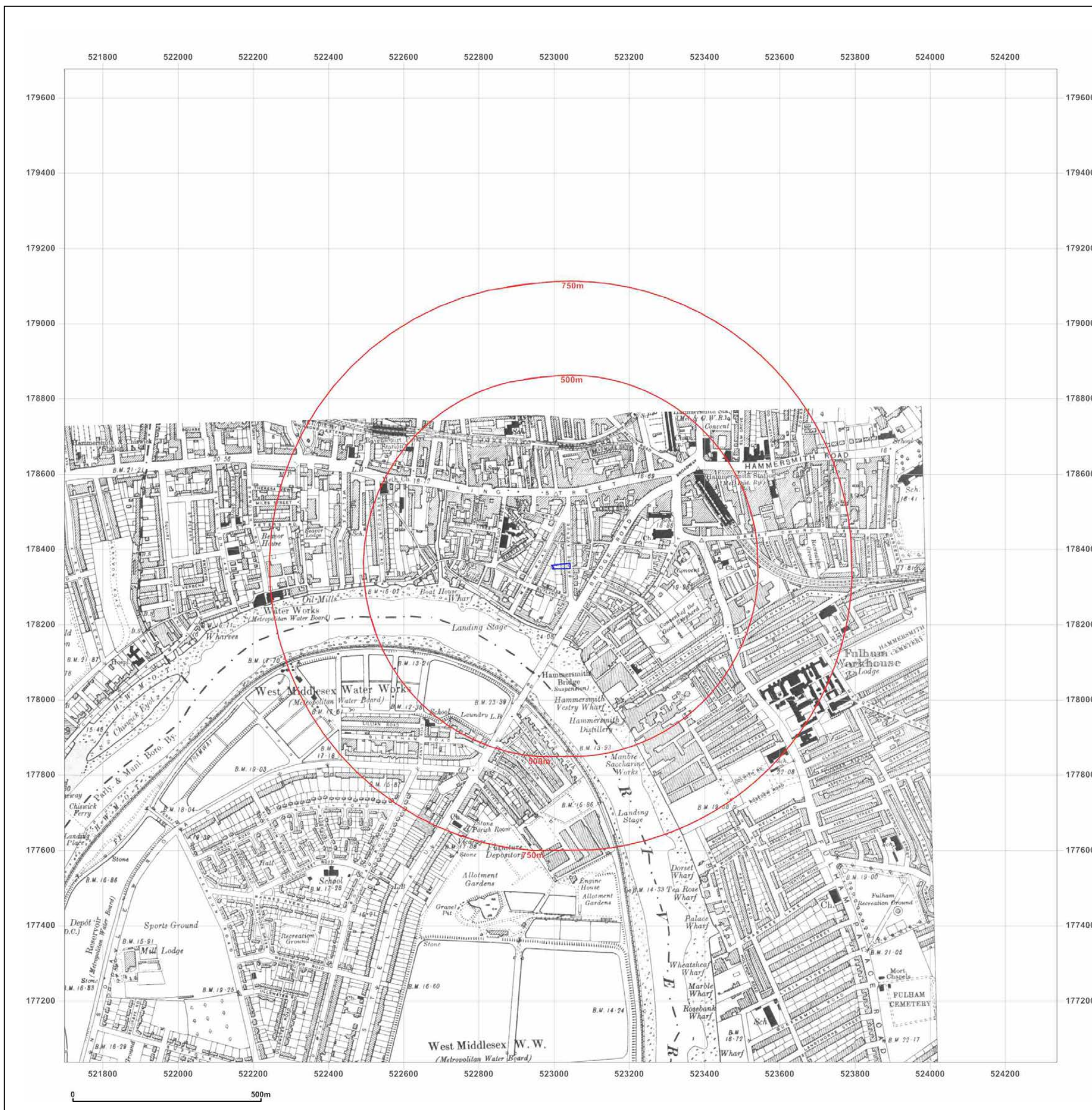


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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1933

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A



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Site Details:

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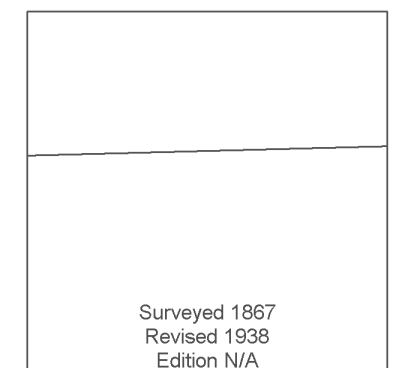
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Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1867
 Revised 1938
 Edition N/A
 Copyright N/A
 Levelled N/A

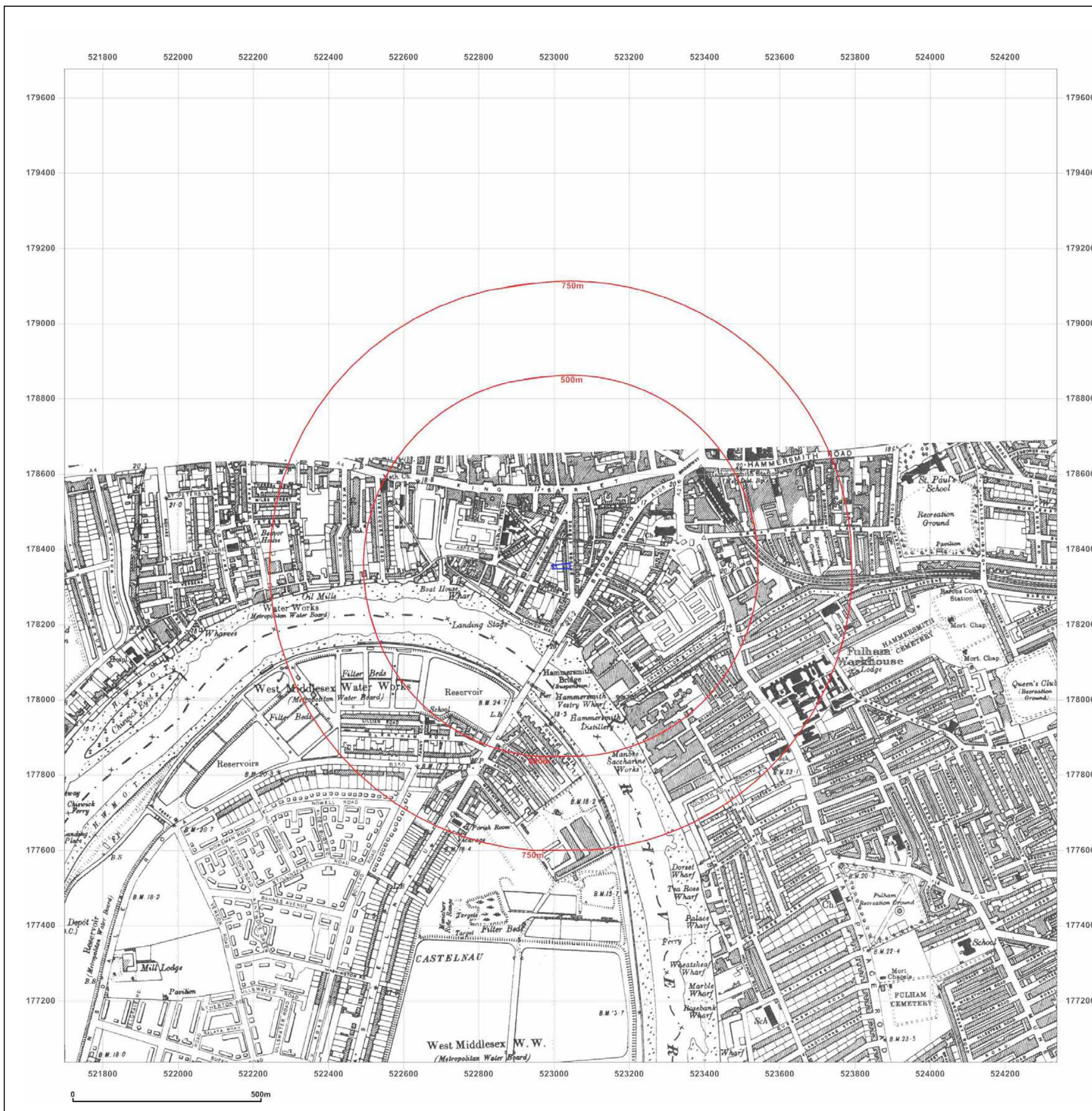


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Site Details:

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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: Provisional

Map date: 1947

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1940
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

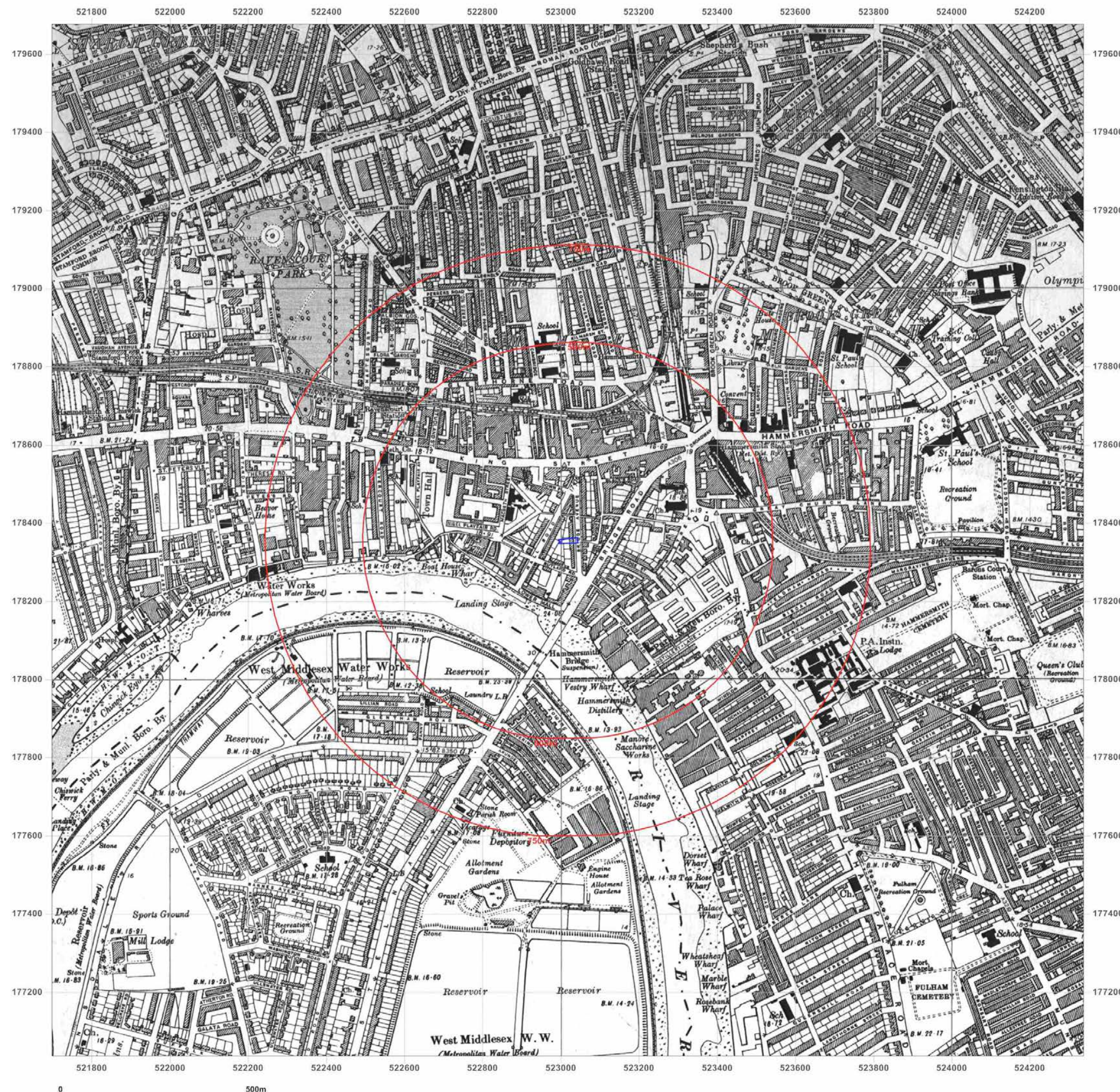


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: Provisional

Map date: 1958

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1958
 Revised 1958
 Edition N/A
 Copyright N/A
 Levelled N/A

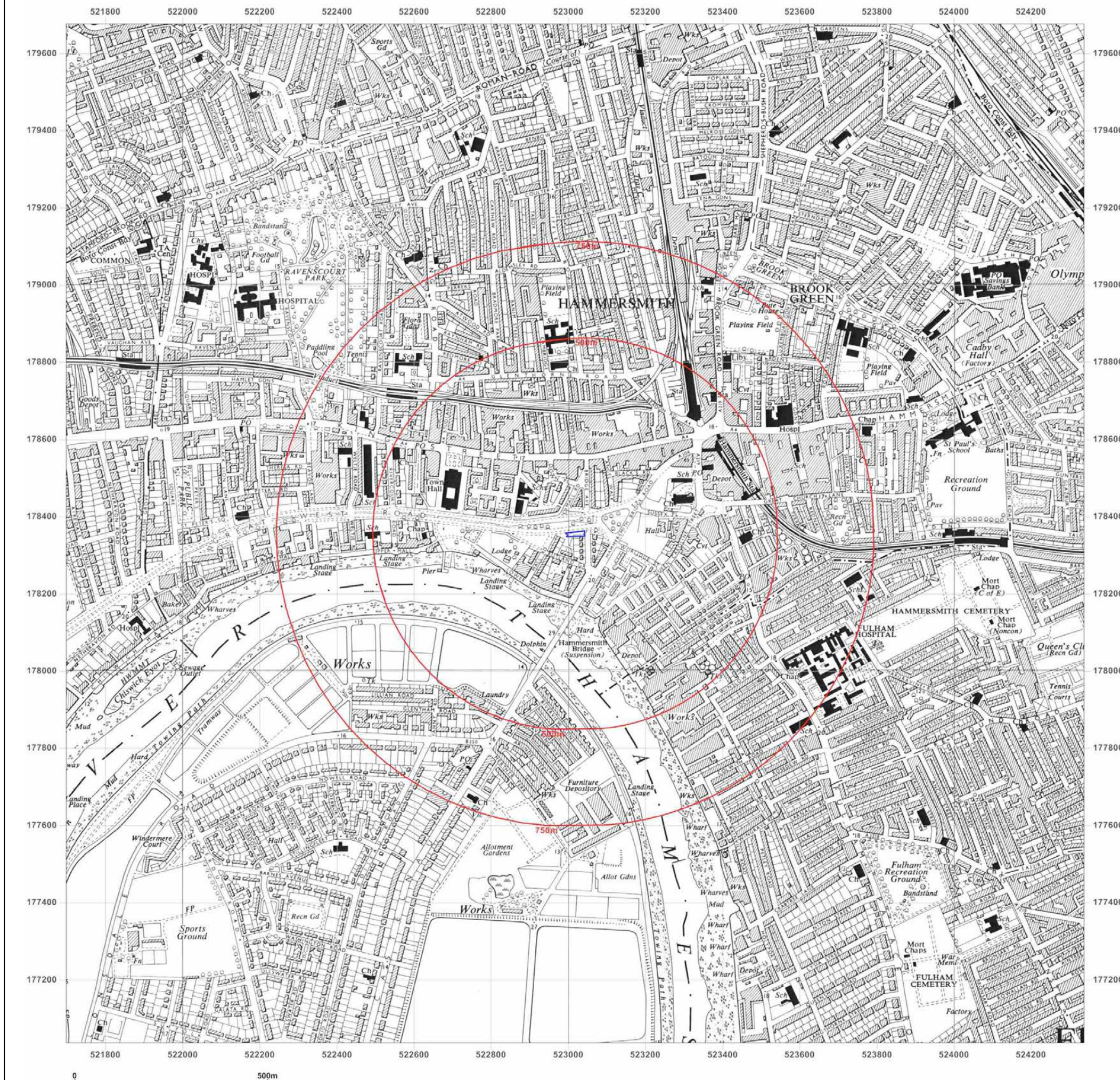


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Site Details:

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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: Provisional

Map date: 1962

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1958
 Revised 1962
 Edition 1958
 Copyright 1958
 Levelled N/A

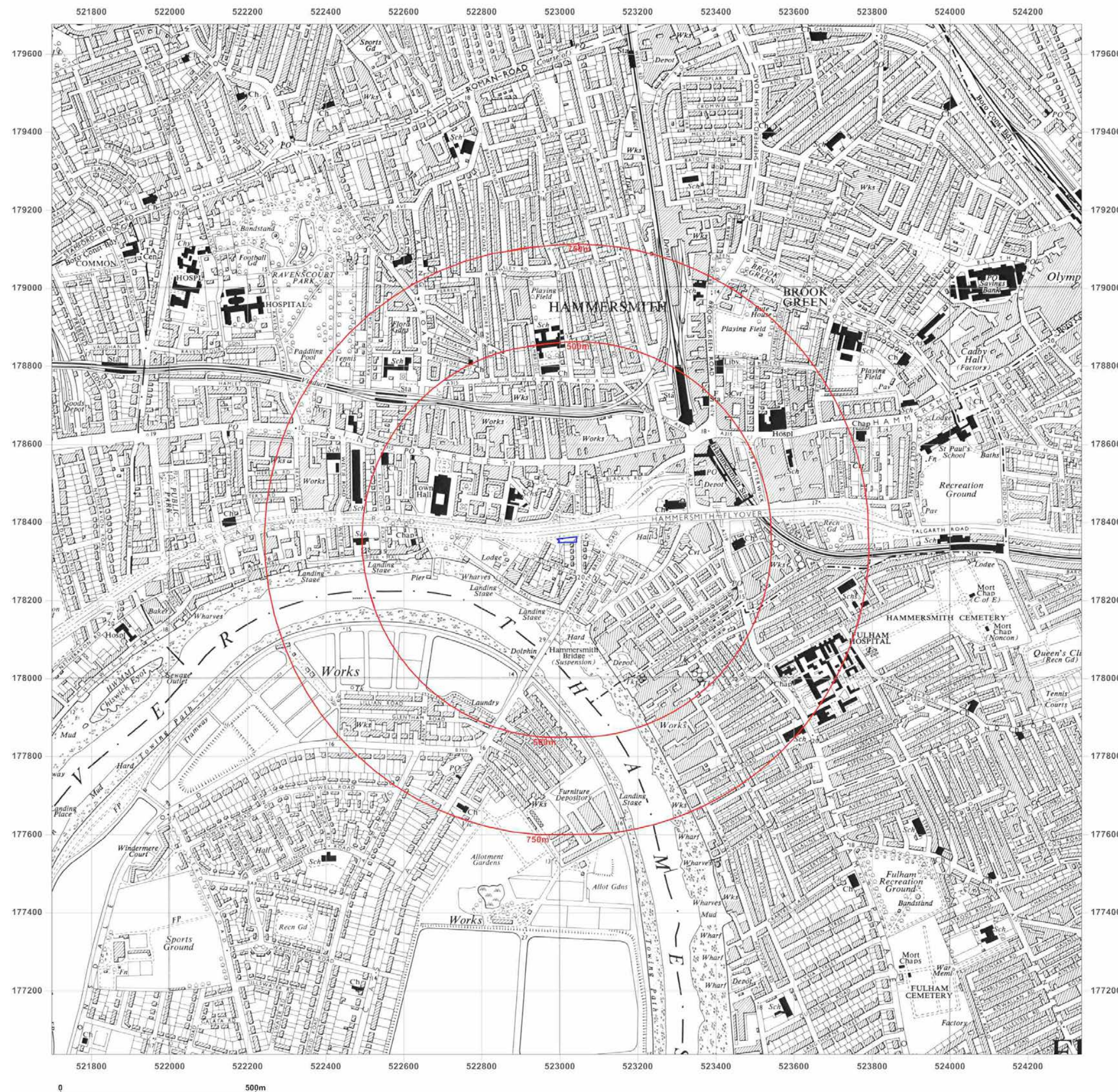


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: Provisional

Map date: 1967

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1967
 Revised 1967
 Edition N/A
 Copyright N/A
 Levelled N/A

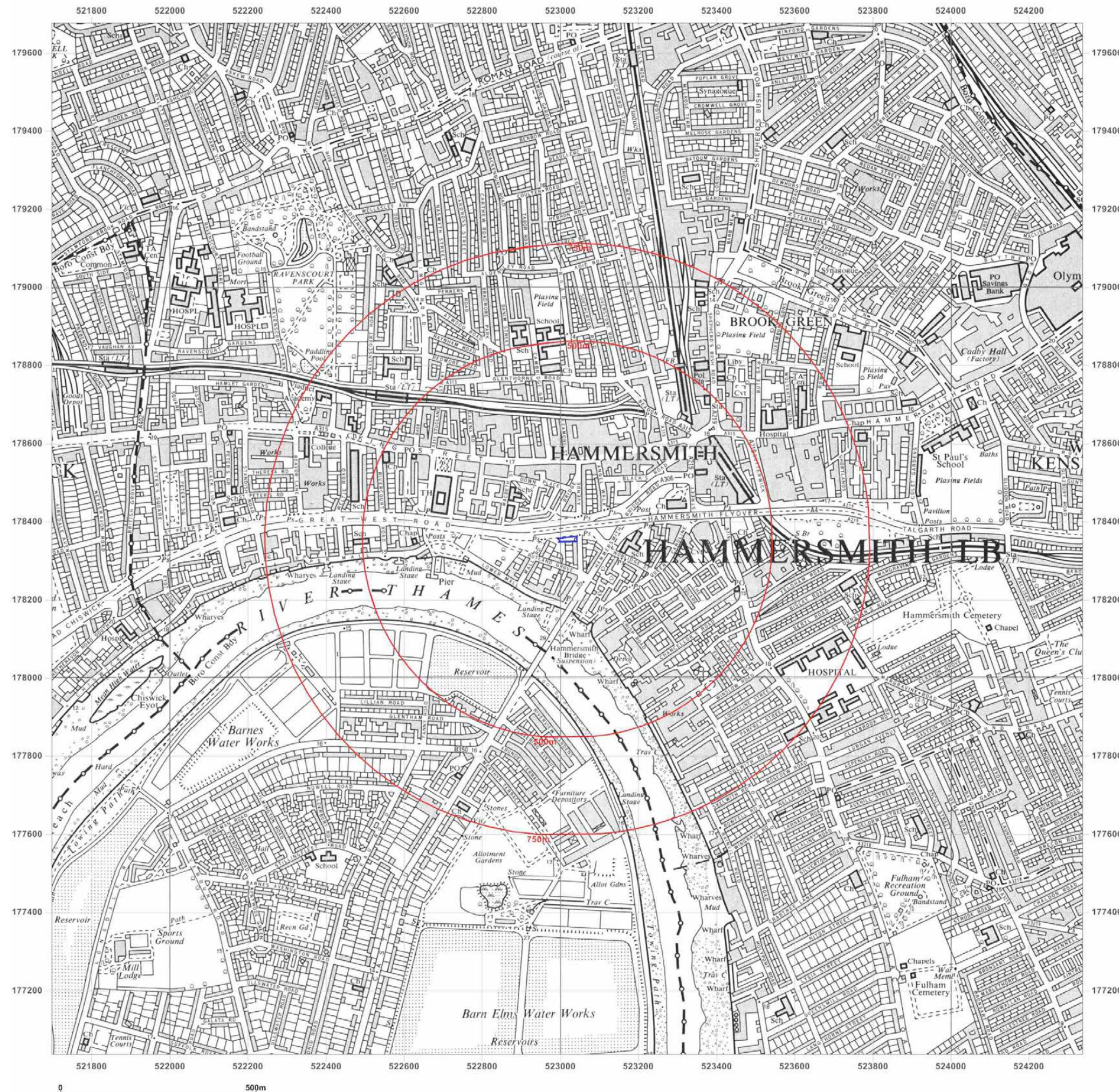


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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1974

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
Revised 1974
Edition N/A
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Levelled N/A



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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 1987

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1981
 Revised 1987
 Edition N/A
 Copyright N/A
 Levelled N/A

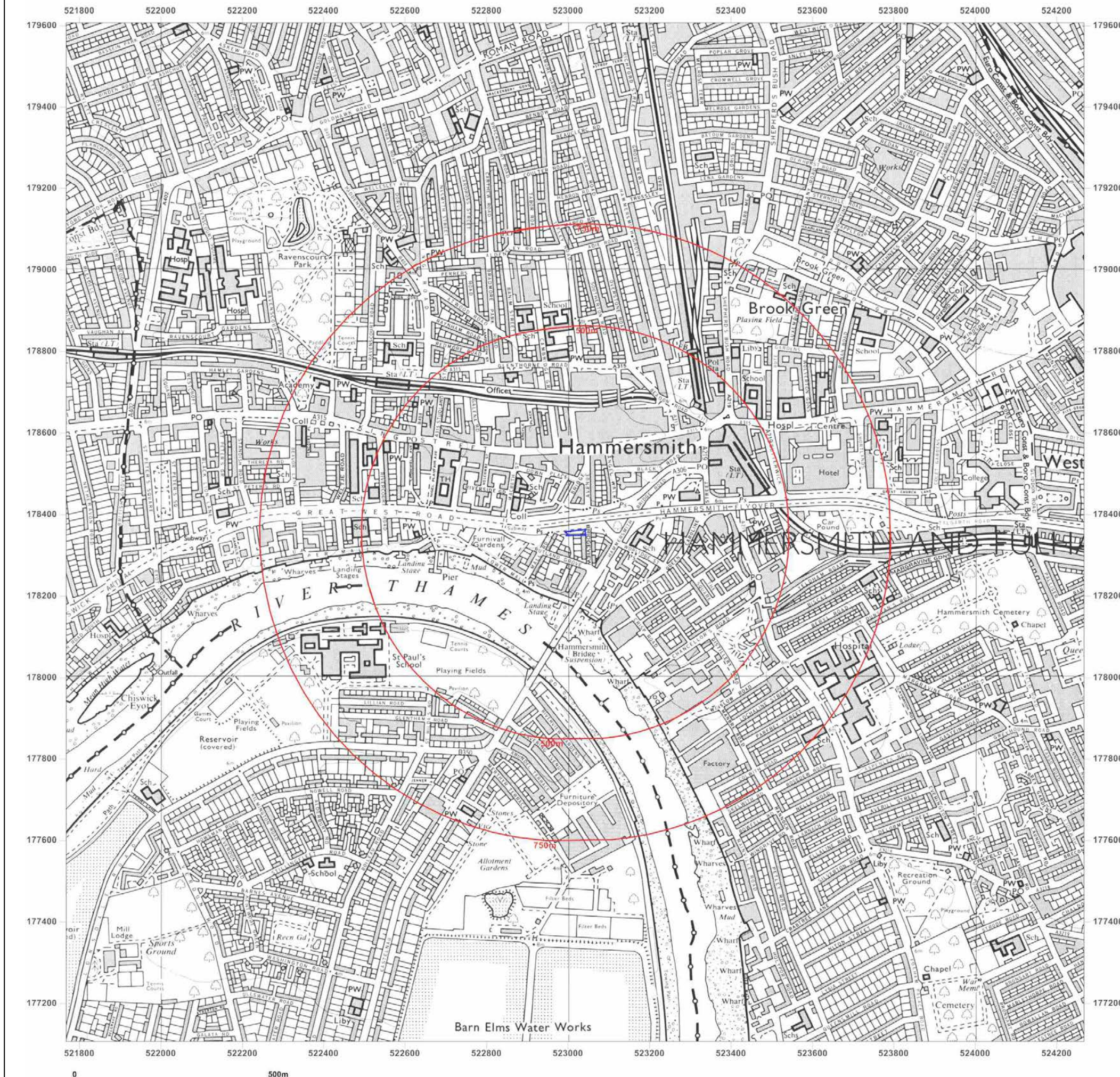


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Site Details:

Land at Bridge View Road (site also referred to as Aspen Place), LBHF, W6 9DD

Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



2002



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Site Details:

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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010



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Site Details:

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Client Ref: PO0067007-1
Report Ref: GS-3885891
Grid Ref: 523017, 178356

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



2014

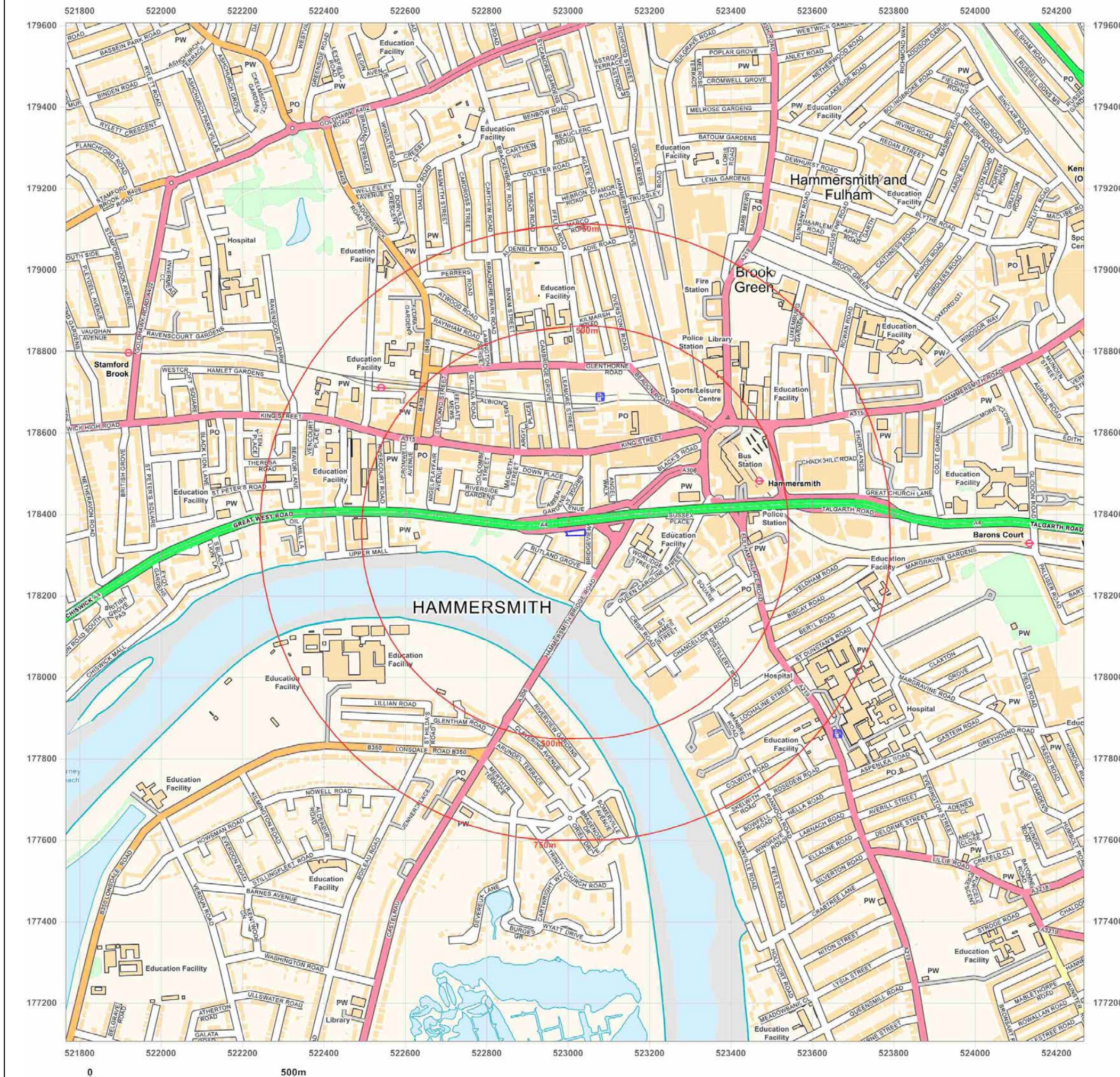


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APPENDIX B

Groundsure Data Sheets

Arcadis

Arcadis, 10, MEDAWAR ROAD,
GUILDFORD, GU2 7AR

Groundsure
Reference:

GS-3885890

Your Reference: PO0067007-1

Report Date 16 May 2017

Report Delivery Method: Email - pdf

Groundsure Geo Insight

Address: Land at Bridge View Road site also referred to as Aspen Place, LBHF, W6 9DD

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Groundsure Geo Insight

Address: Land at Bridge View Road site also referred to as Aspen Place,
LBHF, W6 9DD

Date: 16 May 2017

Reference: GS-3885890

Client: Arcadis

NW N NE



SW S SE

Aerial Photograph Capture date: 07-Jun-2015
Grid Reference: 523025,178350
Site Size: 0.05ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale

1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslide within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and Faults	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of faults within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale

2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslide within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and Faults

2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.

2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?

Yes

2.3.3 Are there any records of faults within 500m of the study site boundary?

No

Section 3: Radon

3. Radon

3.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

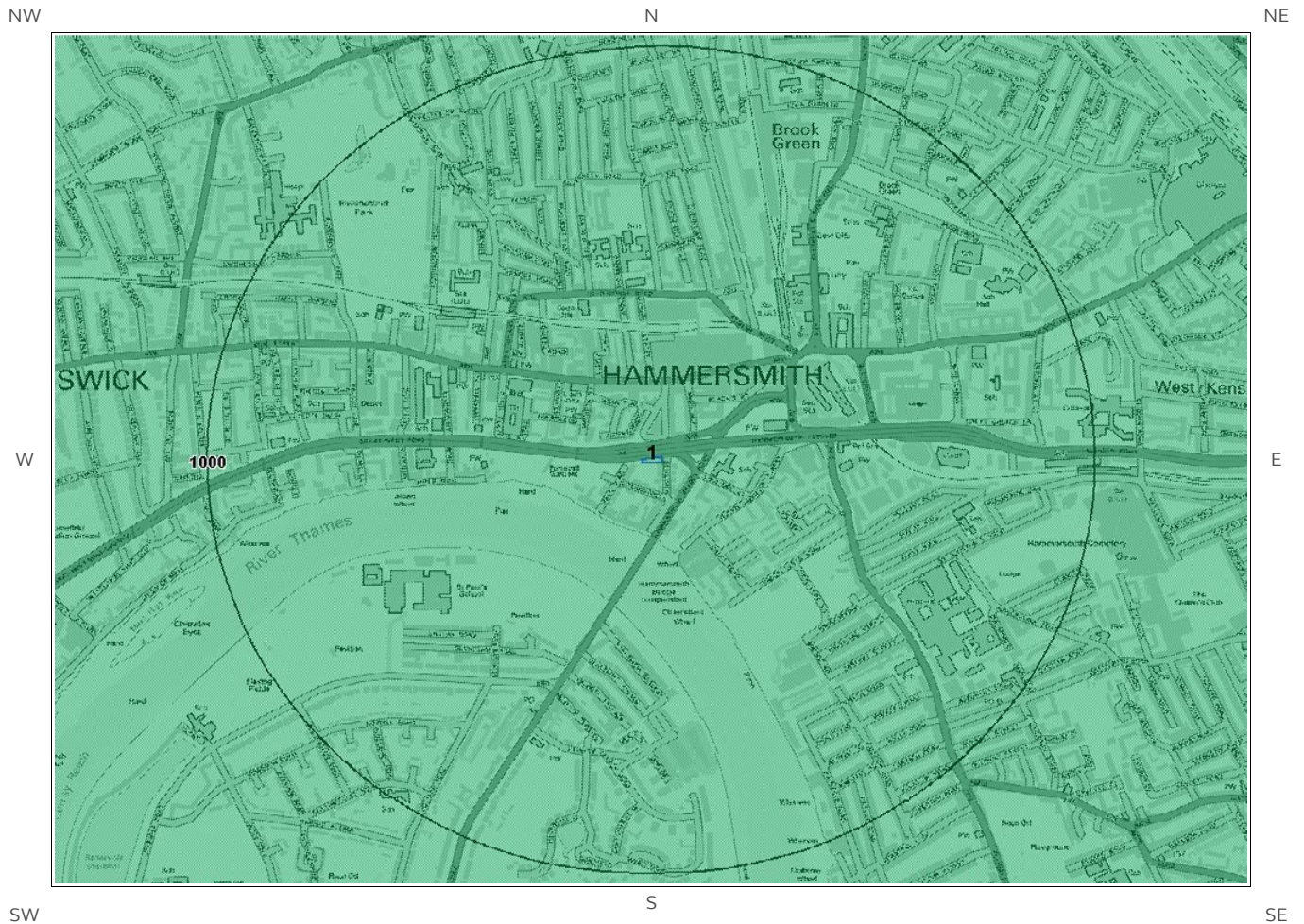
	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	9	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	1

Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

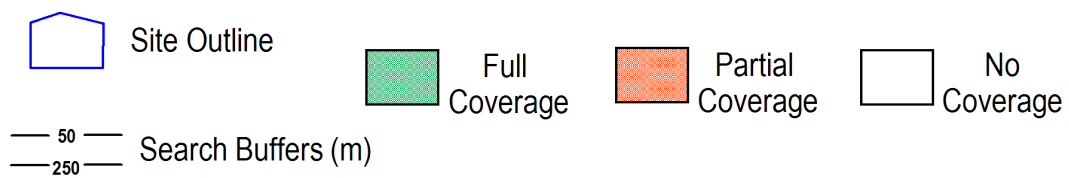
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Negligible				
6.2 Landslides	Very Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Negligible				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Very Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	3	47		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	2	0	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	0	2	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	No coverage
N2	1637.0	Some deposits are mapped	Full	Full	No coverage
N3	1958.0	Some deposits are mapped	Full	Full	No coverage

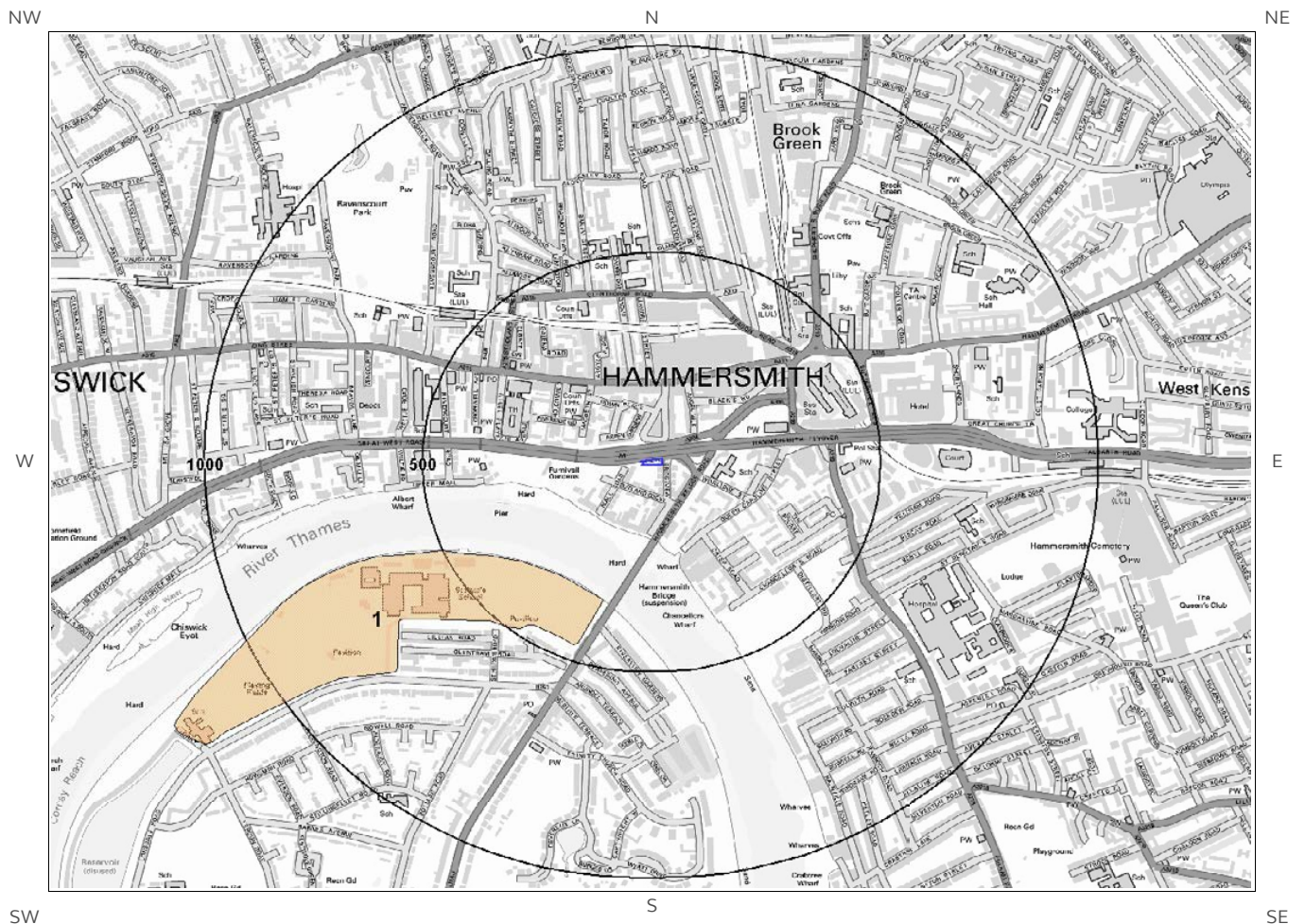
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

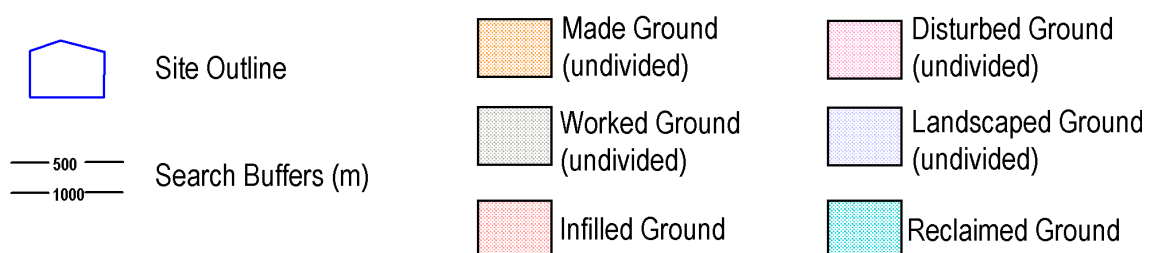
1 Geology (1:10,000 scale).

1.1 Artificial Ground Map (1:10,000 scale)



Artificial Ground Legend

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1. Geology 1:10,000 scale

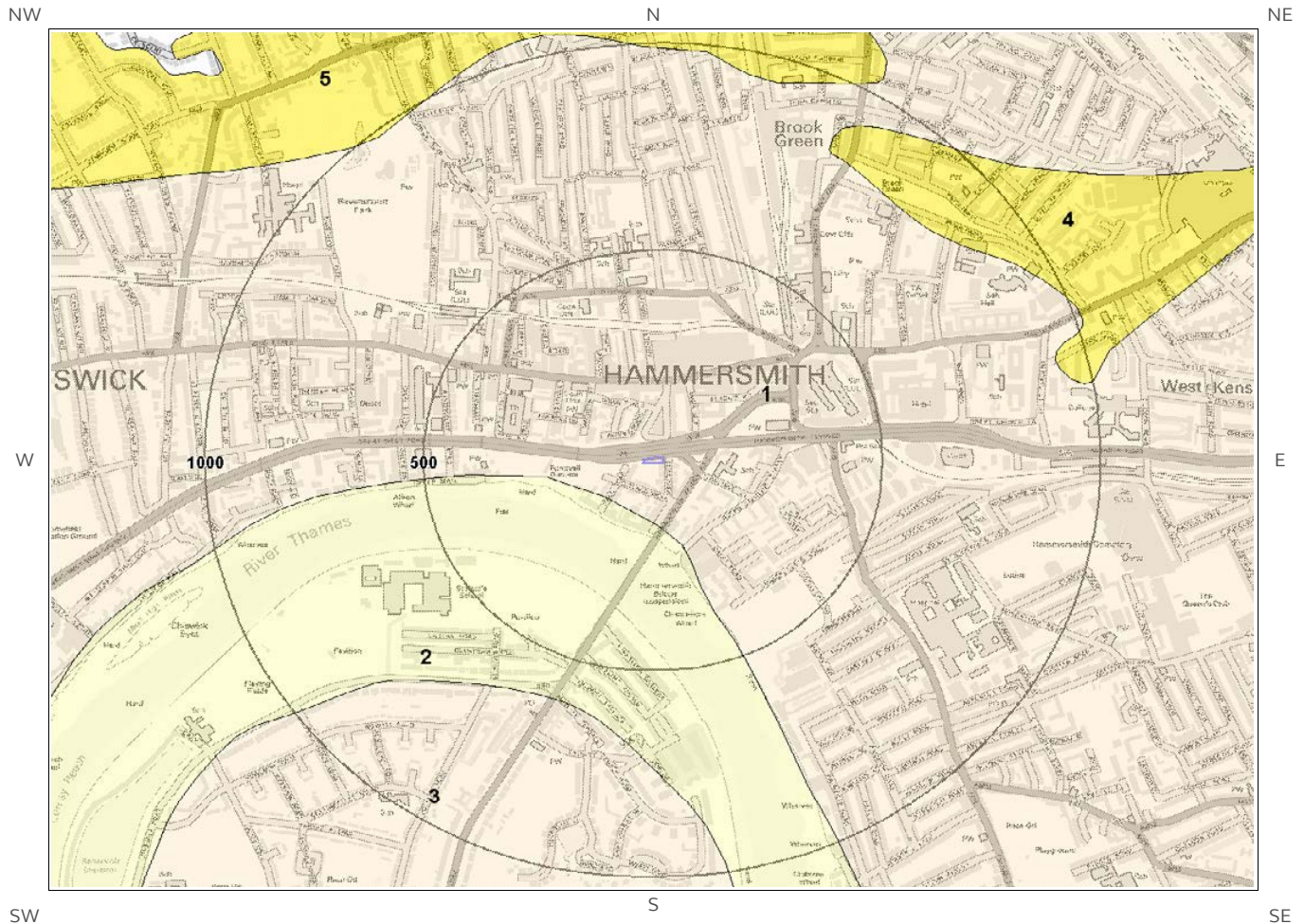
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

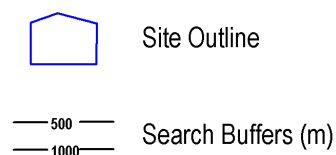
ID	Distance	Direction	LEX Code	Description	Rock Description
1	323.0	SW	MGR- UNKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry

1.2 Superficial Deposits and Landslips Map (1:10,000 scale)



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel
2	115.0	SW	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt

1.2.2 Landslip

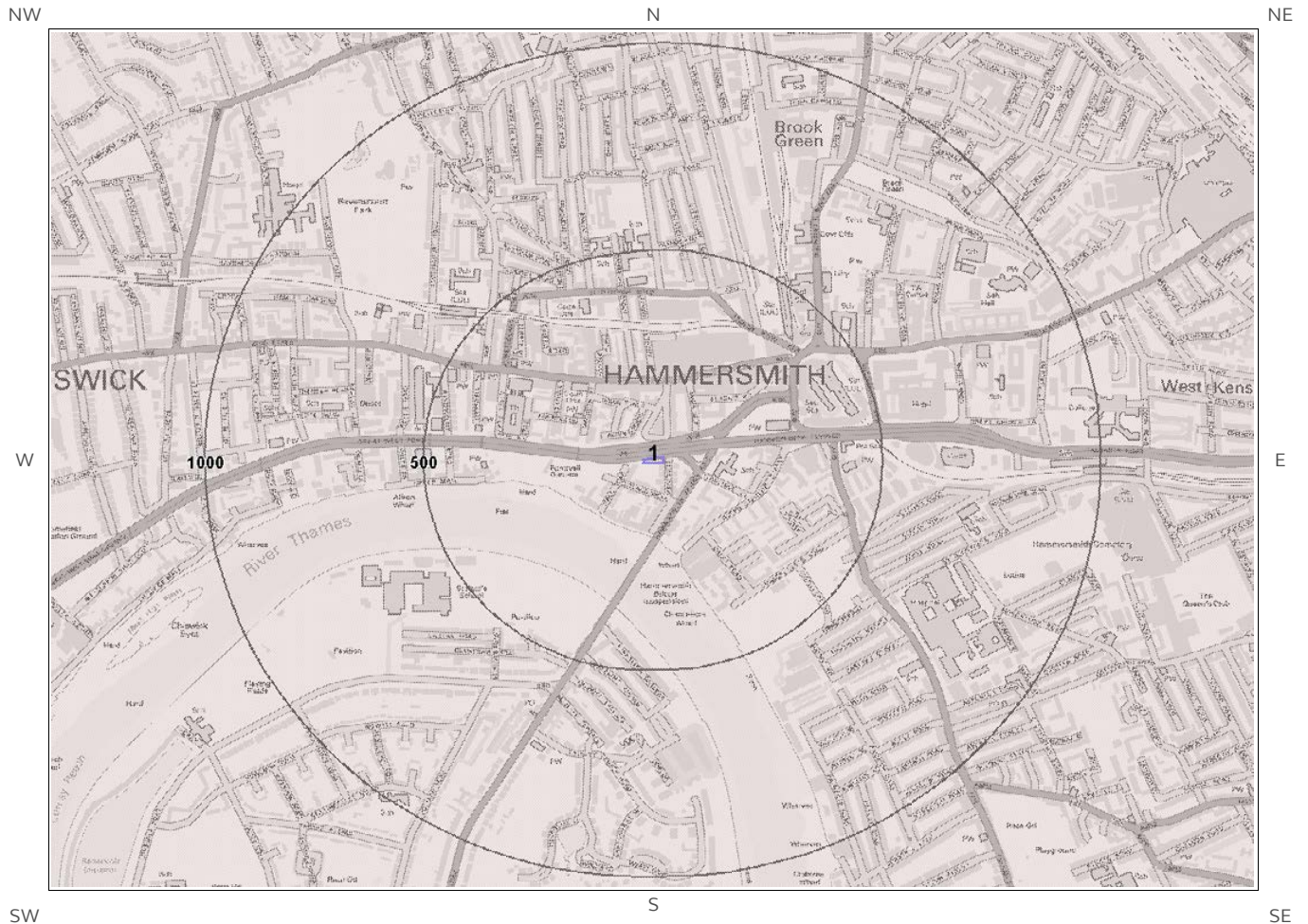
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and Faults Map (1:10,000 scale)

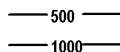


Bedrock and Faults Legend

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Site Outline



Search Buffers (m)

1.3 Bedrock and Faults

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LC-CLAY	London Clay Formation - Clay	Eocene Epoch

1.3.2 Faults

Are there any records of Faults within 500m of the study site boundary at 1:10,000 scale? No

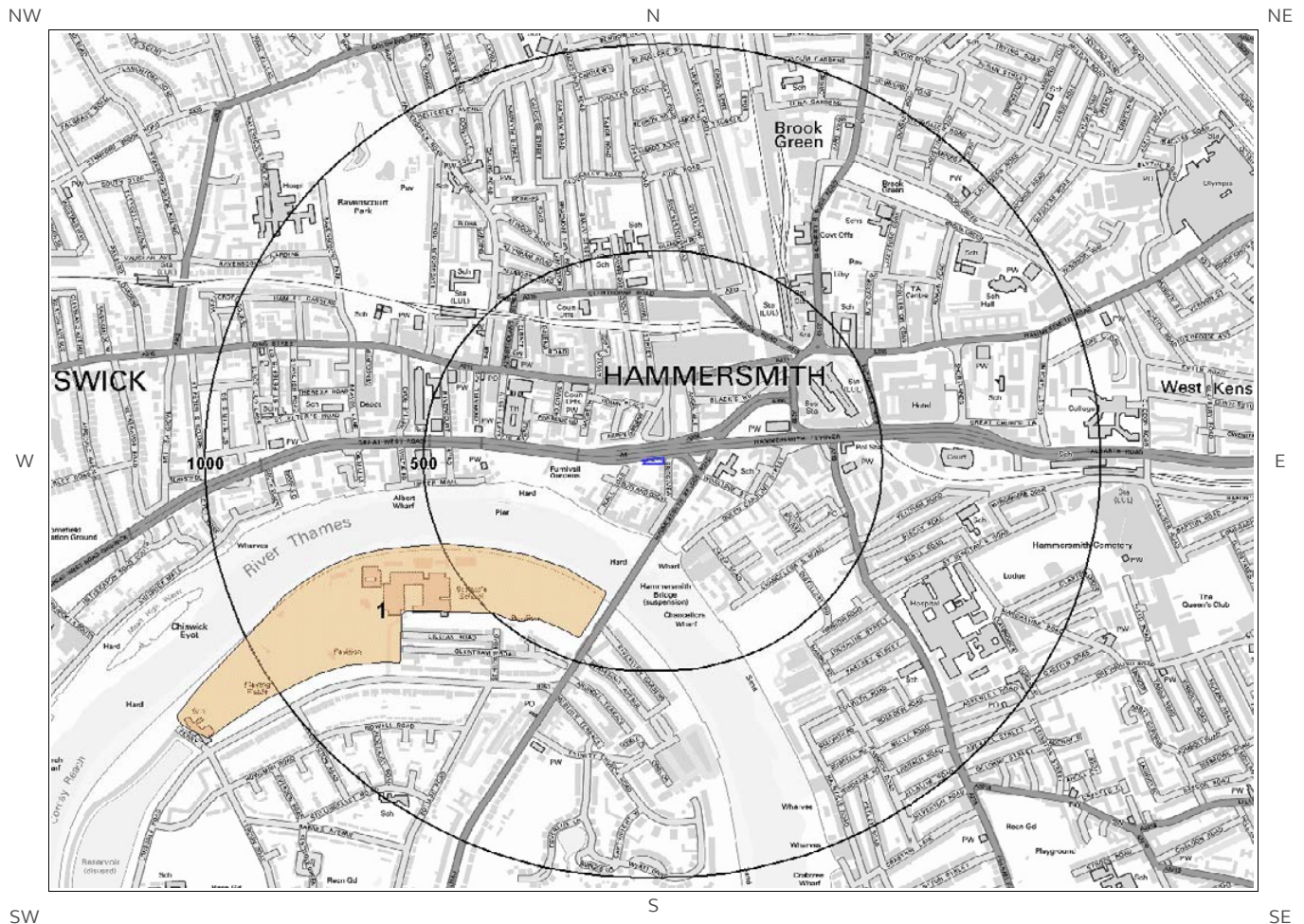
Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

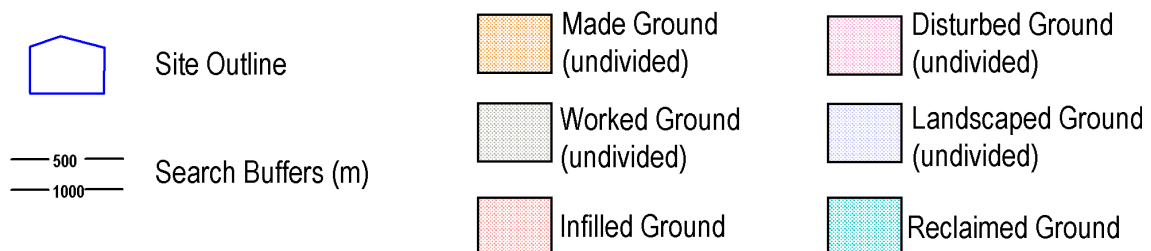
2 Geology 1:50,000 Scale

2.1 Artificial Ground Map



Ground Workings Legend

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2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 270

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

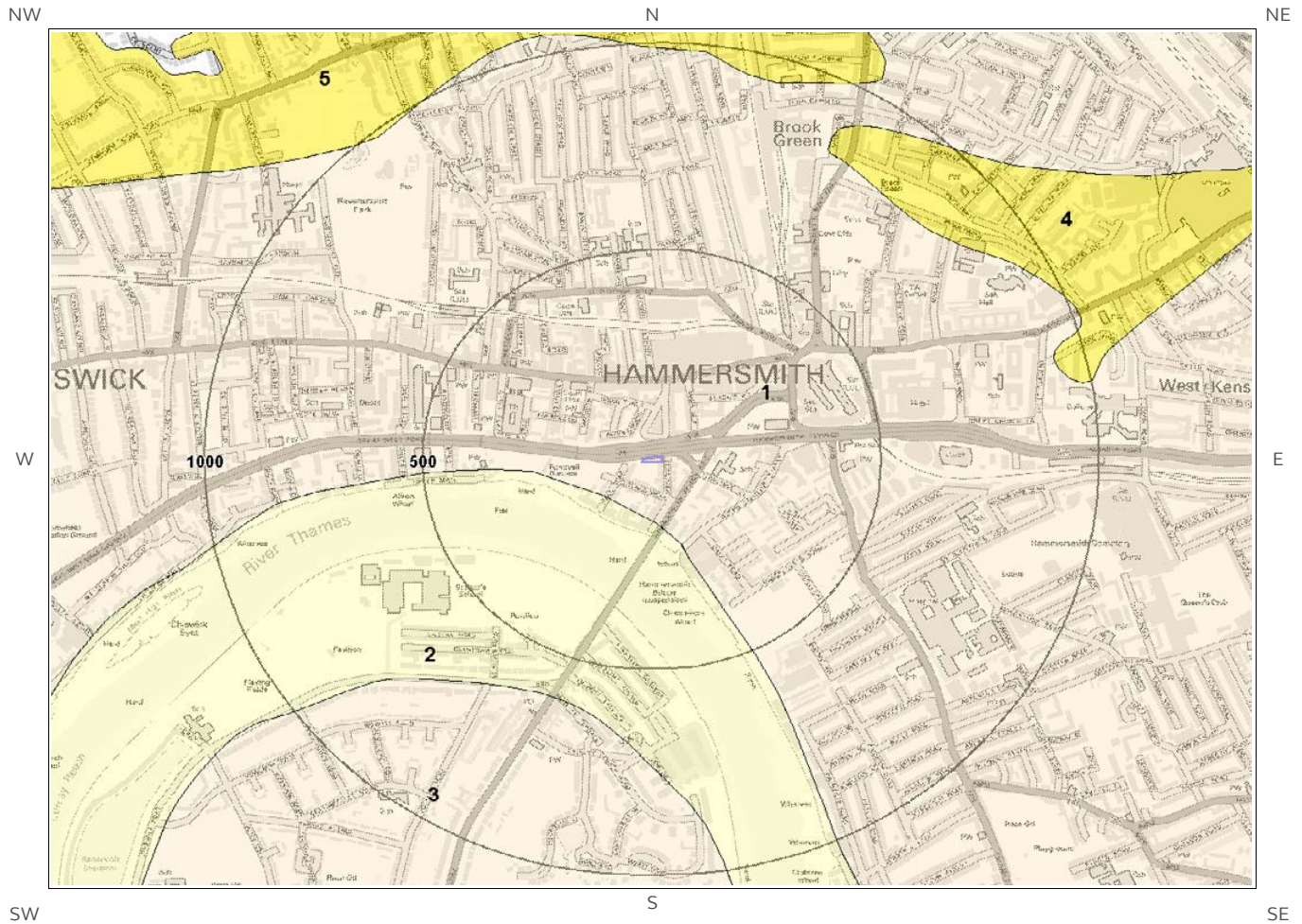
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	307.0	SW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips Map (1:50,000 scale)

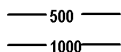


Ground Workings Legend

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Site Outline



Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL
2	114.0	SW	ALV-XCZSP	ALLUVIUM	CLAY, SILT, SAND AND PEAT

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Intergranular	Very High	High

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

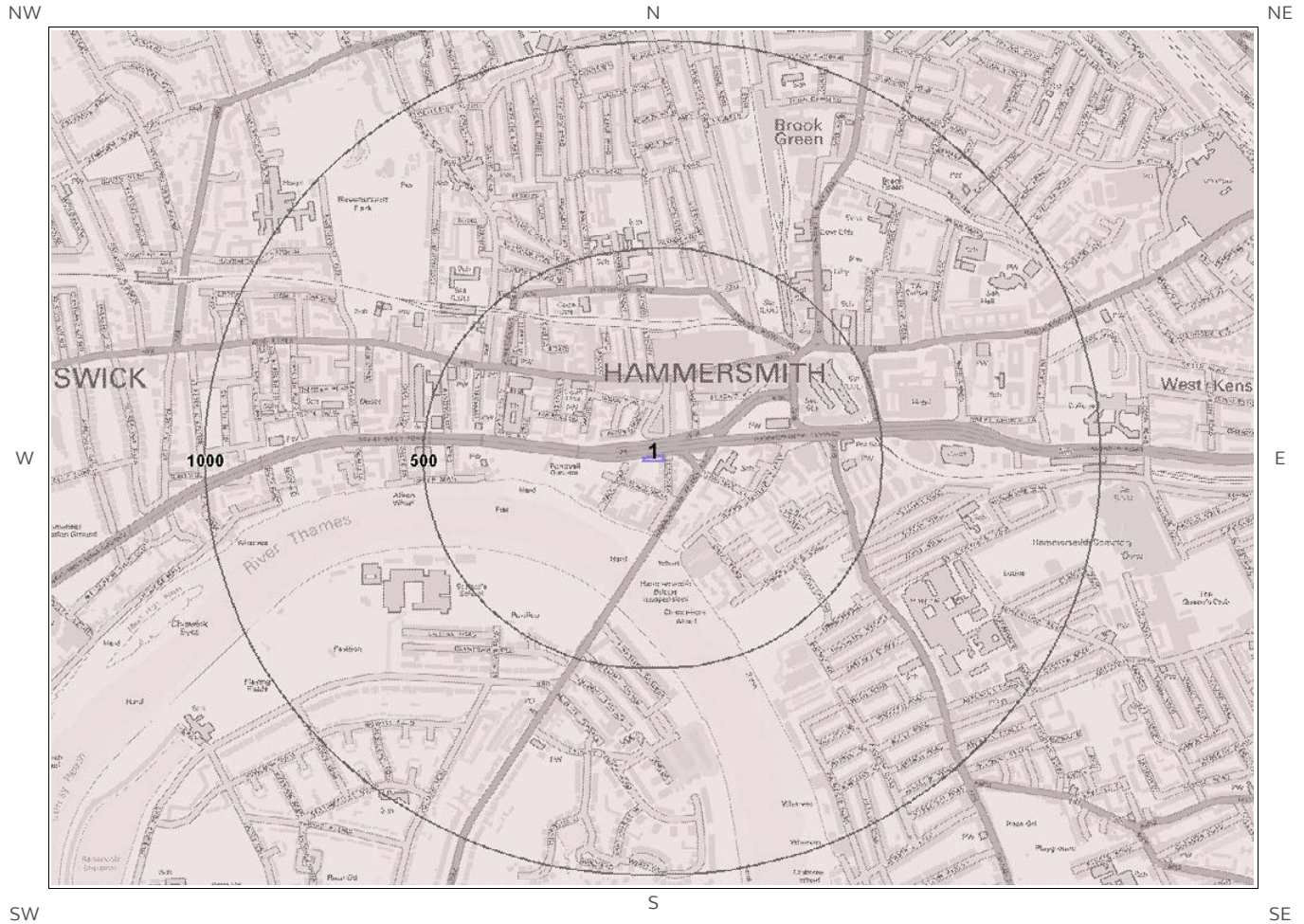
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

2.3 Bedrock and Faults Map (1:50,000 scale)

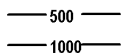


Ground Workings Legend

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Site Outline



Search Buffers (m)

2.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 270

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	LC-XCZ	LONDON CLAY FORMATION - CLAY AND SILT	YPRESIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Low	Very Low

2.3.3 Faults

Are there any records of Faults within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

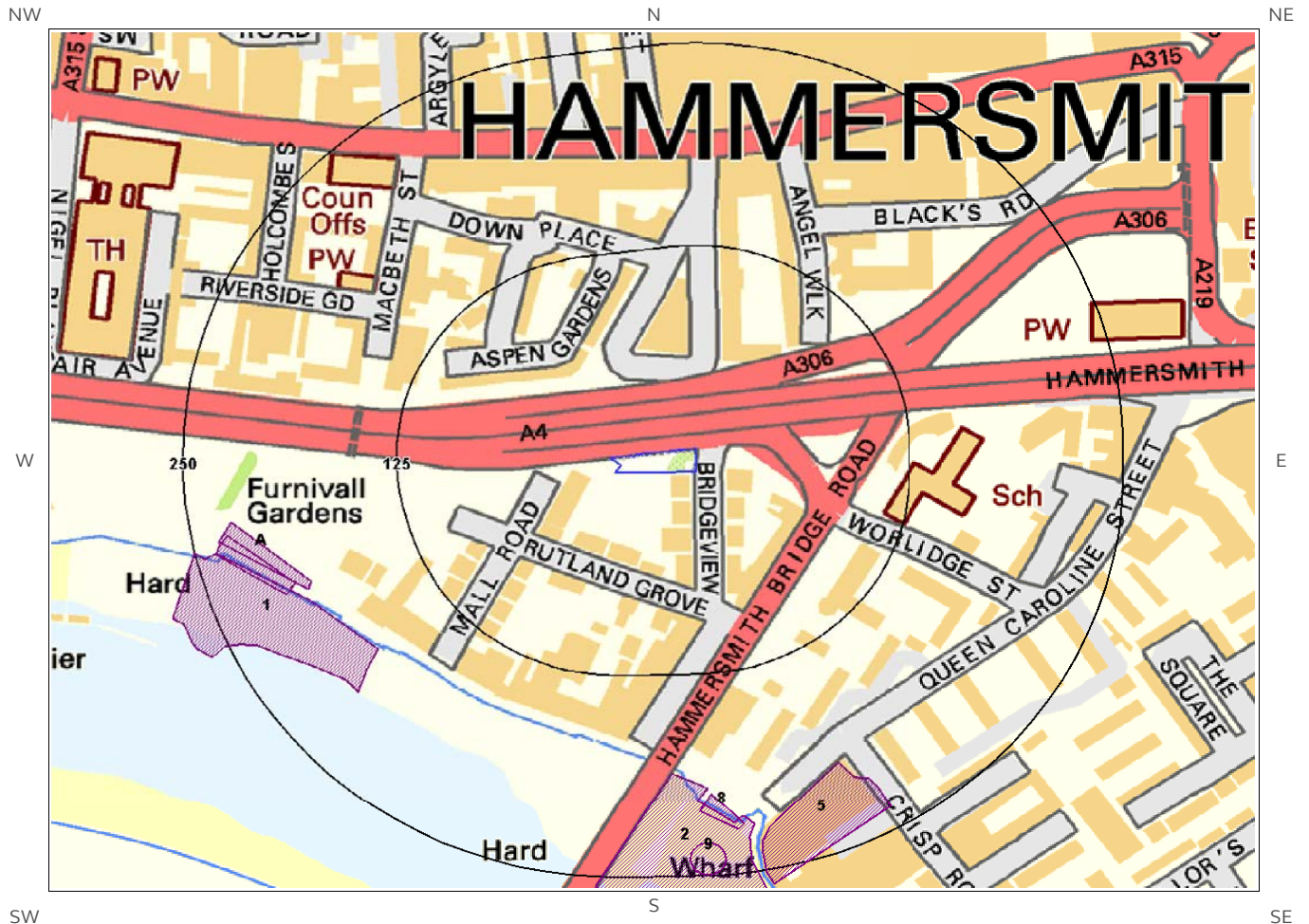
3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

3.2 Radon Protection

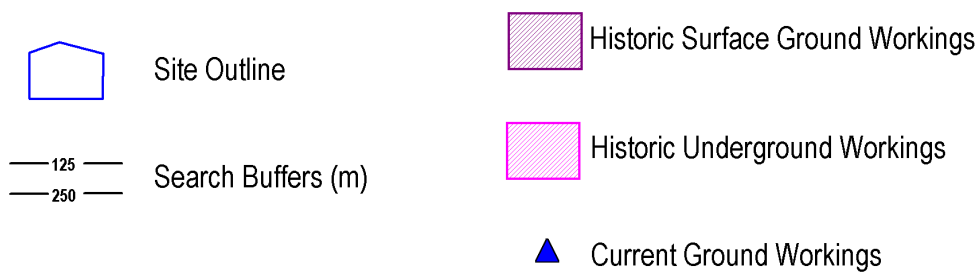
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings Map



Ground Workings Legend

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4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1	176.0	SW	522796 178256	Unspecified Wharf	1940
2	186.0	S	523085 178045	Unspecified Wharf	1940
3A	190.0	W	522790 178297	Unspecified Wharf	1913
4A	190.0	W	522790 178297	Unspecified Wharf	1933
5	198.0	SE	523118 178132	Unspecified Wharf	1894
6A	199.0	W	522785 178291	Unspecified Wharf	1938
7A	199.0	W	522785 178291	Unspecified Wharf	1920
8	199.0	S	523057 178139	Unspecified Wharf	1894
9	230.0	S	523049 178109	Unspecified Wharf	1967

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

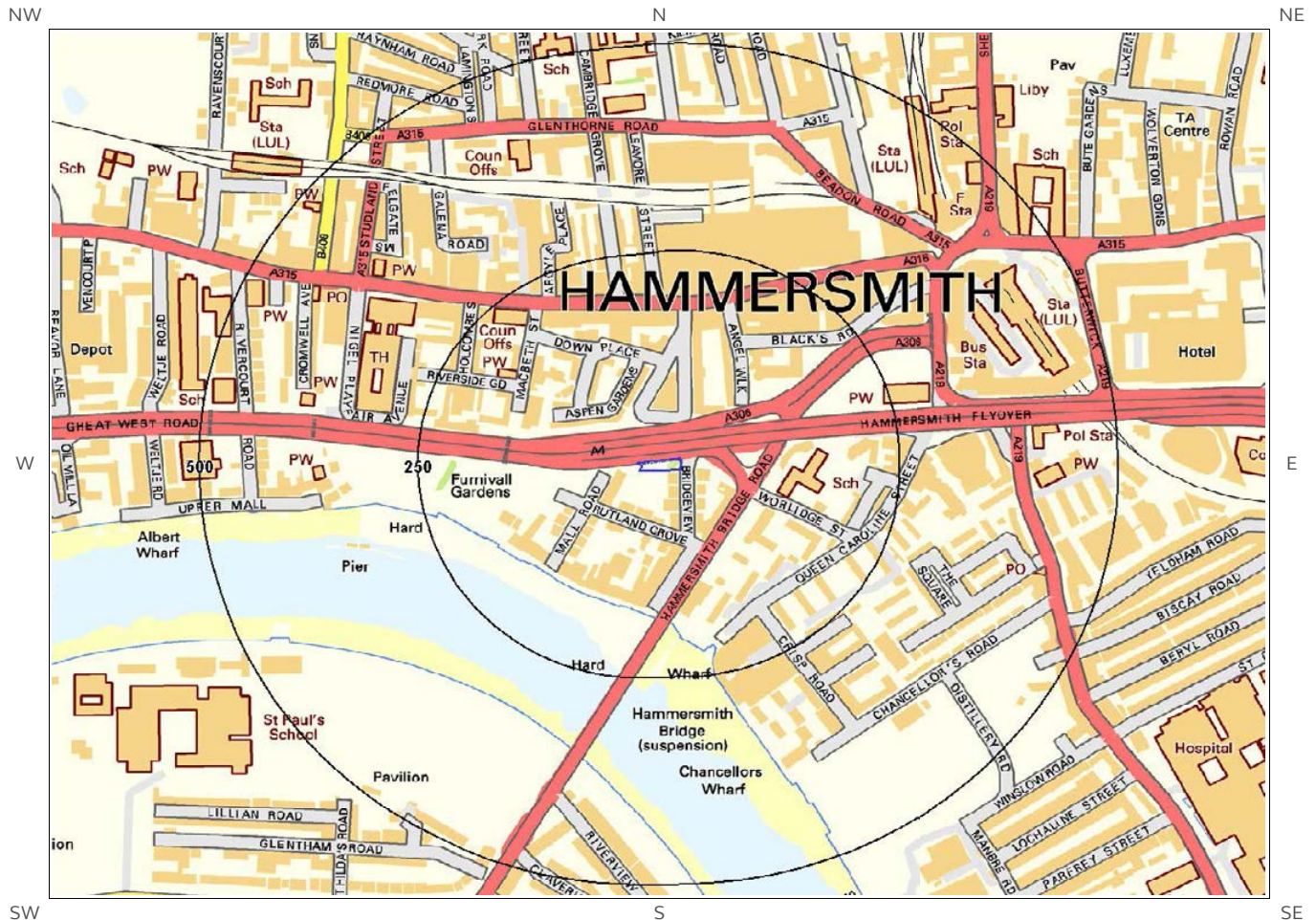
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	942.0	S	522776 177432	Sand & Gravel	Barnes Gravel Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities Map



Mining, Extraction and
Natural Cavities Legend

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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled “Review of mining instability in Great Britain, 1990” PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

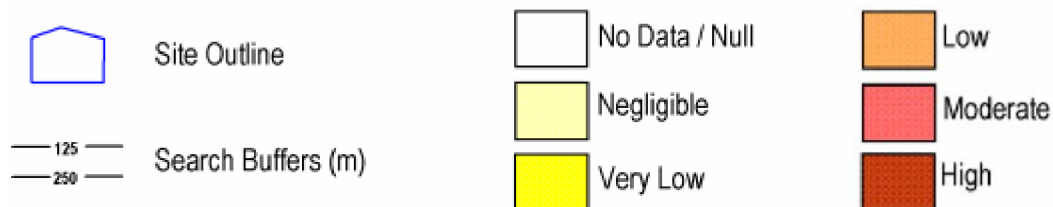
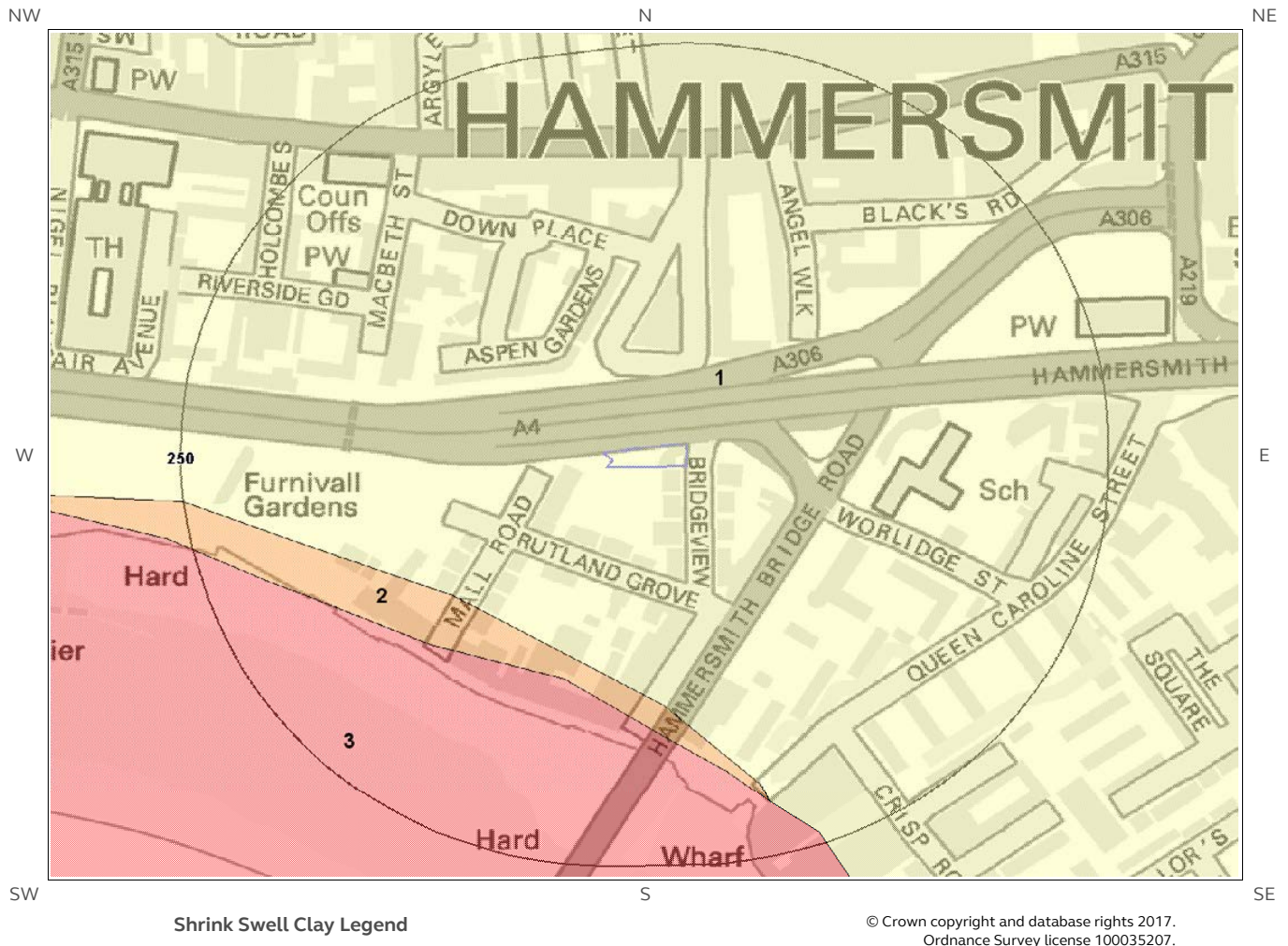
Are there any Clay Mining areas within 1000m of the study site boundary?

No

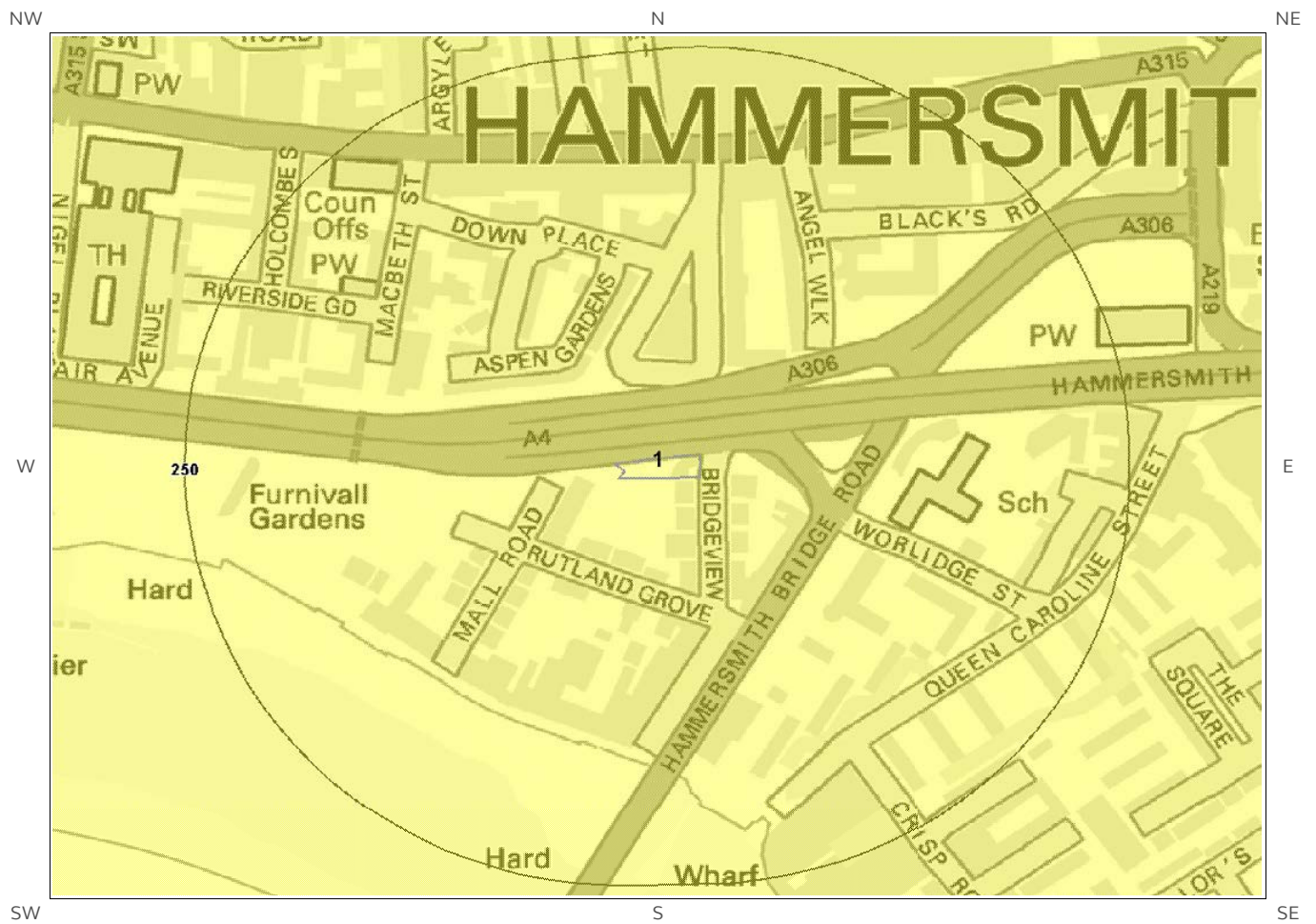
Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay Map

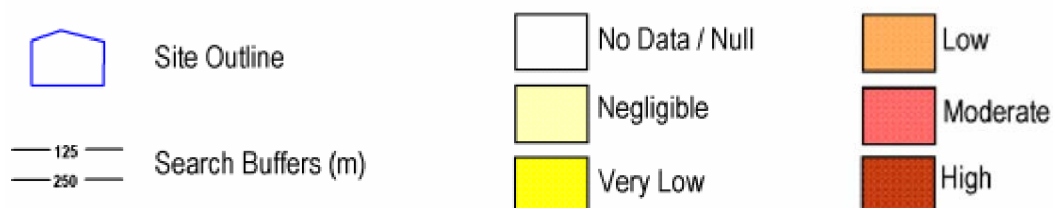


6.2 Landslides Map

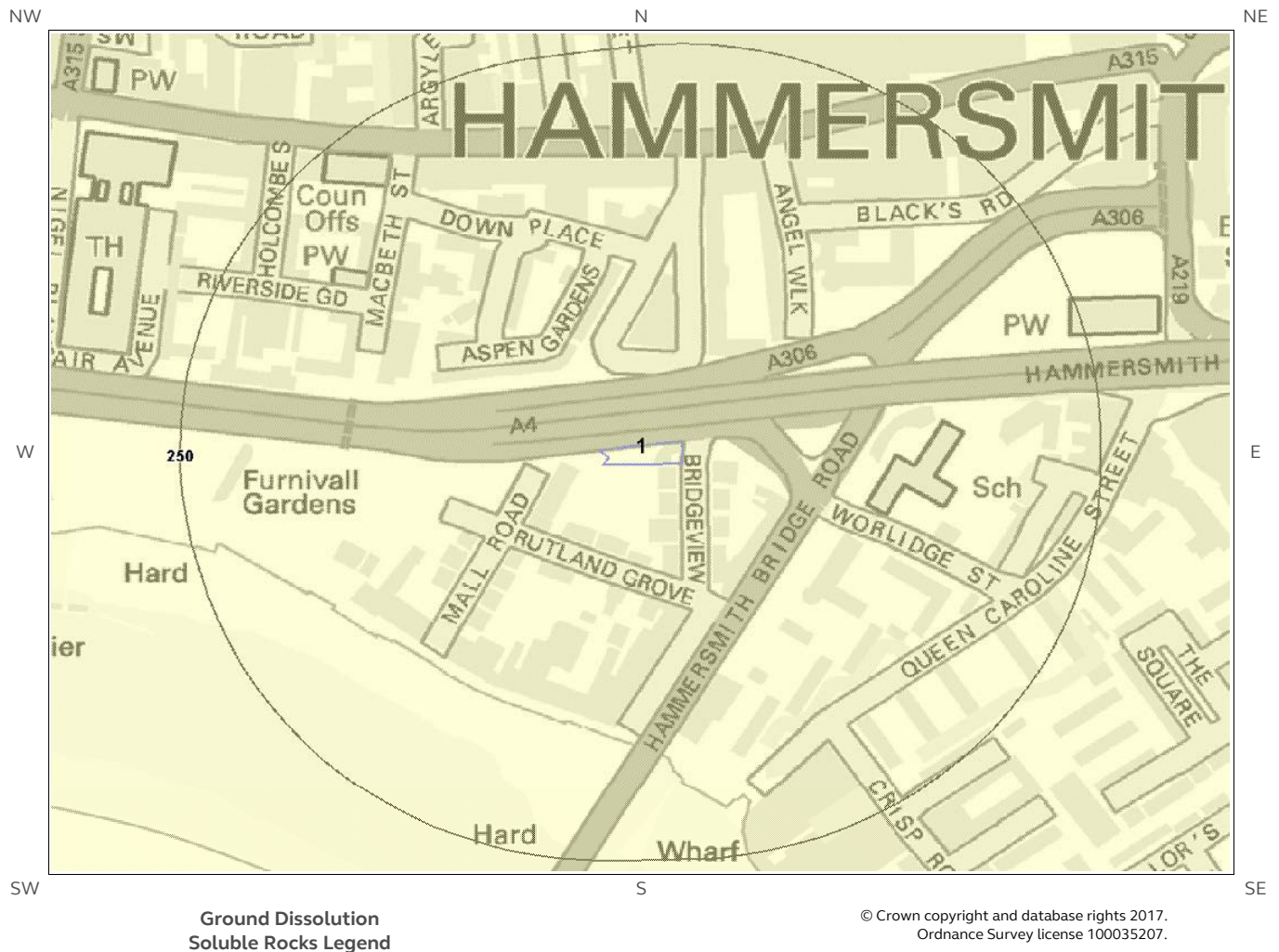


Landslides Legend

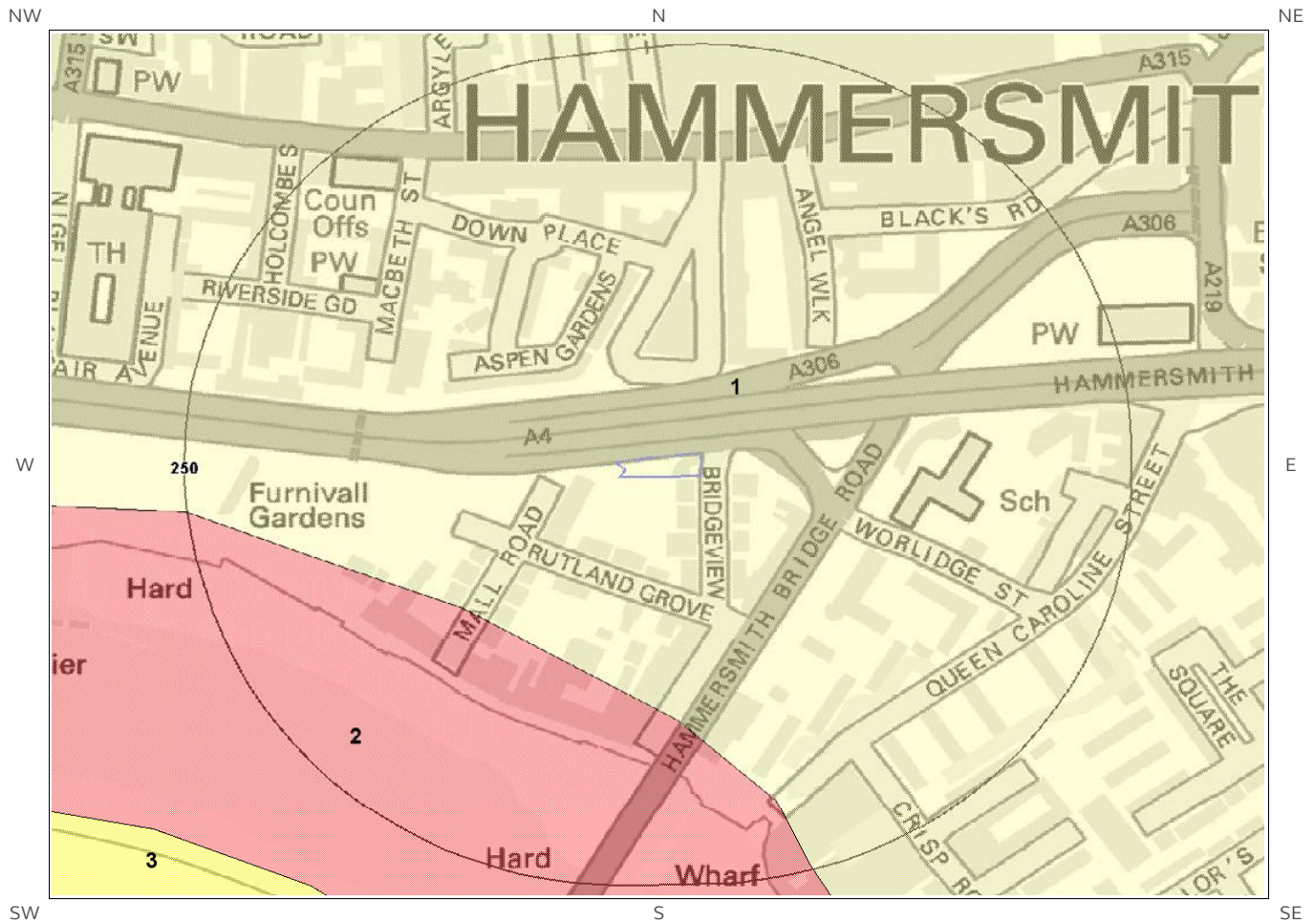
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6.3 Ground Dissolution of Soluble Rocks Map

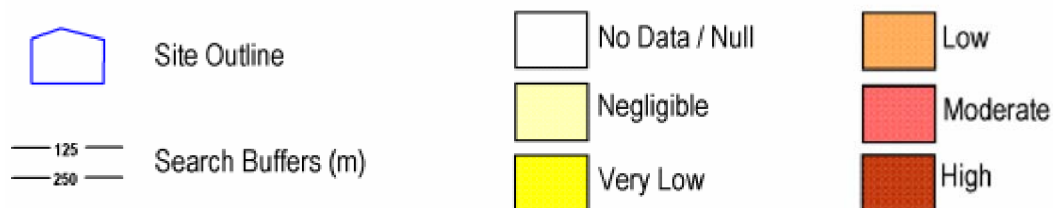


6.4 Compressible Deposits Map

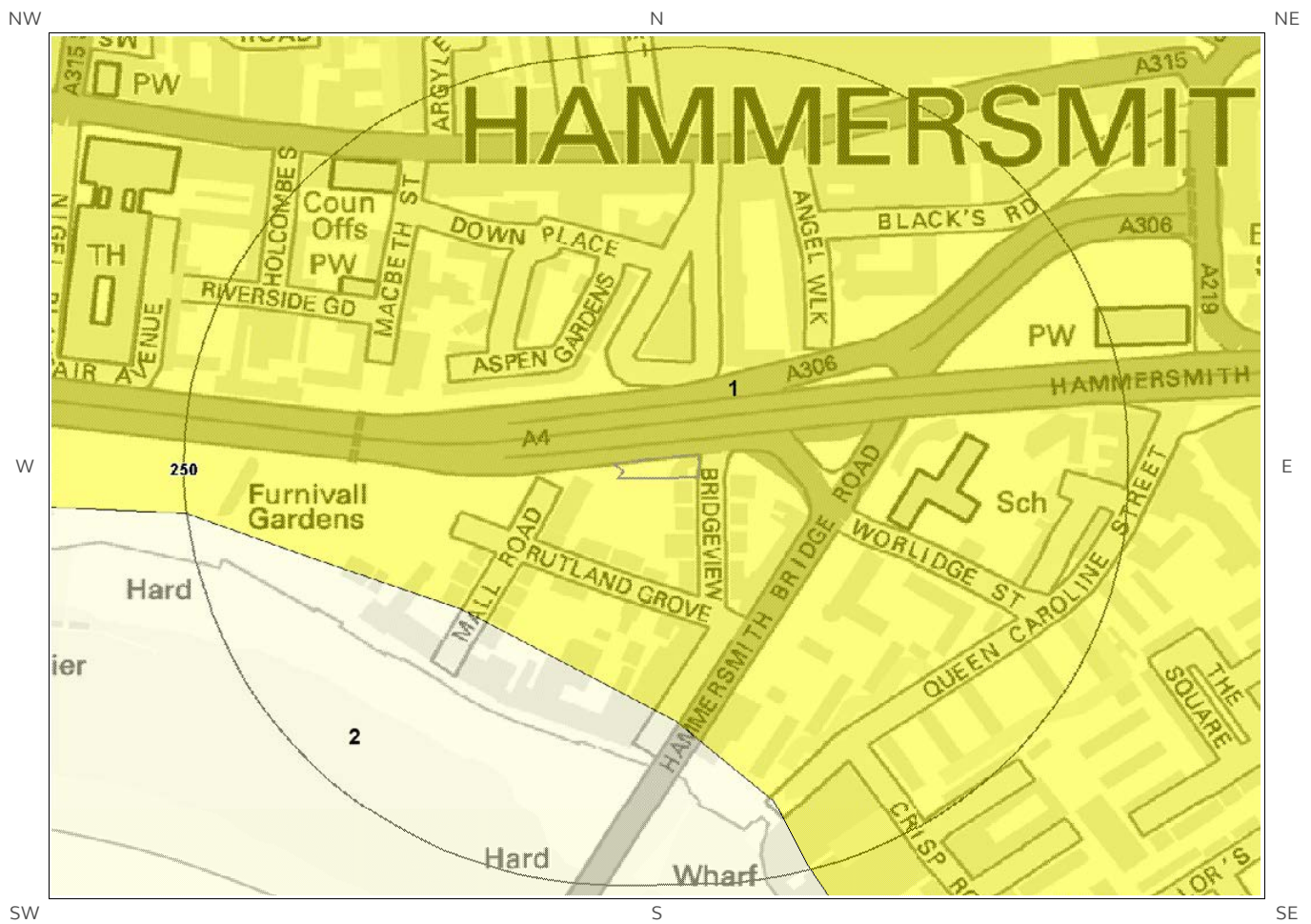


Compressible Deposits Legend

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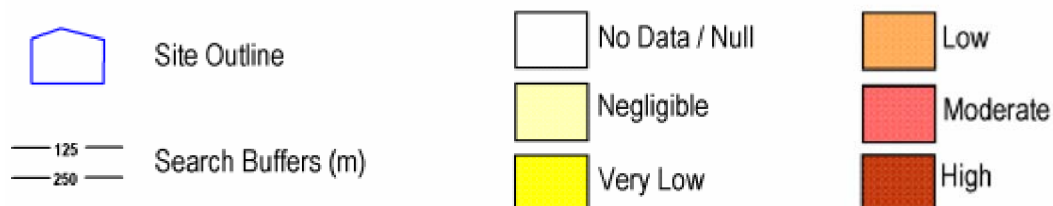


6.5 Collapsible Deposits Map

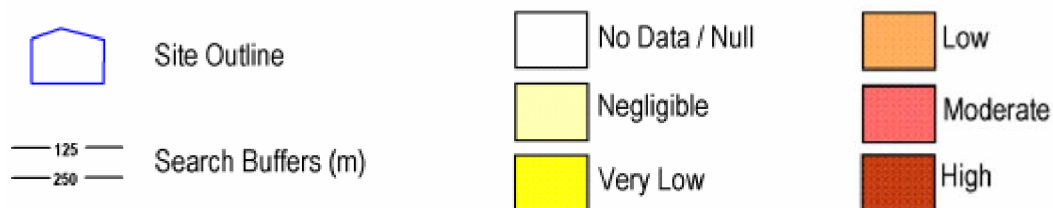
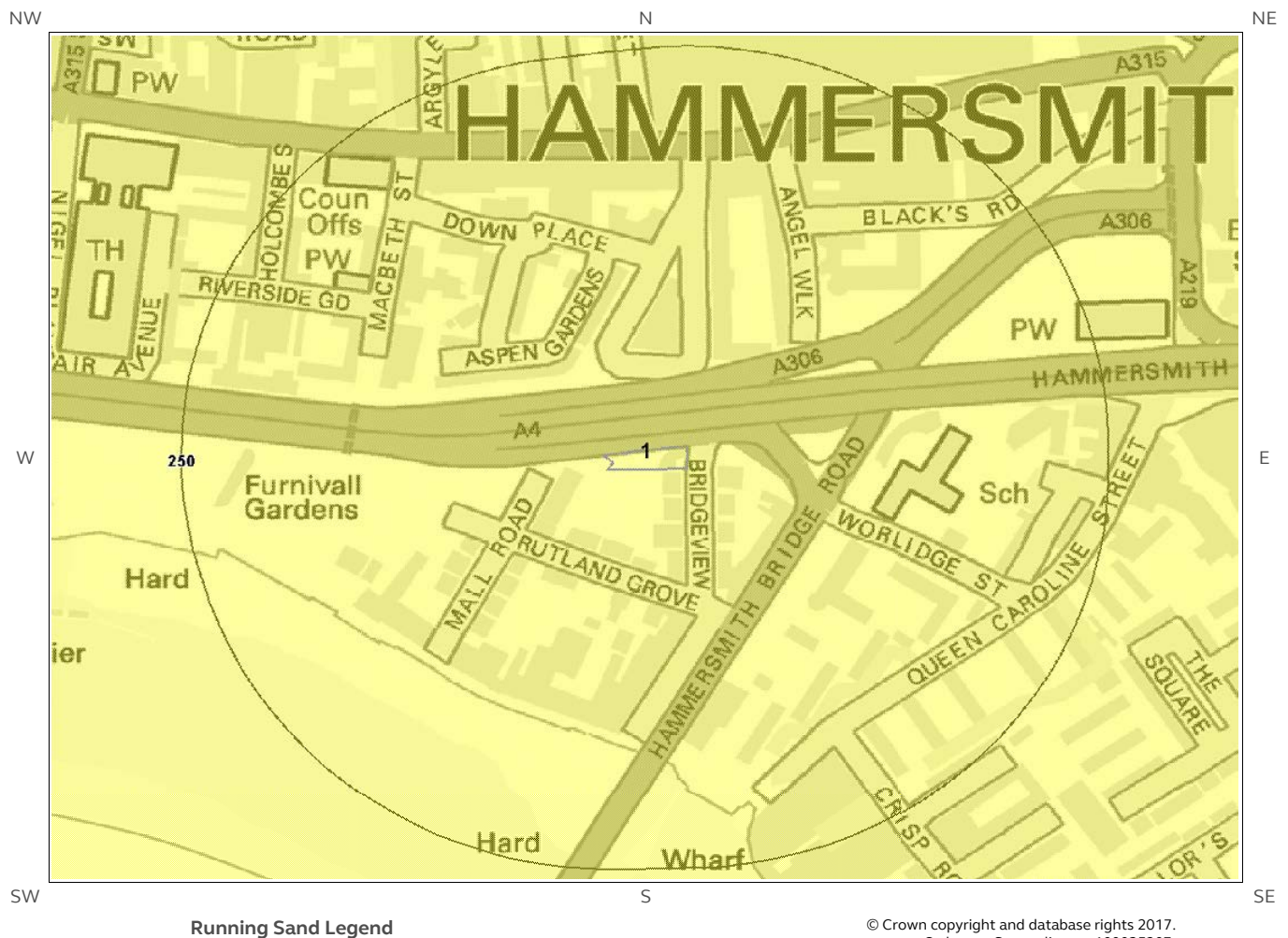


Collapsible Deposits Legend

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6.6 Running Sand Map



6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site** boundary? Very Low

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This includes an automatically generated 50m buffer zone around the site

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

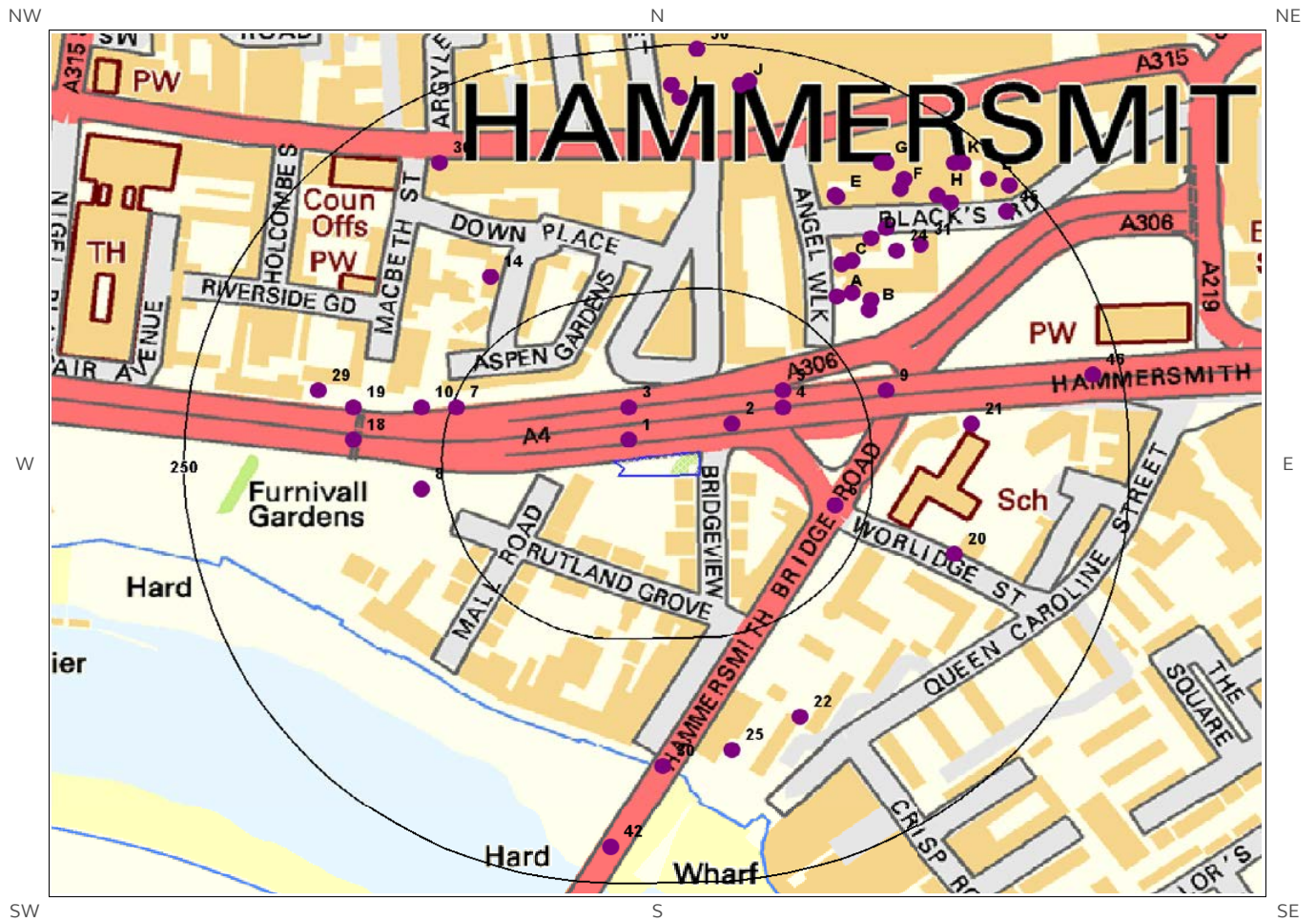
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

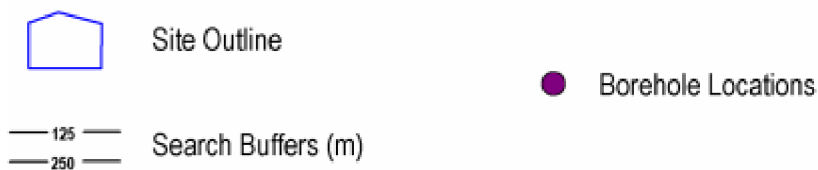
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records Map



Borehole Records Legend

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7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary:

50

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	12.0	N	523000 178370	TQ27NW67	8.83	CROMWELL ROAD EXT.BH1 HAMMERSMITH
2	25.0	NE	523060 178380	TQ27NW61	9.91	CROMWELL ROAD EXT.BH2 HAMMERSMITH
3	31.0	N	523000 178390	TQ27NW71	4.26	CROMWELL ROAD EXT.BH1C HAMMERSMITH
4	55.0	NE	523090 178390	TQ27NW153	24.38	CROMWELL RD EXT BH11 HAMMERSMITH
5	61.0	NE	523090 178400	TQ27NW62	9.75	CROMWELL ROAD EXT.BH3 HAMMERSMITH
6	81.0	E	523120 178330	TQ27NW128	13.11	CNR OF BROOK ST H151 HAMMERSMITH
7	97.0	W	522900 178390	TQ27NW697	9.75	HAMMERSMITH FLYOVER 4
8	113.0	W	522880 178340	TQ27NW281	13.41	HAMMERSMITH STM RELIEF SEWER 13
9	115.0	E	523150 178400	TQ27NW60	8.99	CROMWELL ROAD EXT.BH4 HAMMERSMITH
10	116.0	W	522880 178390	TQ27NW696	10.46	HAMMERSMITH FLYOVER 3
11A	124.0	NE	523121 178458	TQ27NW778	12.2	BRITISH OXYGEN CO LTD 5
12A	131.0	NE	523130 178460	TQ27NW544	12.2	HAMMERSMITH HOUSE 5
13B	131.0	NE	523140 178450	TQ27NW541	17.2	HAMMERSMITH HOUSE 1
14	134.0	NW	522920 178470	TQ27NW15	10.67	SITED LONDON ATLAS G18 HAMMERSMITH
15B	136.0	NE	523141 178456	TQ27NW775	17.1	BRITISH OXYGEN CO LTD 1
16C	141.0	NE	523124 178478	TQ27NW777	15.3	BRITISH OXYGEN CO LTD 4
17C	147.0	NE	523130 178480	TQ27NW543	15.2	HAMMERSMITH HOUSE 4
18	152.0	W	522840 178370	TQ27NW10	9.63	SITED LONDON ATLAS G13 HAMMERSMITH
19	155.0	W	522840 178390	TQ27NW695	10.52	HAMMERSMITH FLYOVER 2
20	156.0	E	523190 178300	TQ27NW27	96.92	MR DORTNELLS LOWER MALL HAMMERSMITH
21	159.0	E	523200 178380	TQ27NW65	9.84	CROMWELL ROAD EXT.BH5 HAMMERSMITH
22	160.0	S	523100 178200	TQ27NW572	96.92	LOWER MALL, HAMMERSMITH

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
23D	164.0	NE	523141 178494	TQ27NW776	15.4	BRITISH OXYGEN CO LTD 3
24	168.0	NE	523156 178486	TQ27NW779	12.95	BRITISH OXYGEN CO LTD 7
25	170.0	S	523060 178180	TQ27NW26	92.65	MR SCOTTS HAMMERSMITH
26D	175.0	NE	523150 178500	TQ27NW542	15.4	HAMMERSMITH HOUSE 3
27E	175.0	NE	523121 178519	TQ27NW783	19.9	CORNER OF ANGEL WALK & BLACKS ROAD 1
28E	175.0	NE	523120 178520	TQ27NW894	19.8	KING STREET HAMMERSMITH 1
29	177.0	W	522820 178400	TQ27NW694	10.82	HAMMERSMITH FLYOVER 1
30	179.0	S	523020 178170	TQ27NW129	9.45	BRIDGE STREET H152 HAMMERSMITH
31	181.0	NE	523170 178490	TQ27NW545	12.2	HAMMERSMITH HOUSE 7
32F	199.0	NE	523158 178524	TQ27NW784	12.2	NEW LITTLEWOODS STORE KING STREET - SOUTH SIDE 2
33F	205.0	NE	523160 178530	TQ27NW895	12.2	KING STREET HAMMERSMITH 2
34G	206.0	NE	523147 178540	TQ27NW789	11.1	NEW LITTLEWOODS STORE KING STREET - SOUTH SIDE 9
35G	207.0	NE	523150 178540	TQ27NW900	12.2	KING STREET HAMMERSMITH 9
36	209.0	NW	522890 178540	TQ27NW280	12.8	HAMMERSMITH STM RELIEF SEWER 12
37H	209.0	NE	523180 178520	TQ27NW896	12.2	KING STREET HAMMERSMITH 3
38H	212.0	NE	523188 178516	TQ27NW785	12.2	NEW LITTLEWOODS STORE KING STREET - SOUTH SIDE 3
39I	217.0	N	523030 178580	TQ27NW647	18.28	KING STREET HAMMERSMITH 17
40I	225.0	N	523025 178588	TQ27NW818	18.5	KING STREET DEVELOPMENT NORTH SIDE 17
41J	226.0	N	523065 178588	TQ27NW820	18.2	KING STREET DEVELOPMENT NORTH SIDE 18
42	228.0	S	522990 178120	TQ27NW130	5.49	BRIDGE STREET H153 HAMMERSMITH
43J	229.0	N	523070 178590	TQ27NW648	18.28	KING STREET HAMMERSMITH 18
44K	231.0	NE	523190 178540	TQ27NW897	19.8	KING STREET HAMMERSMITH 4
45	231.0	NE	523220 178510	TQ27NW127	10.36	CNR OF BLACKS ROAD H150 HAMMERSMITH
46	233.0	E	523270 178410	TQ27NW64	10.24	CROMWELL ROAD EXT.BH6 HAMMERSMITH
47K	234.0	NE	523195 178540	TQ27NW786	19.6	NEW LITTLEWOODS STORE KING STREET - SOUTH SIDE 4
48L	237.0	NE	523210 178530	TQ27NW898	12.2	KING STREET HAMMERSMITH 5

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
49L	243.0	NE	523222 178526	TQ27NW787	12.6	REAR OF MARKS AND SPENCER BLACKS ROAD 5
50	247.0	N	523040 178610	TQ27NW644	24.38	KING STREET HAMMERSMITH 14

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/586646
#2: scans.bgs.ac.uk/sobi_scans/boreholes/586640
#3: scans.bgs.ac.uk/sobi_scans/boreholes/586650
#4: scans.bgs.ac.uk/sobi_scans/boreholes/586734
#5: scans.bgs.ac.uk/sobi_scans/boreholes/586641
#6: scans.bgs.ac.uk/sobi_scans/boreholes/586708
#7: scans.bgs.ac.uk/sobi_scans/boreholes/16023455
#8: scans.bgs.ac.uk/sobi_scans/boreholes/586868
#9: scans.bgs.ac.uk/sobi_scans/boreholes/586639
#10: scans.bgs.ac.uk/sobi_scans/boreholes/16023454
#11A: scans.bgs.ac.uk/sobi_scans/boreholes/18208077
#12A: scans.bgs.ac.uk/sobi_scans/boreholes/587139
#13B: scans.bgs.ac.uk/sobi_scans/boreholes/587136
#14: scans.bgs.ac.uk/sobi_scans/boreholes/586588
#15B: scans.bgs.ac.uk/sobi_scans/boreholes/18208073
#16C: scans.bgs.ac.uk/sobi_scans/boreholes/18208076
#17C: scans.bgs.ac.uk/sobi_scans/boreholes/587138
#18: scans.bgs.ac.uk/sobi_scans/boreholes/586583
#19: scans.bgs.ac.uk/sobi_scans/boreholes/16023453
#20: scans.bgs.ac.uk/sobi_scans/boreholes/586606
#21: scans.bgs.ac.uk/sobi_scans/boreholes/586644
#22: scans.bgs.ac.uk/sobi_scans/boreholes/587167
#23D: scans.bgs.ac.uk/sobi_scans/boreholes/18208075
#24: scans.bgs.ac.uk/sobi_scans/boreholes/18208078
#25: scans.bgs.ac.uk/sobi_scans/boreholes/586605
#26D: scans.bgs.ac.uk/sobi_scans/boreholes/587137
#27E: scans.bgs.ac.uk/sobi_scans/boreholes/18208083
#28E: scans.bgs.ac.uk/sobi_scans/boreholes/18209448
#29: scans.bgs.ac.uk/sobi_scans/boreholes/16023437
#30: scans.bgs.ac.uk/sobi_scans/boreholes/586709
#31: scans.bgs.ac.uk/sobi_scans/boreholes/587140
#32F: scans.bgs.ac.uk/sobi_scans/boreholes/18208084
#33F: scans.bgs.ac.uk/sobi_scans/boreholes/18209449
#34G: scans.bgs.ac.uk/sobi_scans/boreholes/18208089
#35G: scans.bgs.ac.uk/sobi_scans/boreholes/18209454
#36: scans.bgs.ac.uk/sobi_scans/boreholes/586867
#37H: scans.bgs.ac.uk/sobi_scans/boreholes/18209450
#38H: scans.bgs.ac.uk/sobi_scans/boreholes/18208085
#39I: scans.bgs.ac.uk/sobi_scans/boreholes/587242
#40I: scans.bgs.ac.uk/sobi_scans/boreholes/18208147
#41J: scans.bgs.ac.uk/sobi_scans/boreholes/18208149
#42: scans.bgs.ac.uk/sobi_scans/boreholes/586710
#43J: scans.bgs.ac.uk/sobi_scans/boreholes/587243
#44K: scans.bgs.ac.uk/sobi_scans/boreholes/18209451
#45: scans.bgs.ac.uk/sobi_scans/boreholes/586707
#46: scans.bgs.ac.uk/sobi_scans/boreholes/586643
#47K: scans.bgs.ac.uk/sobi_scans/boreholes/18208086
#48L: scans.bgs.ac.uk/sobi_scans/boreholes/18209452
#49L: scans.bgs.ac.uk/sobi_scans/boreholes/18208087
#50: scans.bgs.ac.uk/sobi_scans/boreholes/587239

8 Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

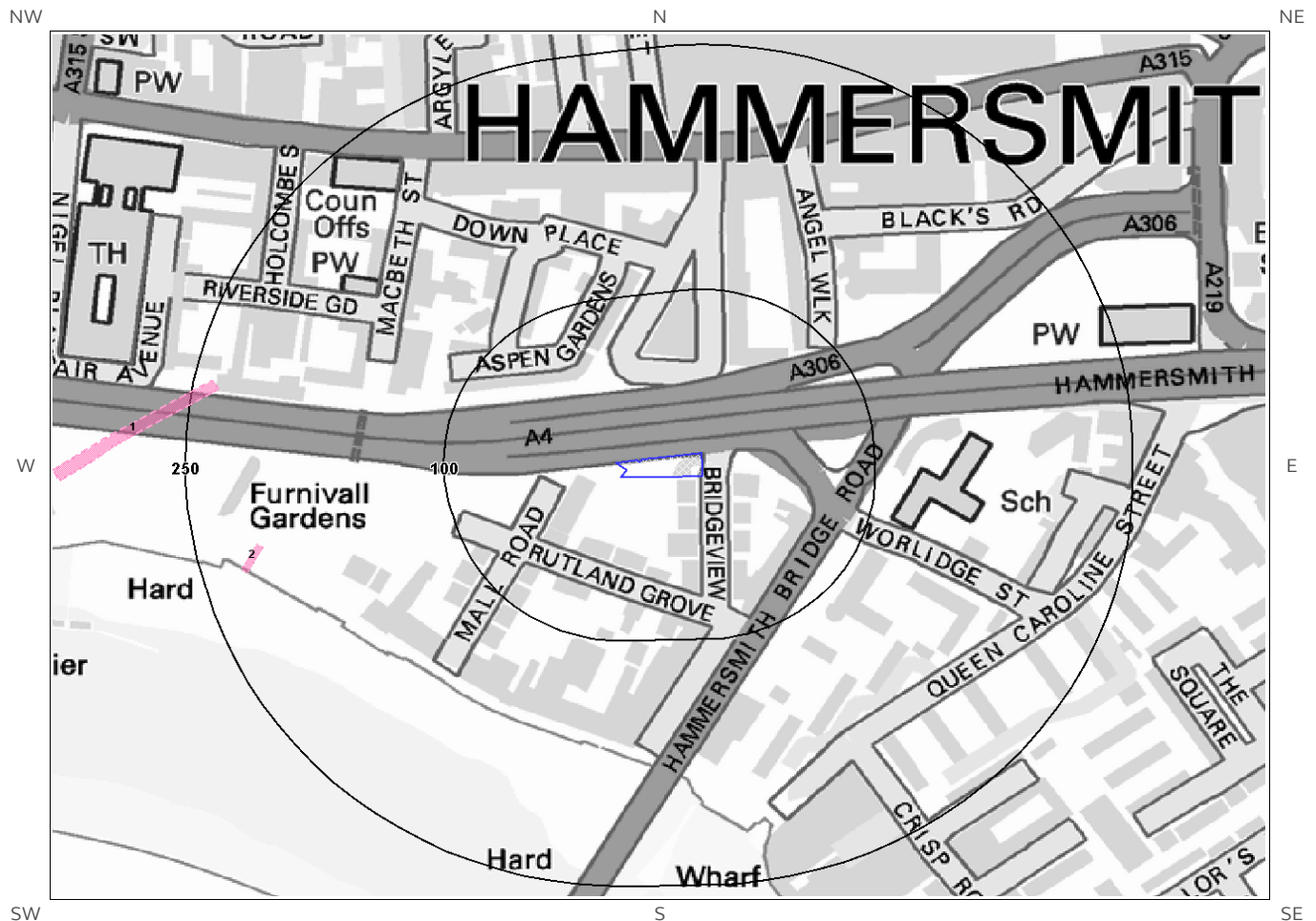
2

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	London	No data	No data	No data	No data	No data

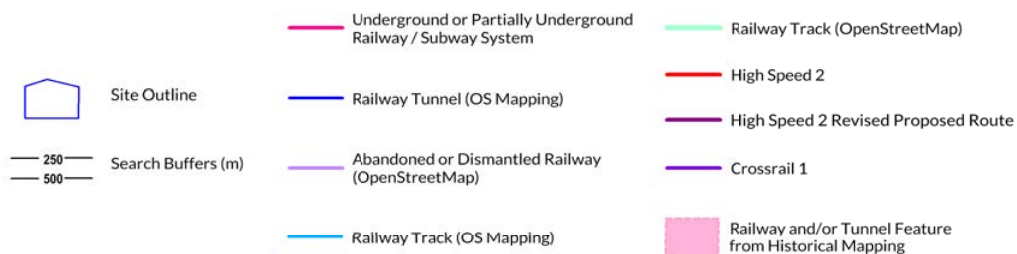
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels Map



Railways and Tunnels Legend

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9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
2	211	W	522781 178299	Railway Sidings	1915
1	235	W	522713 178377	Tunnel	1916

Any records that have been identified are represented on the Railways and Tunnels Map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels Map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels Map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? Yes

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

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<https://www.groundsure.com/terms-and-conditions-sept-2016/>



Arcadis

Arcadis, 10, MEDAWAR ROAD,
GUILDFORD, GU2 7AR

Groundsure
Reference:

GS-3885889

Your Reference: PO0067007-1

Report Date 16 May 2017

Report Delivery Method: Email - pdf

Groundsure Enviro Insight

Address: Land at Bridge View Road site also referred to as Aspen Place, LBHF, W6 9DD

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Groundsure Enviro Insight

Address: Land at Bridge View Road site also referred to as Aspen Place, LBHF, W6 9DD
Date: 16 May 2017
Reference: GS-3885889
Client: Arcadis

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 07-Jun-2015
Grid Reference: 523025,178350
Site Size: 0.05ha

Report Reference: GS-3885889
Client Reference: PO0067007-1

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10.3 Brine Affected Areas	62
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Standard Terms and Conditions	65

Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	0	43	210
1.2 Additional Information – Historical Tank Database	0	0	7	110
1.3 Additional Information – Historical Energy Features Database	0	0	64	119
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	12	24
1.6 Potentially Infilled Land	0	0	17	42
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	2
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	1
2.1.8 Records of Licensed Discharge Consents	0	0	1	3
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	3
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	1

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	18	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	1	1	2
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes					
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	4
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	1	Not searched	Not searched

Section 6: Hydrogeology and Hydrology	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	1	0	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding						
7.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	Yes					
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Yes					
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Low					
7.4 Are there any Flood Defences within 250m of the study site?	Yes					
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	Yes					
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No					
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential below Surface					
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	High					

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	1
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	2
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	1	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Very Low
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Negligible
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Are there any coal mining areas within 75m of the study site?	No
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

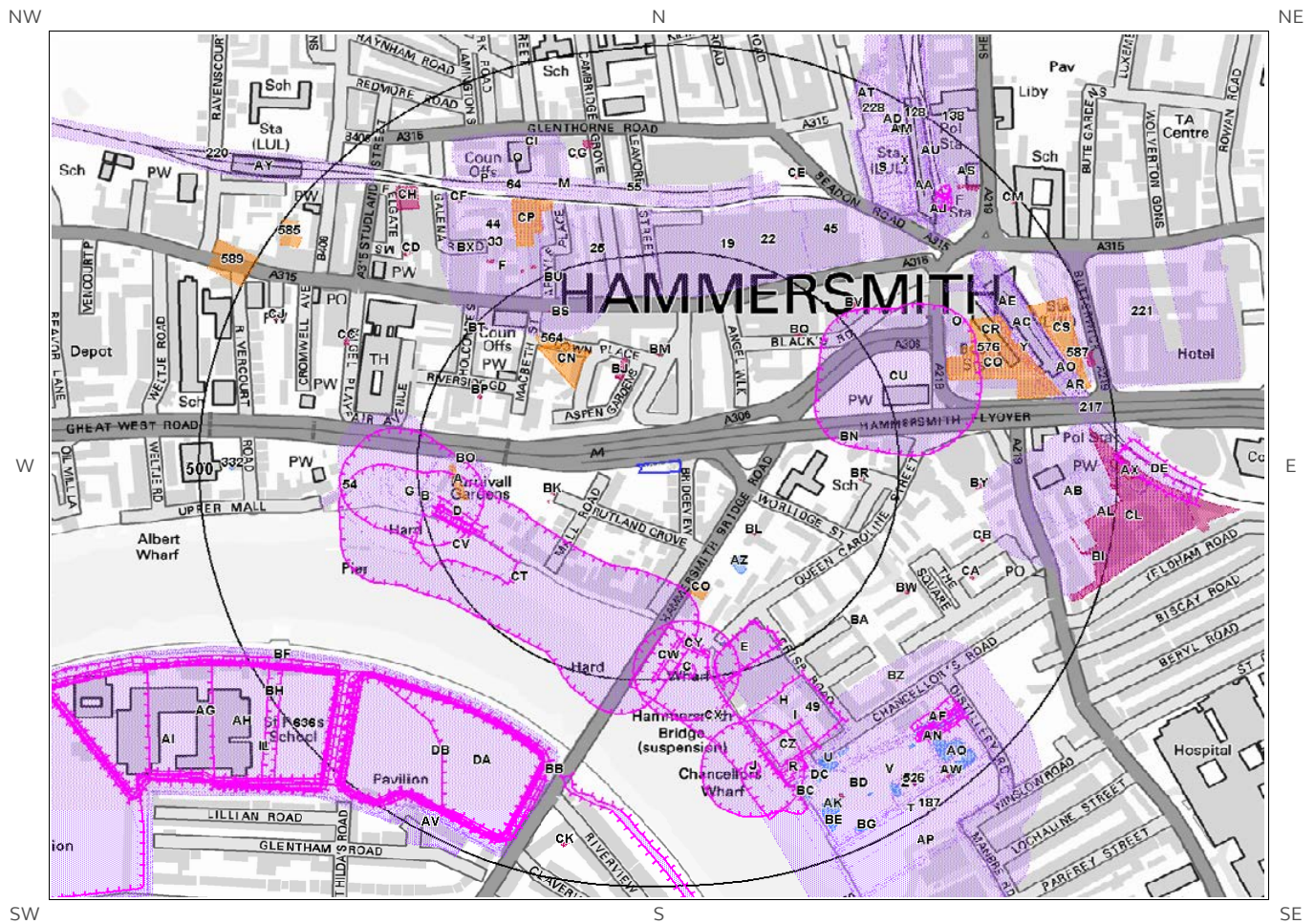
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

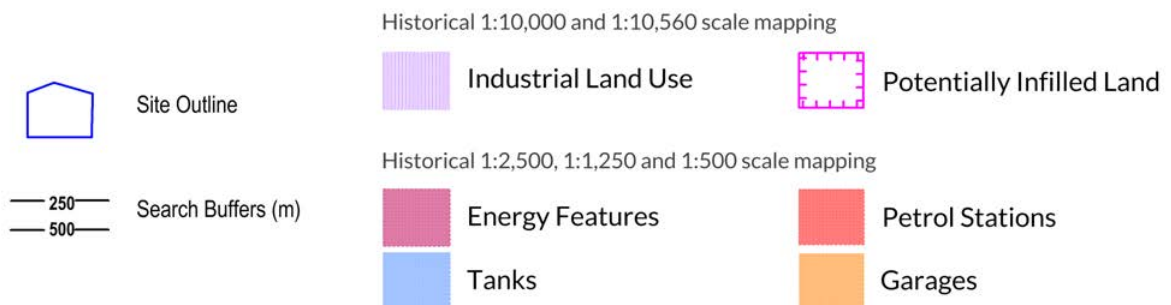
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 253

ID	Distance [m]	Direction	Use	Date
1CT	114	SW	Unspecified Wharves	1958
2B	143	SW	Boat Houses	1893
3CU	164	E	Burial Ground	1866
4A	165	W	Lead Mills	1947
5A	165	W	Lead Mills	1938
6A	165	W	Lead Mills	1920
7BU	172	NW	Smithy	1920
8A	174	W	Lead Mills	1933
9A	174	W	Lead Mills	1910
10A	174	W	Lead Mills	1933
11CV	176	SW	Unspecified Wharf	1947
12B	177	W	Unspecified Wharf	1866
13C	180	S	Unspecified Wharf	1987
14C	180	S	Unspecified Wharf	1974
15CX	186	S	Unspecified Wharf	1947
16D	190	W	Unspecified Wharf	1933
17D	190	W	Unspecified Wharf	1910
18D	193	SW	Wharves	1962
19	198	N	Unspecified Works	1962
20E	198	SE	Unspecified Wharf	1894
21E	199	SE	Unspecified Wharf	1898
22	199	N	Unspecified Works	1958
23D	199	W	Unspecified Wharf	1938
24D	199	W	Unspecified Wharf	1920
25	199	N	Unspecified Commercial/Industrial	1962
26CY	199	S	Unspecified Wharf	1894
27D	200	W	Unspecified Wharf	1933
28CW	200	S	Unspecified Wharf	1896
29F	204	NW	Smithy	1910
30F	204	NW	Smithy	1933
31B	229	W	Boat Houses	1898
32C	230	S	Unspecified Wharf	1967
33	231	NW	Unspecified Works	1958

34B	232	W	Boat House	1910
35B	232	W	Boat House	1933
36G	233	W	Boat Houses	1894
37B	234	W	Boat House	1938
38B	234	W	Boat House	1920
39G	238	W	Boat Houses	1911
40H	240	SE	Unspecified Depot	1974
41H	240	SE	Unspecified Depot	1967
42B	243	W	Boat House	1933
43B	244	W	Boat House	1947
44	263	NW	Unspecified Works	1962
45	272	NE	Unspecified Commercial/Industrial	1962
46I	278	SE	Unspecified Depot	1962
47I	281	SE	Unspecified Wharf	1910
48I	281	SE	Unspecified Wharf	1933
49	285	SE	Unspecified Depot	1958
50I	288	SE	Iron Works	1896
51I	289	SE	Iron Works	1894
52I	290	SE	Iron Works	1894
53I	292	SE	Iron Works	1898
54	300	W	Boat Houses	1894
55	303	N	Railway Sidings	1958
56K	305	N	Railway Buildings	1947
57J	309	S	Unspecified Wharf	1974
58J	309	S	Unspecified Wharf	1987
59K	312	N	Railway Buildings	1910
60K	312	N	Railway Buildings	1933
61BX	314	NW	Smithy	1933
62CQ	322	E	Unspecified Depot	1962
63Z	325	SE	Unspecified Commercial/Industrial	1987
64	328	N	Railway Buildings	1947
65L	329	SW	Unspecified Works	1962
66CZ	330	SE	Unspecified Wharf	1933
67N	331	SW	Water Works	1893
68L	332	SW	Water Works	1898
69M	333	N	Railway Buildings	1933
70M	333	N	Railway Buildings	1910
71L	334	SW	Water Works	1933
72N	335	SW	Water Works	1920
73N	335	SW	Water Works	1938
74N	337	SW	Water Works	1910
75N	337	SW	Water Works	1933
76N	337	SW	Water Works	1894
77L	338	SW	Water Works	1911

78O	339	NE	Railway Station	1974
79O	339	NE	Railway Station	1967
80O	339	NE	Railway Station	1987
81DA	341	SW	Unspecified Pit	1866
82AB	349	E	Nursery	1894
83V	349	SE	Distillery	1894
84Q	355	N	Unspecified Works	1962
85P	359	N	Railway Buildings	1933
86P	359	N	Railway Buildings	1910
87J	359	S	Unspecified Wharf	1967
88AC	366	NE	Railway Station	1958
89Q	367	N	Unspecified Works	1958
90R	368	S	Unspecified Wharf	1920
91R	368	S	Unspecified Wharf	1938
92S	372	NE	Railway Sidings	1894
93DD	373	S	Unspecified Ground Workings	1894
94AM	374	NE	Railway Sidings	1920
95T	375	SE	Unspecified Works	1958
96S	375	NE	Unspecified Commercial/Industrial	1933
97T	375	SE	Unspecified Works	1962
98U	377	SE	Unspecified Tanks	1958
99U	377	SE	Tanks	1962
100V	378	SE	Distillery	1896
101W	380	NE	Railway Sidings	1947
102W	381	NE	Railway Sidings	1894
103W	381	NE	Railway Sidings	1958
104BD	382	SE	Distillery	1894
105R	382	SE	Unspecified Tanks	1967
106S	383	NE	Railway Station	1967
107S	383	NE	Railway Station	1974
108S	384	NE	Railway Sidings	1933
109V	385	SE	Distillery	1866
110X	386	NE	Railway Sidings	1933
111X	386	NE	Railway Sidings	1910
112V	386	SE	Distillery	1910
113V	386	SE	Distillery	1933
114S	387	NE	Railway Sidings	1898
115Y	389	NE	Railway Sidings	1938
116Y	389	NE	Railway Sidings	1920
117AA	391	NE	Railway Station	1933
118V	391	SE	Distillery	1947
119T	391	SE	Unspecified Works	1967
120V	392	SE	Distillery	1938
121V	392	SE	Distillery	1920

122X	392	NE	Railway Station	1894
123Z	392	SE	Distillery	1933
124Y	393	NE	Railway Sidings	1933
125AD	393	NE	Railway Sidings	1962
126W	393	NE	Railway Sidings	1987
127W	393	NE	Railway Sidings	1974
128	393	NE	Railway Sidings	1967
129AA	394	NE	Railway Station	1894
130X	395	NE	Railway Station	1962
131AB	395	E	Nursery	1894
132AC	397	NE	Railway Station	1962
133V	397	SE	Distillery	1898
134X	397	NE	Railway Station	1958
135AA	397	NE	Railway Station	1898
136AD	397	NE	Railway Sidings	1866
137AC	398	NE	Railway Station	1933
138	398	NE	Unspecified Commercial/Industrial	1958
139S	398	NE	Railway Building	1920
140X	398	NE	Railway Station	1920
141AC	398	NE	Railway Sidings	1947
142AL	399	E	Unspecified Works	1962
143AE	399	NE	Railway Station	1894
144AE	399	NE	Railway Station	1938
145AE	399	NE	Railway Station	1920
146Y	400	NE	Railway Sidings	1910
147Y	400	NE	Railway Sidings	1933
148X	400	NE	Railway Station	1987
149X	400	NE	Railway Buildings	1947
150AE	401	NE	Railway Station	1947
151AB	402	E	Nursery	1896
152AB	402	E	Nursery	1898
153X	404	NE	Railway Building	1947
154AC	404	NE	Railway Station	1898
155AE	404	NE	Railway Station	1894
156AC	405	NE	Railway Sidings	1974
157AC	405	NE	Railway Sidings	1987
158AC	405	NE	Railway Sidings	1967
159AE	406	NE	Railway Station	1933
160AE	406	NE	Railway Station	1910
161X	407	NE	Railway Station	1910
162X	407	NE	Railway Station	1933
163AE	408	NE	Railway Station	1896
164AJ	410	NE	Railway Building	1920
165S	410	NE	Railway Building	1910
166S	410	NE	Railway Building	1933

167AI	411	SW	Water Works	1947
168AG	413	SW	Filter Beds	1910
169AA	413	NE	Railway Station	1866
170AF	414	SE	Unspecified Tank	1958
171AF	414	SE	Tank	1962
172AG	415	SW	Filtering Beds	1898
173AG	419	SW	Filtering Beds	1893
174AH	420	SW	Filter Beds	1920
175AH	420	SW	Filter Beds	1938
176AG	421	SW	Filtering Beds	1894
177AI	421	SW	Unspecified Works	1958
178AI	421	SW	Water Works	1967
179AG	423	SW	Filtering Beds	1911
180AJ	425	NE	Unspecified Pit	1933
181AJ	427	NE	Unspecified Pit	1920
182AN	427	SE	Unspecified Tank	1866
183AK	429	SE	Unspecified Tanks	1974
184AK	429	SE	Unspecified Tanks	1987
185AL	429	E	Unspecified Commercial/Industrial	1967
186AL	429	E	Unspecified Works	1958
187	430	SE	Unspecified Commercial/Industrial	1896
188AM	431	NE	Railway Sidings	1962
189AN	434	SE	Unspecified Tank	1933
190AN	434	SE	Unspecified Tank	1910
191AA	435	NE	Unspecified Pit	1933
192AA	435	NE	Unspecified Pit	1910
193AN	436	SE	Unspecified Tanks	1947
194AN	437	SE	Unspecified Tanks	1933
195AO	437	E	Railway Sidings	1896
196AN	438	SE	Unspecified Tanks	1938
197AN	438	SE	Unspecified Tanks	1920
198AO	439	E	Railway Building	1894
199AU	441	NE	Railway Sidings	1933
200AN	442	SE	Unspecified Tank	1894
201AN	442	SE	Unspecified Tank	1894
202AN	442	SE	Unspecified Tank	1896
203AP	445	SE	Saccharine Works	1938
204AP	445	SE	Saccharine Works	1920
205AQ	445	SE	Unspecified Tanks	1958
206AO	445	E	Railway Buildings	1894
207AQ	446	SE	Unspecified Tank	1898
208AQ	447	SE	Unspecified Tanks	1967
209AQ	448	SE	Tanks	1962
210AQ	448	SE	Unspecified Tank	1933

211AQ	448	SE	Unspecified Tank	1910
212AR	450	E	Railway Building	1920
213AR	450	E	Railway Building	1938
214AR	450	E	Railway Building	1894
215AQ	451	SE	Unspecified Tank	1910
216AQ	451	SE	Unspecified Tank	1933
217	453	E	Railway Sidings	1958
218AO	453	E	Railway Building	1933
219AO	453	E	Railway Building	1910
220	453	NW	Railway Sidings	1947
221	454	E	Unspecified Depot	1958
222AS	456	NE	Fire Station	1958
223AS	460	NE	Fire Station	1962
224AT	462	NE	Railway Station	1947
225AT	462	NE	Railway Station	1920
226AQ	463	SE	Unspecified Tank	1866
227AU	466	NE	Railway Sidings	1898
228	467	NE	Railway Building	1866
229AT	468	NE	Railway Station	1894
230AS	468	NE	Fire Station	1967
231AV	473	SW	Laundry	1958
232AP	473	SE	Saccharine Works	1910
233AP	473	SE	Saccharine Works	1933
234AW	474	SE	Unspecified Tank	1894
235AV	475	SW	Laundry	1962
236AW	475	SE	Unspecified Tank	1896
237T	476	SE	Unspecified Works	1898
238AP	476	SE	Unspecified Works	1947
239AW	477	SE	Unspecified Tank	1894
240AV	478	SW	Laundry	1933
241AV	479	SW	Laundry	1933
242AW	479	SE	Unspecified Tank	1898
243T	483	SE	Saccharine Works	1894
244AT	485	NE	Railway Station	1866
245AT	486	NE	Railway Building	1866
246AX	488	E	Unspecified Tanks	1958
247AX	488	E	Unspecified Tanks	1967
248AX	491	E	Tanks	1962
249BH	492	SW	Unspecified Tank	1933
250AY	496	NW	Railway Station	1933
251AY	498	NW	Railway Station	1898
252AX	499	E	Cuttings	1894
253DE	499	E	Cuttings	1898

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary:

117

ID	Distance (m)	Direction	Use	Date
254BJ	111	N	Unspecified Tank	1916
255AZ	118	SE	Tanks	1950
256AZ	118	SE	Tanks	1950
257AZ	119	SE	Tanks	1950
258E	210	S	Unspecified Tank	1950
259E	210	S	Unspecified Tank	1950
260E	210	S	Unspecified Tank	1950
261BA	273	SE	Unspecified Tank	1950
262BA	273	SE	Unspecified Tank	1950
263BA	274	SE	Unspecified Tank	1950
264BB	374	S	Unspecified Tank	1871
265BB	376	S	Unspecified Tank	1871
266U	379	SE	Tanks	1950
267U	379	SE	Tanks	1950
268U	380	SE	Tanks	1967
269U	380	SE	Tanks	1967
270U	380	SE	Tanks	1957
271U	380	SE	Tanks	1950
272U	380	SE	Tanks	1963
273U	380	SE	Tanks	1963
274U	382	SE	Unspecified Tank	1963
275U	382	SE	Unspecified Tank	1957
276U	382	SE	Unspecified Tank	1963
277U	382	SE	Unspecified Tank	1967
278U	382	SE	Unspecified Tank	1967
279U	383	SE	Tanks	1950
280U	383	SE	Unspecified Tank	1991
281U	383	SE	Unspecified Tank	1992
282U	383	SE	Unspecified Tank	1991
283U	383	SE	Unspecified Tank	1991
284U	383	SE	Tanks	1950
285U	386	SE	Unspecified Tank	1991
286U	386	SE	Unspecified Tank	1991
287DC	398	SE	Tanks	1950
288BC	408	S	Tanks	1972
289BC	411	S	Tanks	1972
290AF	411	SE	Tanks	1916

291AF	417	SE	Tanks	1896
292AN	421	SE	Tanks	1950
293AN	421	SE	Tanks	1967
294AN	421	SE	Tanks	1967
295AN	421	SE	Tanks	1950
296AN	422	SE	Tanks	1976
297AN	422	SE	Tanks	1963
298AN	422	SE	Tanks	1957
299AN	422	SE	Tanks	1950
300AN	422	SE	Tanks	1963
301AF	422	SE	Unspecified Tank	1950
302AF	422	SE	Unspecified Tank	1950
303BD	429	SE	Unspecified Tank	1972
304BD	429	SE	Unspecified Tank	1991
305AK	430	SE	Tanks	1991
306AK	430	SE	Unspecified Tank	1972
307AK	430	SE	Tanks	1991
308AK	432	S	Unspecified Tank	1972
309AQ	436	SE	Tanks	1916
310AQ	442	SE	Unspecified Tank	1896
311AQ	442	SE	Unspecified Tank	1896
312BD	444	SE	Tanks	1950
313BD	444	SE	Tanks	1950
314V	447	SE	Unspecified Tank	1950
315V	448	SE	Tanks	1950
316V	448	SE	Unspecified Tank	1950
317V	448	SE	Tanks	1950
318AQ	449	SE	Unspecified Tank	1950
319AQ	450	SE	Unspecified Tank	1950
320AQ	450	SE	Unspecified Tank	1963
321AQ	450	SE	Unspecified Tank	1957
322AQ	450	SE	Unspecified Tank	1963
323AQ	452	SE	Unspecified Tank	1950
324AQ	452	SE	Unspecified Tank	1963
325AQ	452	SE	Unspecified Tank	1950
326AQ	452	SE	Unspecified Tank	1963
327AQ	452	SE	Tanks	1957
328Z	453	SE	Unspecified Tank	1916
329Z	456	SE	Unspecified Tank	1950
330BE	456	SE	Unspecified Tank	1916
331Z	456	SE	Unspecified Tank	1950
332	458	W	Unspecified Tank	1916
333BE	460	S	Unspecified Tank	1950
334BE	461	S	Unspecified Tank	1950
335BF	462	SW	Unspecified Tank	1950
336BF	464	SW	Unspecified Tank	1950

337BF	464	SW	Unspecified Tank	1950
338BF	464	SW	Unspecified Tank	1950
339AQ	465	SE	Unspecified Tank	1950
340AQ	465	SE	Unspecified Tank	1950
341AQ	465	SE	Unspecified Tank	1950
342AQ	468	SE	Unspecified Tank	1950
343AQ	469	SE	Unspecified Tank	1963
344AQ	469	SE	Unspecified Tank	1950
345AQ	469	SE	Unspecified Tank	1963
346BF	469	SW	Unspecified Tank	1940
347AQ	471	SE	Tanks	1950
348AQ	471	SE	Tanks	1950
349BE	473	SE	Tanks	1950
350BE	474	SE	Tanks	1950
351AW	475	SE	Unspecified Tank	1896
352AW	476	SE	Gasometer	1896
353BG	480	SE	Tanks	1950
354BG	480	SE	Tanks	1950
355BH	486	SW	Unspecified Tank	1950
356BH	486	SW	Unspecified Tank	1957
357BI	487	E	Unspecified Tank	1967
358BI	487	E	Unspecified Tank	1967
359BH	487	SW	Unspecified Tank	1950
360BH	487	SW	Unspecified Tank	1950
361BI	488	E	Unspecified Tank	1967
362BH	490	SW	Unspecified Tank	1896
363BH	492	SW	Unspecified Tank	1913
364BH	492	SW	Unspecified Tank	1940
365BH	492	SW	Unspecified Tank	1933
366AX	493	E	Unspecified Tank	1950
367AX	493	E	Unspecified Tank	1950
368AX	493	E	Unspecified Tank	1950
369AX	493	E	Tanks	1967
370AX	493	E	Tanks	1960

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary:

183

ID	Distance (m)	Direction	Use	Date
371BK	98	W	Electricity Substation	1950

372BJ	103	N	Electricity Substation	1971
373BJ	103	N	Electricity Substation	1950
374BJ	103	N	Electricity Substation	1950
375BJ	104	N	Electricity Substation	1991
376BJ	104	N	Electricity Substation	1950
377BJ	105	N	Electricity Substation	1991
378BJ	105	N	Electricity Substation	1993
379BJ	105	N	Electricity Substation	1993
380BK	106	W	Electricity Substation	1950
381BK	106	W	Electricity Substation	1950
382BK	106	W	Electricity Substation	1950
383BK	106	W	Electricity Substation	1950
384BL	108	SE	Electricity Substation	1995
385BL	108	SE	Electricity Substation	1991
386BL	108	SE	Electricity Substation	1992
387BL	109	SE	Electricity Substation	1976
388BL	109	SE	Electricity Substation	1991
389BL	109	SE	Electricity Substation	1991
390BJ	117	N	Electricity Substation	1950
391BJ	117	N	Electricity Substation	1950
392BJ	117	N	Electricity Substation	1950
393BJ	118	N	Electricity Substation	1950
394BM	128	N	Electricity Substation	1991
395BM	128	N	Electricity Substation	1992
396BM	128	N	Electricity Substation	1991
397BM	128	N	Electricity Substation	1991
398BM	136	N	Electricity Substation	1950
399BM	136	N	Electricity Substation	1976
400BM	136	N	Electricity Substation	1950
401BM	138	N	Electricity Substation	1950
402BN	193	E	Electricity Substation	1950
403BN	193	E	Electricity Substation	1950
404BN	193	E	Electricity Substation	1950
405BO	193	W	Electricity Substation	1950
406BO	194	W	Electricity Substation	1950
407BO	194	W	Electricity Substation	1950
408BO	194	W	Electricity Substation	1950
409BO	194	W	Electricity Substation	1950
410BP	195	NW	Electricity Substation	1991
411BP	195	NW	Electricity Substation	1993
412BP	195	NW	Electricity Substation	1993
413BP	195	NW	Electricity Substation	1991
414BP	196	NW	Electricity Substation	1971
415BS	199	NW	Electricity Substation	1950
416BQ	200	NE	Electricity Substation	1995
417BQ	200	NE	Electricity Substation	1993

418BQ	200	NE	Electricity Substation	1985
419BQ	201	NE	Electricity Substation	1991
420BQ	202	NE	Electricity Substation	1991
421BQ	202	NE	Electricity Substation	1980
422BR	203	E	Electricity Substation	1992
423BR	203	E	Electricity Substation	1991
424BR	203	E	Electricity Substation	1995
425BS	203	NW	Electricity Substation	1950
426BS	203	NW	Electricity Substation	1950
427BS	203	NW	Electricity Substation	1950
428BR	204	E	Electricity Substation	1991
429BR	204	E	Electricity Substation	1991
430BR	204	E	Electricity Substation	1976
431BT	242	NW	Electricity Substation	1991
432BT	242	NW	Electricity Substation	1992
433BT	242	NW	Electricity Substation	1995
434BT	242	NW	Electricity Substation	1991
435BU	264	NW	Electricity Substation	1950
436BU	264	NW	Electricity Substation	1950
437BU	264	NW	Electricity Substation	1950
438BU	264	NW	Electricity Substation	1950
439F	266	NW	Electricity Substation	1950
440BV	268	NE	Electricity Substation	1993
441BV	268	NE	Electricity Substation	1995
442BV	269	NE	Electricity Substation	1985
443BV	269	NE	Electricity Substation	1991
444BV	270	NE	Electricity Substation	1991
445BV	270	NE	Electricity Substation	1980
446BW	293	SE	Electricity Substation	1992
447BW	293	SE	Electricity Substation	1991
448BW	293	SE	Electricity Substation	1995
449F	294	NW	Electricity Substation	1985
450F	294	NW	Electricity Substation	1991
451F	294	NW	Electricity Substation	1979
452BW	294	SE	Electricity Substation	1976
453BW	294	SE	Electricity Substation	1991
454BW	294	SE	Electricity Substation	1991
455BX	296	NW	Electricity Substation	1991
456BY	339	E	Electricity Substation	1950
457BY	339	E	Electricity Substation	1950
458BY	339	E	Electricity Substation	1950
459BZ	350	SE	Electricity Substation	1950
460BZ	350	SE	Electricity Substation	1950
461BZ	350	SE	Electricity Substation	1950
462CA	352	E	Electricity Substation	1995
463CA	352	E	Electricity Substation	1992

464CA	352	E	Electricity Substation	1991
465CB	353	E	Electricity Substation	1995
466CB	353	E	Electricity Substation	1991
467CB	353	E	Electricity Substation	1992
468CA	353	E	Electricity Substation	1976
469CB	354	E	Electricity Substation	1991
470CB	354	E	Electricity Substation	1991
471CB	354	E	Electricity Substation	1976
472CC	359	NW	Electricity Substation	1950
473CC	360	NW	Electricity Substation	1950
474CC	360	NW	Electricity Substation	1950
475CC	360	NW	Electricity Substation	1950
476CC	360	NW	Electricity Substation	1950
477CD	361	NW	Electricity Substation	1950
478CD	361	NW	Electricity Substation	1950
479CE	363	N	Electricity Substation	1950
480CE	363	N	Electricity Substation	1950
481CE	363	N	Electricity Substation	1950
482CD	365	NW	Electricity Substation	1950
483CD	365	NW	Electricity Substation	1950
484CF	375	NW	Electricity Substation	1950
485CG	375	N	Electricity Substation	1995
486CF	381	NW	Electricity Substation	1950
487CF	381	NW	Electricity Substation	1950
488CF	381	NW	Electricity Substation	1950
489CG	386	N	Electricity Substation	1991
490CG	386	N	Electricity Substation	1992
491CG	387	N	Electricity Substation	1991
492CG	387	N	Electricity Substation	1985
493CG	387	N	Electricity Substation	1979
494CH	396	NW	Electricity Substation	1950
495CH	396	NW	Electricity Substation	1950
496CH	396	NW	Electricity Substation	1950
497CH	396	NW	Electricity Substation	1950
498CH	396	NW	Electricity Substation	1950
499CI	402	N	Electricity Substation	1950
500CI	402	N	Electricity Substation	1950
501CI	402	N	Electricity Substation	1950
502CI	402	N	Electricity Substation	1950
503CI	402	N	Electricity Substation	1950
504AK	429	SE	Electricity Substation	1991
505V	444	SE	Electricity Substation	1972
506V	444	SE	Electricity Substation	1991
507CJ	446	NW	Electricity Substation	1979
508CJ	446	NW	Electricity Substation	1991
509CJ	446	NW	Electricity Substation	1985

510CJ	446	NW	Electricity Substation	1991
511CJ	446	NW	Electricity Substation	1992
512CJ	446	NW	Electricity Substation	1995
513CK	452	S	Electricity Substation	1991
514CK	452	S	Electricity Substation	1995
515CK	452	S	Electricity Substation	1999
516CK	452	S	Electricity Substation	1995
517CK	452	S	Electricity Substation	1996
518CK	452	S	Electricity Substation	1994
519CK	453	S	Electricity Substation	1951
520CK	453	S	Electricity Substation	1991
521CK	453	S	Electricity Substation	1981
522CK	453	S	Electricity Substation	1971
523CK	453	S	Electricity Substation	1951
524CL	454	E	Electricity Works	1950
525CL	454	E	Electricity Works	1950
526	456	SE	Electricity Substation	1991
527AS	457	NE	Electricity Substation	1950
528AS	462	NE	Electricity Substation	1950
529AS	462	NE	Electricity Substation	1950
530CL	467	E	Electricity Works	1950
531CL	467	E	Power Station	1967
532AW	476	SE	Gasometer	1896
533AO	478	E	Electricity Substation	1950
534AO	478	E	Electricity Substation	1950
535AO	478	E	Electricity Substation	1950
536CM	490	NE	Electricity Substation	1995
537CM	490	NE	Electricity Substation	1993
538CM	490	NE	Electricity Substation	1991
539CM	491	NE	Electricity Substation	1985
540AX	492	E	Electricity Substation	1976
541AX	492	E	Electricity Substation	1993
542AX	492	E	Electricity Substation	1991
543AX	492	E	Electricity Substation	1991
544AX	492	E	Electricity Substation	1976
545AX	492	E	Electricity Substation	1991
546AX	492	E	Electricity Substation	1991
547AX	492	E	Electricity Substation	1993
548AX	492	E	Electricity Substation	1991
549AX	492	E	Electricity Substation	1983
550AX	492	E	Electricity Substation	1991
551AX	493	E	Electricity Substation	1991
552AX	493	E	Electricity Substation	1983
553AX	493	E	Electricity Substation	1991

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 36

ID	Distance (m)	Direction	Use	Date
554CN	115	NW	Garage	1971
555CN	115	NW	Garage	1991
556CN	116	NW	Garage	1991
557CN	116	NW	Garage	1993
558CN	116	NW	Garage	1993
559CO	133	S	Coach Works	1950
560CO	133	S	Coach Works	1950
561CO	133	S	Coach Works	1950
562CN	148	NW	Garage	1957
563CN	148	NW	Garage	1950
564	157	NW	Garage	1950
565A	197	W	Garage	1916
566CP	289	NW	Garage	1991
567CP	289	NW	Garage	1992
568CP	289	NW	Garage	1995
569CP	291	NW	Garage	1991
570CP	291	NW	Garage	1985
571CP	291	NW	Garage	1979
572CQ	323	E	London Transport Garage	1976
573CQ	323	E	Garage	1957
574CQ	323	E	Garage	1963
575CQ	323	E	Garage	1963
576	323	E	Garage	1916
577CQ	323	E	Garage	1967
578CQ	323	E	Garage	1967
579CR	361	E	Garage	1985
580CR	361	E	Garage	1963

581CR	362	E	Garage	1980
582CS	438	NE	Repair Shop	1950
583CS	438	NE	Repair Shop	1950
584CS	444	E	Repair Shop	1950
585	468	NW	Garages	1950
586AO	469	E	Repair Shop	1950
587	469	E	Repair Shop	1950
588CS	471	E	Repair Shop	1950
589	499	NW	Garage	1916

1.6 Potentially Infilled Land

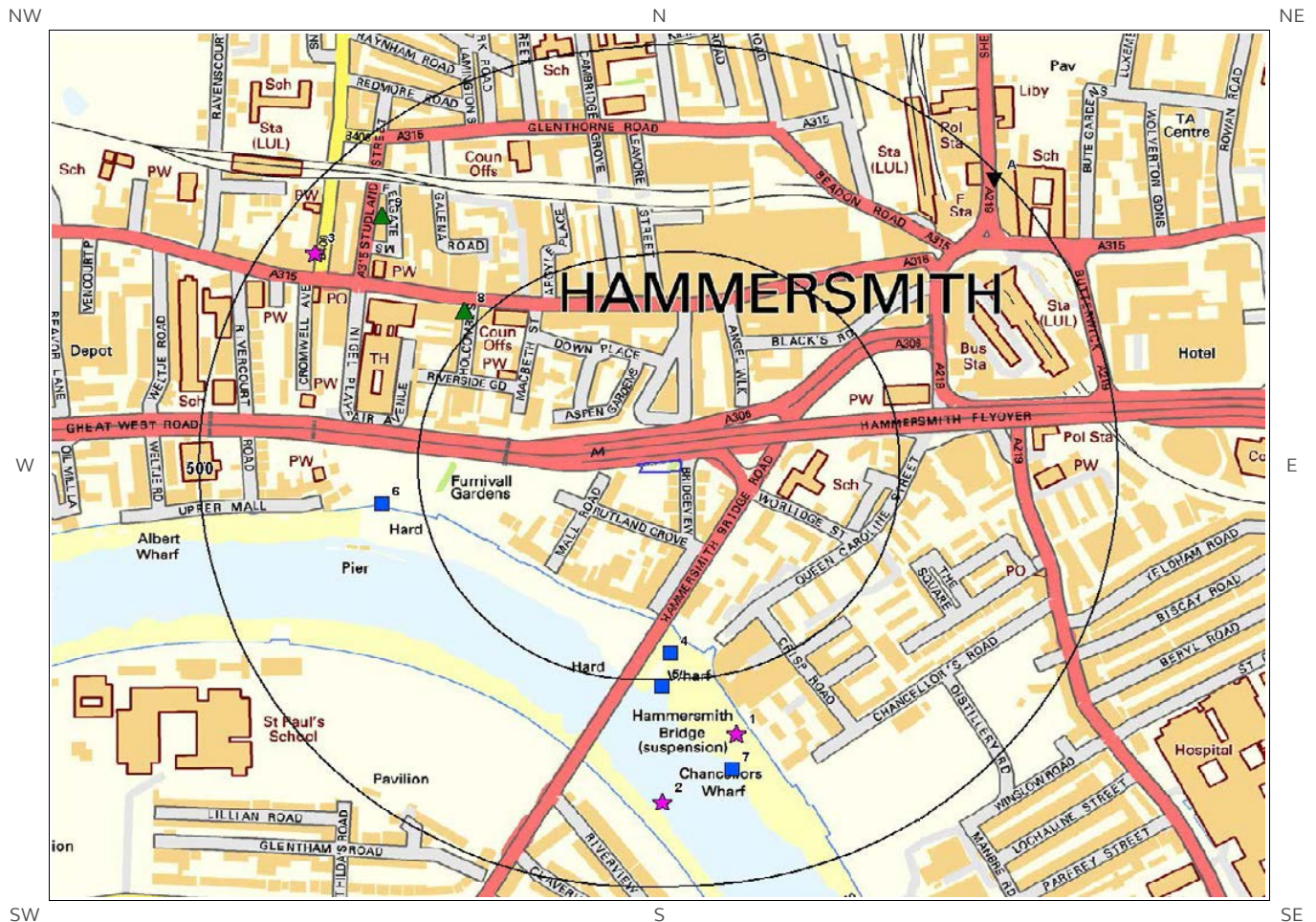
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 59

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

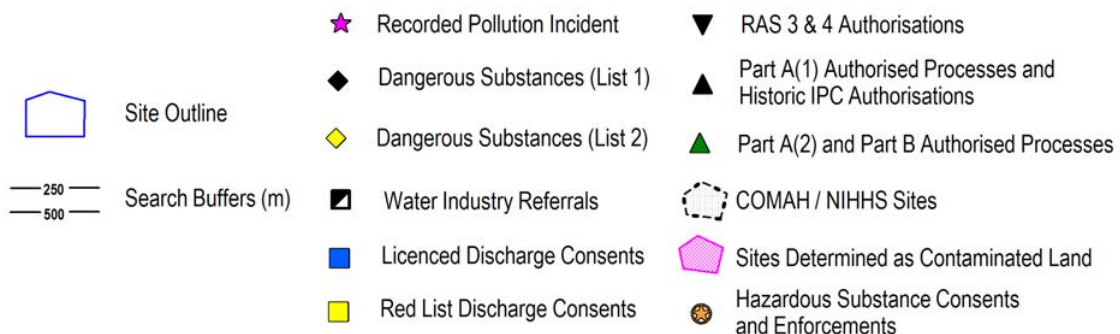
ID	Distance(m)	Direction	Use	Date
590CT	114	SW	Unspecified Wharves	1958
591CU	164	E	Burial Ground	1866
592CV	176	SW	Unspecified Wharf	1947
593G	177	W	Unspecified Wharf	1866
594CW	180	S	Unspecified Wharf	1974
595CW	180	S	Unspecified Wharf	1987
596CX	186	S	Unspecified Wharf	1947
597D	190	W	Unspecified Wharf	1910
598D	190	W	Unspecified Wharf	1933
599E	198	SE	Unspecified Wharf	1894
600E	199	SE	Unspecified Wharf	1898
601D	199	W	Unspecified Wharf	1920
602D	199	W	Unspecified Wharf	1938
603CY	199	S	Unspecified Wharf	1894
604D	200	W	Unspecified Wharf	1933
605CY	200	S	Unspecified Wharf	1896
606CW	230	S	Unspecified Wharf	1967
607I	281	SE	Unspecified Wharf	1910
608I	281	SE	Unspecified Wharf	1933
609J	309	S	Unspecified Wharf	1974
610J	309	S	Unspecified Wharf	1987
611CZ	330	SE	Unspecified Wharf	1933
612DB	339	SW	Pond	1962
613L	341	SW	Water Body	1933
614DA	341	SW	Unspecified Pit	1866
615DB	342	SW	Reservoir	1947
616DB	342	SW	Pond	1958
617DB	342	SW	Reservoir	1967
618DB	343	SW	Reservoir	1893

619DB	343	SW	Pond	1933
620DB	344	SW	Reservoir	1898
621DB	344	SW	Reservoir	1894
622DB	344	SW	Reservoir	1910
623DB	344	SW	Reservoir	1938
624DB	344	SW	Reservoir	1920
625DB	346	SW	Reservoir	1911
626J	359	S	Unspecified Wharf	1967
627DC	368	S	Unspecified Wharf	1938
628R	368	S	Unspecified Wharf	1920
629DD	373	S	Unspecified Ground Workings	1894
630AF	404	SE	Pond	1866
631AG	413	SW	Filter Beds	1910
632AG	415	SW	Filtering Beds	1898
633AF	416	SE	Pond	1894
634AF	418	SE	Ponds	1894
635AG	419	SW	Filtering Beds	1893
636	419	SW	Ponds	1933
637AH	420	SW	Filter Beds	1938
638AH	420	SW	Filter Beds	1920
639AF	420	SE	Pond	1898
640AG	421	SW	Filtering Beds	1894
641AG	423	SW	Filtering Beds	1911
642AA	425	NE	Unspecified Pit	1933
643AJ	427	NE	Unspecified Pit	1920
644AA	435	NE	Unspecified Pit	1933
645AA	435	NE	Unspecified Pit	1910
646AH	483	SW	Ponds	1933
647AX	499	E	Cuttings	1894
648DE	499	E	Cuttings	1898

2. Environmental Permits, Incidents and Registers Map



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2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

2

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
8	269	NW	522794 178540	Address: Kwik Kleen, 165 King Street, London, W6 9JT Process: Dry Cleaning Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Received Date of Enforcement: No Enforcements Received Comment: No Enforcements Received
9	417	NW	522700 178655	Address: Galena Ltd, Galena Wks, Studland St, W6 0JX Process: Foundry & Casting Process Status: Historical Permit Permit Type: Part B Enforcement: No Enforcements Received Date of Enforcement: No Enforcements Received Comment: No Enforcements Received

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

1

The following RAS Licence (3 or 4) records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
11A	492	NE	523400 178700	Charing Cross Hospital Medical School Nhs Trust, West London Hospital, Hammersmith Road, London, W6 7DG	Charing Cross Hospital Medical School Nhs Trust	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AB8252	Date of Approval: 31/3/1991 Effective from: 31/3/1991 Last date of update: 2015-01-01	Revoked/cancelled

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

4

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
4	219	S	523030 178130	Address: LOW LEVEL 1, LOWER MALL, LONDON, LOW LEVEL 1, LOWER MALL, LONDON, -, -, - Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: CSAB.0535 Permit Version: 1 Receiving Water: R.THAMES (TIDAL) Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 05/10/1987 Effective Date: 05-Oct-1987 Revocation Date: -

ID	Distance (m)	Direction	NGR	Details
5	259	S	523020 178090	<p>Address: NW. RELIEF SEWER, LOWER MALL, LONDO, NW. RELIEF SEWER, LOWER MALL, LO, NDON, -, -</p> <p>Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY</p> <p>Permit Number: CSAB.0571</p> <p>Permit Version: 1</p> <p>Receiving Water: R.THAMES (TIDAL)</p> <p>Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY)</p> <p>Issue date: 05/10/1987</p> <p>Effective Date: 05-Oct-1987</p> <p>Revocation Date: -</p>
6	296	W	522700 178310	<p>Address: STAMFORD BROOK, HAMMERSMITH, LONDON, STAMFORD BROOK, HAMMERSMITH, LON, DON, -, -</p> <p>Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY</p> <p>Permit Number: CSAB.0534</p> <p>Permit Version: 1</p> <p>Receiving Water: R.THAMES (TIDAL)</p> <p>Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY)</p> <p>Issue date: 05/10/1987</p> <p>Effective Date: 05-Oct-1987</p> <p>Revocation Date: -</p>
7	364	S	523100 177990	<p>Address: HAMMERSMITH PS, LONDON, HAMMERSMITH PS, LONDON, -, -, -</p> <p>Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY</p> <p>Permit Number: CSAB.0572</p> <p>Permit Version: 1</p> <p>Receiving Water: R.THAMES (TIDAL)</p> <p>Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY)</p> <p>Issue date: 05/10/1987</p> <p>Effective Date: 05-Oct-1987</p> <p>Revocation Date: -</p>

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

3

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	322	S	523104 178033	Incident Date: 23-Sep-2003 Incident Identification: 191944 Pollutant: Sewage Materials Pollutant Description: Storm Sewage Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	399	S	523020 177950	Incident Date: 06-Sep-2011 Incident Identification: 920562 Pollutant: Sewage Materials Pollutant Description: Storm Sewage Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	448	NW	522623 178612	Incident Date: 03-Jan-2002 Incident Identification: 50414 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

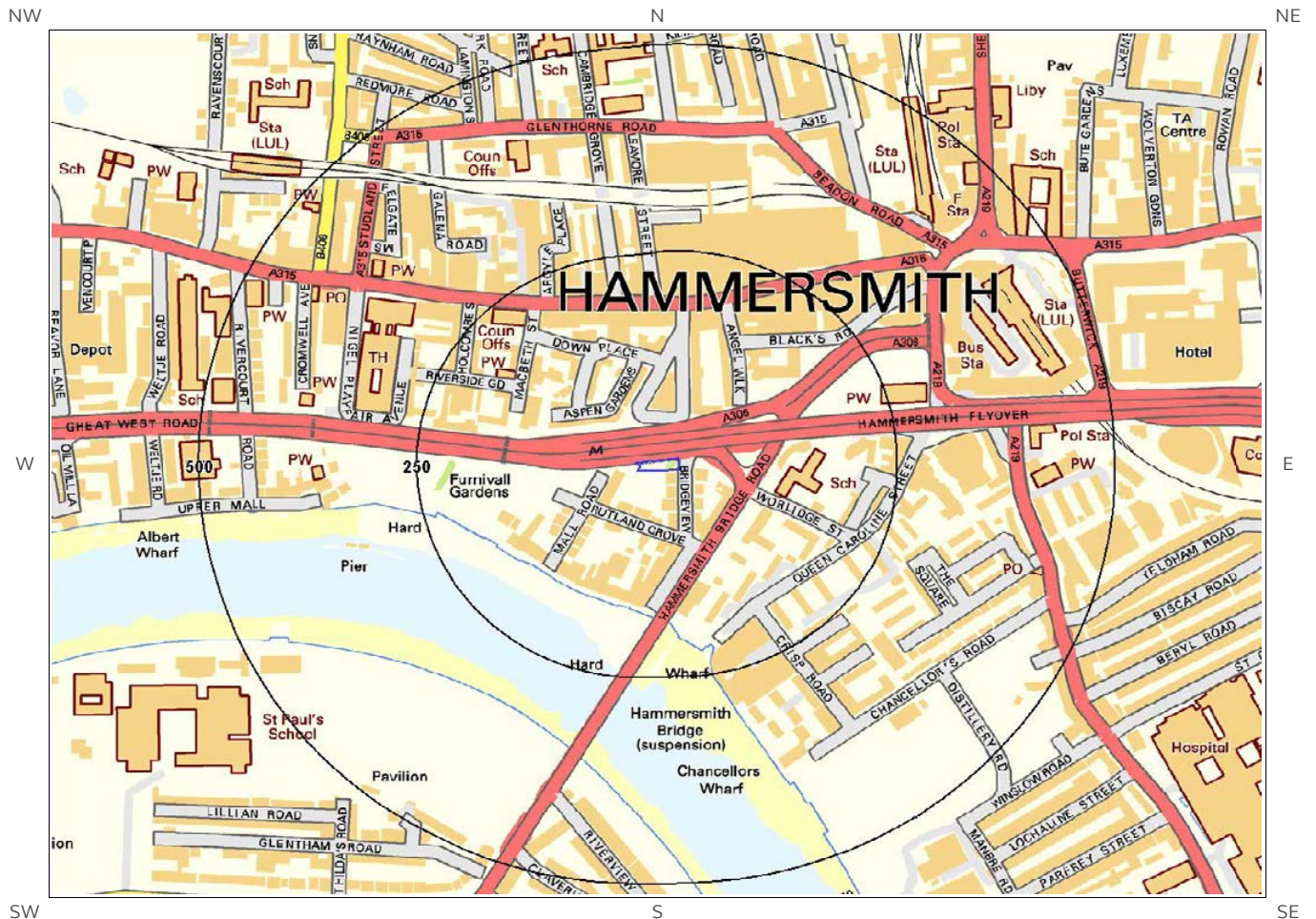
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site?

0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

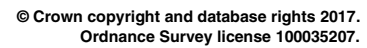
Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

1

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
Not shown	1166	N	522846 179514	<p>Site Address: 145, Goldhawk Road, Shepherds Bush, London, W12 8EN Type: Metal Recycling Site (Vehicle Dismantler) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ORP002 EPR reference: EA/EPR/WP3197NW/A001 Operator: Orpin Jane Waste Management licence No: 80639 Annual Tonnage: 2500.0</p> <p>Issue Date: 01/11/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Reg Orpin Motorcycles Correspondence Address: -</p>



-  Site Outline
  Current Industrial Sites
 Electricity Transmission Cables
-  Search Buffers (m)
  Petrol & Fuel Sites
  Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site:

18

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	107	N	Electricity Sub Station	522967 178461	Electricity Sub Station, W6	Electrical Features	Infrastructure and Facilities
2	116	SE	Electricity Sub Station	523129 178273	Electricity Sub Station, W6	Electrical Features	Infrastructure and Facilities
3	151	N	Electricity Sub Station	523025 178513	Electricity Sub Station, W6	Electrical Features	Infrastructure and Facilities
4A	170	NE	Alquds Alarabi Publishing & Advertising Overseas Ltd	523172 178472	Alquds Alarabi Publishing & Advertising Overseas Ltd, Landmark House, Hammersmith Bridge Road, London, W6 9EJ	Published Goods	Industrial Products
5A	170	NE	Latam Airlines	523172 178472	Latam Airlines, Landmark House, Hammersmith Bridge Road, London, W6 9EJ	Airlines and Airline Services	Transport, Storage and Delivery
6	175	SW	Floating Landing Stage	522911 178194	Floating Landing Stage, W6	Moorings and Unloading Facilities	Water
7	182	S	Floating Landing Stage	522962 178169	Floating Landing Stage, W6	Moorings and Unloading Facilities	Water
8	190	SW	Floating Landing Stage	522855 178219	Floating Landing Stage, W6	Moorings and Unloading Facilities	Water
9	196	SE	Matthew Matusiak- Easy Contractors	523150 178186	Matthew Matusiak- Easy Contractors, Caroline House, 15 Queen Caroline Street, London, W6 9RG	Industrial Coatings and Finishings	Industrial Products
10	202	NE	Electricity Sub Station	523177 178513	Electricity Sub Station, W6	Electrical Features	Infrastructure and Facilities
11	202	E	Electricity Sub Station	523244 178342	Electricity Sub Station, W6	Electrical Features	Infrastructure and Facilities
12B	203	NW	Electricity Sub Station	522811 178449	Electricity Sub Station, W6	Electrical Features	Infrastructure and Facilities
13	203	NW	Digital Print Centre	522886 178530	Digital Print Centre, 141-143, King Street, London, W6 9JG	Published Goods	Industrial Products
14	220	N	All Rubbish Cleared	522976 178577	All Rubbish Cleared, 2, Cambridge Grove, London, W6 0LA	Waste Storage, Processing and Disposal	Infrastructure and Facilities
15B	221	NW	Telephone Exchange	522790 178447	Telephone Exchange, W6	Telecommunications Features	Infrastructure and Facilities

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
16	222	S	Works	523110 178138	Works, W6	Unspecified Works Or Factories	Industrial Features
17	242	S	Queen's Wharf	523058 178108	Queen's Wharf, W6	Moorings and Unloading Facilities	Water
18	247	NW	Electricity Sub Station	522809 178523	Electricity Sub Station, W6	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site:

0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site:

4

The following Underground Electricity Transmission Cable records are represented as linear features on the Current Land Use map:

ID	Distance (m)	Direction	Details
19	10	E	Cable Set: - Cable Route: WIMBLEDON - WILLESSEN Cable Make: - Cable Type: DECOMMISSIONED Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
20	126	N	Cable Set: - Cable Route: WIMBLEDON - WILLESSEN Cable Make: - Cable Type: DECOMMISSIONED Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
21	306	SE	Cable Set: - Cable Route: WIMBLEDON - WILLESSEN Cable Make: - Cable Type: DECOMMISSIONED Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
22	497	N	Cable Set: - Cable Route: WIMBLEDON - WILLESSEN Cable Make: - Cable Type: DECOMMISSIONED Operating Voltage (kV): - Year of installation: - Cable in tunnel: -

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL

5.3 Bedrock and Solid Geology

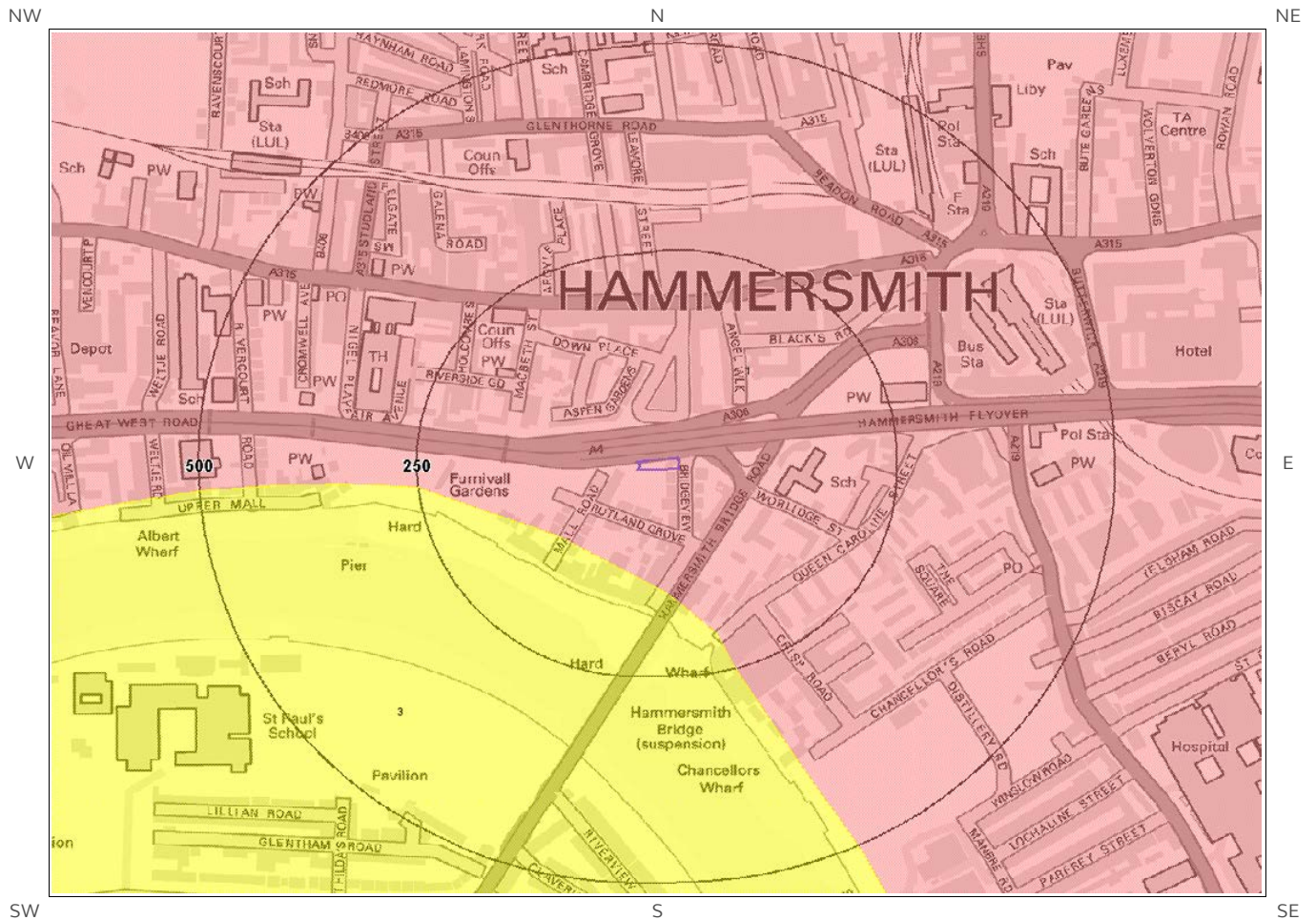
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LC-XCZ	LONDON CLAY FORMATION	CLAY AND SILT

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

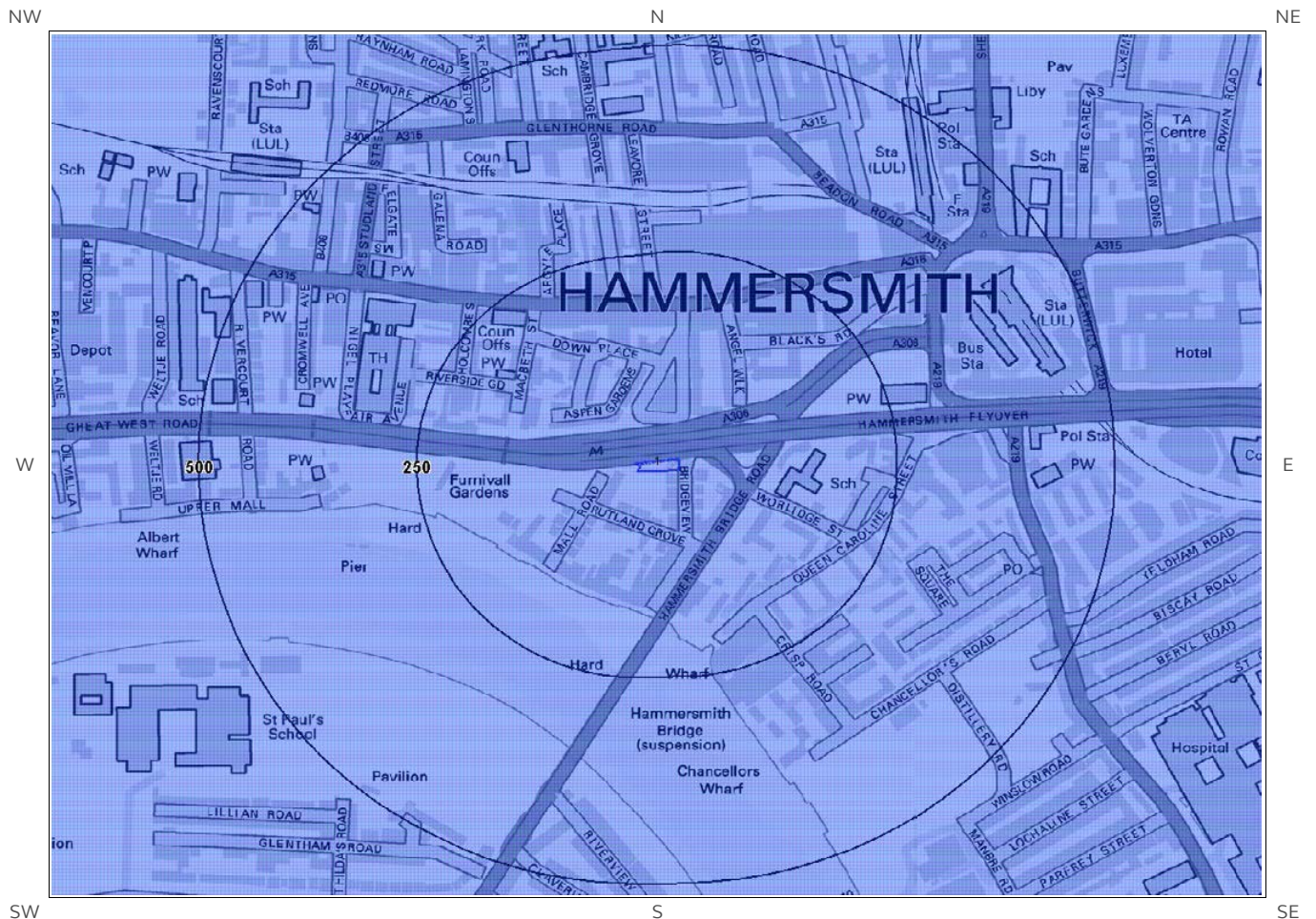
6a. Aquifer Within Superficial Geology



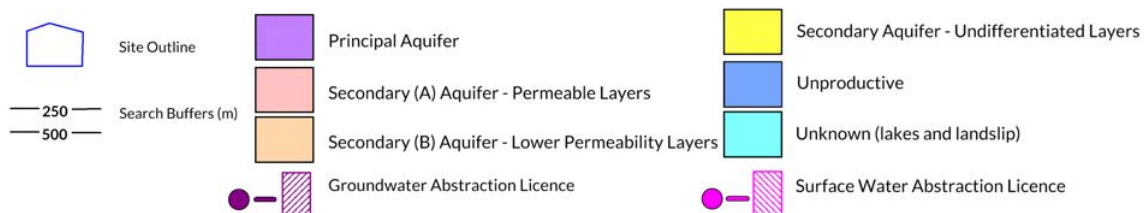
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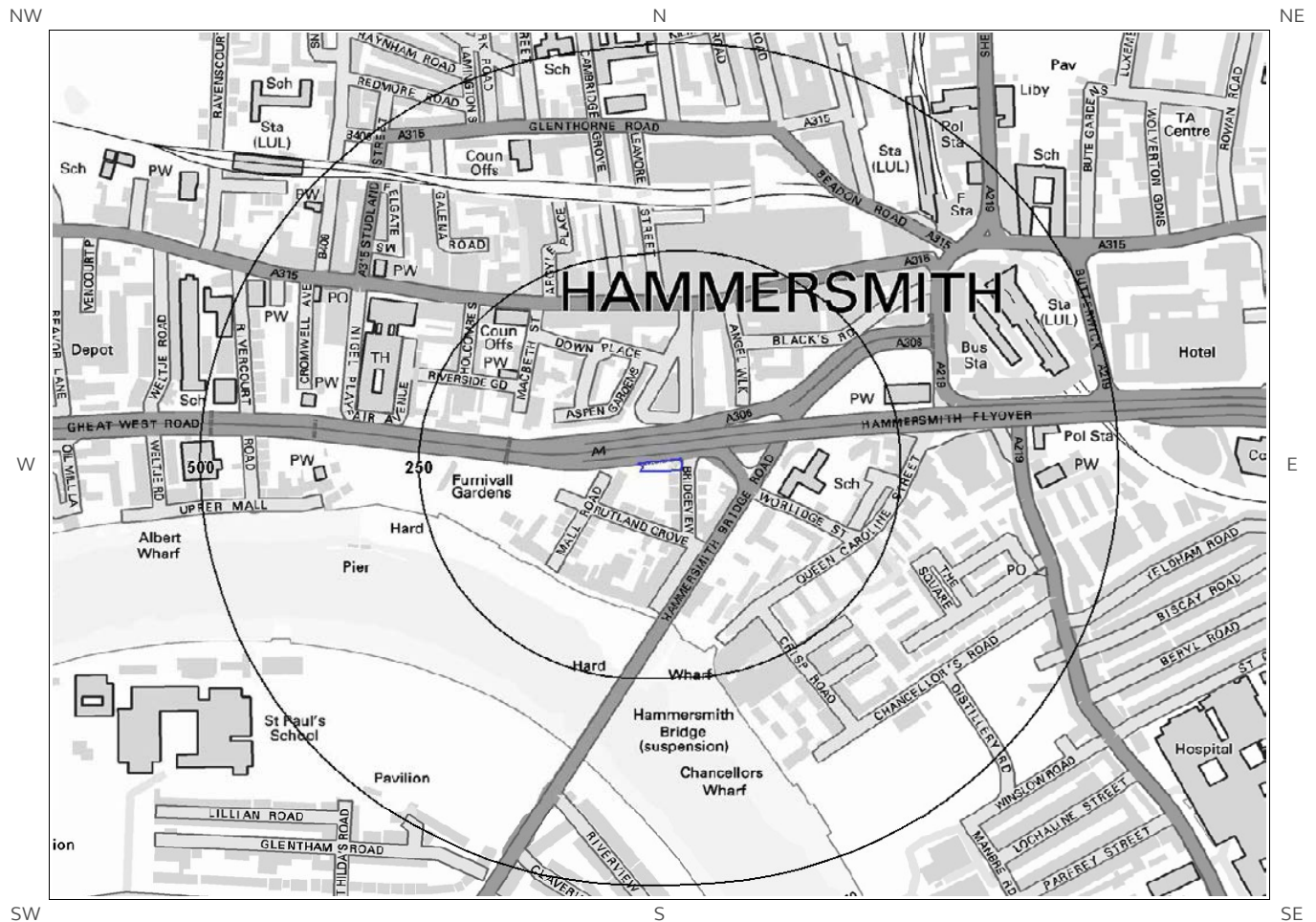
6b. Aquifer Within Bedrock Geology and Abstraction Licenses



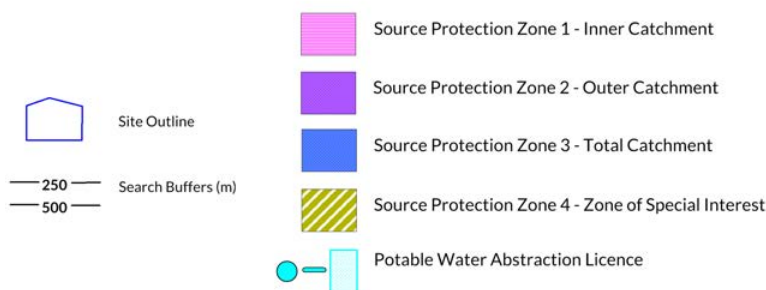
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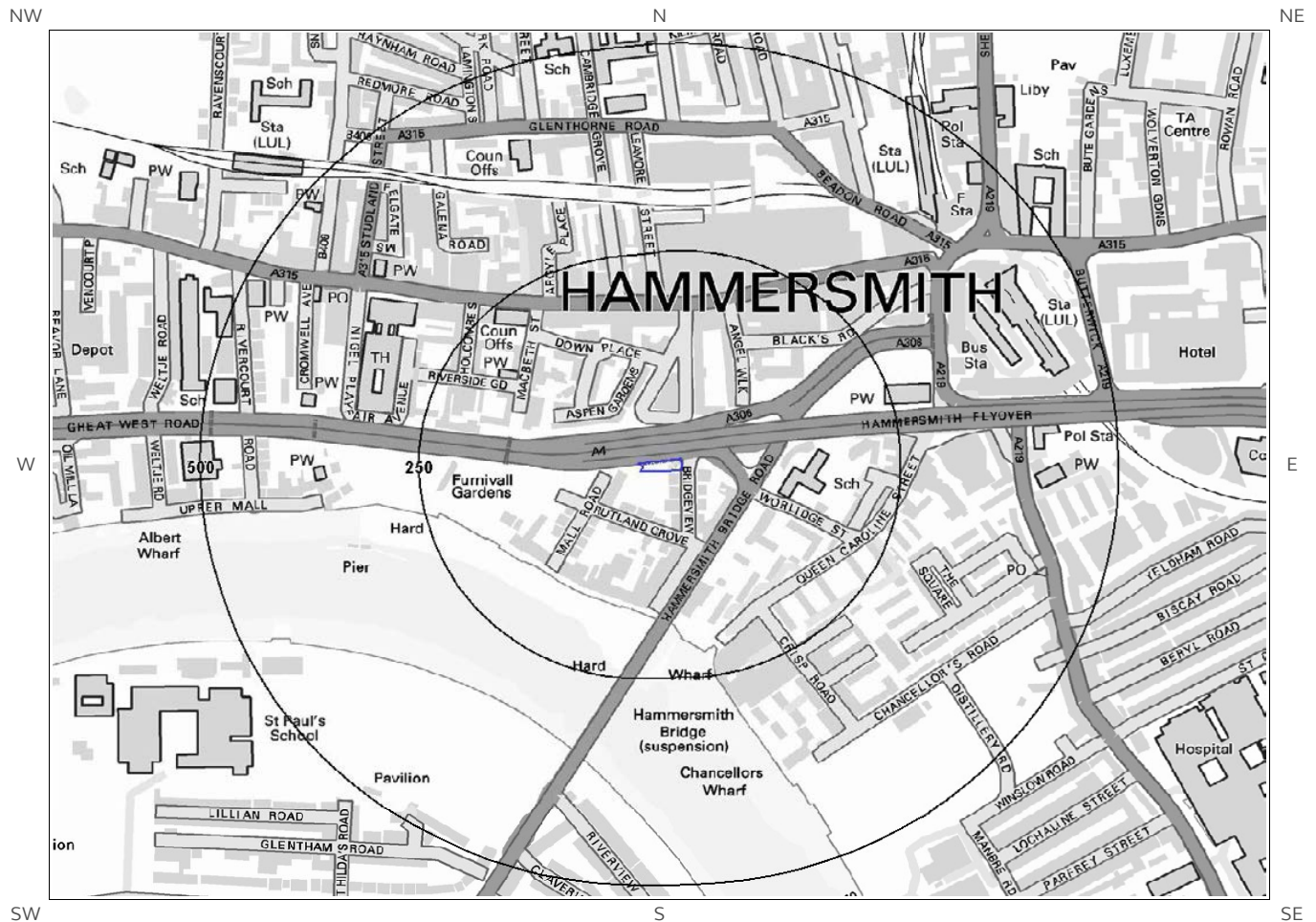
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



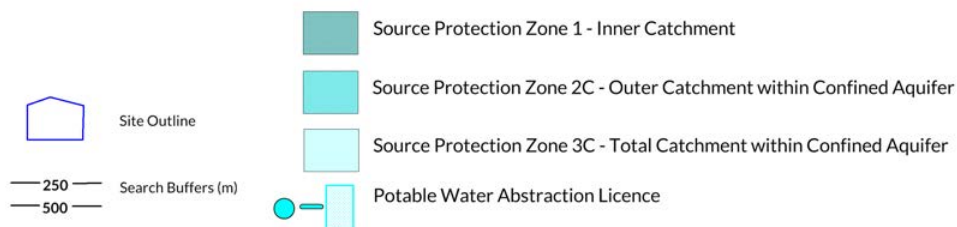
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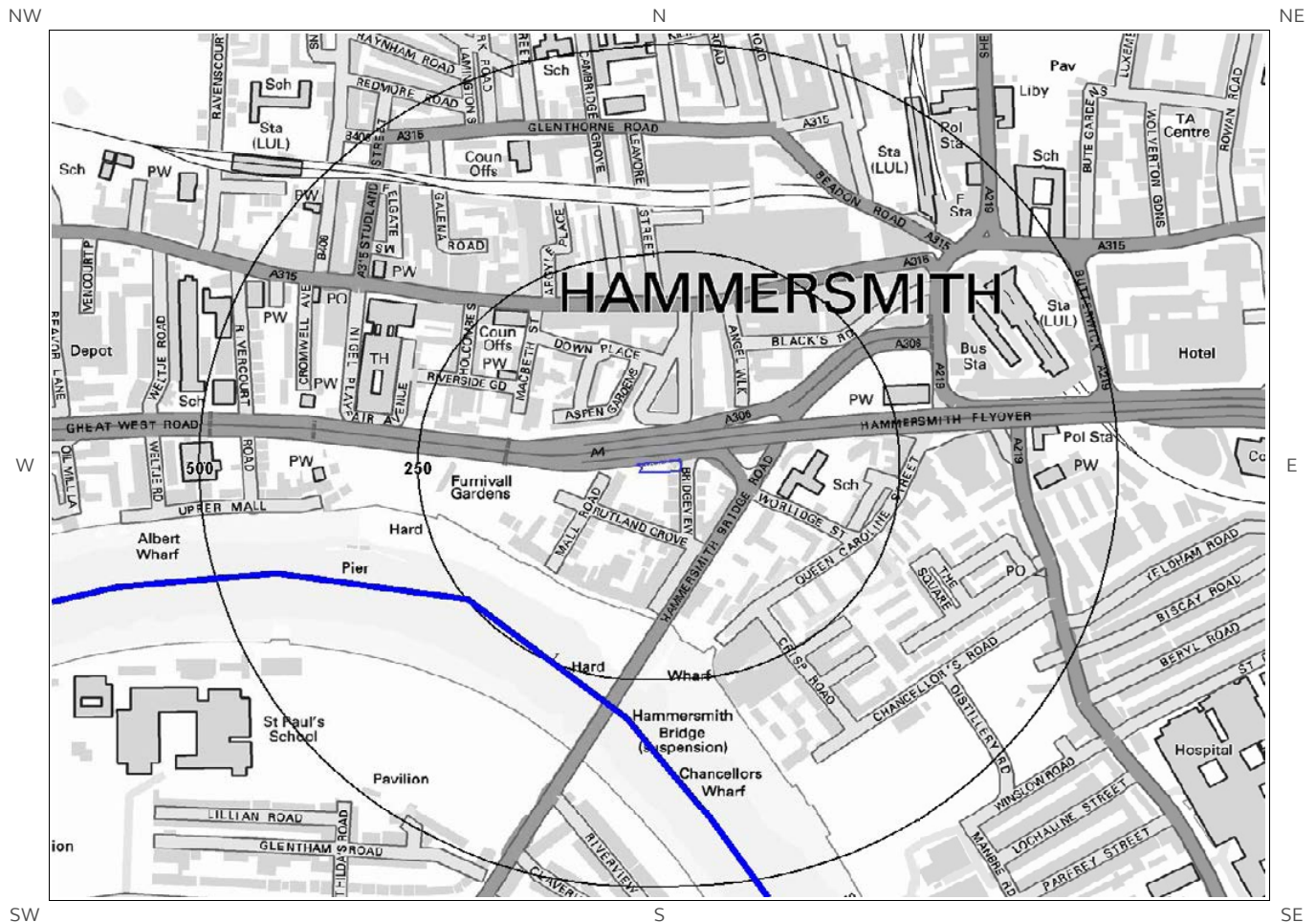
6d. Hydrogeology – Source Protection Zones within confined aquifer



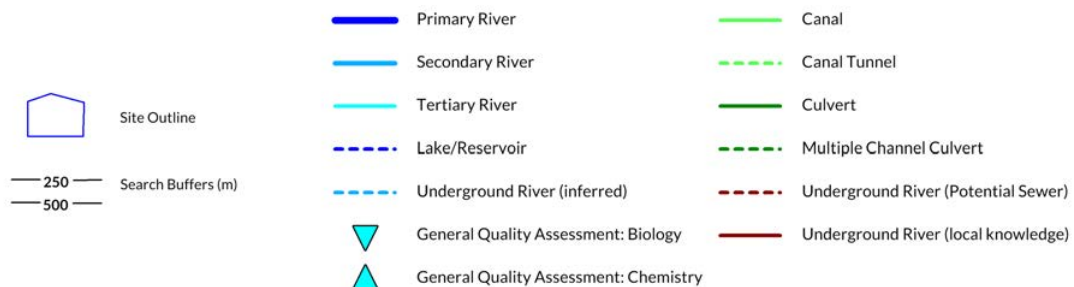
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6e. Hydrology – Detailed River Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
3	114	SW	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site?

Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1242	N	523150 179600	Status: Historical Licence No: 28/39/39/0210 Details: Pollution Remediation Direct Source: Thames Groundwater Point: London United Bus Depot, Shepherds Bush- Point 'a' Data Type: Point Name: LAND CLEAN LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WRA/N/1328 Original Start Date: 20/11/2003 Expiry Date: 31/12/2009 Issue No: 1 Version Start Date: 20/11/2003 Version End Date:
Not shown	1465	W	521600 177900	Status: Active Licence No: 28/39/39/0137 Details: Non-Evaporative Cooling Direct Source: Thames Groundwater Point: Well At Griffin Brewery, Chiswick, London W4 Data Type: Point Name: FULLER SMITH & TURNER LTD Annual Volume (m³): 81828 Max Daily Volume (m³): 327.3 Original Application No: - Original Start Date: 14/9/1970 Expiry Date: - Issue No: 100 Version Start Date: 14/9/1970 Version End Date:
Not shown	1900	S	523590 176530	Status: Active Licence No: TH/039/0039/075 Details: Spray Irrigation - Direct Direct Source: Thames Groundwater Point: Craven Cottage Stadium- Borehole Data Type: Point Name: FULHAM FOOTBALL CLUB LIMITED Annual Volume (m³): 6500 Max Daily Volume (m³): 30 Original Application No: NPS/WR/009180 Original Start Date: 3/4/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: 3/4/2013 Version End Date:
Not shown	1900	S	523590 176530	Status: Historical Licence No: 28/39/39/0221 Details: Spray Irrigation - Direct Direct Source: Thames Groundwater Point: Craven Cottage Stadium- Borehole Data Type: Point Name: FULHAM FOOTBALL CLUB LIMITED Annual Volume (m³): 6500 Max Daily Volume (m³): 30 Original Application No: GEN/39/119 Original Start Date: 16/5/2006 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 1/4/2008 Version End Date:

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site?

No

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site?

No

Database searched and no data found.

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site?

No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site?

No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site?

Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
317	SW	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?

No

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site?

Yes

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details
1	242	SW	<div> <div> River Name: River Thames Welsh River Name: - Alternative Name: - </div> <div> River Type: Primary River Main River Status: Currently Undefined </div> </div>

6.11 Surface Water Features

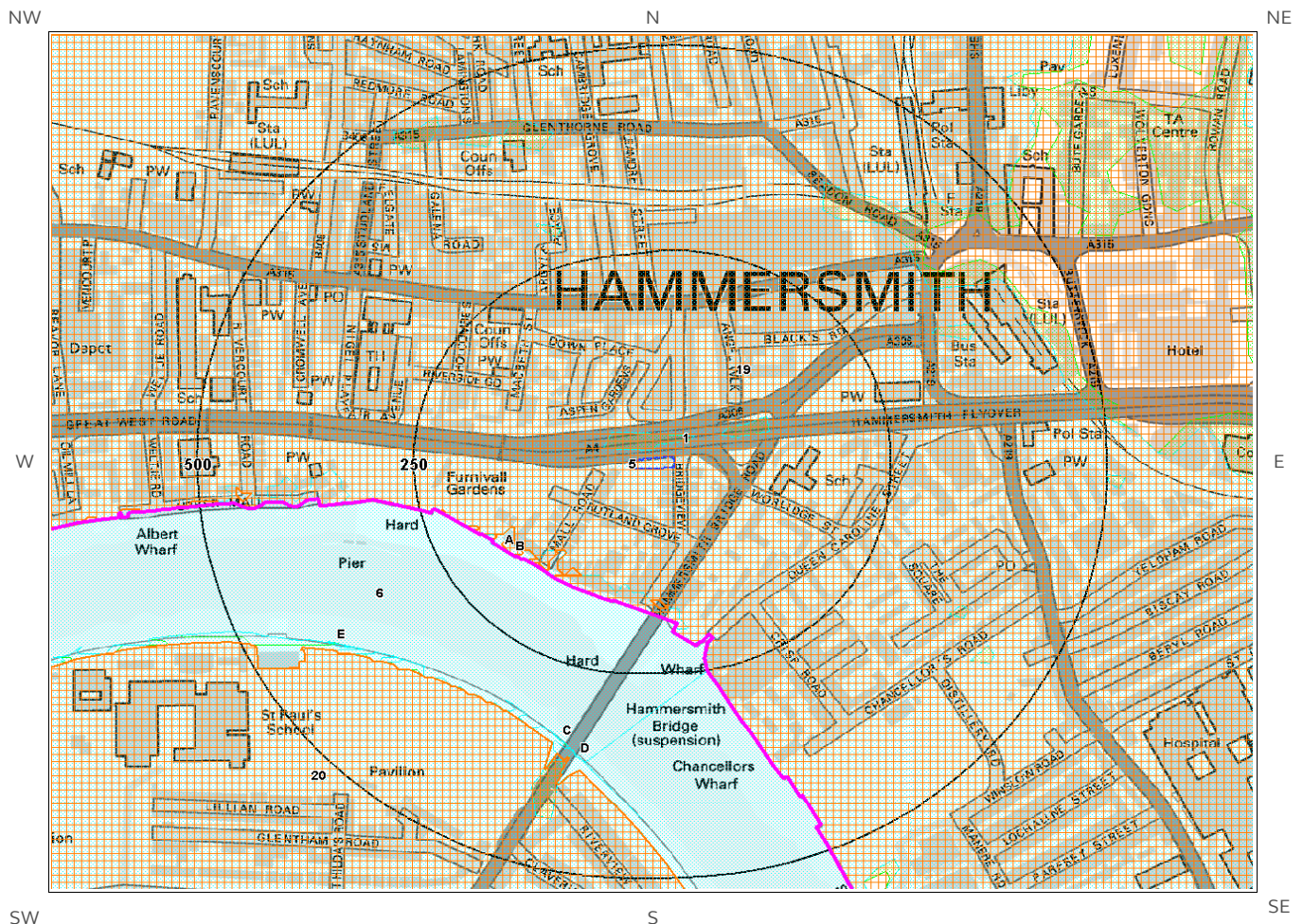
Are there any surface water features within 250m of the study site?

Yes

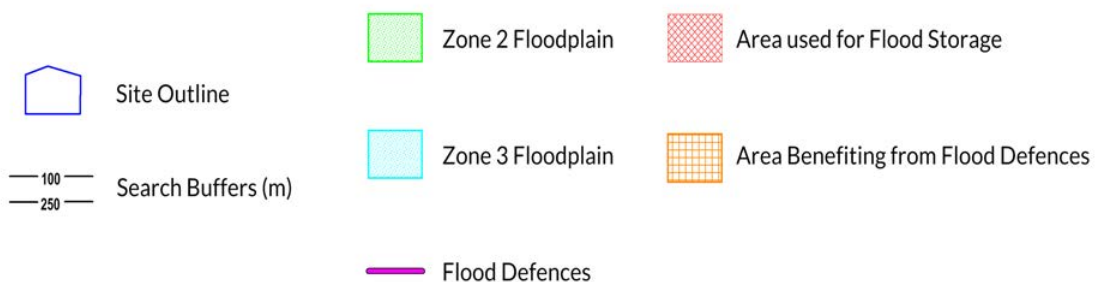
The following surface water records are not represented on mapping:

Distance (m)	Direction
160	SW
182	S

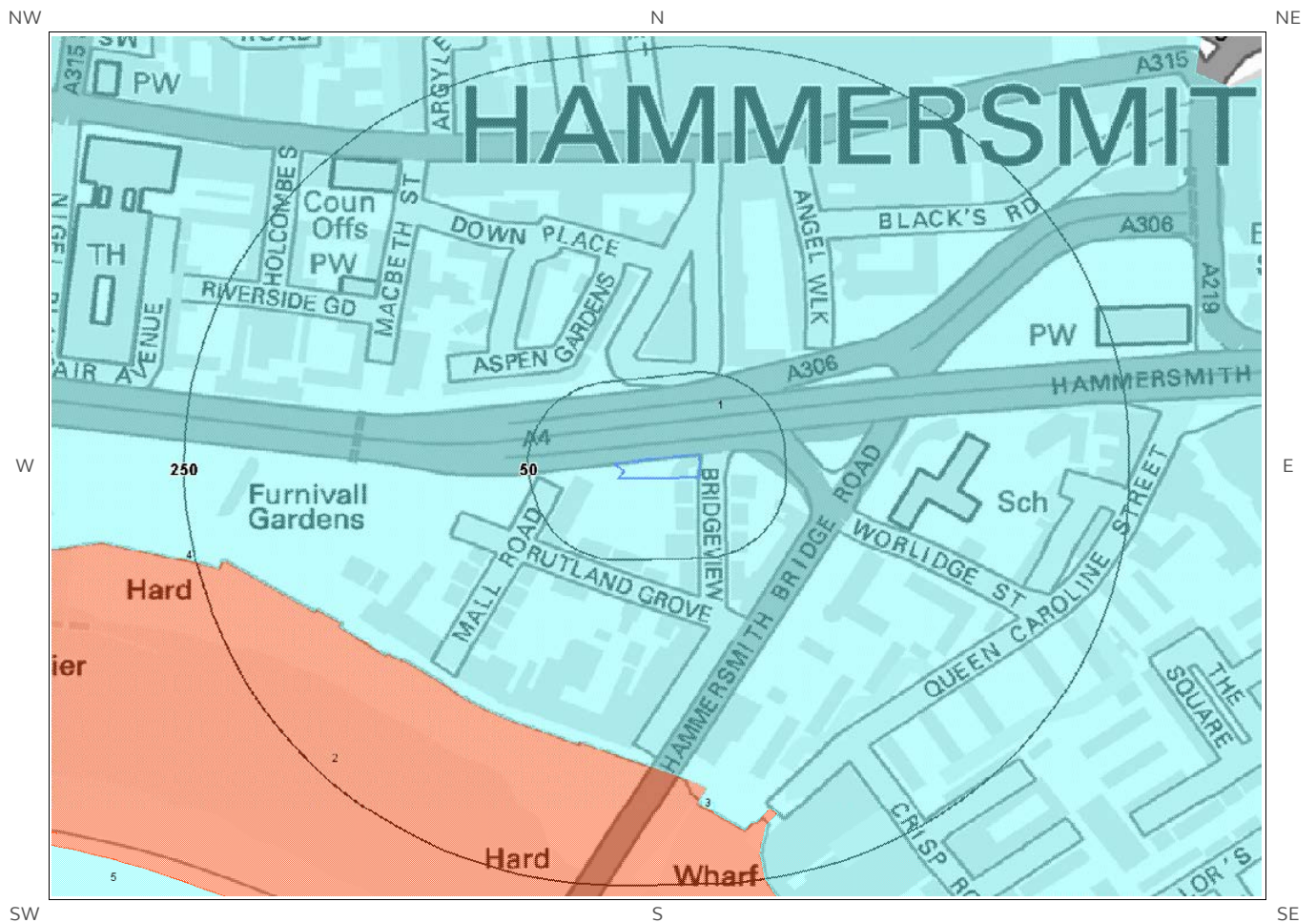
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



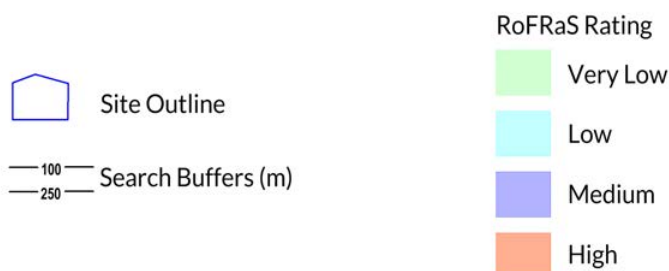
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? Yes

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1	0	On Site	01-Feb-2017	Zone 2 - (Fluvial /Tidal Models)
2	128	SW	01-Feb-2017	Zone 2 - (Fluvial /Tidal Models)
3A	173	SW	01-Feb-2017	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? Yes

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1	0	On Site	01-Feb-2017	Zone 3 - (Fluvial Models)
2	135	SW	01-Feb-2017	Zone 3 - (Fluvial Models)
3A	164	SW	01-Feb-2017	Zone 3 - (Fluvial Models)
	173	SW	01-Feb-2017	Zone 3 - (Fluvial Models)
	174	SW	01-Feb-2017	Zone 3 - (Fluvial Models)
	175	SW	01-Feb-2017	Zone 3 - (Fluvial Models)
	177	SW	01-Feb-2017	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite?

Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Low (greater than 1 in 1000 but less than 1 in 100) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRaS flood Risk
1	0.0	On Site	Low

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site?

Yes

The following flood defence records are represented as lines on the Flood Map:

ID	Distance (m)	Direction	Update
21	160	S	31-Jan-2017

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site?

Yes

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site?

No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Potential below Surface

Where potential for groundwater flooding of property situated below ground level is indicated, this means that given the geological conditions there may be a groundwater flooding hazard to basements and other below surface infrastructure. Unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area you need take no further action in relation to groundwater flooding hazard. If there are records of previous incidences of groundwater flooding, then it is recommended that other information e.g. rainfall history, property type, and land drainage information in addition to previous records of flooding be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

7.8 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result?

High

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.



8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site?

Yes

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

1

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
1	1013	S	Barn Elms Wetland Centre	Natural England

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

2

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
2	1054	W	Chiswick Eyot	Natural England
3	1218	SW	Leg of Mutton Reservoir	Natural England

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

1

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
4	350	S	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a **Groundsure Geo Insight**, available from our **website**. The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

What is the maximum Running Sand** hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

* This indicates an automatically generated 50m buffer and site.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing

ones as described in publication BR211 by the Building Research Establishment?

No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? No

Database searched and no data found.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? No

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No

Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
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info@groundsure.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: www.environment-agency.gov.uk
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: London Borough of Hammersmith & Fulham
Phone: 020 8748 3020
Web: <http://www.lbhf.gov.uk/>
Address: Town Hall, King Street, Hammersmith, W6 9JU

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<https://www.groundsure.com/terms-and-conditions-sept-2016>

APPENDIX C

Zetica UXO Maps

REGIONAL UNEXPLODED BOMB RISK

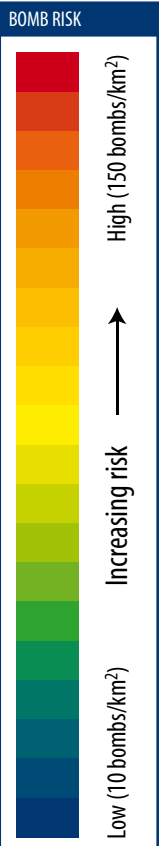
LONDON – East Central

NUMBER OF BOMBS PER BOROUGH			
Borough	High Explosive	Parachute mines	Incendiary*
Bermondsey	809	11	39
Bethnal Green	281	9	8
Camberwell	1197	11	68
City of London	393	9	16
Deptford	717	12	46
Finsbury	208	4	21
Hackney	613	16	13
Islington	568	7	40
Lewisham	1366	15	58
Poplar	755	20	20
Shoreditch	279	6	12
Southwark	593	9	30
Stepney	1212	9	19
Stoke Newington	193	9	21

London and its approaches are renowned for the heavy bombing inflicted on them during WWII. This is reflected in the number of UXB found since the war and so it is accepted that a significant risk from UXB exists across the London area. On average, less than 10% of high explosive and 50% of incendiary bombs failed to explode. This map shows the relative increase in this risk based on bombing densities.

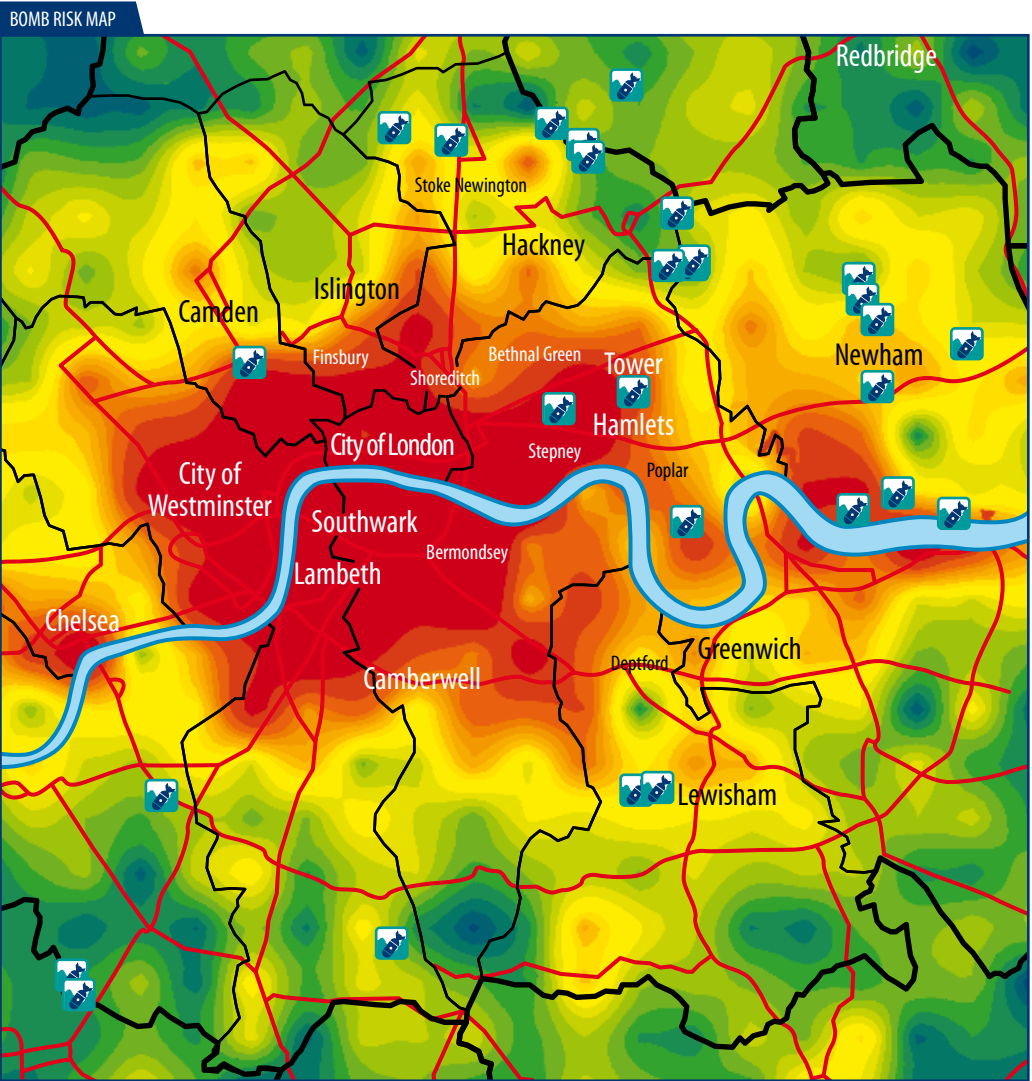
*Larger incendiary devices only. This figure does not include the numerous smaller incendiary devices (eg. 1kg devices).

The information in this UXB risk map is derived from a number of sources and should be read in conjunction with the 'Users' Guide' attached. The often inaccessible nature and changing ground conditions in estuaries and riverbeds (eg. movement of silt that may contain ordnance) means that historical bombing records of these areas may be poor or inaccurate, and further assessment of the bomb risk may be required as part of a site specific study. Zetica cannot guarantee the accuracy or completeness of the information or data.



KEYPOINTS

Abandoned bombs



UXB hazard map
This map can be used as part of a preliminary risk assessment in line with CIRIA guidance (C681).

A FOUR-STEP PROCESS



Risk assessment and method statement from a qualified explosive ordnance clearance (EOC) operative.



Surface geophysical survey to allow shallow groundwork.



MAGCONE detects UXBs and obstructions on piling layout to the no-risk depth.

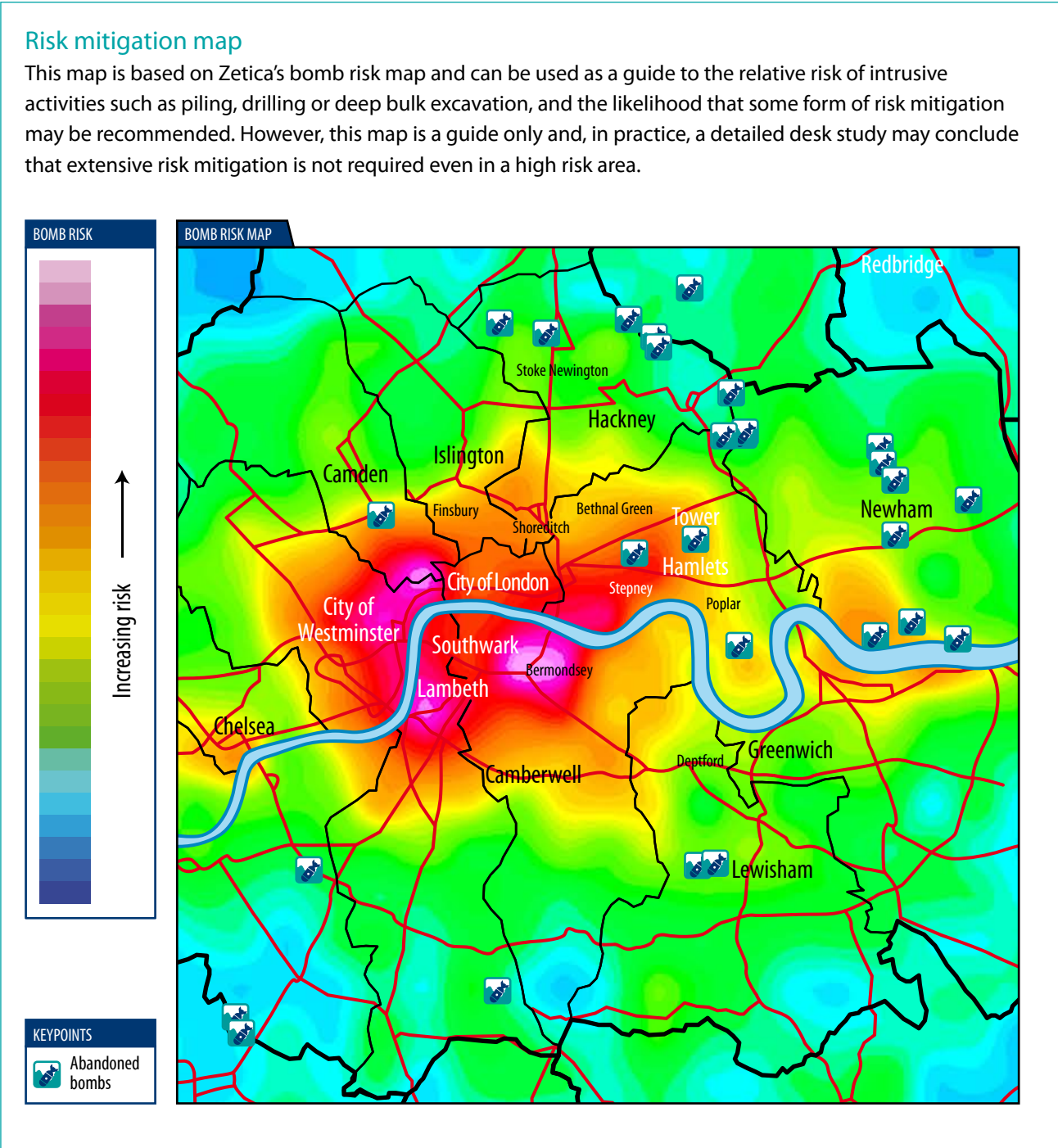


Detected UXBs can be dealt with by our EOC engineers and a Clearance Certificate issued for the site.



RISK MITIGATION AND INVESTIGATION

LONDON – East Central



Investigation options

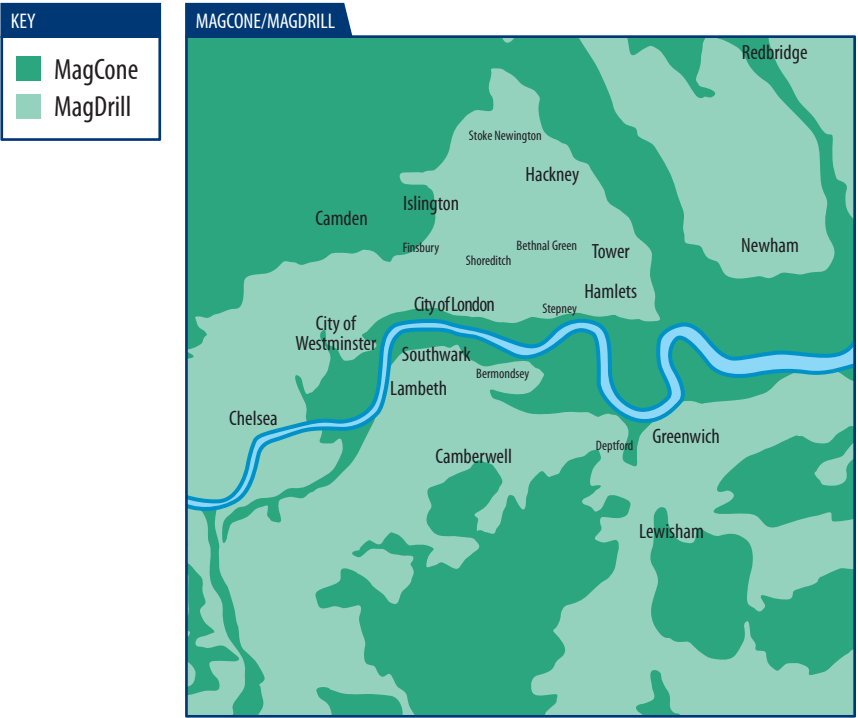
The unexploded bomb (UXB) risk for intrusive site works, such as drilling or piling that usually extend to depths greater than can be mapped from surface, can be effectively managed by clearing borehole or pile locations using MagCone or MagDrill techniques.

For the London area, the geology is extremely complex with a complicated succession that includes several units that are unsuitable for MagCone techniques. To give a first order approximation as to which technique might be appropriate for a site, a simplified map has been produced.

This map has been compiled from the BGS Solid and Drift map sheets 256, 257, 270 and 271. The complex geology has been reduced to three areas coloured grey, green and pink. Areas that involve units that are probably only suitable for MagDrill, which include gravels, are shown in pink. Areas that involve units probably suitable for MagCone, such as London Clay or alluvium, are coloured green. Where



chalk crops out at surface or there is negligible soil cover over chalk, it is shown in grey. This map is for indicative purposes only and specific site geology needs to be taken in to account, especially close to the boundaries shown on the map.



MagCone/MagDrill map

This map compilation provides a guide to appropriate intrusive UXB detection methods. The map is based on British Geological Survey maps at 1:50,000 scale. Soft, compressible alluvial materials can typically be investigated using MagCone (CPT-based) methods whereas sands and dense gravels from River Terrace deposits are typically investigated using MagDrill (drilling-based) methods.

The use of an inappropriate method could result in insufficient depth of detection or a less cost effective technique being used.

BOMB MAP USERS' GUIDE

Sources of information and explanation of bomb risk

Why?

Unexploded bombs (UXB) still present a risk to construction projects long after the end of the Second World War (WWII). UXBs often entered the ground unnoticed at high velocity and penetrated to a depth of several metres. Here they remain – vulnerable to disturbances from construction work. Beyond the depth of shallow excavation work, the greatest risk is to piling, drilling and probing crews. A piling rig could repeatedly hit a UXBs with considerable force before the crew realises an obstruction has been impacted. It could then be up to 72 hours before the detonator activates.

Who?

The responsibility for avoiding UXB risk usually lies with construction companies or house builders particularly those who are redeveloping urban sites. In addition, project engineering or environmental consultants are expected to advise their clients of a site's history. Other interested parties include those organisations whose employees are physically at most risk from intrusive works, normally piling companies, drillers or probing operators.

How?

UXB risk should be assessed for every site, but especially those in known heavily bombed areas or those situated near war-time strategic installations that were priority targets for enemy aircraft, for example, airfields. Zetica's regional bomb risk map is therefore a first point of reference from which the relative, potential abundance of UXBs can be judged. Consultants then advise their clients that an ordnance-risk desk study is required, which they may obtain from external sources. Construction companies or house builders who assess their own risk could choose to come direct to Zetica.

When?

Do not wait for the piling or drilling company to be on site before thinking about UXB risk – it will inevitably cause delays and higher costs. Request the regional bomb risk map from Zetica as soon as a site is being considered, and then use it to help you or your clients to decide if an ordnance-risk desk study is required.

Where?

Maps can be obtained for any county in England, Scotland, Wales or Northern Ireland – or for any London borough. They can help determine the areas that were most heavily bombed – but no part of the country should be considered 100% safe from UXB risk. Even remote rural areas can have a high risk if, for example, they were locations for decoy airfields or beacons that were lit to fool enemy pilots into thinking they had located a burning city that had been successfully hit by others in the raid.

How to use this regional map of London

This map is designed to give you an indication of the potential risk from UXBs in your area. If you are conducting work that involves excavation, piling or other disturbance of the ground, then you should use the map to identify the category of risk for your site.

The risk boundaries are a guide, compiled from data based on the political areas for which records are held; being just outside a high-risk area does not mean there is no UXB risk. You should use the map to assist in your decision of whether to investigate the UXB risk further.

Information on the regional risk remaining from UXBs in the UK

Zetica has built the largest UXB database of its kind in the UK. It includes a unique digital library of bomb census data, and maps showing key strategic points and bombing densities from the First and Second World Wars. The main sources of information include records from central government (Public Records Office), the Ministry of Defence, and the German Luftwaffe.

Using information from this database, Zetica has published maps of UXB risk on a regional, county and borough scale. The maps indicate relative degrees of UXB risk based on available records for bombing densities and known targeted areas for regions within the UK. The risk is broken down into individual boroughs, towns or cities. The data are based on the historical boroughs and are then overlaid onto the modern map. It is important to note that more-detailed research may be required for individual sites, particularly where proximity to a potential WWII target means the local risk may be higher.

Relative UXB risk across London

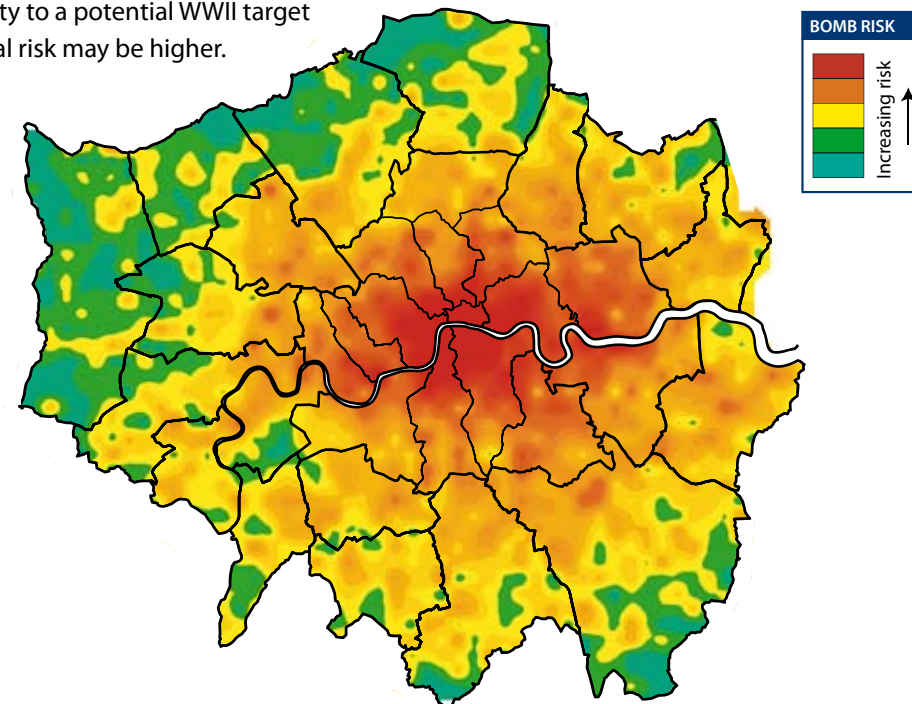
The relative risk for the London area is established by plotting the recorded bombing densities. These are represented as counts of high explosive bombs in km² area.

The areas coloured green represent a record of less than 10 bombs per km². Compared to other areas of the UK, this still represents a significant risk.

However, this is much lower than parts of Central London, where the red colouration indicates in excess of 150 bombs falling per km², representing a very significant UXB risk.

Other WWII targets

Other regions with the risk of UXBs are key strategic points as defined by the government during WWII as representing potential enemy targets. Where these exist outside areas mapped as high, moderate or low risk, a site-specific assessment of the UXB risk may be required.



What to do if...

...you have a site that has a potential UXB risk

In the absence of current legislation requiring you to address the risk from UXBs, your responsibilities under health and safety legislation and regulations such as construction design and management require that you address all identified risks. The first stage is to request further advice from a professional adviser such as Zetica, or to gain more site-specific information by commissioning an ordnance-risk desk study. Then a strategy to deal with the risk can be established that is tailored to your proposed work.

...you find a suspect item or require advice

If during site works you find a suspect (ordnance-related) item, it is very important that you do not touch or move it (even if it has already been moved by an excavator). If it is clearly ordnance related, then dial 999 and ask for the police. Ensure that the area around the item is kept as clear as possible without placing yourself at risk. If you are unsure and do not wish to cause undue alarm, or you just require some advice, then you can call Zetica. We have experienced qualified UXB specialists on hand who can offer support and advice during any site works.

More-detailed procedures should be established in advance if you are in an area where the risk of finding a UXB is shown to be significant (moderate to high).

Site-specific desktop studies

Zetica is able to provide high-quality, site-specific UXB risk information for any residential, industrial or commercial property in the UK. These desktop studies provide details of the bombing density within an area and for the site itself, in order to indicate the risks of UXBs still being present. A risk assessment is provided to facilitate informed decision making on whether any further risk mitigation measures are required.

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A decorative graphic consisting of three thin orange lines. One line is horizontal, extending across the width of the page. Two other lines are diagonal, starting from the bottom left and extending towards the top right, intersecting the horizontal line.