

SMALL SITES



SMALL BUILDERS

PORTTREE STREET

TECHNICAL INFORMATION

LAND AT PORTTREE STREET, POPLAR, E14 0HT

Navigate this pack using the links below or the pdf bookmarks

Aerial and OS maps

Planning Statement

Site Investigation Summary Report

Topographical Survey

Flood Risk Review

Ecology Survey

Arboricultural Survey

Archaeology Desktop Review

Geotechnical and Geo-Environmental Desk Study



Transport for London
TfL Operational Property
Commercial Development
Windsor House
42-50 Victoria Street
SW1H 0TL

Land at Portree Street



A4 Landscape

Date : Jun 2017

Initial : REM

File : PAR

Scale : 1/1250 at A4



Mayor of London

©Getmapping PLC © Crown copyright and database rights 2017 Ordnance Survey 100035971



Transport for London

TfL Operational Property
Commercial Development
Windsor House
42-50 Victoria Street
SW1H 0TL

Land at Portree Street



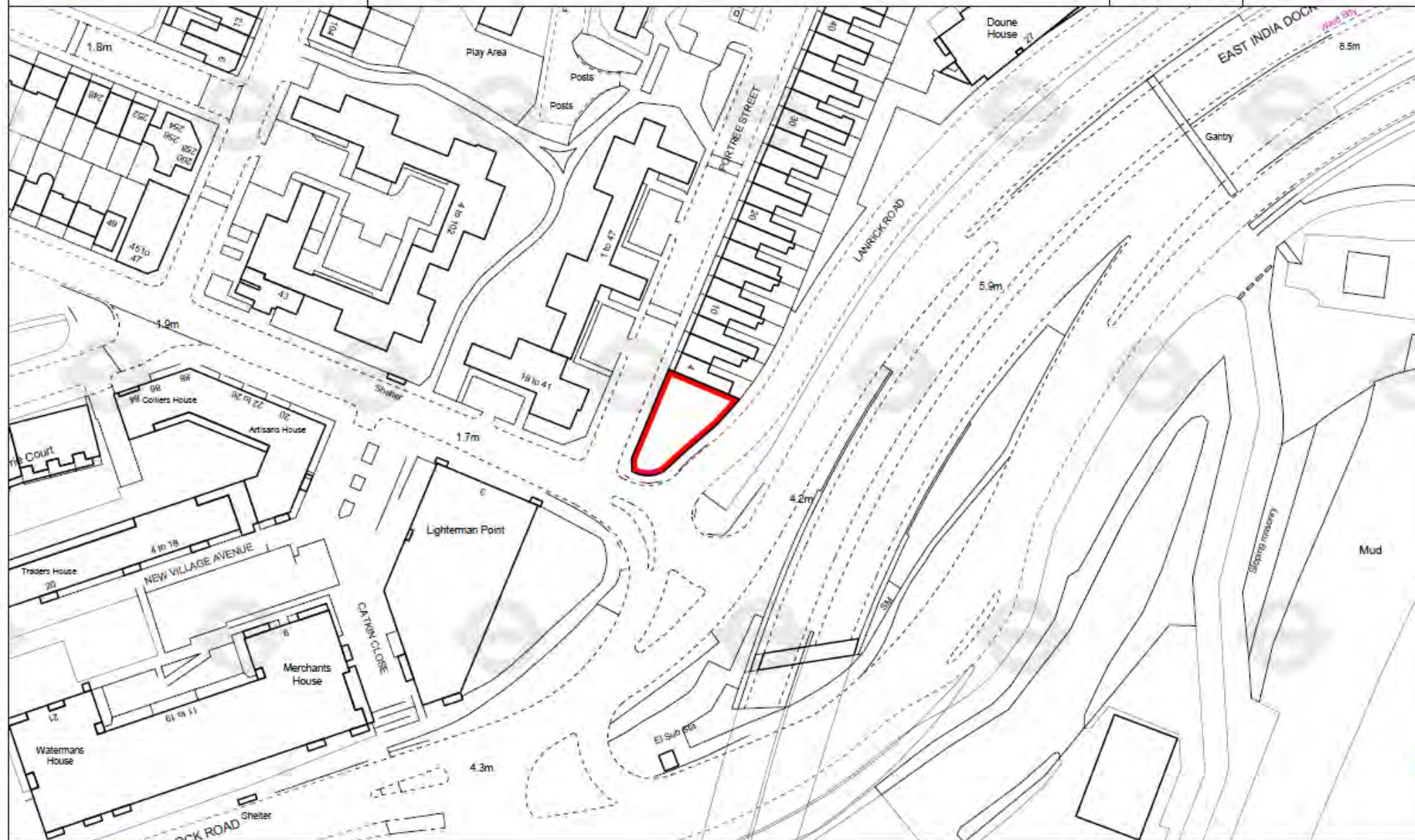
A4 Landscape

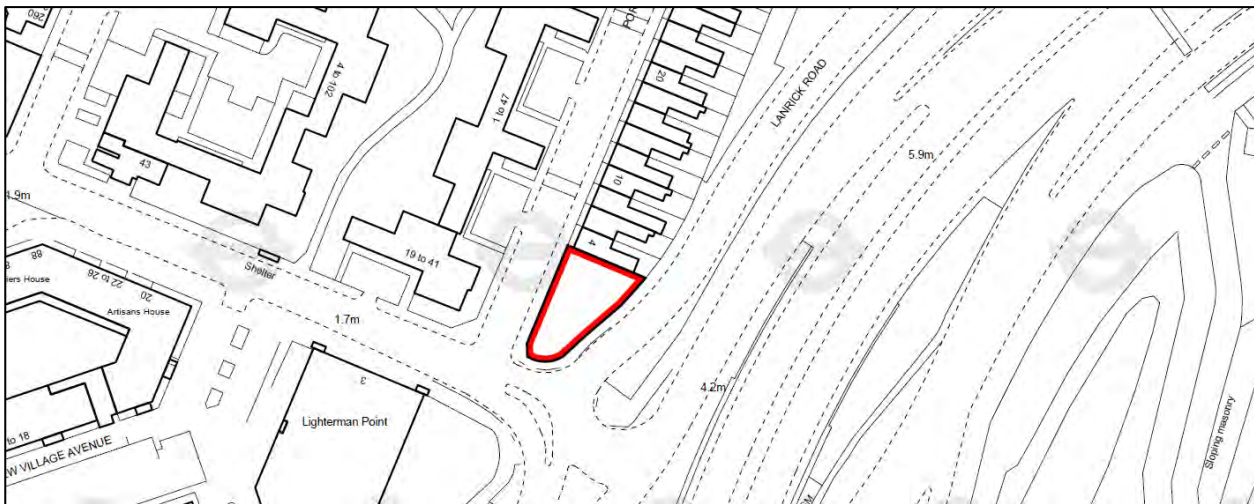
Date : Jun 2017

Initial : REM

File : PAR

Scale : 1/1250 at A4



1. PROPERTY DETAILS		
Site Name & Address	Land at Portree Street, Poplar, London, E14 0HT	
Unique Ref (PAR)	2748	
Borough	Tower Hamlets	
Zone (TfL)	2/3	
Site Area (acres)	0.08 (337.79 sq. m)	
Location and Site Plan		
Existing Use	- Site is vacant land. - The site was previously occupied by a detached building which was demolished some time after 1995.	
2. TOWN PLANNING		
Planning Policy Documents	- Adopted: London Plan, Core Strategy (2010); Managing Development Document & Policies Map (2013). - Emerging: New Local Plan (Regulation 18 consultation in late 2016)	
Site Allocations	No	
Housing zone or Opportunity Area	No	
Heritage Designations	No, but within an Archaeological Priority Area	
Flood Zone	The site is within an area benefiting from flood defences.	
Ecological Designations	None	

PTAL	- 3/4																								
Tall buildings permitted	- The site does not fall within an area suitable for tall buildings outlined within the Tower Hamlets Core Strategy and DMD and emerging New Local Plan. The primary context of the site is residential, with 2 storey terrace units located to the North and a part 5 storey flatted development to the North West. Taller new build residential development is located immediately to the south of the site. The corner location and the site’s context provides some potential for a taller, but not tall, building.																								
Car parking standards	- Car free development is promoted in sites with high PTAL in existing and emerging planning policy.																								
LPA affordable housing target	Existing:<table><tr><th>Threshold</th><th>Affordable Housing target (unit)</th><th>Affordable Housing Tenure Split</th><th>Provision Requirement</th></tr><tr><td>10 units, or more than 1,000 sq m gross internal area</td><td>35%-50% subject to viability</td><td>70% Social Rented and 30% Intermediate</td><td>On site preferred</td></tr><tr><td>9 units, or 999 sq m or less of gross internal area</td><td>n/a</td><td>n/a</td><td>No policy requirement</td></tr></table> Proposed:<table><tr><th>Threshold</th><th>Affordable Housing target (unit)</th><th>Affordable Housing Tenure Split</th><th>Provision Requirement</th></tr><tr><td>10 units, or more than 1,000 sq m gross internal area</td><td>35%-50% subject to viability</td><td>70% Social Rented and 30% Intermediate</td><td>On site preferred</td></tr><tr><td>9 units, or 999 sq m or less of gross internal area</td><td>n/a</td><td>n/a</td><td>Contributions required</td></tr></table>	Threshold	Affordable Housing target (unit)	Affordable Housing Tenure Split	Provision Requirement	10 units, or more than 1,000 sq m gross internal area	35%-50% subject to viability	70% Social Rented and 30% Intermediate	On site preferred	9 units, or 999 sq m or less of gross internal area	n/a	n/a	No policy requirement	Threshold	Affordable Housing target (unit)	Affordable Housing Tenure Split	Provision Requirement	10 units, or more than 1,000 sq m gross internal area	35%-50% subject to viability	70% Social Rented and 30% Intermediate	On site preferred	9 units, or 999 sq m or less of gross internal area	n/a	n/a	Contributions required
Threshold	Affordable Housing target (unit)	Affordable Housing Tenure Split	Provision Requirement																						
10 units, or more than 1,000 sq m gross internal area	35%-50% subject to viability	70% Social Rented and 30% Intermediate	On site preferred																						
9 units, or 999 sq m or less of gross internal area	n/a	n/a	No policy requirement																						
Threshold	Affordable Housing target (unit)	Affordable Housing Tenure Split	Provision Requirement																						
10 units, or more than 1,000 sq m gross internal area	35%-50% subject to viability	70% Social Rented and 30% Intermediate	On site preferred																						
9 units, or 999 sq m or less of gross internal area	n/a	n/a	Contributions required																						
Other	- There is currently one tree on the southern boundary of the site that has been identified as being of moderate quality.																								
Planning Policy Overview	Existing: - Policy SP02 supports infill development within the borough where it meets and identified need and contributes to creating sustainable communities - Development will need to ensure that there is adequate daylight and sunlight provision and no unacceptable loss of privacy for the adjacent properties and proposed development (DM25) - Lap 7&8 outlines the council’s aspirations for the Poplar Riverside area, which the site falls within. - The site falls within the wider definition of public open space, in line with Policy DM10. In line with Policy DM10 development which results in a loss of public open space will be resisted. However, the public space is not widely accessible and is not considered to be of high quality or bring wider benefits to the local community. It is considered that the provision of residential accommodation on site will materially outweigh the benefit of the poor quality and poorly accessible public open space.																								

	Proposed: - Strategic Policy SG 1 outlines the Borough's approach to sustainable growth. This includes requirements to incorporate sustainable design and construction into developments. - Policy H 3 outlines the Borough's housing standards and quality requirements. - The site falls within the Isle of Dogs and South Poplar sub area. An area priority includes supporting new housing where there is sufficient public transport capacity. - Under Policy OS 3 the site falls within the wider definition of public open space. Development that results in the loss of public open space will be resisted in line with Policy OS 3. However, the public space is not widely accessible and is not considered to be of high quality or bring wider benefits to the local community. It is considered that the provision of residential accommodation on site will materially outweigh the benefit of the poor quality and poorly accessible public open space.
Planning History	- No relevant planning history.
Local Planning Authority Feedback Written feedback from Jerry Bell following an informal discussion. Received on the 28/09/2017	- Principle of development: The site is defined as a publically accessible open space under existing and emerging planning policy. This policy resists the loss of public open space. However, the setting of the site in a primarily residential area make the principle of residential development on site favourable, subject to the open space policy constraint being overcome and the proposals conforming with other relevant policies. - Preferred use: Residential is considered to be the most appropriate use for the site. - Other considerations: Consideration will need to be given to air quality and noise.

TFL_PSF_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE LAND AT PORTTREE STREET, POPLAR, LONDON, E14

Site Ref. 2748

Summary Report

SEPTEMBER 2017

Incorporating

EC HARRIS
BUILT ASSET
CONSULTANCY



LAND AT PORTREE STREET, POPLAR, LONDON, E14

Summary Report

Author Various

Checker Alison Pugh



Approver Angela Mulgrew



Report No 1406-UA009686-UP32R-02

Date SEPTEMBER 2017

VERSION CONTROL

Version	Date	Author	Changes
01	Sept 2017		First Issue
02	Sept 2017		Final Issue

This report dated 27 September 2017 has been prepared for Transport for London (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.

CONTENTS

1	INTRODUCTION	1
2	TOPOGRAPHICAL SURVEY	2
3	ECOLOGY SURVEY	3
4	ARBORICULTURAL SURVEY.....	5
5	GEOTECHNICAL AND GEO-ENVIRONMENTAL DESK STUDY	6
6	REFERENCES	8

1 Introduction

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Transport for London (TfL) 'the Client' to undertake a number of technical surveys for a site at Portree Street, Poplar ('the Site').

TfL is aiming to divest a number of small sites to enable prospective regeneration. The objective of the survey work is to provide robust and pragmatic advice associated with topography and buried services, flood risk, ecology, arboriculture, archaeology and geotechnical and geo-environmental conditions. This report provides a summary of the technical surveys commissioned for the Site and reference should be made to the individual reports for further detailed information.

The Site is located east of Portree Street, west of Lanrick Road and A13 and north of Abbott Road, in Poplar. The Site is centred at grid reference of 538914, 181303 and is approximately 0.023 hectare in size. It is located at the end of terrace housing and comprises of scrub/shrub and scattered trees.

The surveys undertaken for this Site include:

- Topographical and Buried Services Survey (Ref 1);
- Flood Risk Assessment (Ref 2)
- Ecology Survey (Ref 3)
- Arboricultural Survey (Ref 4);
- Archaeological Desk Study (Ref 5) and
- Geotechnical and Geo-Environmental Desk Study (Ref 6).

A summary of the findings of these surveys are detailed in the following sections.

2 Topographical and Buried Service Survey

The topographical survey indicates that the Site slopes gently downwards from south to north. Levels in the south are 3.68m OS and in the north 2.33m OS.

There are a number of services including electricity, telecoms, fibre optics and traffic light system indicated along the boundaries. A duct and three telecoms cables are shown crossing the site from east to west in the northern half of the Site. Consideration of these services will need to be given during the redevelopment of the Site.

3 Flood Risk Review

Following an assessment of flood risk to the Site from all likely sources, it is considered that there is a low risk of flooding from all sources. The degree of tidal and fluvial flood risk is dependent on the installed defences on the River Thames and the River Lee, which protect the Site up to the 0.1% flood event in the present day. In accordance with the Environment Agencies Thames Estuary 2100 flood risk management policy these defences will be maintained to provide the same level of protection into the future, accounting for the predicted effects of climate change.

Following the National Planning Policy Framework (NPPF) guidance, the Site would be suitable for '*Water Compatible*' and '*Less Vulnerable*' development types, but would trigger application of the Exception Test for '*More Vulnerable*' (which includes residential land use) and '*Essential Infrastructure*' uses. The Site would not be appropriate for '*Highly Vulnerable*' development types (which notably includes basement dwellings).

As a defended Site, there is a residual risk of flooding, and any future planning application for development of the Site would need to be informed by a Flood Risk Assessment. The FRA would be a more detailed assessment than is presented in the Flood Risk Review and would need to be specific to the type and layout/configuration of development that is proposed. The FRA should demonstrate that any proposed development would not be subject to an unreasonable risk of flooding and would not increase flood risk to third parties. If proven, this would satisfy the NPPF Exception Test.

It is considered that there is a low risk of surface water flooding and sewer flooding, however there is an increasing risk of surface water and sewer flooding in the borough. Surface water drainage and runoff from the Site, including available connections with the sewer network, should be further investigated and it should be ensured that drainage is managed to a high standard. Further investigation should include the calculation of current rainfall-runoff rates and volumes, greenfield runoff rates for the Site and confirmation of the available capacity of the local and wider sewer networks.

A Drainage Strategy should be developed, detailing methods to manage runoff from the Site, which would ideally be controlled to match greenfield rates by adopting suitable Sustainable Drainage (SuDS) techniques.

Overall, it is considered that, with the exception of basement dwellings, the Site is appropriate for residential and most other forms of development.

4 Ecology Survey

The ecological assessment comprised a desk-based study using publicly available information and an ecological constraints survey to identify potential constraints present on Site.

Ecology is not considered to present a significant constraint to the development of the Site.

No Statutory or non-statutory designated sites (including ancient woodlands or woodlands listed on the Ancient Woodland Inventory (AWI)) were identified within the vicinity of the Site to have the potential to be significantly impacted by development on the Site.

The Site supported a limited range of habitats with the majority of the Site comprised of dense introduced shrubs with scattered scrub, small areas of tall ruderals and scattered trees. Although the habitats on Site are generally of poor quality due to the lack of positive management, these habitats are valuable in terms of general green infrastructure, likely performing important ecosystem services (such as water quality and volume attenuation, air quality attenuation etc.).

Within the Site, there was limited potential for protected or notable species. Nesting birds are likely to be utilising the trees, introduced shrubs and scrub on the Site, including potentially species listed on the London Biodiversity Action Plan (BAP) such as house sparrow. Removal of vegetation on the Site will need to be conducted outside of the bird nesting season (March – August inclusive) or under an ecological watching brief.

There will be some ecological benefit from the removal of non-native and invasive species listed on the LISI (London Invasive Species Initiative) list which are present on the Site (Snowberry, *Symphoricarpos* sp.). There is no legal obligation to control or remove the species however it is good practice to do so. Trees should be re-provisioned on the Site within any development, these should be of a suitable species, preferably native species of local origin. In addition, consideration to biodiversity roofs, rain gardens and other green infrastructure should be included in any development. Bird boxes for sparrows would be a valuable enhancement, along with appropriately located bat roosting boxes and dead wood loggeries if possible.

5 Arboricultural Survey

An arboricultural survey was conducted in accordance with British Standard 5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations.

The Site is not within a Conservation area and none of the trees within or adjoining the Site are protected by a specific Tree Preservation Order (TPO).

A total of five arboricultural items were recorded within the study area (the Site and its immediate surroundings). All of these were within the Site. One individual tree has been identified as Category B (trees of moderate quality) and the other four individual trees have been identified as Category C (trees of low quality). One Category C Silver Birch (*Betula pendula*) and two Category C Rowan (*Sorbus aucuparia*) trees are located along the eastern boundary of site, bordering Lanrick Road. These are not considered to be a significant constraint to development. Two London Plane (*Platanus x hispanica*) trees are located in the south of the site. One is a Category B tree and due to its location and size it is probably the most influential tree on the Site in terms of contribution to roadside landscaping and public amenity space. This tree should be retained where possible but if removal is required then re-planting elsewhere on-Site post development is recommended.

While unlikely to prevent development, tree protection for trees to be retained and tree re-provisioning for any trees lost due to development are a material consideration for planning determination. If trees cannot be replaced on-Site due to development, off-Site options for tree re-provisioning to ensure no net loss should be considered. Individual Local Planning Authorities may ask for re-provisioning in excess of 1 to 1 for trees of Category B grade.

Should any future development proposal require the removal of trees or incursions into the Root Protection Areas (RPAs) of any trees, an Arboricultural Impact Assessment (AIA) would be required in support of any planning application.

A bespoke AMS may be required post planning and when the construction details are known by the local planning authority (LPA) to protect the retained trees within and adjoining the Site.

All new tree planting should be in accordance with British Standard 8545: Trees: From Nursery to Independence in the Landscape – Recommendations, 2014; and all tree works must be carried out by a qualified contractor in accordance with BS3998:2010: Tree Work – Recommendations.

6 Archaeology Desktop Review

An archaeology desk-top review for a Site on Portree Street, Tower Hamlets has been carried out. This involved a rapid information-gathering and review exercise on the Site and a 500m study area using information from publicly held sources. A brief assessment of potential heritage/archaeological constraints and opportunities at the Site has been made.

The review has assessed that the Site has a low to medium potential for buried archaeological and paleoenvironmental remains to be present. The Site lies in former marshland next to the River Lea. It lies within the Tower Hamlets Archaeology Priority Area (APA) where important paleoenvironmental remains survive in the deep alluvial deposits associated with the River Thames and Lea floodplain. These deposits have the potential to reveal evidence of changing environmental conditions from prehistory through to the recent past. There is also evidence of organic deposits such as peat being preserved which may contain information on past human activity. Although the Site has potential for buried archaeological remains to exist, these heritage assets are not considered likely to be a barrier to development on the Site.

There are no scheduled monuments within the Site or study area. There are two Listed Buildings within the study area but none within the Site boundary. The study area does not fall within a Conservation Area. There are no Registered Parks and Gardens or London Squares or Historic Green Spaces within the study area.

For any future planning application, the potential for below ground remains need to be fully evaluated. The Greater London Archaeological Advisory Service (GLAAS) who advise the local planning authority are likely to recommend a full archaeological desk-based assessment (DBA) for the Site as well as an evaluation to be undertaken prior to planning permission being determined. The DBA would include a specific archaeology Site walkover, a visit to the record office to gather historic maps and relevant documentary evidence, a map regression exercise as well as preparation of distribution maps showing designated and undesignated heritage assets. The evaluation would likely consist of a programme of trial trenching and subsequent reporting. If heritage assets of significance are encountered during the evaluation stage, there may be a requirement for further recording in the form of an excavation or watching brief. This may be delivered through a post-determination condition.

7 Geotechnical and Geo-Environmental Desk Study

The geo-environmental and geotechnical desk study comprised a review of existing historical and current information on the Site.

From historical review, the site was previously terrace housing which was possibly bombed during WWII. An intrusive site investigation has not been undertaken at this stage, however based upon the historical review Made Ground is anticipated within the Site and surrounding area.

Potential risks to human health, controlled waters and the built environment have been identified from potential on-Site Made Ground and to human health from the off-site sources such as the historical timber yard. 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 CIRIA C665 and CLR11.

Based on the findings of the desk study report, and assuming that the Site will be developed for residential use with gardens, it is anticipated that some remediation (off-site disposal, clean cover, gas membrane, basic asbestos monitoring and pipe upgrade but excluding foundation) may be required.

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

The Site is in an area where 'high' risk of encountering unexploded ordnance is present. Further assessment by a suitably qualified UXO specialist of the potential for encountering UXO should be undertaken prior to investigation or construction.

8 References

1. 40Seven (August 2017) Topographical and Underground Utility Survey. Lanrick and Portree, London, E14 0LR
2. Arcadis Consulting (UK) Limited (August 2017) Land at Portree Street, Poplar, E14, Flood Risk Review, (Report number 1405-UA009686-UU41R-03)
3. Arcadis Consulting (UK) Limited (September 2017) Land at Portree Street, Poplar, E14. Ecology Assessment (Report Number 1402-UA009686-UE21R-01)
4. Arcadis Consulting (UK) Limited (September 2017) Land at Portree Street, Poplar, E14. Preliminary BS5837 :2012 Tree Survey (Report 1403-UA009686-UE21R-01)
5. Arcadis Consulting (UK) Limited (July 2017) Land at Portree Street, Tower Hamlets, E14. Archaeology Desktop Review (Report 1404-UA009686-UE21R-01)
6. Arcadis Consulting (UK) Limited (August 2017) Land at Portree Street, Poplar, E14 Geotechnical and Geo Environmental Desk Study (Report Number 1401-UA009686-UP32R-01)

Arcadis Consulting (UK) Limited

Arcadis House
34 York Way
London N1 9AB
United Kingdom
T: +44 (0)20 7812 2000

[arcadis.com](https://www.arcadis.com)

TFL_PSF_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE LAND AT PORTREE STREET, POPLAR, E14

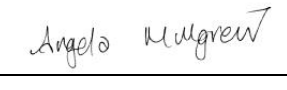
Site Ref. 2748

Flood Risk Review

OCTOBER 2017

Land at Portree Street, Poplar, E14

Flood Risk Review

Author	Joshua Moore	
Checker	Lisa Driscoll	
Approver	Angela Mulgrew	
Report No	1405-UA009686-UU41R-04	
Date	OCTOBER 2017	

VERSION CONTROL

Issue	Revision No.	Date Issued	Description of Revision: Page No.	Description of Revision: Comment	Reviewed by:
01	0	14/08/2017	-	Initial Draft	JM
02	1	15/08/2017	-	Technical Review	LD
03	2	15/08/2017	-	Issue following Technical Review	JM
04	3	20/10/2017		Final Issue	AP

This report dated 20 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** ("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.

CONTENTS

1 INTRODUCTION.....	1
1.1 Background	1
1.2 Scope of Works	1
1.3 Limitations	1
2 SITE OVERVIEW.....	2
2.1 Catchment Description.....	3
2.2 Ground Conditions and Aquifers	3
3 DATA SOURCES.....	4
4 RELEVANT PLANNING POLICES & DESIGNATIONS.....	5
4.1 NPPF and Flood Risk.....	5
4.2 The Sequential and Exception Tests	5
5 FLOOD RISK SOURCES AND FLOODING HISTORY	7
5.1 Overview	7
5.2 Historical Flooding.....	7
5.3 Flood Defences	7
5.4 Flooding from the Sea	8
5.5 Flooding from Rivers	9
5.6 Flooding from Surface Water.....	10
5.7 Flooding from Sewers	11
5.8 Flooding from Groundwater	11
5.9 Flooding from Artificial Sources	11
6 RISK RATING & RECOMMENDATIONS FOR FURTHER INVESTIGATION.....	12
7 REFERENCES.....	13

Appendices

Appendix A	Environment Agency Flood Product 4 and Flood Product 8 Data Packs
------------	---

1 INTRODUCTION

1.1 Background

Arcadis Consulting (UK) Limited ('Arcadis') has been commissioned by Transport for London (TfL) 'the Client' to undertake a number of technical surveys for a site known as Land at Portree Street in Poplar, in the London Borough of Tower Hamlets ('the Site').

TfL is aiming to divest a number of small sites to enable positive 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 aim of this flood risk review is to assess the flood risk status of the Site and confirm the suitability for various forms of development on the Site, based on the findings of this desk study.

1.2 Scope of Works

Specific objectives of the flood risk review are to:

- Collect and review Environment Agency (EA) and Lead Local Flood Authority (Tower Hamlets London Borough Council (THLBC)) flood maps and published datasets (including Strategic Flood Risk Assessments, Preliminary Flood Risk Assessment and Local Flood Risk Management Strategy);
- Assess flood risk from all relevant sources (coastal and tidal, rivers, groundwater, surface water, sewers and artificial sources) and assign a risk value for each form of flooding (high, medium or low);
- Confirm the EA Flood Zone and confirm the acceptability of accommodating residential or other forms of development in accordance with the National Planning Policy Framework (NPPF) requirements;
- Confirm the need for application of the NPPF Sequential and Exception Tests; and
- Provide recommendations for further study or necessary flood risk mitigation measures to facilitate development.

1.3 Limitations

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 OVERVIEW

The Site covers 0.023 hectares and is located between Portree Street and Lanrick Road, centred at National Grid reference 538914 181303.

The Site consists of an infill plot, located at the southern end of a row of terraced housing, within a generally urban setting, surrounded by residential, commercial and public buildings as well as some green open spaces. Land use on the Site consists of open, but overgrown land with some formal tree planting in the east and south. The Site is bounded by terraced housing to the north and by Lanrick Road (A13), Abbott Road (B125) and Portree Street to the east, south and west respectively, as shown in Figure 1.



Figure 1: Site Location. Site Boundary Outlined in Red.
Contains Ordnance Survey data © Crown copyright and database right 2017. All rights reserved.

Topographical information for the Site has been identified from EA Opensource Government License 2m LiDAR digital terrain mapping (DTM) datasets (Ref. 1). The Site slopes down towards the west, with ground levels between 2.89m above ordnance datum (mAOD) and 4.18mAOD. The landform in the wider area is generally flat, with ground levels between 2.0mAOD and 4.0mAOD (Figure 2).

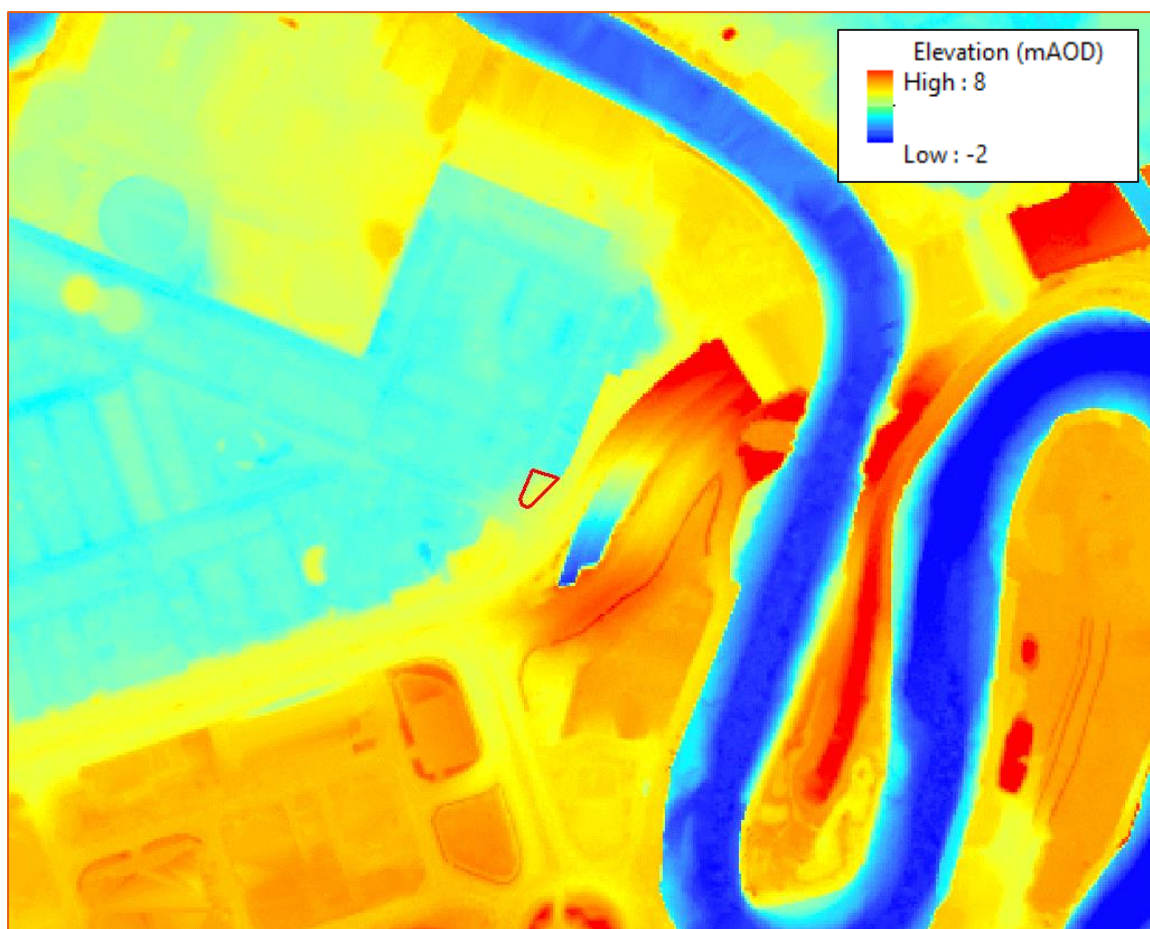


Figure 2: Site Topography. Site Boundary Outlined in Red.
Contains Opensource Government License data © Crown copyright and database right 2017. All rights reserved.

2.1 Catchment Description

The Site is located within the catchment of the River Lee, an EA designated Main River and tributary of the River Thames. The River Lee is known as the Bow Creek in its final section before confluenting with the River Thames. The River Lee flows in a southerly direction approximately 180m east of the Site and to this point drains a catchment of over 1,400km². The catchment local to the Site receives an average annual rainfall of approximately 670mm (Ref. 2).

The River Thames flows in an easterly direction approximately 800m south of the Site and to which point drains a catchment of over 10,000km². The River Thames is tidally influenced to Teddington, over 40km upstream of the Site.

2.2 Ground Conditions and Aquifers

Soils underlying the Site are described as naturally wet loamy and clayey soils of coastal flats with naturally high groundwater (Ref. 3). The superficial geology consists of Alluvium – clay, silt, sand and gravel (Ref. 4), which supports a Secondary (undifferentiated) aquifer (Ref. 5). Such aquifers are defined by rock layers or drift deposits with a wide range of permeability and storage, which have previously been designated as both minor and non-aquifer. The bedrock geology underlying the Site consists of the London Clay Formation – clay and silt, which has no aquifer designation.

3 DATA SOURCES

Information has been drawn from web-based and published sources, outlined below, as well as having been collected through consultation with the EA who provided Flood Product 4 and Flood Product 8 data packs (Ref. 6).

Web-based sources:

- Flood Estimation Handbook (FEH) Web-Service;
- EA What's In Your Backyard? Interactive Maps;
- EA Long Term Flood Risk, Interactive Maps (Ref. 7);
- EA Flood Map for Planning (Ref. 8);
- Cranfield Soil and AgriFood Institute, Soilscales Viewer;
- British Geological Survey, Geology of Britain Viewer.

Published documents:

- THLBC Level 2 Strategic Flood Risk Assessment (SFRA) (Ref. 9);
- THLBC Preliminary Flood Risk Assessment (PFRA) (Ref 10);
- THLBC Local Flood Risk Management Strategy (LFRMS) (Ref. 11);
- Surface Water Management Plan for THLBC (SWMP) (Ref. 12);
- Thames Estuary 2100 (TE2100) Plan (Ref. 13).

4 RELEVANT PLANNING POLICES & DESIGNATIONS

4.1 NPPF and Flood Risk

The NPPF (Ref. 14) and accompanying flood risk and coastal change planning practice guidance (PPG) (Ref. 15) set out the Government's planning policy for England and advises on '*how to take account of and address the risks associated with flooding and coastal change in the planning process*'. The principal aim of the NPPF is to achieve sustainable development by accounting for flooding at all stages of the planning process, avoiding inappropriate development in areas at risk of flooding and directing development away from areas where risks are highest. Where development is necessary in areas at risk of flooding, the NPPF aims to ensure it is safe, without increasing flood risk to third parties.

Early adoption of, and adherence to, the principles set out in the NPPF and its PPG, with respect to flood risk, ensures that detailed designs and plans for development take due account of flood risk and the need for appropriate mitigation, if required.

4.2 The Sequential and Exception Tests

The NPPF identifies four Flood Zone classifications, detailed in Table 1 below.

Table 1 Flood Zones (Source: PPG, Table 1)

Flood Zone	Definition
Zone 1 – Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding.
Zone 2 – Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Zone 3a – High Probability	Land having a greater than 1 in 100 annual probability of river flooding; or land having a greater than 1 in 200 annual probability of sea flooding.
Zone 3b – The Functional Floodplain	Land where water flows or is stored in times of flood.

The NPPF specifies that the suitability of all new development in relation to flood risk should be assessed by applying the Sequential Test to demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development proposed. The NPPF provides guidance on the compatibility of each land use classification in relation to each of the Flood Zones, as summarised in Table 2.

Table 2 Flood Risk Vulnerability and Flood Zone Compatibility (Source: PPG, Table 3)

Flood Zone	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception Test required	✓	✓

Flood Risk Review

Flood Zone	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 3a	Exception Test required	✓	X	Exception Test required	✓
Zone 3b	Exception Test required	✓	X	X	X
Key: ✓ Development is appropriate X Development should not be permitted					

When the Exception Test is triggered, this requires the development proposals to demonstrate wider sustainability benefits to the community that outweigh flood risk, and that the development will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce overall flood risk.

The Site has been assessed against the NPPF planning tests in Section 6 of this report.

5 FLOOD RISK SOURCES AND FLOODING HISTORY

5.1 Overview

In line with best practice, flood risk from the range of possible sources listed in Table 3 has been considered.

Table 3 Potential Sources of Flooding

Source of Flooding	Description
1. Flooding from the sea (Coastal and Tidal)	Flooding originating from nearby sea or connected waterbody when seawater overflows onto land through extreme tidal conditions, storm surge or breach.
2. Flooding from rivers (Fluvial)	Floodwater originating from a nearby watercourse when the amount of water exceeds the channel capacity of that watercourse.
3. Flooding from land (Surface Water)	Flooding caused by intense rainfall exceeding the available infiltration and/or drainage capacity of the ground.
4. Flooding from groundwater	Flooding caused when groundwater levels rise above ground level following prolonged rainfall.
5. Flooding from reservoirs, canals and other artificial sources and sewers	Failure of infrastructure that retains or transmits water or controls its flow.

5.2 Historical Flooding

Historical flood records provided by the EA identify the Site as situated on land affected by the 1947 River Thames and River Lee flood event and on the boundary of the area impacted by the 1928 River Thames flood event. The THLBC Level 2 SFRA states that the March 1947 floods '*affected nearly all of the main river in the south of England and caused the greatest flood event on the River Lee since records began*'. The SFRA identifies that flood defence structures were installed following this flood to '*prevent a repeat of the consequences*'.

The THLBC PFRA *Summary Map of Past Floods – Main River / Fluvial / Tidal Incidents* map identifies the Site as having been affected by flooding. No specific event details are available, but this likely relates to the 1947 and 1928 flood events. In addition, the THLBC Level 2 SFRA identifies that parts of Tower Hamlets, particularly the area around the confluence of the River Lee and the River Thames, were impacted by flooding in 1953, caused by a storm surge. During this event, the Site is not located within the mapped flood outline, but areas less than 200m east of the Site were affected.

The THLBC Level 2 SFRA *Recorded Incidents of Sewer Flooding* map identifies flooding incidents within the Borough. No specific location information is available, instead flood incidents are defined based on postal code and there are three recorded incidents of sewer flooding in the E14 0 area.

The THLBC PFRA holds one record of groundwater flooding affecting the Borough, consisting of standing water emergence on Eric Street in December 2004, which is located approximately 2.5km northwest of the Site.

5.3 Flood Defences

The River Thames is tidally dominated through London, with the most severe flood risks associated with tidal surges. However, land within the Thames floodplain is defended by a combination of raised banks, river walls and tidal barriers, most notably the Thames Barrier.

The Thames Barrier and associated defence system protect to the 1 in 1,000 year standard (0.1% annual probability). The EA state that *'if levels and flows are forecast to be any higher [than the 1 in 1,000 year standard] the Thames Barrier would shut, ensuring that the tide is blocked and the river maintained to a low level. For this reason, the probability of any given water level upriver of the Barrier [beyond the 1 in 1,000 year standard] is controlled and therefore any associated return period becomes irrelevant.'*

In addition to the Thames Barrier, the River Thames and the River Lee are contained by river walls and raised banks. In proximity to the Site, the defences along the River Thames are raised to a height of 5.23mAOD and the defences along the River Lee are raised to a height of between 5.23mAOD and 5.28mAOD. The EA describes the condition of these defences as 'Good' to 'Moderate', denoting defences with some 'minor' to 'moderate' defects.

Through the combination of the Thames Barrier, river walls and other structures, it is considered that the Site is fully defended against flooding beyond the 0.1% annual probability extreme tide level.

The TE2100 Plan sets out the EA recommendations for flood risk management for London and the River Thames to 2100. The policy direction for the study area is to undertake future raising of the river walls on the River Thames to a minimum level of 6.20mAOD by 2100.

5.4 Flooding from the Sea

The EA *Flood Map for Planning*, identifies the Site as in an 'area benefitting from flood defences'. This designation identifies areas that benefit from formal flood defences that protect to a minimum of a 1 in 200 (0.5%) standard from the sea. The residual flood risk to the Site, ignoring the presence of flood defences, identifies the Site in Flood Zone 3, high flood risk (land having a greater than 1 in 200 (0.5%) annual probability of flooding from the sea). This denotes the high residual flood risk to the Site from the River Thames in the unlikely event of a failure/breach of the defences.

Modelled water levels applicable to the Site have been supplied by the EA, extracted from the TE2100 Plan. The TE2100 Plan provides values for the maximum likely floodwater level (1 in 1,000 year (0.1%) annual exceedance probability) for a present day scenario (2008) and two future scenarios (2065 and 2100), which also incorporate an allowance for climate change. Flood levels are provided for a model node located on the River Thames, approximately 800m south of the Site. The TE2100 Plan estimates extreme water levels of 4.67mAOD (present day, 2008) and design water levels of 5.16mAOD (future, 2065) and 5.65mAOD (future, 2100). These flood levels would result in overtopping of the current installed defences in the future (post 2065) scenarios. However, the TE2100 Plan provides recommendations for continuous improvement of defences along the River Thames, including their raising and repair, in line with predicted climate change impacts. It is therefore anticipated that the Thames flood defences will be maintained to provide a 0.1% standard of protection over the lifetime of any proposed development at the Site.

It is therefore considered highly unlikely that the installed defences will be overtopped, instead the greatest tidal flood risk from the River Thames or the River Lee corresponds to a failure (breach) of the defences.

The EA *Breach Modelling Map* (included in Appendix A), provides outlines for the predicted inundation areas following a breach of the River Thames flood defences coinciding with a 1 in 1,000 year (0.1%) annual exceedance probability flood event. Outlines are provided for a 2014 present day scenario and a 2100 future scenario, which incorporates an allowance for climate change.

The Site is located on the boundary of the flood outline for the 2014 scenario, with predicted flood levels of up to 2.393mAOD, and within the outline of the 2100 scenario, with predicted flood levels of up to 4.479mAOD. Compared with the Site's elevation, these flood levels demonstrate that the Site would experience flooding with depths of up to 0.279m in the 2100 future scenario, but would be flood free in the present day (2014) scenario. The likelihood of a defence breach is low, especially

considering the TE2100 recommendation for continuous improvement and repair, and it is therefore considered that there is a low risk of flooding from this source.

Overall, it is considered that the Site is at low risk of tidal flooding, due to the protection afforded by flood defences, but has a high residual risk of shallow flooding from this source in the unlikely event of defence failure (breach) in the future.

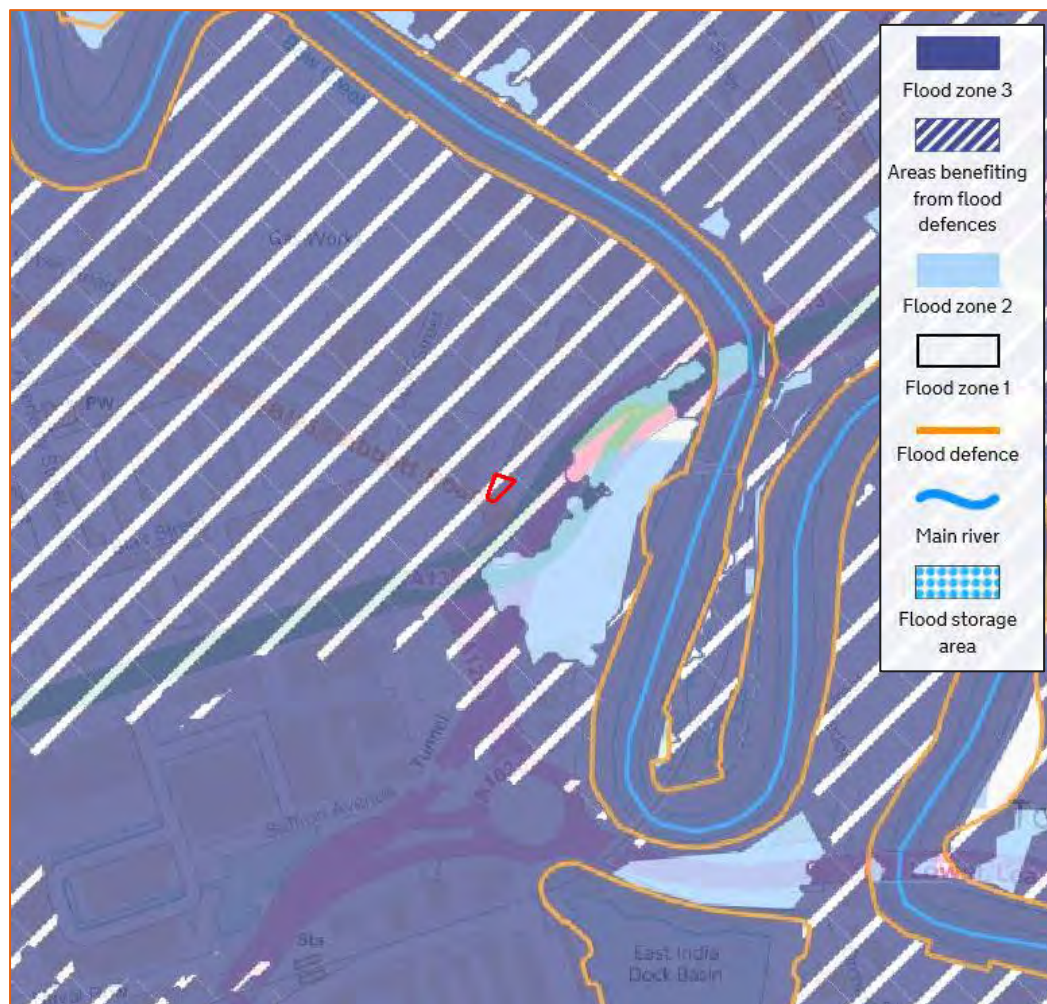


Figure 3 EA Flood Map for Planning. Site Boundary Outlined in Red.
Contains Environment Agency Data © Crown copyright and/or database right 2017. All rights Reserved.

5.5 Flooding from Rivers

The EA *flood map for planning* identifies the Site within an area designated as 'benefitting from flood defences'. Modelled flood outlines supplied with the EA Product 4 data pack (Appendix A) show that the Site is fully defended for fluvial flood scenarios up to and including the 1 in 1,000 (0.1%) scenario, against maximum flood levels of up to 4.86mAOD, and therefore has a very low susceptibility to flooding from this source.

The EA *Flood Map for Planning* and EA Flood Zone classifications do not illustrate flood risk from non-Main River sources (ordinary watercourses). However, no ordinary watercourses have been identified in proximity to the Site.

Overall, it is considered that the Site is at low risk of fluvial flooding, due to the protection afforded by the flood defences, but has a high residual risk of flooding from this source in the unlikely event of defence failure (breach) in the future.

5.6 Flooding from Surface Water

The THLBC Draft LFRMS states that surface water flooding poses ‘*the most significant risk of flooding within the borough*’. This risk is due to rapid urbanisation within the borough and the subsequent increase in paved and impermeable surfacing. Most rainfall in the borough drains and is piped away via the combined sewer system, however, the sewer system has limited capacity, when combined with topographical low points and underground infrastructure, poses an increased risk of surface water flooding.

The SWMP for THLBC identifies 14 Critical Drainage Areas (CDAs) in the borough, however the Site is not included within one of these.

The EA Risk of Flooding from Surface Water map (Figure 4) identifies the entire Site as having a very low risk (having a less than 1 in 1,000 (0.1%) annual probability) of surface water flooding. Lanrick Road to the east, and the gardens of the terraced houses to the north, are designated with low risk (having between 1 in 100 (1%) and 1 in 1,000 (0.1%) annual probability) of surface water flooding. Surrounding the Site there are several areas of medium (having between 1 in 30 (3.3%) and 1 in 100 (1%) annual probability) and high risk (having a greater than 1 in 30 (3.3%) annual probability) of surface water flooding. These correspond to areas of lower topography where surface water pooling is likely or represent surface water overland flow paths.

Overall, it is considered that the Site is at low risk of surface water flooding.

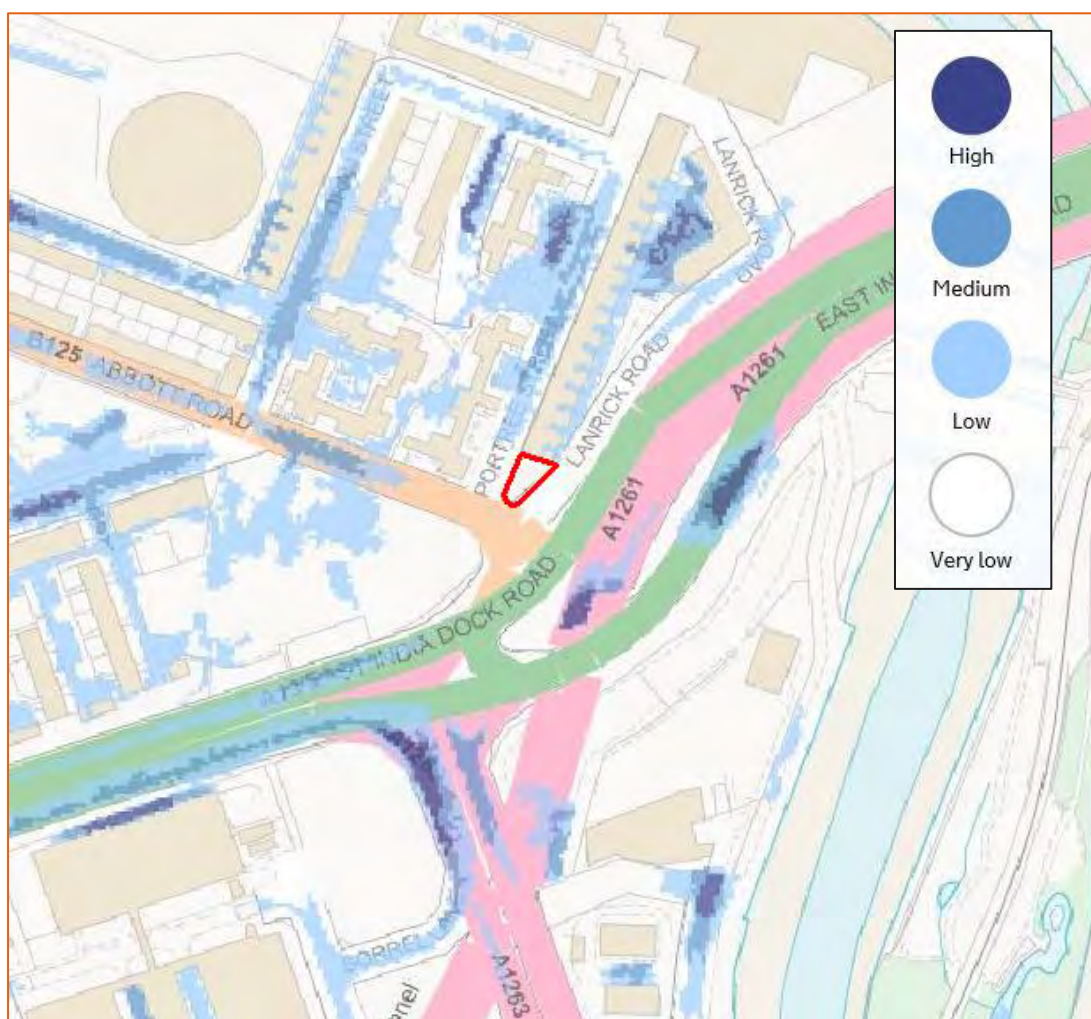


Figure 4: EA Risk of Flooding from Surface Water, Site Boundary Outlined in Red.
Contains EA data © Crown copyright and database right 2017. All rights reserved.

5.7 Flooding from Sewers

The THLBC Level 2 SFRA states that *'the risk of flooding from sewers is increasing due to the increasing urbanisation of areas and rising rainfall intensities'* and the sewer network in London cannot cope. There are three records of sewer flooding within the E14 0 postal district.

The sewer network mainly consists of combined sewers and sewer flood risk is therefore intrinsically linked to surface water flood risk, which is considered to be a low risk.

Overall, it is considered that the Site is at low risk of sewer flooding, however it is recommended that consultation with Thames Water should be undertaken to understand the capacity of the local network serving the Site.

5.8 Flooding from Groundwater

The THLBC Draft LFRMS states that there are localised areas in the borough with *'more permeable substrate/ground'* and that therefore have a *'higher potential for groundwater flooding'*. However, this risk would only occur following the alignment of numerous factors, including the end/reduction of groundwater abstraction, significant periods of prolonged rainfall and/or the introduction of barriers to groundwater flow.

The Site is underlain by superficial deposits designated as Secondary (undifferentiated) aquifer, therefore has some, limited potential for groundwater emergence. The PFRA notes one incident of groundwater flooding in the borough, more than 2km from the Site.

Overall, it is considered that the Site is at low risk of groundwater flooding.

5.9 Flooding from Artificial Sources

The EA *Risk of Flooding from Reservoirs* map indicates that the Site is not located within the maximum extent of reservoir flooding, should large reservoirs fail and release the water that they hold. Areas surrounding the Site are identified as being at risk and this risk is associated with the Lee Valley reservoirs upstream of the Site, notably the William Girling and King George reservoirs. The consequence of reservoir breach can be very high, however continuing management of reservoirs under the Reservoirs Act 1975 serves to greatly reduce the likelihood of reservoir flooding.

The Site is located approximately 1.5km southeast of the Lee Navigation and the Limehouse Cut, which are identified as reaches of the national canal network. The distance of separation of the Site from these reaches and the flood defences installed in proximity to the Site means that no risk is predicted from these receptors.

Overall, it is considered that the Site is at low risk of flooding from artificial sources.

6 RISK RATING & RECOMMENDATIONS FOR FURTHER INVESTIGATION

Following an assessment of flood risk to the Site from all likely sources, it is considered that there is a **Low** risk of flooding from all sources. The degree of tidal and fluvial flood risk is dependent on the installed defences on the River Thames and the River Lee, which protect the Site up to the 0.1% flood event in the present day and in accordance with TE2100 policy should be maintained to provide the same level of protection into the future, accounting for the predicted effects of climate change.

Table 4 Flood Risk Sources

Source of Flooding	Flood Risk
1. Flooding from the Sea (Coastal and Tidal)	Low (High Residual)
2. Flooding from rivers (Fluvial)	Low (High Residual)
3. Flooding from land (Surface Water)	Low
4. Flooding from groundwater	Low
5. Flooding from reservoirs, canals and other artificial sources	Low
6. Flooding from sewers	Low

Following the NPPF guidance, the Site would be suitable for '*Water Compatible*' and '*Less Vulnerable*' development types, but would trigger application of the Exception Test for '*More Vulnerable*' (which includes residential land use) and '*Essential Infrastructure*' uses. The Site would not be appropriate for '*Highly Vulnerable*' development types (which notably includes basement dwellings).

As a defended Site, there is a residual risk of flooding, and any future planning application for development of the Site would need to be informed by a Flood Risk Assessment. The FRA would be a more detailed assessment than is presented in this Flood Risk Review and would need to be specific to the type and layout/configuration of development that is proposed. The FRA should demonstrate that any proposed development would not be subject to an unreasonable risk of flooding and would not increase flood risk to third parties. If proven, this would satisfy the NPPF Exception Test.

It is considered that there is a low risk of surface water flooding and sewer flooding, however there is an increasing risk of surface water and sewer flooding in the borough. Surface water drainage and runoff from the Site, including available connections with the sewer network, should be further investigated and it should be ensured that drainage is managed to a high standard. Further investigation should include the calculation of current rainfall-runoff rates and volumes, greenfield runoff rates for the Site and confirmation of the available capacity of the local and wider sewer networks.

A Drainage Strategy should be developed, detailing methods to manage runoff from the Site, which would ideally be controlled to match greenfield rates by adopting suitable Sustainable Drainage (SuDS) techniques.

Overall, it is considered that, with the exception of basement dwellings, the Site is appropriate for residential and most other forms of development.

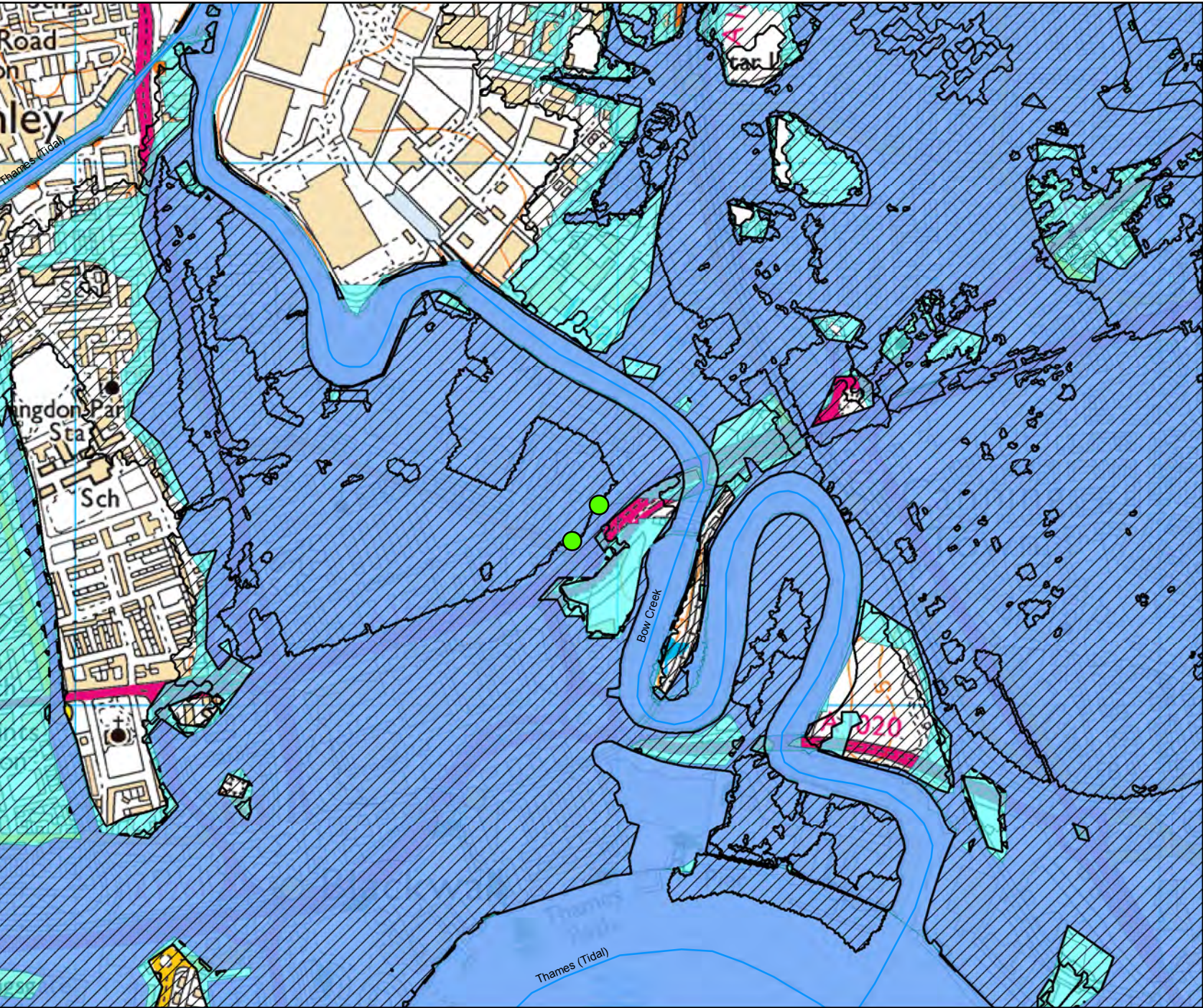
7 REFERENCES

1. Her Majesty's Stationary Office, 2017. Open Government License, LiDAR Composite Digital Terrain Model (DTM) 2m spatial resolution. Accessed August 2017 via <http://environment.data.gov.uk/ds/survey/>
2. Centre for Ecology and Hydrology, 2017. Flood Estimation Handbook (FEH) Web-Service. Accessed August 2017 via: <https://fehweb.ceh.ac.uk/GB/map>
3. Cranfield Soil and AgriFood Institute, 2017. Soilscales Viewer. Accessed August 2017 via <http://www.landis.org.uk/soilscales/>
4. British Geological Survey, 2017. Geology of Britain Viewer. Accessed August 2017 via: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>
5. Environment Agency, 2017. What's In Your Backyard? Groundwater map. Accessed August 2017 via: http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683&y=355134&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=groundwater
6. Environment Agency, 2017. Provision of Product 4 and 8 centred on Lanrick Road, Tower Hamlets, E14 0JP, HNL52203.
7. Environment Agency, 2017. Long Term Flood Risk Information. Accessed August 2017 via <https://flood-warning-information.service.gov.uk/long-term-flood-risk/>
8. Environment Agency, 2017. Flood Map for Planning. Accessed August 2017 via <https://flood-map-for-planning.service.gov.uk/>
9. Capita Symonds, 2012. London Borough of Tower Hamlets, Level 2 Strategic Flood Risk Assessment Volume 1 – Guidance.
10. Capita Symonds, 2011. London Borough of Tower Hamlets, Preliminary Flood Risk Assessment.
11. London Borough of Tower Hamlets, 2014. London Borough of Tower Hamlets, Local Flood Risk Management Strategy.
12. Capita Symonds, 2011. Surface Water Management Plan for London Borough of Tower Hamlets.
13. Environment Agency, 2011. Thames Estuary 2100 (TE2100) Plan.
14. Department for Communities and Local Government, 2012. National Planning Policy Framework.
15. Department for Communities and Local Government, 2014. Planning Practice Guide: Flood Risk and Coastal Change.

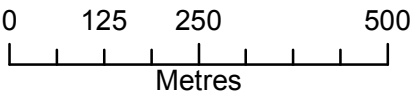
APPENDIX A

ENVIRONMENT AGENCY FLOOD PRODUCT 4 AND FLOOD PRODUCT 8 DATA PACKS

Flood Map for Planning centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

Flood Map for Planning

- Flood Storage Area
- Areas Benefiting from Flood Defences
- Flood Zone 3
- Flood Zone 2

Flood Map for Planning (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

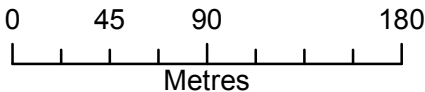
Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

Main Rivers

Defended Flood Outlines

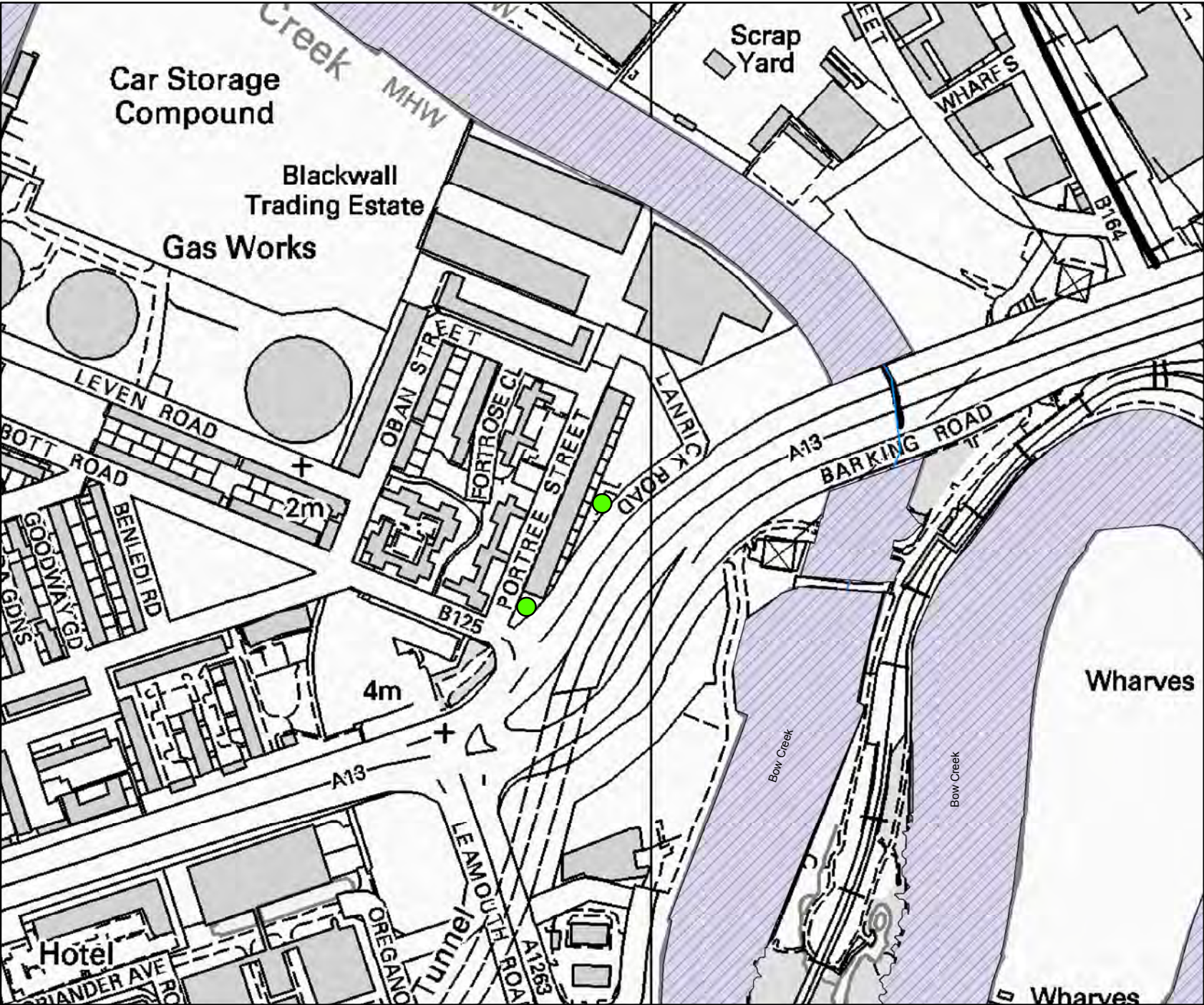
- 1 in 2 (50%) Defended
- 1 in 5 (20%) Defended
- 1 in 10 (10%) Defended
- 1 in 20 (5%) Defended
- 1 in 50 (2%) Defended

The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment.

Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

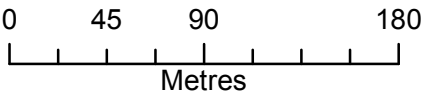
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London



Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

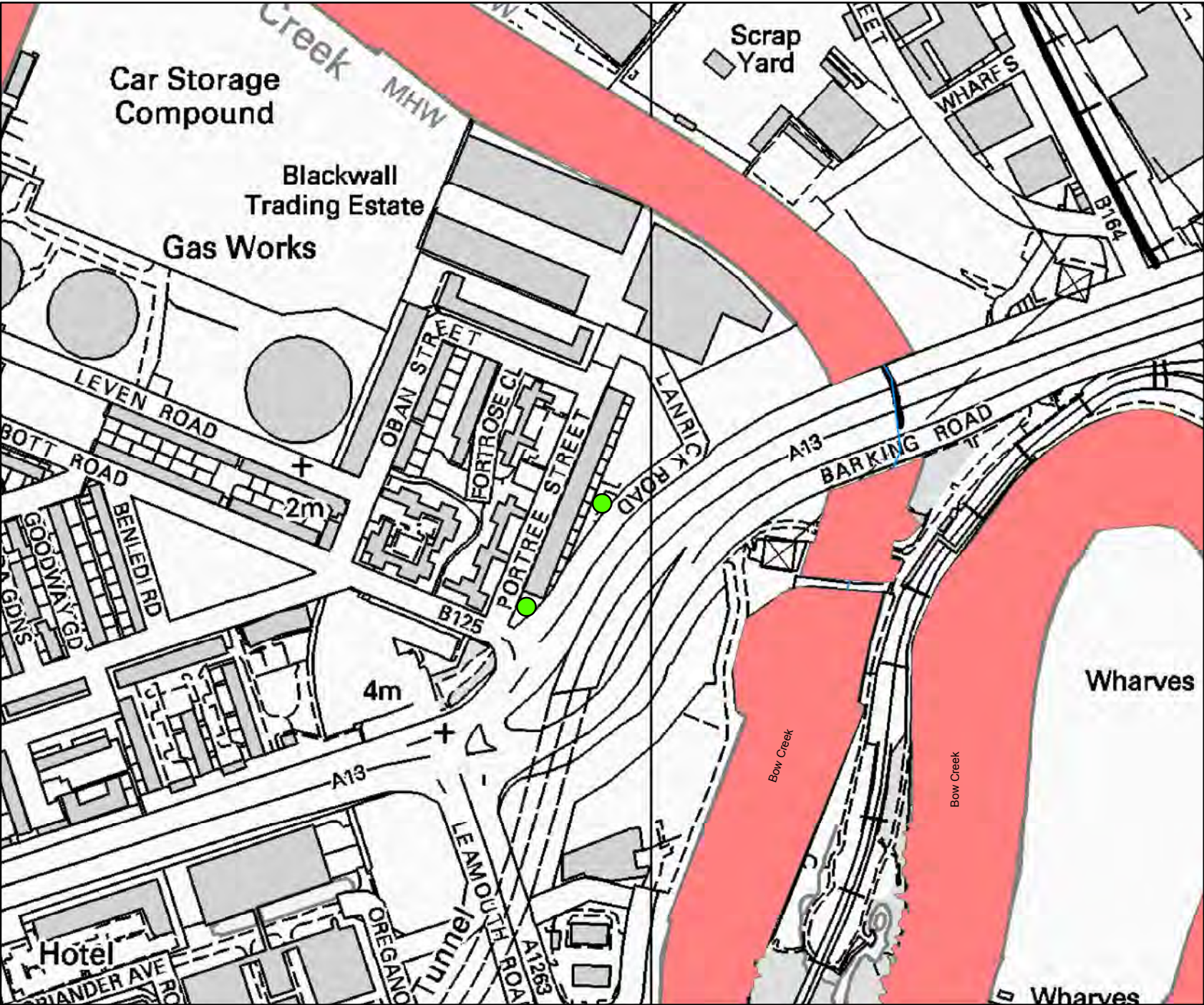
- Main Rivers
- Defended Flood Outlines
 - 1 in 75 (1.3%) Defended
 - 1 in 100 (1%) Defended
 - 1 in 100+20% (*CC) Defended
 - 1 in 200 (0.5%) Defended
 - 1 in 1000 (0.1%) Defended

The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[Illegible text block]

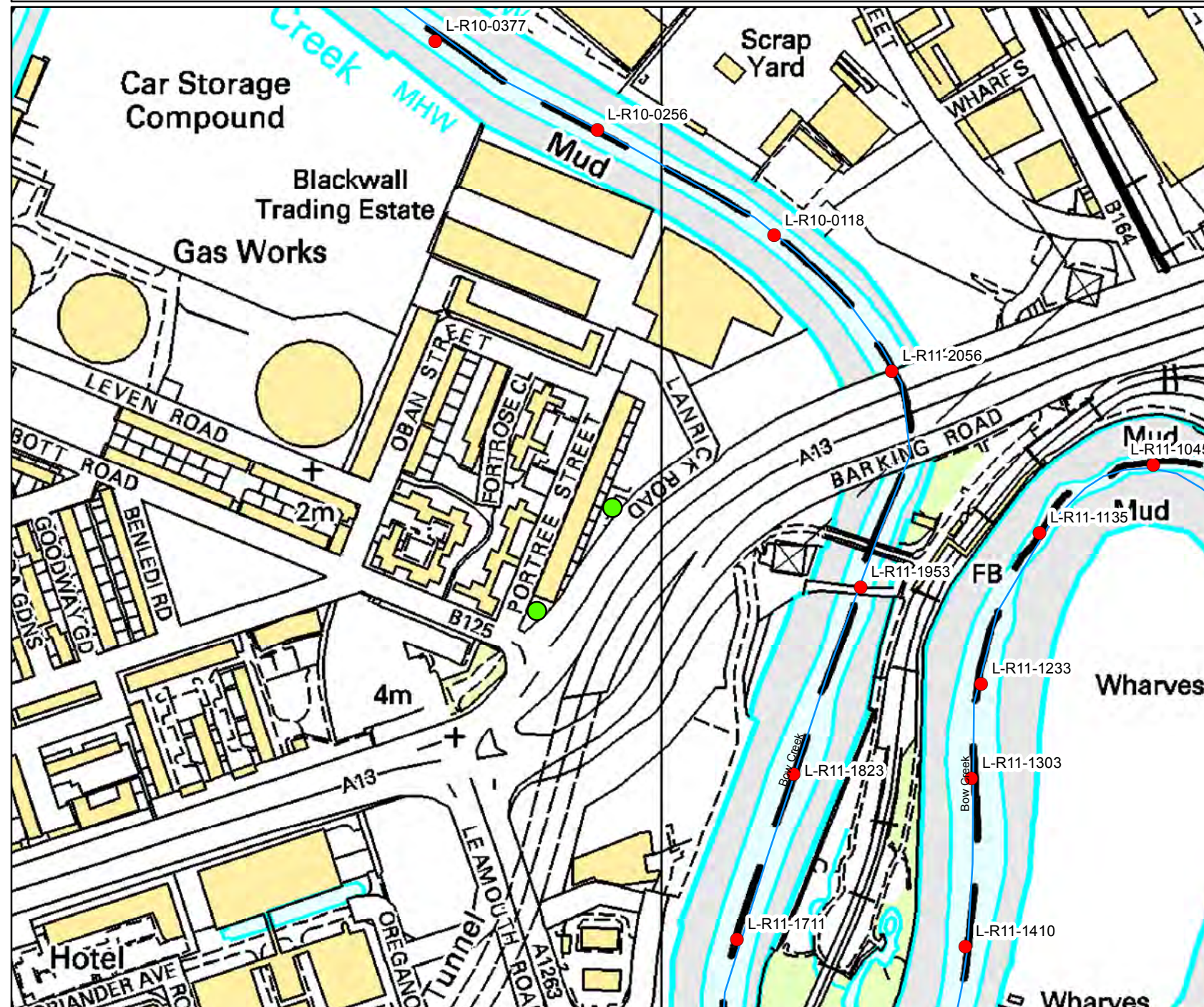
<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

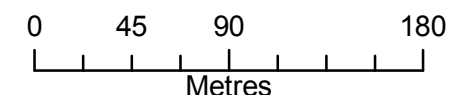


This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

1D Node Results

- Node Results

The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright.
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Environment Agency ref: HNL52203

The data in this map has been extracted from the River Lee 2D Modelling study (CH2M Hill, 2014).

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Caution:

This model has been designed for catchmentwide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences.

All flood levels are given in metres Above Ordnance Datum (mAOD)

All flows are given in cubic metres per second (cumecs)

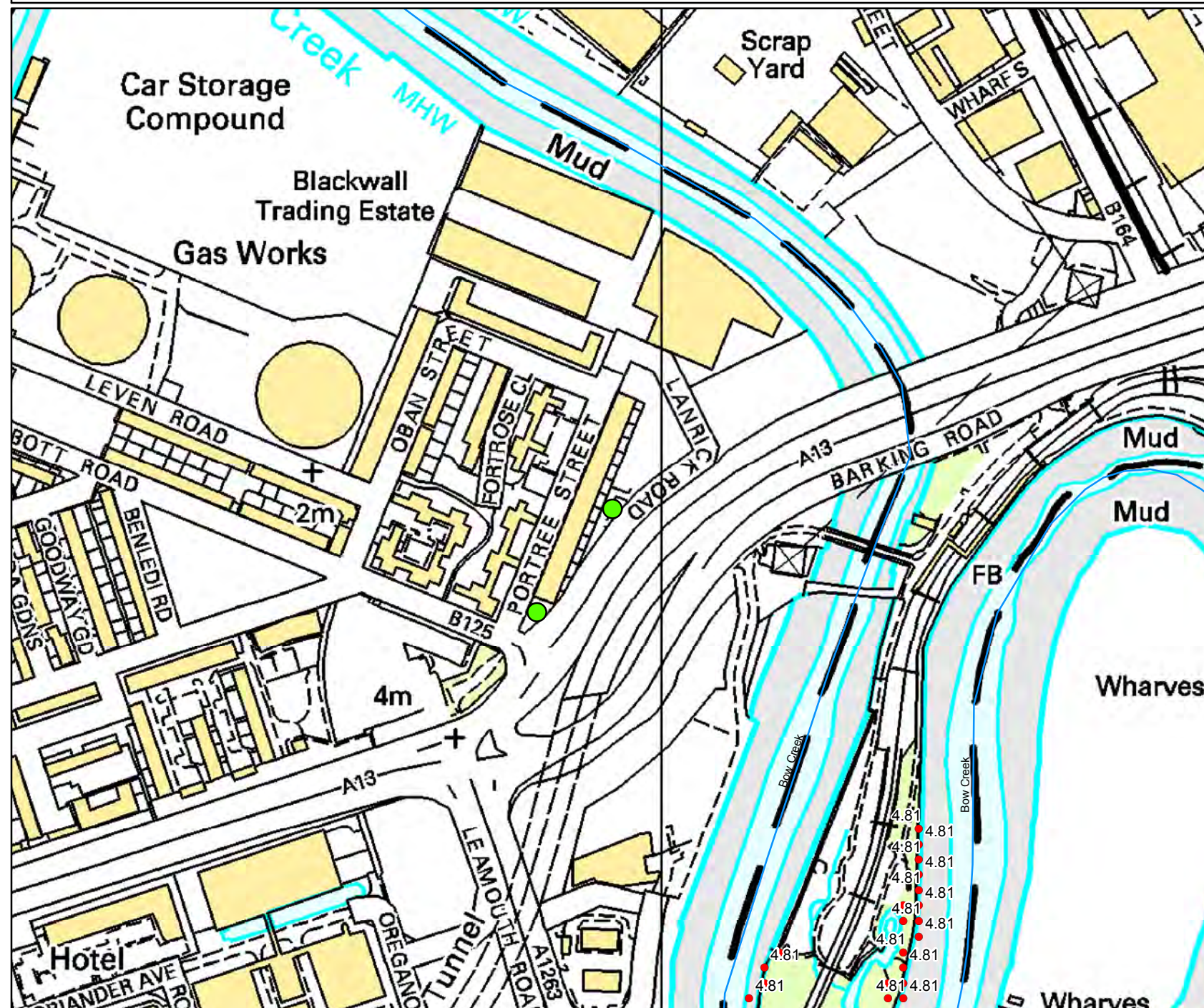
MODELLED FLOOD LEVEL

			Return Period									
Node Label	Easting	Northing	2 yr	5 yr	10 yr	20 yr	50 yr	75 yr	100 yr	100 yr + 20%	200 yr	1000 yr
L-R10-0118	539073	181546	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.86	4.85	4.86
L-R10-0256	538958	181614	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.87	4.86	4.87
L-R10-0377	538853	181671	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.88	4.86	4.88
L-R11-1045	539318	181397	4.81	4.81	4.81	4.81	4.81	4.81	4.80	4.82	4.81	4.82
L-R11-1135	539245	181353	4.81	4.81	4.81	4.81	4.81	4.81	4.80	4.82	4.81	4.82
L-R11-1233	539207	181255	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.83	4.82	4.83
L-R11-1303	539201	181194	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.83	4.82	4.83
L-R11-1410	539197	181085	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.83	4.82	4.83
L-R11-1711	539049	181090	4.82	4.81	4.82	4.82	4.82	4.81	4.81	4.84	4.83	4.84
L-R11-1823	539086	181197	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.85	4.84	4.85
L-R11-1953	539129	181318	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.85	4.84	4.85
L-R11-2056	539149	181457	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.86	4.85	4.86

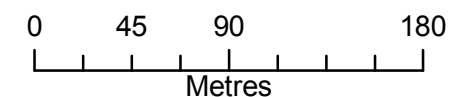
MODELLED FLOWS

			Return Period									
Node Label	Easting	Northing	2 yr	5 yr	10 yr	20 yr	50 yr		100 yr	100 yr + 20%	200 yr	1000 yr
L-R10-0118	539073	181546	194.01	210.64	216.39	220.44	241.34	260.49	270.37	280.49	277.48	298.26
L-R10-0256	538958	181614	190.67	207.30	213.08	217.15	238.65	257.37	267.30	277.36	274.21	295.06
L-R10-0377	538853	181671	187.61	204.24	209.99	214.09	236.21	254.49	264.45	274.49	271.17	292.06
L-R11-1045	539318	181397	228.85	245.26	251.05	255.01	271.71	294.27	304.84	314.60	313.04	331.97
L-R11-1135	539245	181353	225.97	242.41	248.20	252.18	269.13	291.47	302.06	311.78	310.21	329.17
L-R11-1233	539207	181255	222.56	239.03	244.82	248.88	266.11	288.19	298.80	308.45	306.86	325.86
L-R11-1303	539201	181194	219.95	236.40	242.19	246.34	263.77	285.66	296.29	305.87	304.23	323.30
L-R11-1410	539197	181085	216.38	232.85	238.55	242.81	260.51	282.16	292.83	302.26	300.49	319.76
L-R11-1711	539049	181090	207.41	223.95	229.68	233.89	252.50	273.39	284.12	293.31	291.04	311.05
L-R11-1823	539086	181197	204.16	220.73	226.40	230.53	249.75	270.22	280.85	290.11	287.71	307.89
L-R11-1953	539129	181318	200.70	217.29	222.99	226.99	246.86	266.87	277.24	286.82	284.14	304.57
L-R11-2056	539149	181457	196.98	213.59	219.33	223.36	243.77	263.30	273.30	283.30	280.41	301.08

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 2 (50%) Defended M04

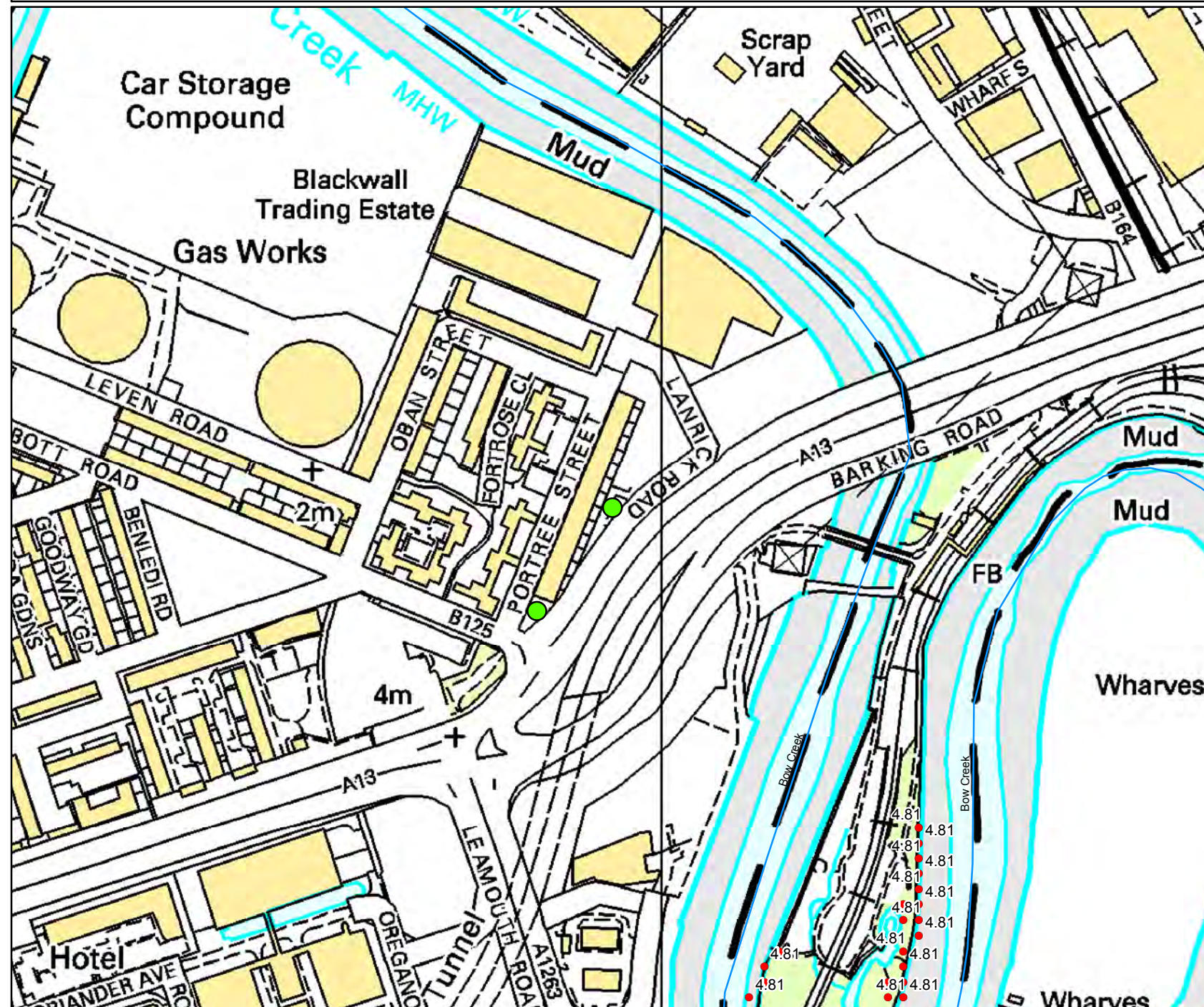
The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

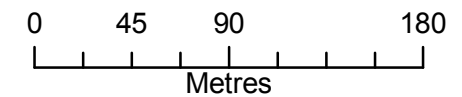
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright.
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 5 (20%) Defended M04

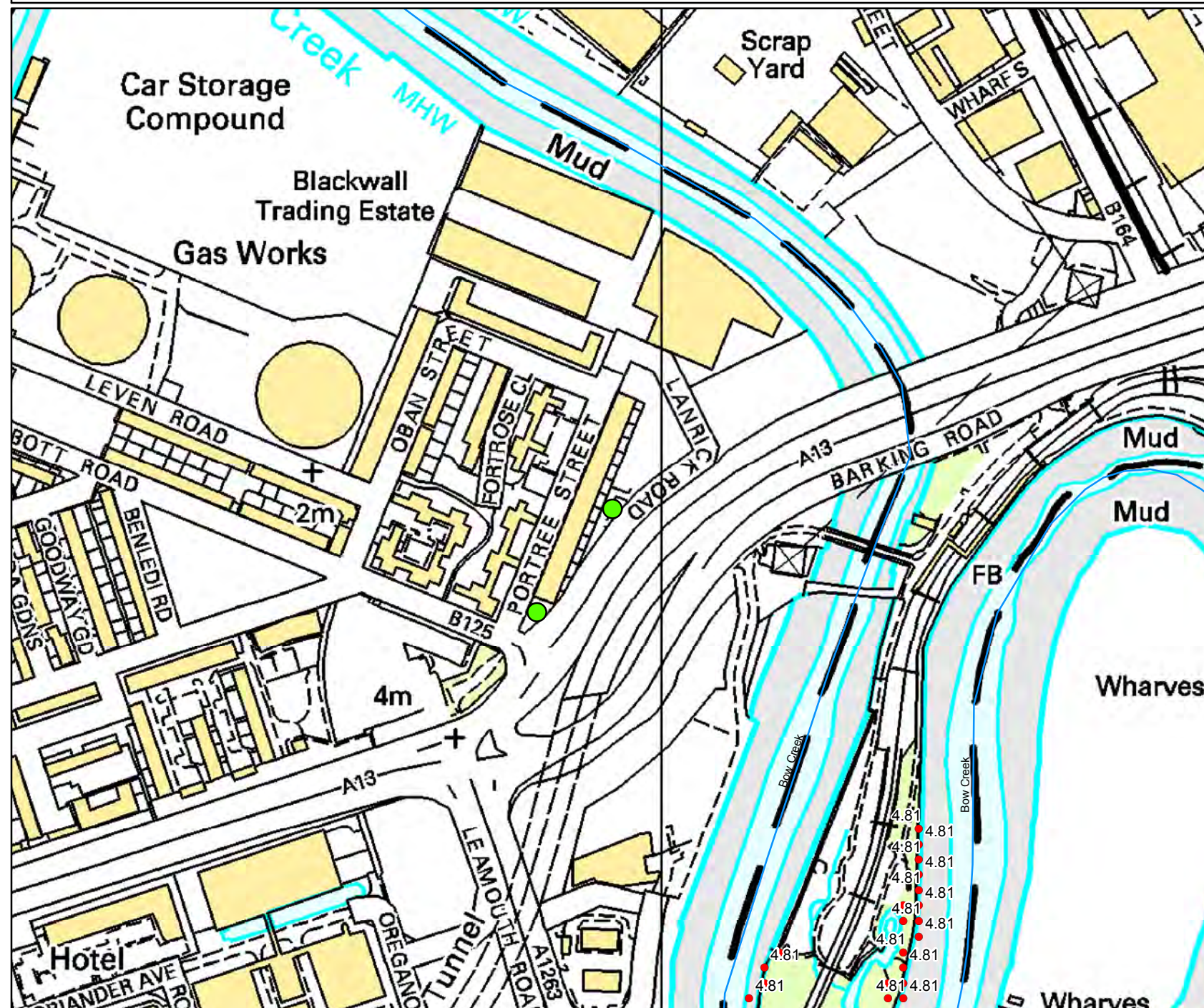
The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

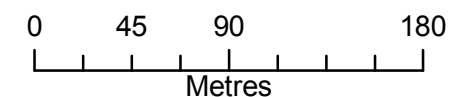
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright.
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 10 (10%) Defended M04

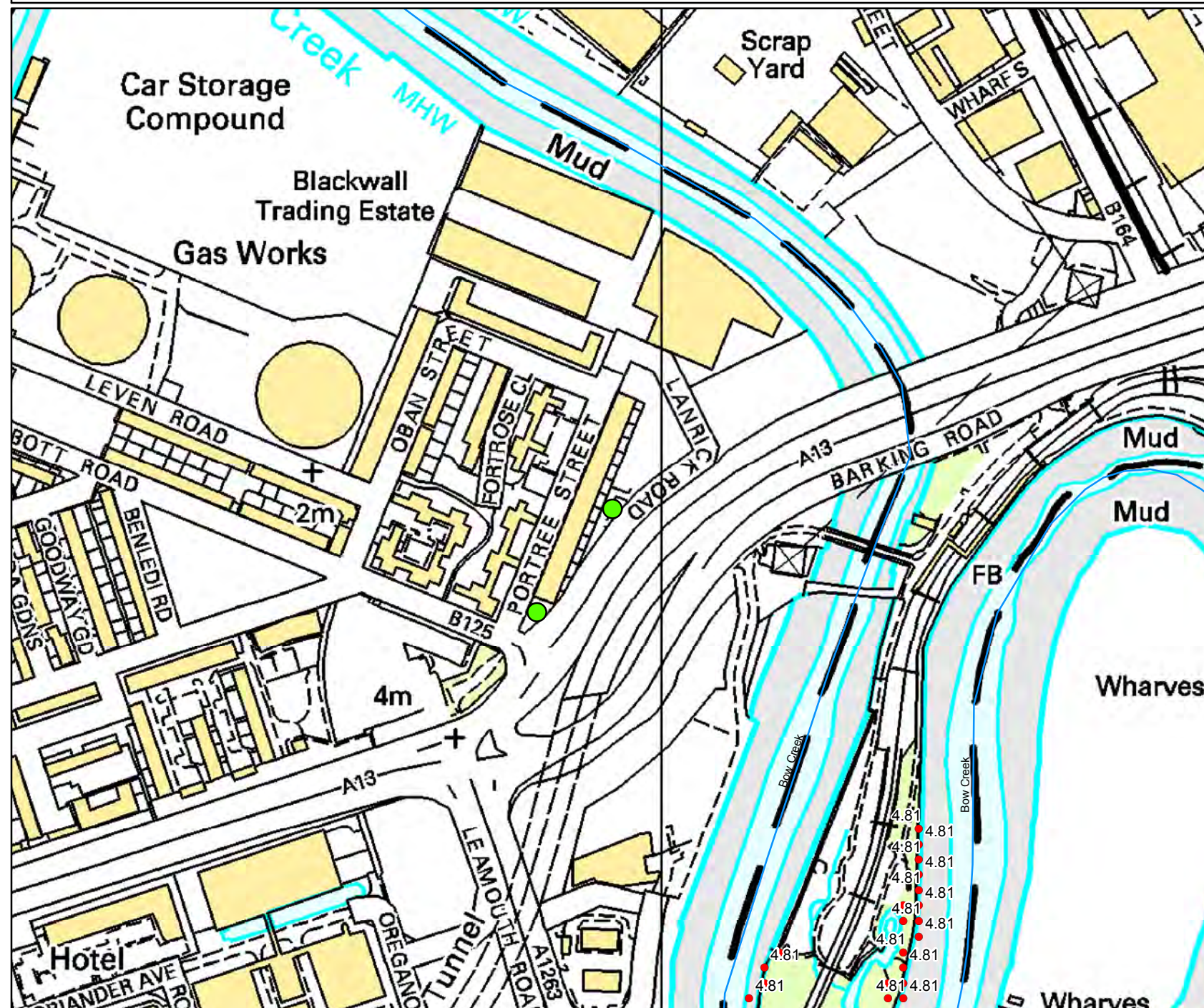
The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

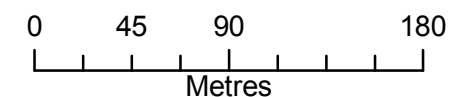
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright.
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 20 (5%) Defended M04

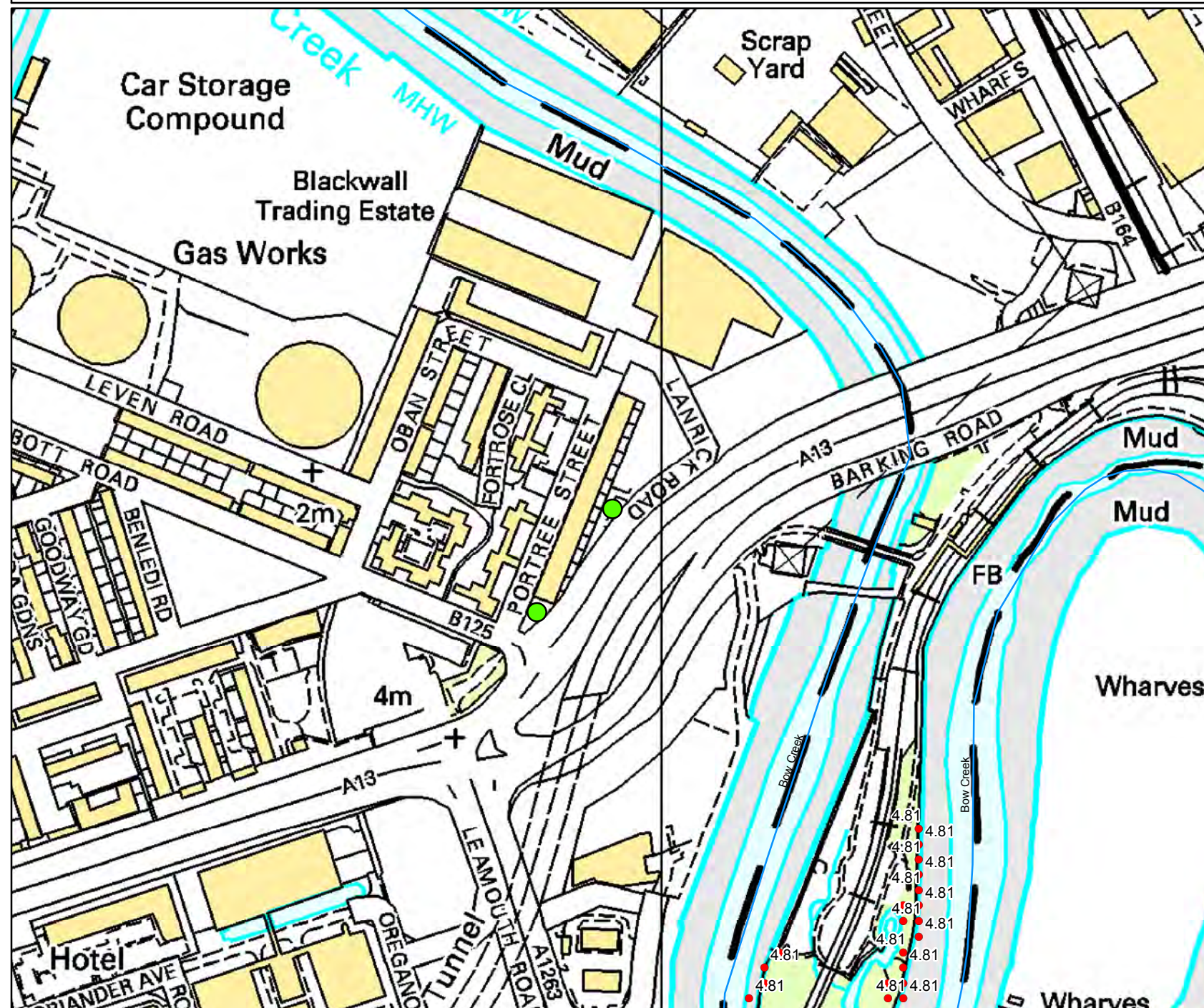
The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

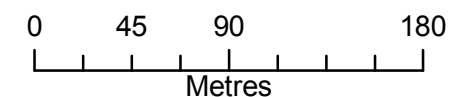
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright.
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 50 (2%) Defended M04

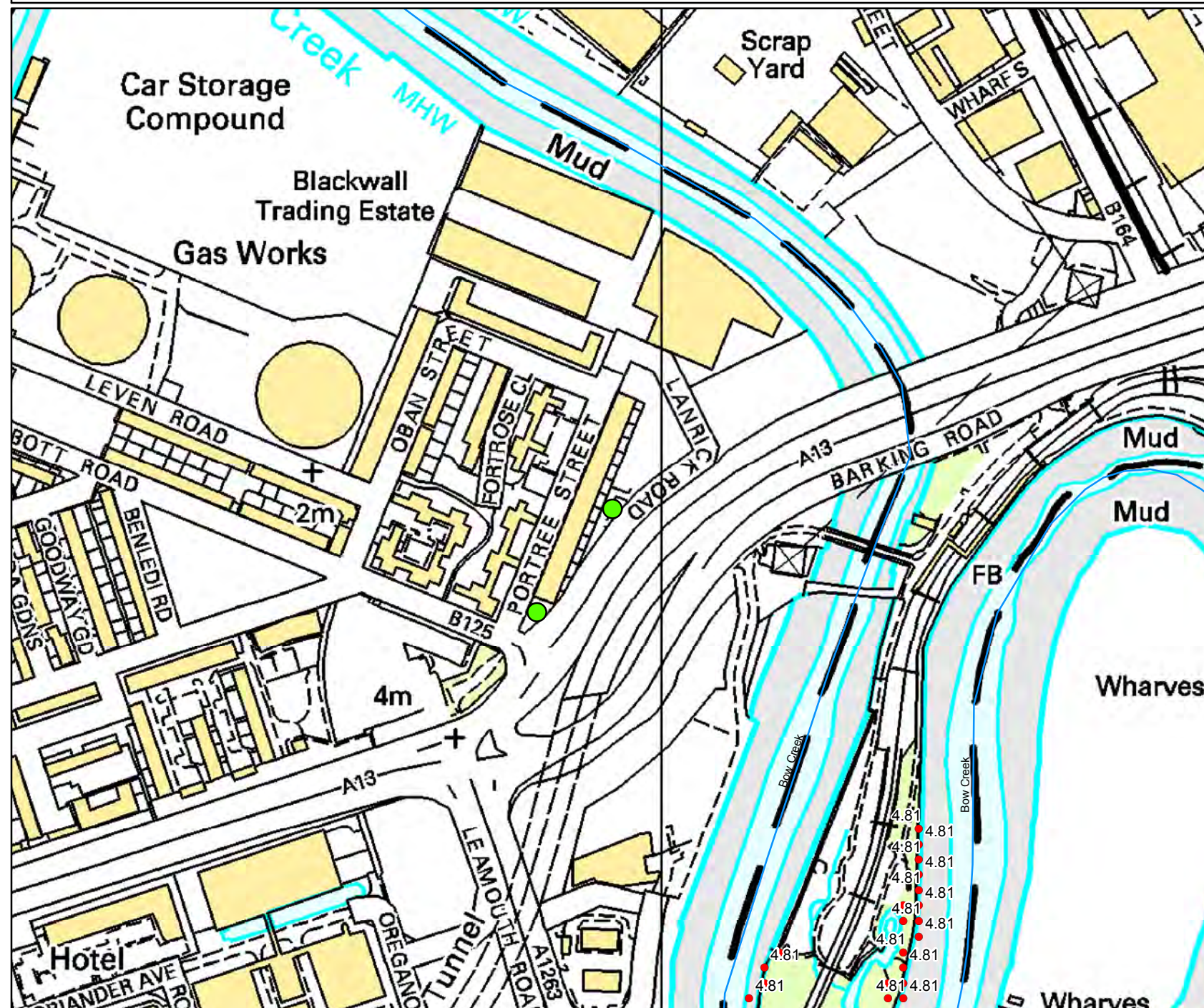
The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

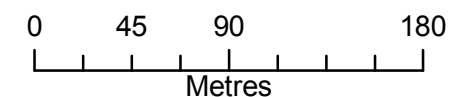
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright.
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 75 (1.33%) Defended M04

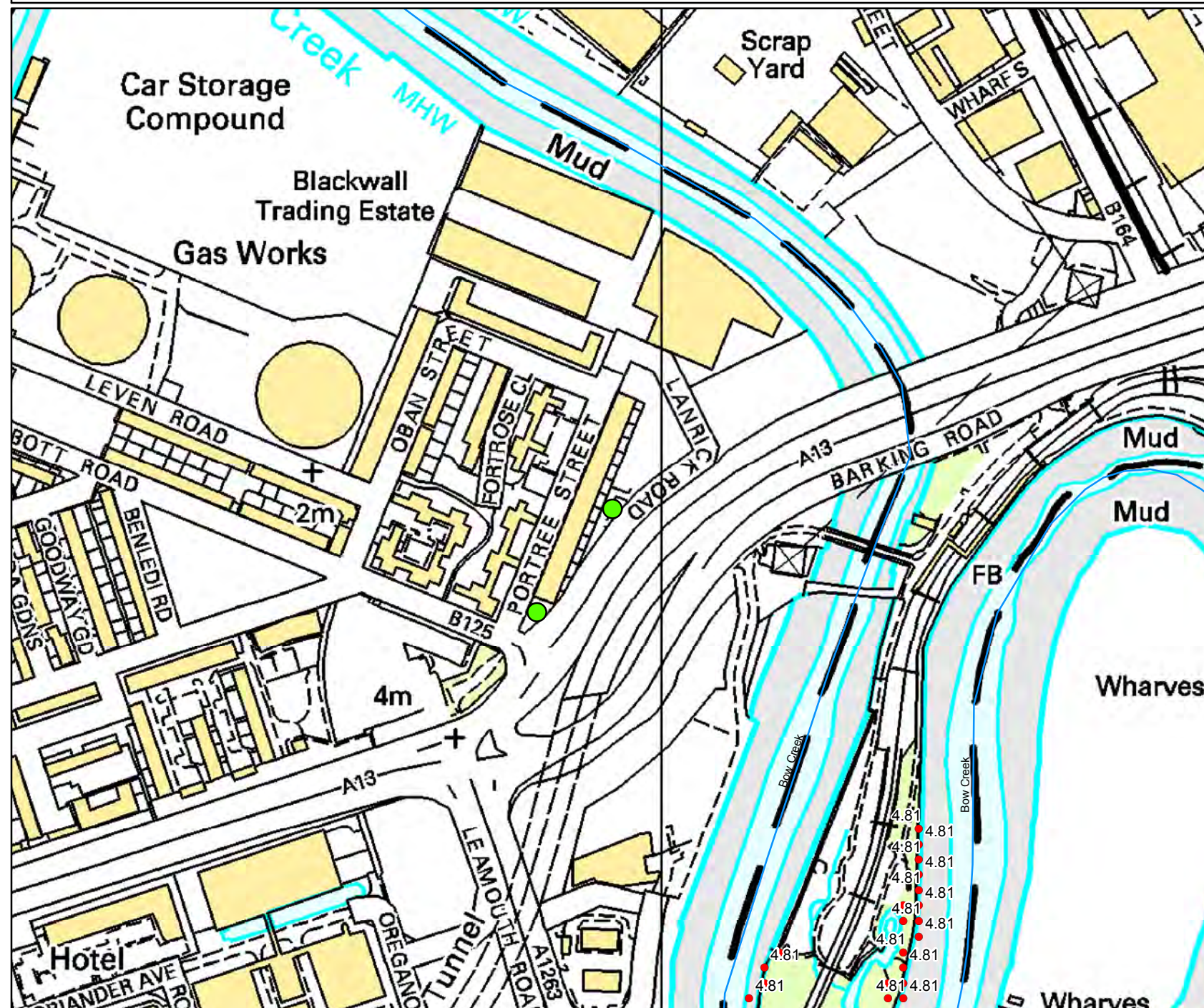
The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

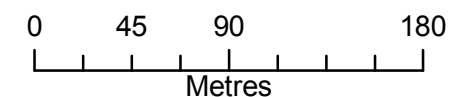
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright.
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 100 (1%) Defended M04

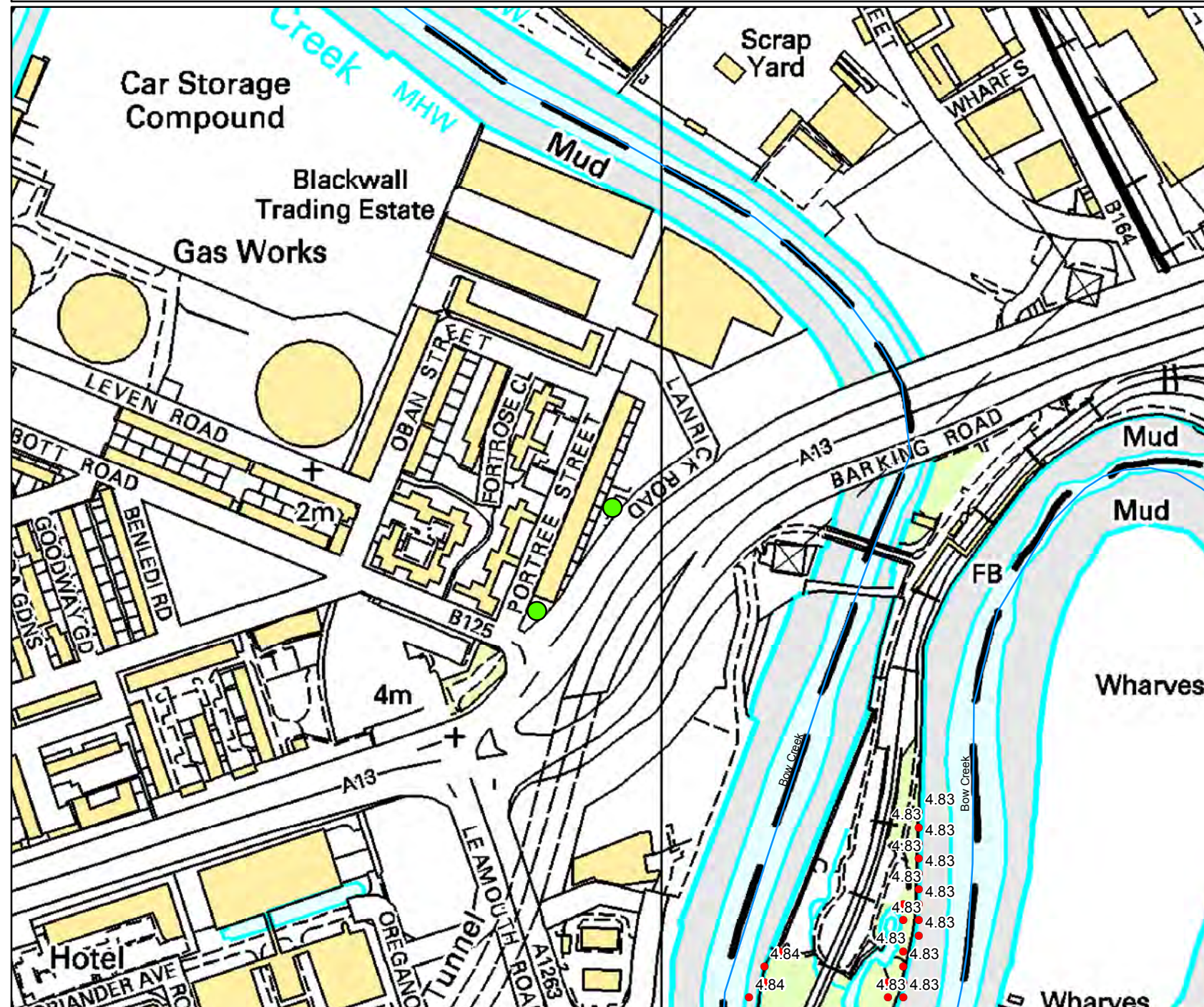
The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

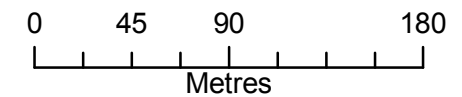
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 100+20% (*CC) Defended M04

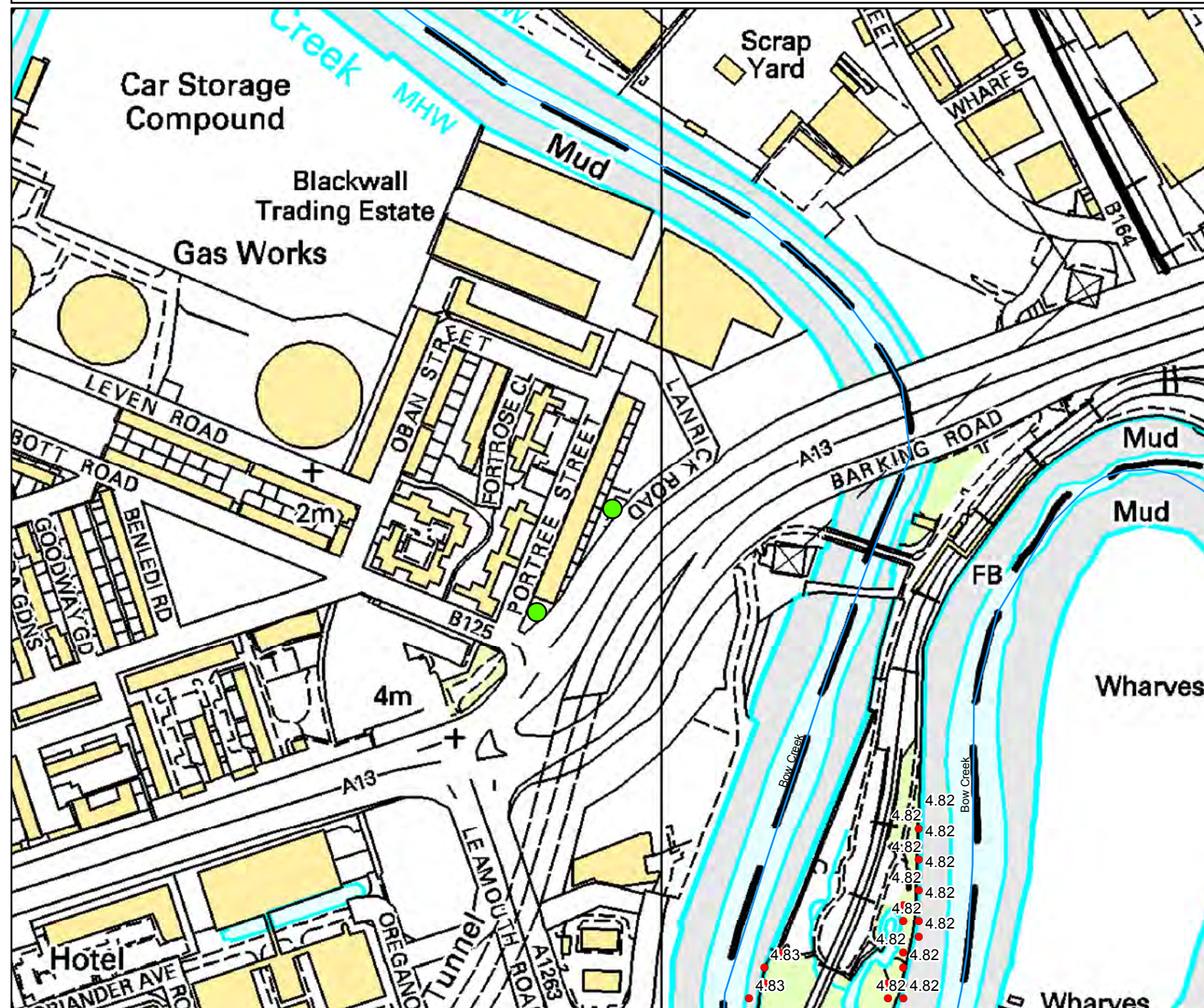
The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

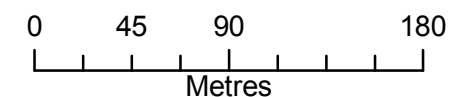
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright.
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 200 (0.5%) Defended M04

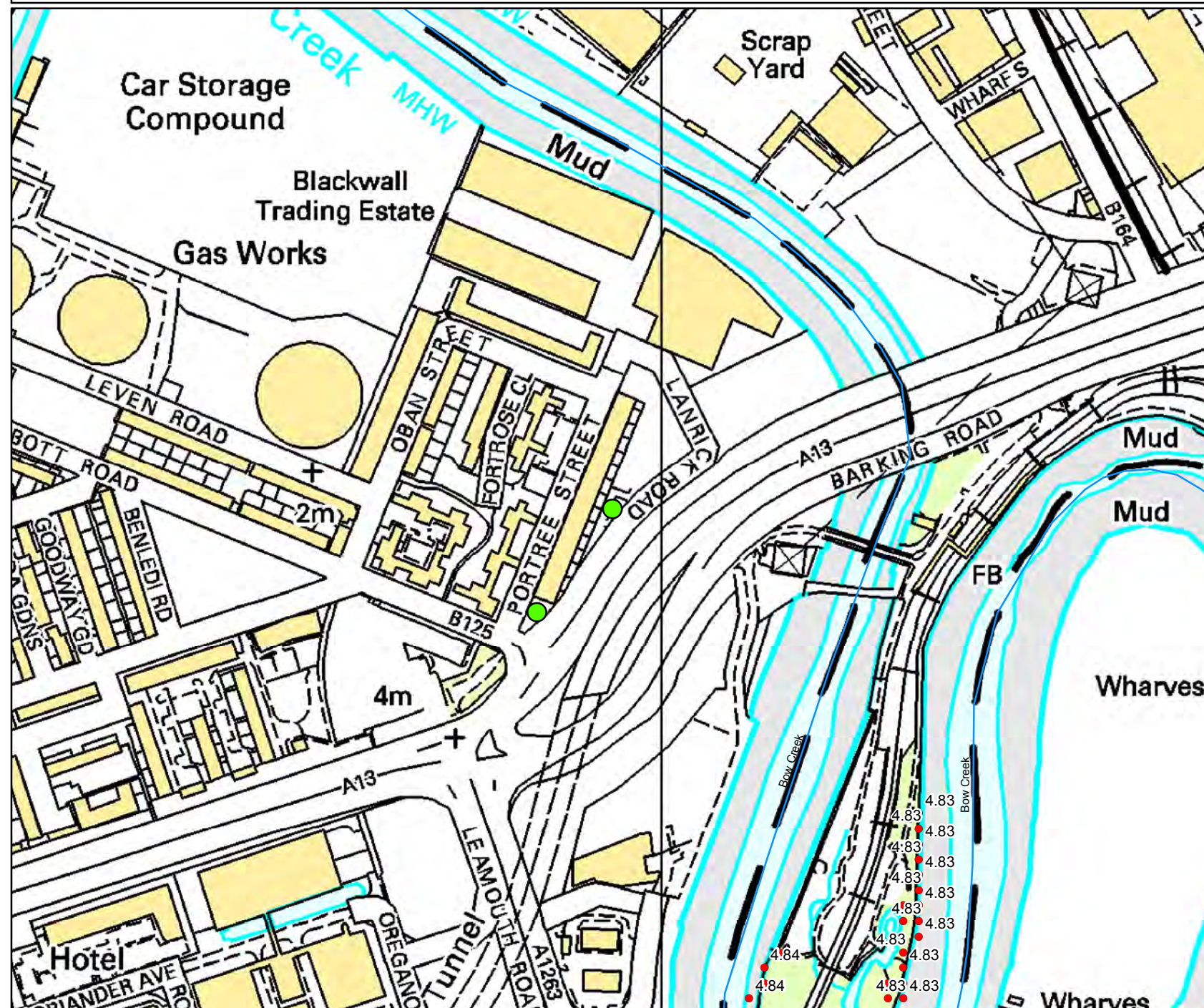
The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

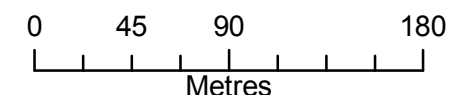
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Detailed FRA centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

2D Node Results: Heights

- 1 in 1000 (0.1%) Defended M04

The data in this map has been extracted from the River Lee 2D Flood Mapping Study (CH2M Hill, 2014). This was a catchment-scale mapping study, so may need local updates for site-specific decisions. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment-wide defences. Updates to model M03 were undertaken by the Lower Hall Sluices Operational Scenario Modelling (CH2M Hill, 2014), and updates to model M04 by the Lower Lee Tributaries Economic Appraisal project (CH2M Hill, 2015).

[illegible]

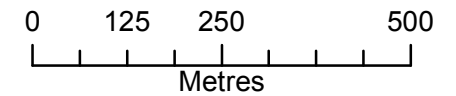
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright.
Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Historic Flood Map centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



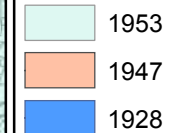
Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

Flood Event Outlines



The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey.

Our historic flood event outlines do not provide a definitive record of flooding. It is possible that there will be an absence of data in places where we have not been able to record the extent of flooding.

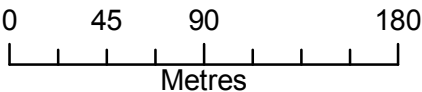
It is also possible for errors occur in the digitisation of historic records of flooding.

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Structures and Defences centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

Main Rivers

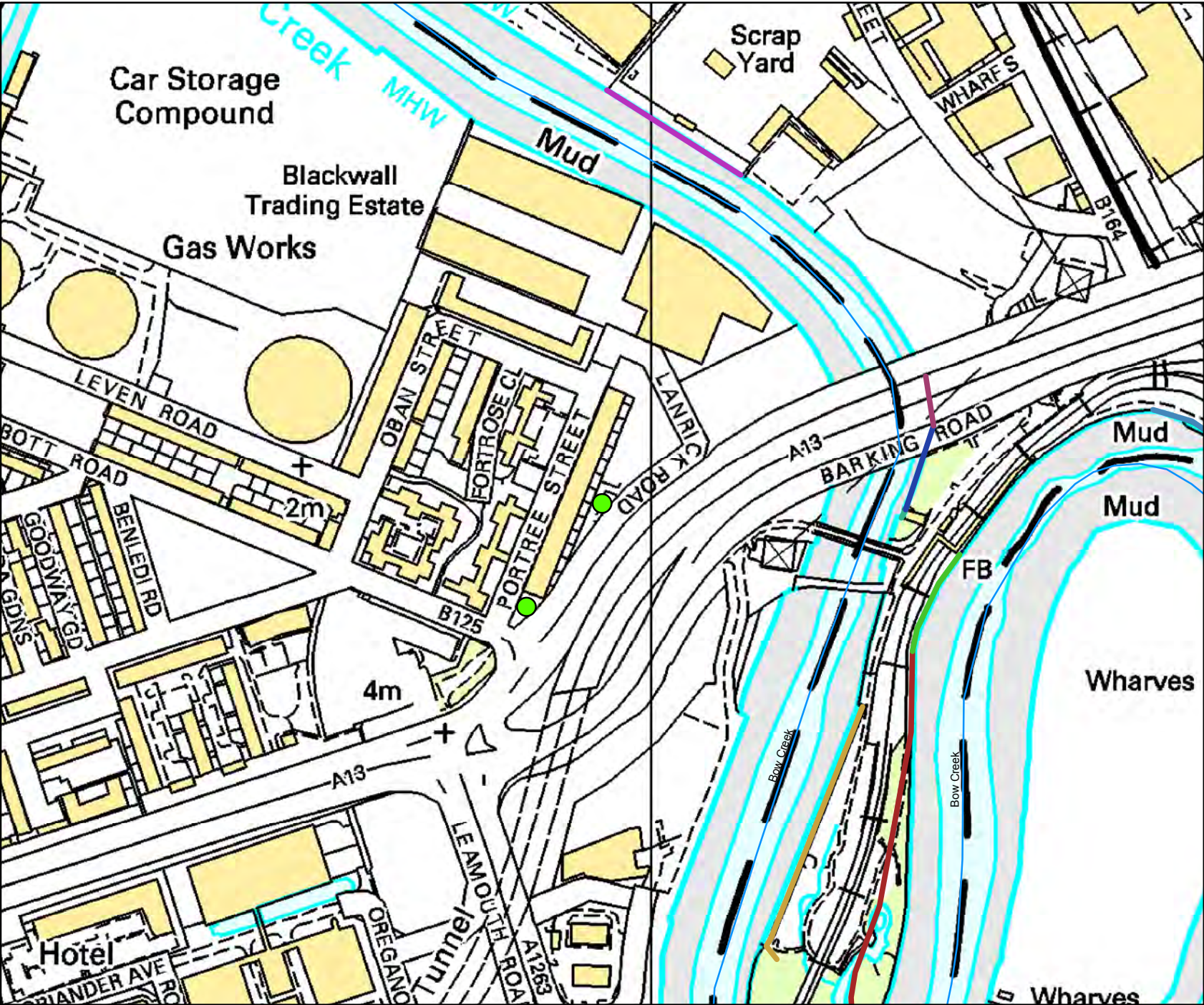
NAFRA_DEFENCE

ASSET_ID

- 8141
- 8142
- 8143
- 8258
- 8306
- 14355
- 14356
- 14357

The following information on defences has been extracted from the Asset Information Management System (AIMS)

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

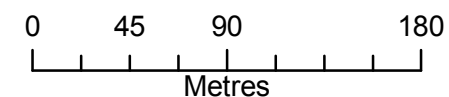


This map is based upon Ordnance Survey Material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Environment Agency 100024198, 2017

Structures and Defences centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

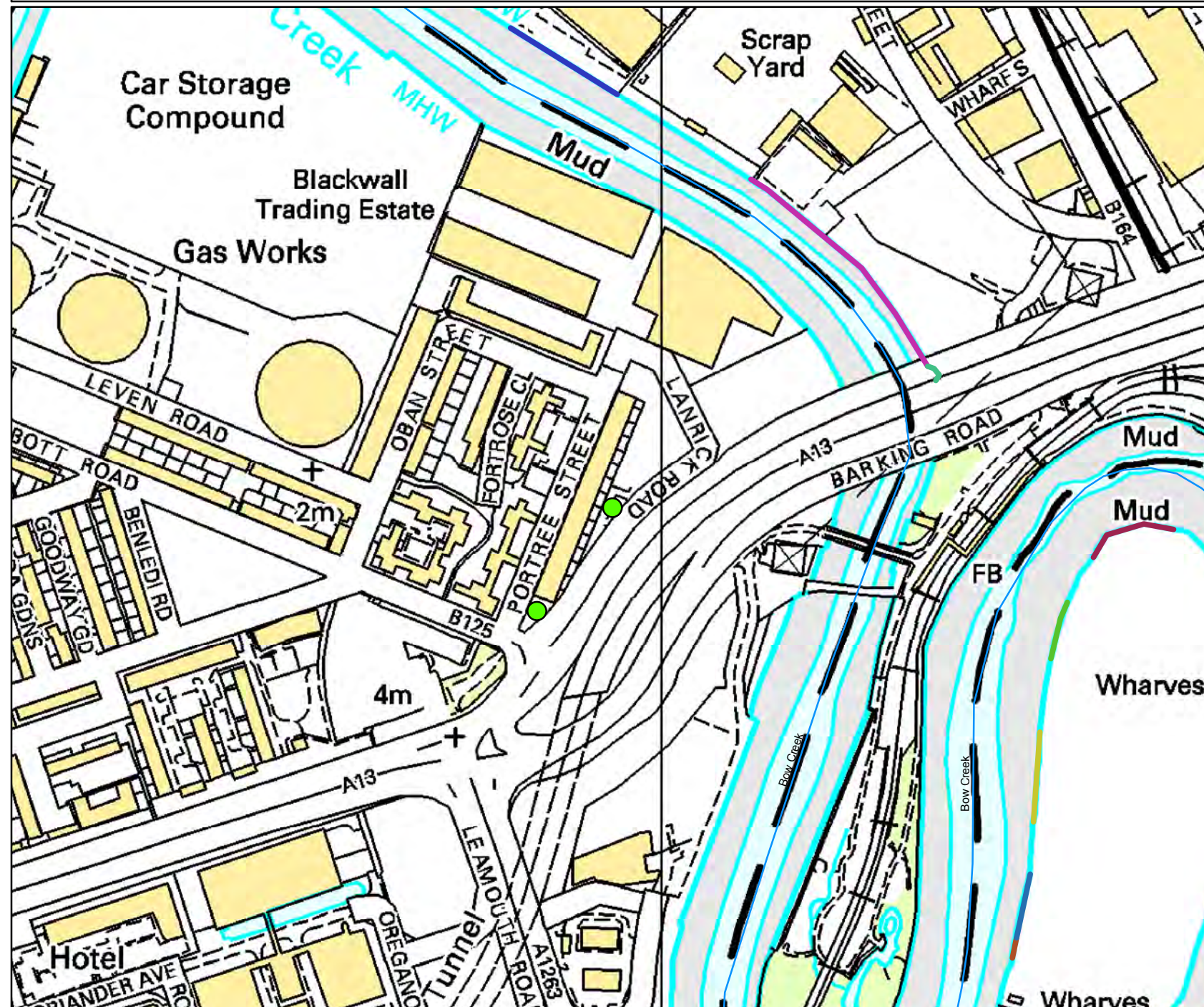
NAFRA_DEFENCE

ASSET_ID

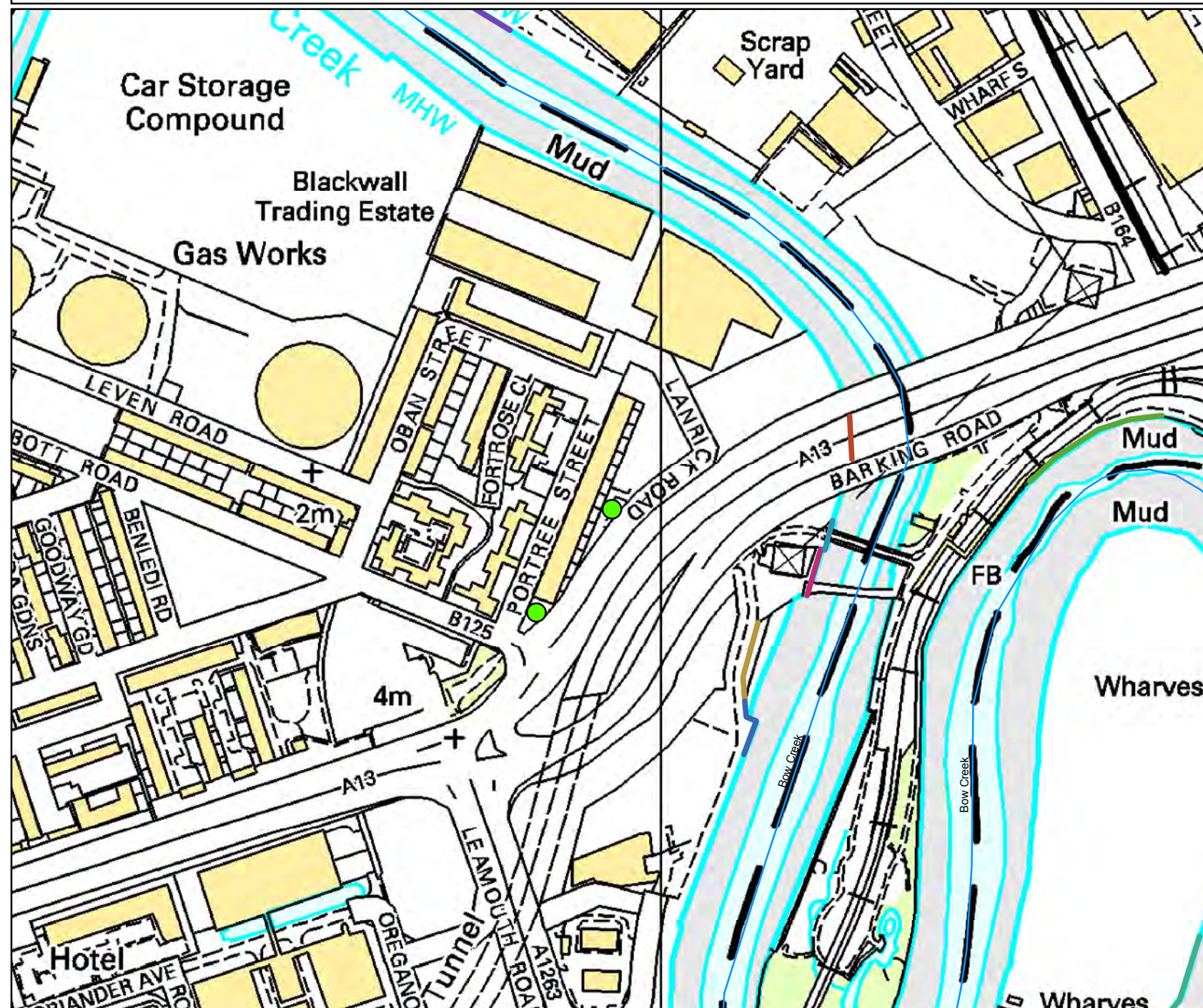
- 14358
- 14359
- 14407
- 14408
- 14409
- 14428
- 14448
- 14449

The following information on defences has been extracted from the Asset Information Management System (AIMS)

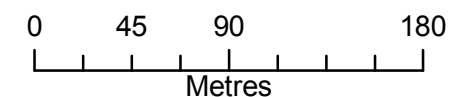
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London



Structures and Defences centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

NAFRA_DEFENCE
ASSET ID

- | |
|-------|
| 14467 |
| 14474 |
| 14480 |
| 14481 |
| 14482 |
| 14483 |
| 14511 |
| 14517 |

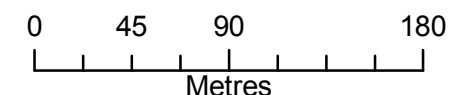
The following information on defences has been extracted from the Asset Information Management System (AIMS)

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Structures and Defences centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

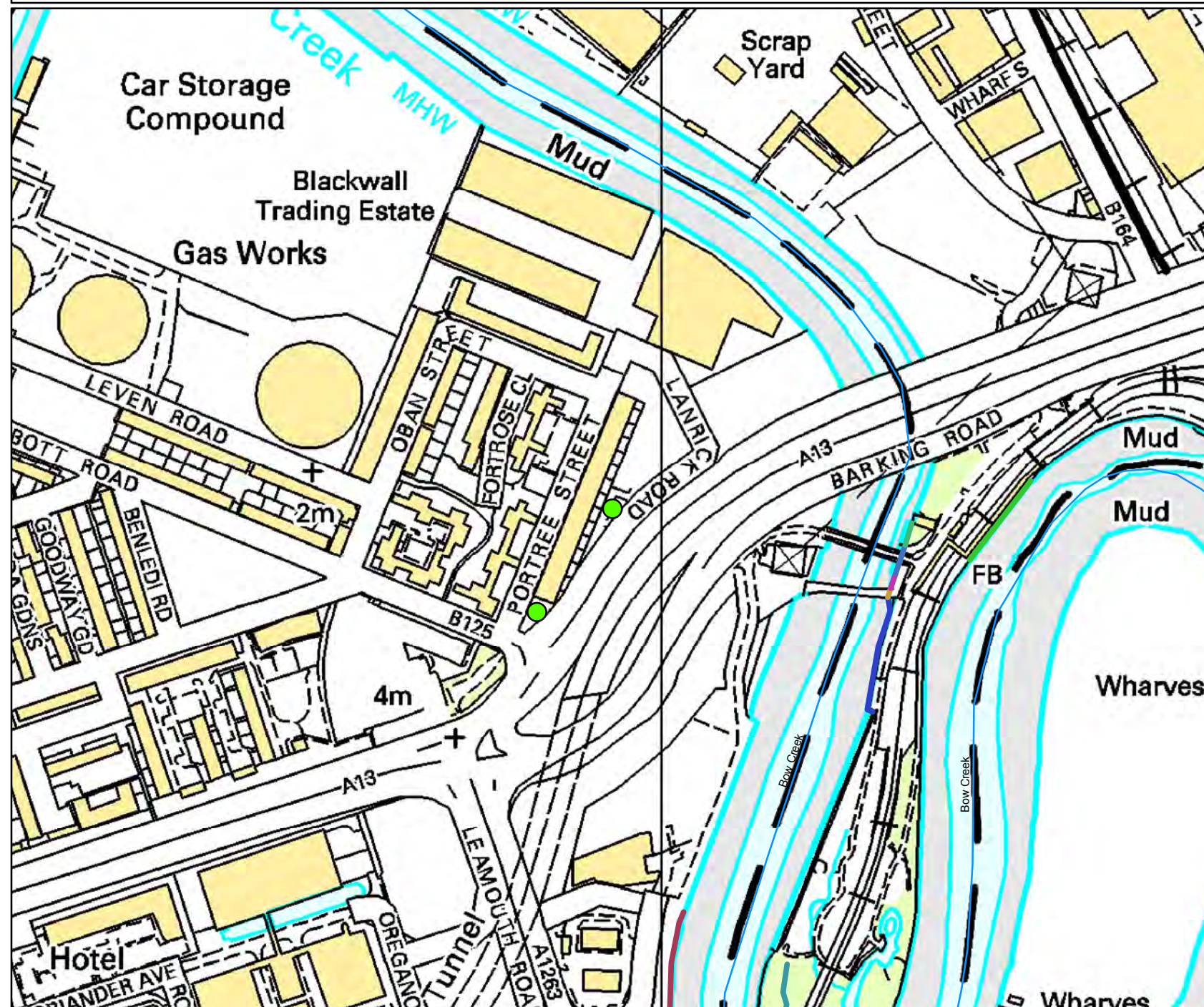
NAFRA_DEFENCE

ASSET_ID

- 14518
- 14588
- 14732
- 14733
- 14734
- 14735
- 14736
- 14737

The following information on defences has been extracted from the Asset Information Management System (AIMS)

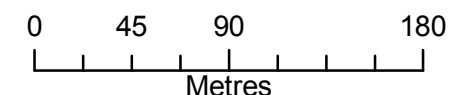
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London



Structures and Defences centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

— Main Rivers

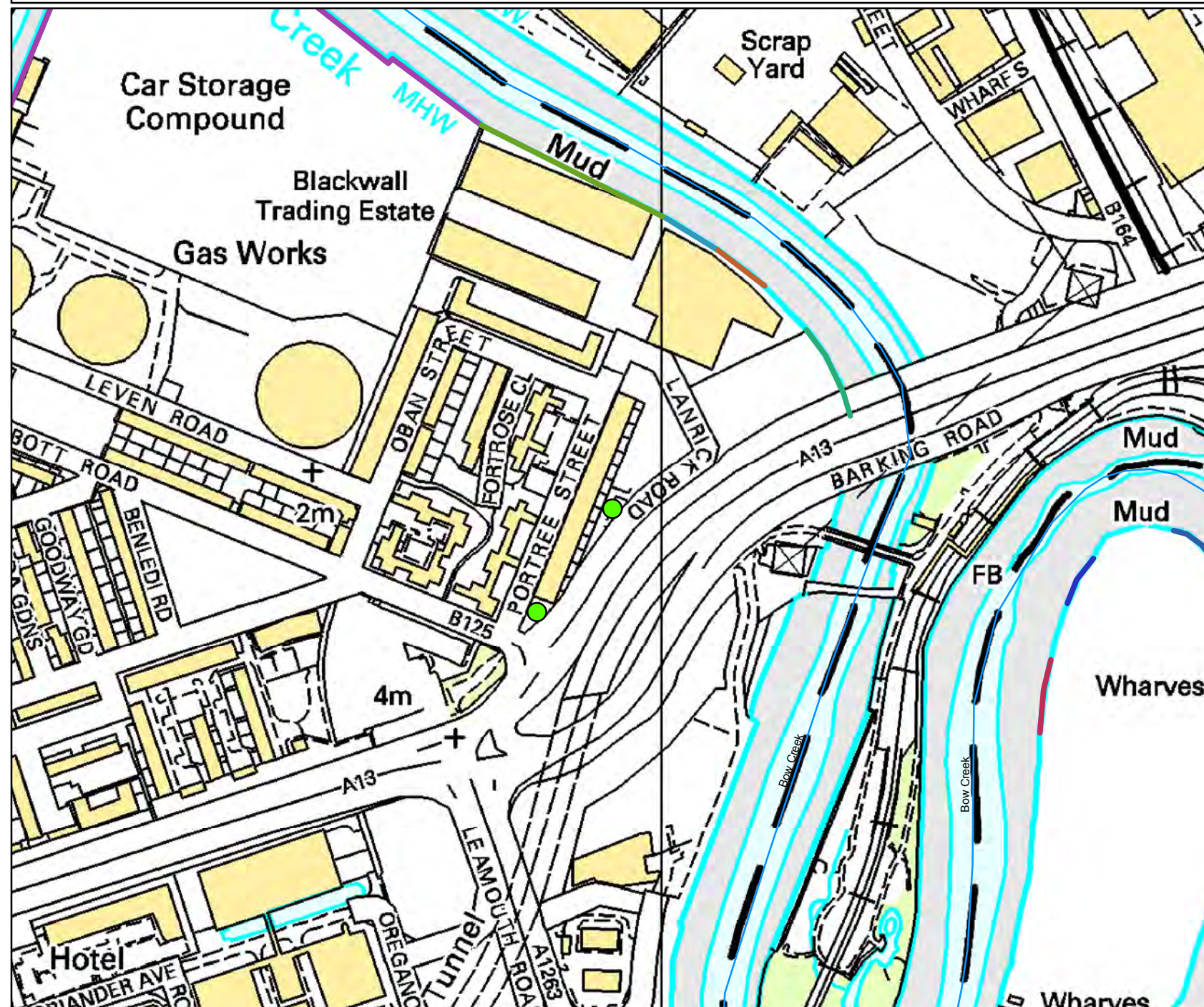
NAFRA_DEFENCE

ASSET_ID

- 14877
- 14878
- 14879
- 14880
- 14881
- 16598
- 16599
- 16600

The following information on defences has been extracted from the Asset Information Management System (AIMS)

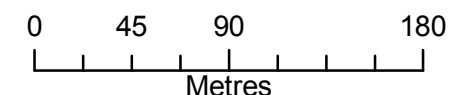
Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London



Structures and Defences centred on Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Environment Agency
2 Bishops Square Business Park
St Albans Road West
Hatfield
Hertfordshire
AL10 9EX



Legend

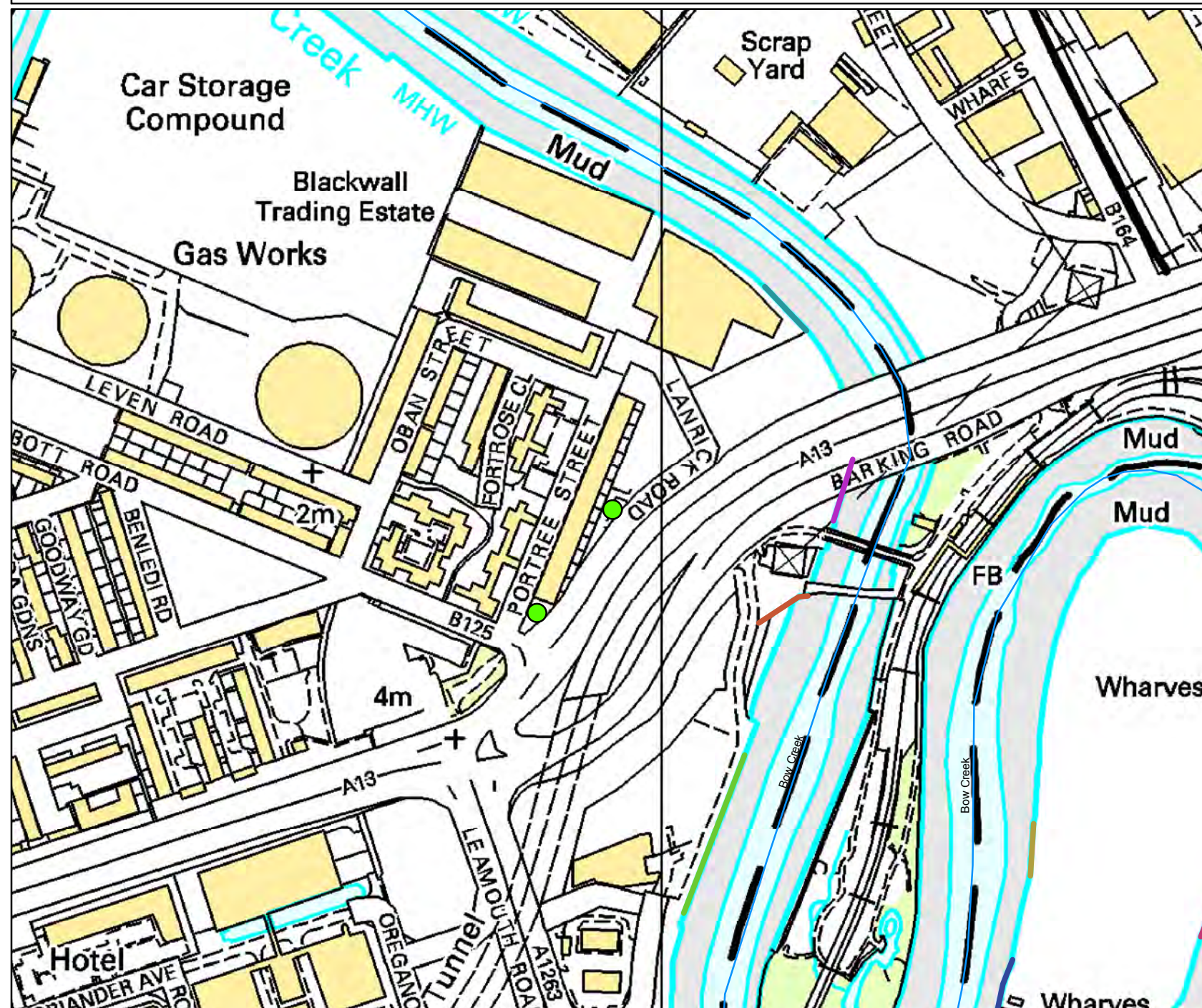
— Main Rivers

NAFRA_DEFENCE ASSET_ID

- 16618
- 16859
- 16860
- 16861
- 16867
- 16868
- 17131

The following information on defences has been extracted from the Asset Information Management System (AIMS)

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London



Environment Agency ref: [HNL52203](#)

The following information on defences has been extracted from the Asset Information Management System (AIMS)

Defences

Asset ID	Asset Type	Asset Protection	Asset Comment	Asset Description	Design Standard of protection (years)	Downstream Crest Level	Upstream Crest Level	Condition of Defences (1=Good, 5 = Poor)
14877	wall	tidal	T6	Poplar Gas Works	1000	5.39	5.39	3
14467	wall	tidal	No data	Electra Park	1000	5.28	5.28	3
14878	wall	tidal	T6	Commercial Wharf	1000	5.3	5.3	3
14428	wall	tidal	T6	Electra Park	1000	5.28	5.28	2
8258	wall	tidal	No data	Canning Town.	1000	6.5	6.5	2
14879	wall	tidal	T6	Leapfield House	1000	5.28	5.28	3
14880	wall	tidal	T6	Creek Wharf	1000	5.28	5.28	3
14359	wall	tidal	No data	Canning Town	1000	6.5	6.5	3
16618	wall	tidal	T6	Creek Wharf	1000	5.28	5.28	2
14881	wall	tidal	T6	A13 Thames Gateway River Lee Crossing	1000	5.36	5.36	3
16859	wall	tidal	T6	A13 Thames Gateway River Lee Crossing	1000	5.28	5.28	3
14480	wall	tidal	No data	A13 Thames Gateway River Lee Crossing	1000	5.28	5.28	2
14355	wall	tidal	No data	Wharfside Rd, London E16 4	1000	6.5	6.5	3

14356	wall	tidal	No data	Wharfside Rd, London	1000	6.5	6.5	3
14358	wall	tidal	Storm outfall	A13 Lee Crossing	1000	6.5	6.5	4
14357	wall	tidal	No data	A13 Bridge	1000	6.5	6.5	2
14474	wall	tidal	No data	Limmo Site	1000	6.5	6.5	2
8141	wall	tidal	No data	Limmo Site / Lee Crossing	1000	6.5	6.5	2
16861	wall	tidal	T6	Blackwall Transfer Station	1000	5.28	5.28	2
14483	wall	tidal	T6	Blackwall Transfer Station	1000	5.28	5.28	2
14517	wall	tidal	T6	Blackwall Transfer Station	1000	5.28	5.28	2
16860	wall	tidal	No data	Blackwall Transfer Station	1000	5.28	5.28	2
8306	wall	tidal	No data	Bow Creek Ecology Park	1000	6.5	6.5	2
14482	wall	tidal	T6	Blackwall Transfer Station	1000	5.28	5.28	2
14481	wall	tidal	T6	Iron Bridge Wharf	1000	5.28	5.28	2
8143	wall	tidal	Flood defence line retreated into park.	Limmo Site	1000	6.5	6.5	2
14733	wall	tidal	No data	Bow Creek Ecology Park	1000	6.5	6.5	2
14734	wall	tidal	No data	Wharfside Rd, London E16 4	1000	6.5	6.5	2
14735	wall	tidal	No data	Wharfside Rd, London E16 4	1000	6.5	6.5	2
14736	wall	tidal	No data	Wharfside Rd, London E16 4	1000	6.5	6.5	2
14737	wall	tidal	No data	Wharfside Rd, London E16 4	1000	6.5	6.5	3
8142	wall	tidal	T6Defence requires subdividing.	Limmo Site	1000	6.5	6.5	2
14588	wall	tidal	No data	Limmo Site	1000	6.5	6.5	2

14409	wall	tidal	No data	Pura Foods	1000	5.63	5.63	2
16598	wall	tidal	No data	Pura Foods	1000	5.63	5.63	2
14448	wall	tidal	No data	Pura Foods	1000	5.63	5.63	2
16599	wall	tidal	No data	Pura Foods	1000	5.63	5.63	2
16600	wall	tidal	No data	Pura Foods	1000	6.33	6.33	2
14518	wall	tidal	T6	Orchard Wharf And Slipway	1000	5.27	5.27	2
16867	wall	tidal	No data	Pura Foods	1000	5.63	5.63	2
14511	wall	tidal	Requires subdivision.	Jubilee Wharf	1000	6.33	6.33	2
14407	wall	tidal	No data	Pura Foods	1000	5.63	5.63	2
14408	wall	tidal	No data	Pura Foods	1000	5.63	5.63	2
17131	wall	tidal	No data	Pura Foods	1000	6.33	6.33	3
16868	wall	tidal	No data	Pura Foods	1000	5.63	5.63	2
14732	wall	tidal	No data	Limmo Site	1000	6.5	6.5	2
14449	wall	tidal	No data	Pura Foods	1000	5.63	5.63	2

Product 4 (Detailed Flood Risk) for: Lanrick Road, Tower Hamlets, E14 0JP

Reference: HNL52203

Date: 20/07/2017

Contents

- Flood Map for Planning (Rivers and Sea)
- Flood Map Extract
- Thames Estuary 2100 (TE2100)
- Thames Tidal Upriver Breach Inundation Modelling 2017
- Thames Tidal Upriver Breach Inundation Modelling Map
- Site Node Locations Map
- Defence Details
- Recorded Flood Events Data
- Recorded Flood Events Outlines Map
- Additional Information
- Environment Agency Standard Notice

The information provided is based on the best data available as of the date of this letter.

You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements to the data for this location have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

Flood Map for Planning (Rivers and Sea)

The Flood Map:

Our Flood Map shows the natural floodplain for areas at risk from river and tidal flooding. The floodplain is specifically mapped ignoring the presence and effect of defences. Although flood defences reduce the risk of flooding they cannot completely remove that risk as they may be over topped or breached during a flood event.

The Flood Map indicates areas with a 1% (0.5% in tidal areas), Annual Exceedance Probability (AEP) - the probability of a flood of a particular magnitude, or greater, occurring in any given year, and a 0.1% AEP of flooding from rivers and/or the sea in any given year. In addition, the map also shows the location of some flood defences and the areas that benefit from them.

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time and also take into account historic flooding and local knowledge. The Flood Map is updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet at

<https://www.gov.uk/government/organisations/environment-agency>.

At this Site:

The Flood Map shows that this site lies within Flood Zone 3 - with a 0.5% chance of flooding from the sea (tidal flooding) in any given year.

Enclosed is an extract of our Flood Map which shows this information for your area.

Method of production

The Flood Map at this location has been derived using detailed modelling of the tidal River Thames through the Thames Tidal Defences Study completed in 2006 by Halcrow Ltd.

Thames Estuary 2100 (TE2100)

You have requested in-channel flood levels for the tidal river Thames. These have been taken from the Thames Estuary 2100 study completed by HR Wallingford in 2008. The modelled node closest to your site is **2.46**; the locations of nearby nodes are also shown on the enclosed map.

Details about the TE2100 plan

The TE2100 plan is now live and within it are a set of levels on which the flood risk management strategy is based. The plan is the overarching flood management strategy for the Thames Estuary and therefore any development planning should be based on the same underlying data.

Details about the TE2100 in-channel levels

The TE2100 in-channel levels take into account operation of the Thames Barrier when considering future levels. The Thames Barrier requires regular maintenance and with additional closures the opportunity for maintenance will be reduced. When this happens, river levels – for which the Barrier would normally shut for the 2008 epoch – will have to be allowed through to ensure that the barrier is not shut too often. For this reason, levels upriver of the barrier will increase and the tidal walls will need to be heightened to match.

Why is there no return period for levels upriver of the barrier?

The levels upriver of the barrier are the highest levels permitted by the operation of the Thames Barrier. If levels and flows are forecast to be any higher, the Thames Barrier would shut, ensuring that the tide is blocked and the river maintained to a low level. For this reason the probability of any given water level upriver of the Barrier is controlled and therefore any associated return period becomes irrelevant. The Thames Barrier and associated defence system has a 1 in 1000 year standard which means it ensures that flood risk is managed up to an event that has a 0.1% annual probability. The probability of water levels upriver is ultimately controlled by the staff at the Thames Barrier.

TE2100 2008 levels:

Levels downriver of the Thames Barrier are 0.1% AEP (1 in 1000) and levels upriver are the highest levels permitted by the Thames Barrier, described as the Maximum Likely Water Levels (MLWLs). The defence levels (left defence, right defence) are the minimum levels to which the defences should be built.

Location	Node	Easting	Northing	Extreme water level (m)	Left defence (m)	Right defence (m)	Allow for future defence raising to a level of...	
							Left Bank (m)	Right Bank (m)
Greenwich	2.46	538943	180471	4.67	5.23	5.23	6.20	6.20
	2.46au	539436	180390	4.66	5.18	5.18	6.20	6.20
	2.46ad	539528	180320	4.66	5.18	5.18	6.20	6.20
	2.47	539826	179982	4.65	5.18	5.18	6.20	6.20

TE2100 climate change levels:

Location	Node	Easting	Northing	2065 to 2100		2100	
				Design water level	Defence level (both banks)	Design water level	Defence level (both banks)
Greenwich	2.46	538943	180471	5.16	5.70	5.65	6.20
	2.46au	539436	180390	5.15	5.70	5.64	6.20
	2.46ad	539528	180320	5.15	5.70	5.63	6.20
	2.47	539826	179982	5.14	5.70	5.62	6.20

Thames Tidal Upriver Breach Inundation Modelling – 2017

The table below displays site-specific modelled flood levels at your site. These have been taken from the Thames Tidal Upriver Breach Inundation Modelling Study 2017 completed by Atkins Ltd. in May 2017.

We have developed a modelling approach where all upriver breach locations along the Thames are equitably modelled, to ensure a consistent approach across London. This modelling simulates 5679 continuous tidal breaches along the entire extent of the Thames from Teddington to the Thames Barrier. For hard and composite defences breaches are set at 20 m wide; for soft defences, breaches are 50 m wide. In both cases, the defence breach scour distance was assumed to extend into the floodplain by the same distance as the breach width.

For breaches upriver of the Thames Barrier, there is no return period for modelled levels as the levels are controlled by barrier closures. The levels used are referred to as Maximum Likely Water Levels (MLWLs). Therefore 2014 and 2100 epochs were modelled on that basis.

Node	National Grid Reference		Modelled levels in mAODN for Max Likely Water Level	
	Easting	Northing	2014	2100
0	538909	18129	No data	3.668
1	538916	181311	2.393	3.668
2	538928	181306	No data	3.475
3	538917	181299	No data	No data
4	538904	181305	2.767	3.668
5	538932	181299	No data	3.937
6	538982	181381	No data	4.383
7	538967	181379	2.393	4.466
8	538966	181363	No data	4.477
9	538978	181371	No data	4.479
10	538949	181337	2.393	4.201
11	538976	181358	No data	4.468

Defence Details

The design standard of protection of the flood defences in this area of the Thames is 0.1% AEP; they are designed to defend London up to a 1 in 1000 year **tidal** flood event. The defences are all raised, man-made and privately owned. It is the riparian owners' responsibility to ensure that they are maintained to a crest level of **5.23m** AODN (the Statutory Flood Defence Level in this reach of the Thames). We inspect them twice a year to ensure that they remain fit for purpose. The current condition grade for defences in the area is **2 (good)**, on a scale of 1 (very good) to 5 (very poor). For more information on your rights and responsibilities as a riparian owner, please see our document 'Living on the edge' found on our website at:

<https://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities>

There are no planned improvements in this area. Please see the 'Thames Estuary 2100' document on our website for the short, medium and long term Flood Risk Management strategy for London:

<https://www.gov.uk/government/publications/flooding-thames-estuary-2100-te2100-plan>

Areas Benefiting from Flood Defences

This site is within an area benefiting from flood defences, as shown on the enclosed extract of our Flood Map. Areas benefiting from flood defences are defined as those areas which benefit from formal flood defences specifically in the event of flooding from rivers with a 1% (1 in 100) chance in any given year, or flooding from the sea with a 0.5% (1 in 200) chance in any given year.

If the defences were not there, these areas would be flooded. An area of land may benefit from the presence of a flood defence even if the defence has overtopped, if the presence of the defence means that the flood water does not extend as far as it would if the defence were not there.

Recorded Flood Events Data

We hold records of historic flood events from rivers and the sea. Information on the floods that may have affected the area local to your site are provided in the enclosed map.

Due to the fact that our records are not comprehensive, we would advise that you make further enquiries locally with specific reference to flooding at this location. You should consider contacting the relevant Local Planning Authority and/or water/sewerage undertaker for the area.

We map flooding to land, not individual properties. Our historic flood event record outlines are an indication of the geographical extent of an observed flood event. Our historic flood event outlines do not give any indication of flood levels for individual properties. They also do not imply that any property within the outline has flooded internally.

Please be aware that flooding can come from different sources. Examples of these are:

- from rivers or the sea;
- surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system);
- overflowing or backing up of sewer or drainage systems which have been overwhelmed,
- groundwater rising up from underground aquifers

Currently the Environment Agency can only supply flood risk data relating to the chance of flooding from rivers or the sea. However you should be aware that in recent years, there has been an increase in flood damage caused by surface water flooding and drainage systems that have been overwhelmed.

Other Sources of Flood Risk

The Lead Local Flood Authority for your area are responsible for local flood risk (i.e. surface runoff, ground water and ordinary watercourse) and may hold further information .

You may also wish to consider contacting the appropriate relevant Local Planning Authority and/or water/sewerage undertaker for the area. They may be able to provide some knowledge on the risk of flooding from other sources.

Additional Information

Use of Environment Agency Information for Flood Risk / Flood Consequence Assessments

Important

If you have requested this information to help inform a development proposal, then we recommend that you undertake a formal pre-application enquiry using the form available from our website:-

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

Depending on the enquiry, we may also provide advice on other issues related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

In **England**, you should refer to the Environment Agency's Flood Risk Standing Advice, the technical guidance to the National Planning Policy Framework and the existing PPS25 Practice Guide for information about what flood risk assessment is needed for new development in the different Flood Zones. These documents can be accessed via:

<https://www.gov.uk/flood-risk-standing-advice-frsa-for-local-planning-authorities>

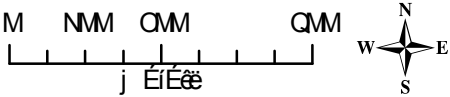
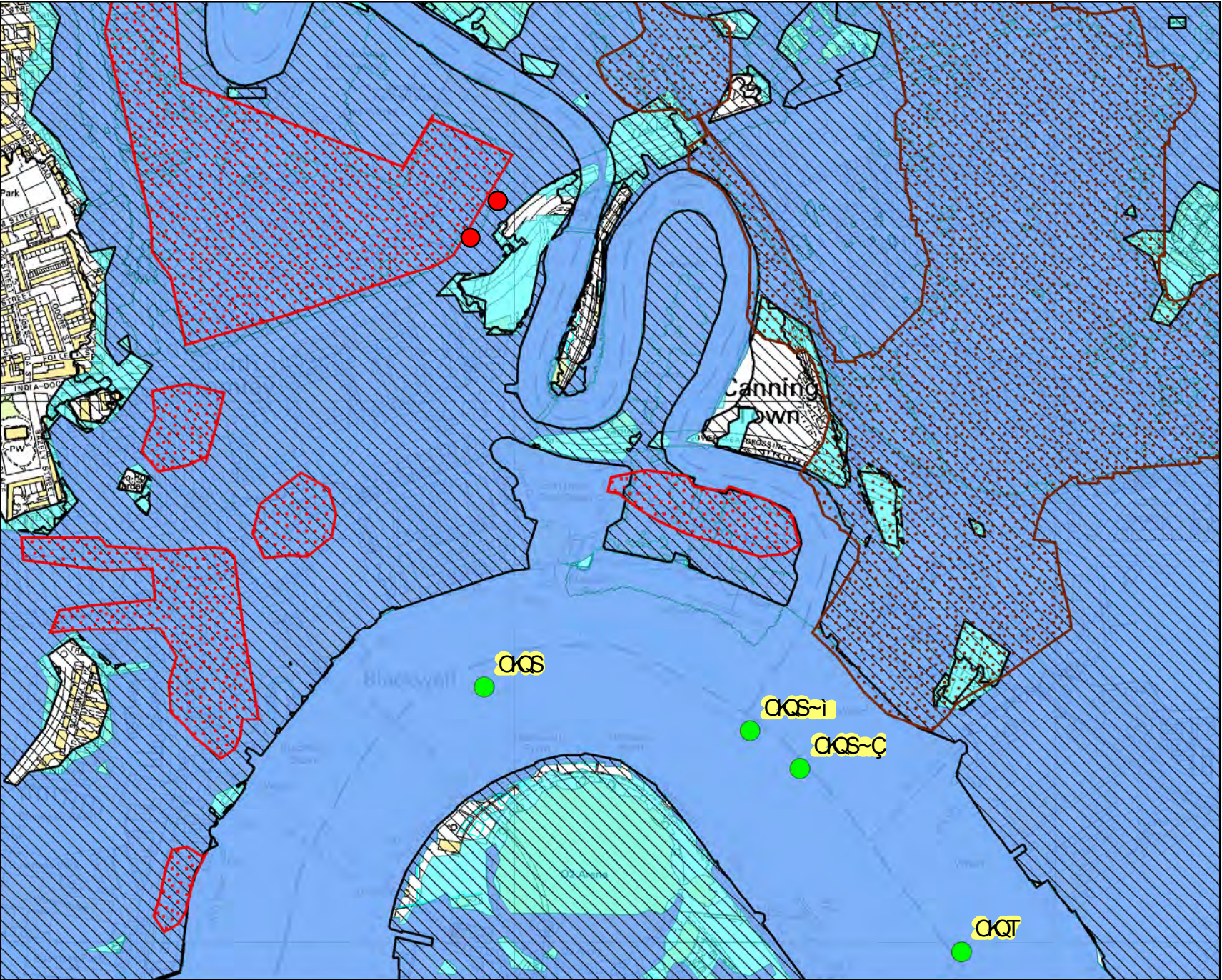
<https://www.gov.uk/government/publications/national-planning-policy-framework-technical-guidance>

<https://www.gov.uk/government/publications/development-and-flood-risk-practice-guide-planning-policy-statement-25>

You should also consult the Strategic Flood Risk Assessment produced by your local planning authority.

You should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk / Consequence Assessment (FRA / FCA) where one is required, but does not constitute such an assessment on its own.
2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or overland runoff. The information produced by the local planning authority referred to above may assist here.
3. Where a planning application requires a FRA / FCA and this is not submitted or deficient, the Environment Agency may well raise an objection.
4. For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your local planning authority.



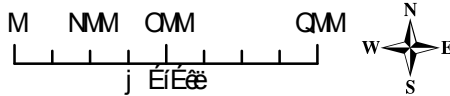
- Legend**
- Site Location
 - qb CNMk çÇÈ
 - 1707 Flood Outline
 - 1928 Flood Outline
 - 1953 Flood Outline
 - ^ Æ~è= ÉàÉñà Öñçã ðççÇa ÉñÉaÆè
 - Flood Zone 3
 - Flood Zone 2

Flood Map for Planning (assuming no defences)

Flood Zone 3~èÜçì è=ÜÈ=Æ~=Ü~i=Çì ðÇÆ
~ñÉAÉÇÀö=ñçÇàÖN
=ñçã ðÜ=èÈ~= ðÜ=ñKB ðèÖÈ~iÈ
=AU~àAE=çñçAAi ððÖÈ~AU=è-è
=çèñçã =èÈ Èç ðÜ=ñB ðèÖÈ~iÈ
=AU~àAE=çñçAAi ððÖÈ~AU=è-èK

Flood Zone 2~èÜçì è=ÜÈ=ÉñiÉaí=çñ~à=ÉñiÉa É
ñççÇñçã =èÈ Èç=èÜ=èÈ~= ðÜ=è=ç=ñKB
AU~àAE=çñçAAi ððÖÈ~AU=è-èK

Detailed FRA/FCA for: Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



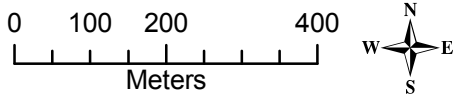
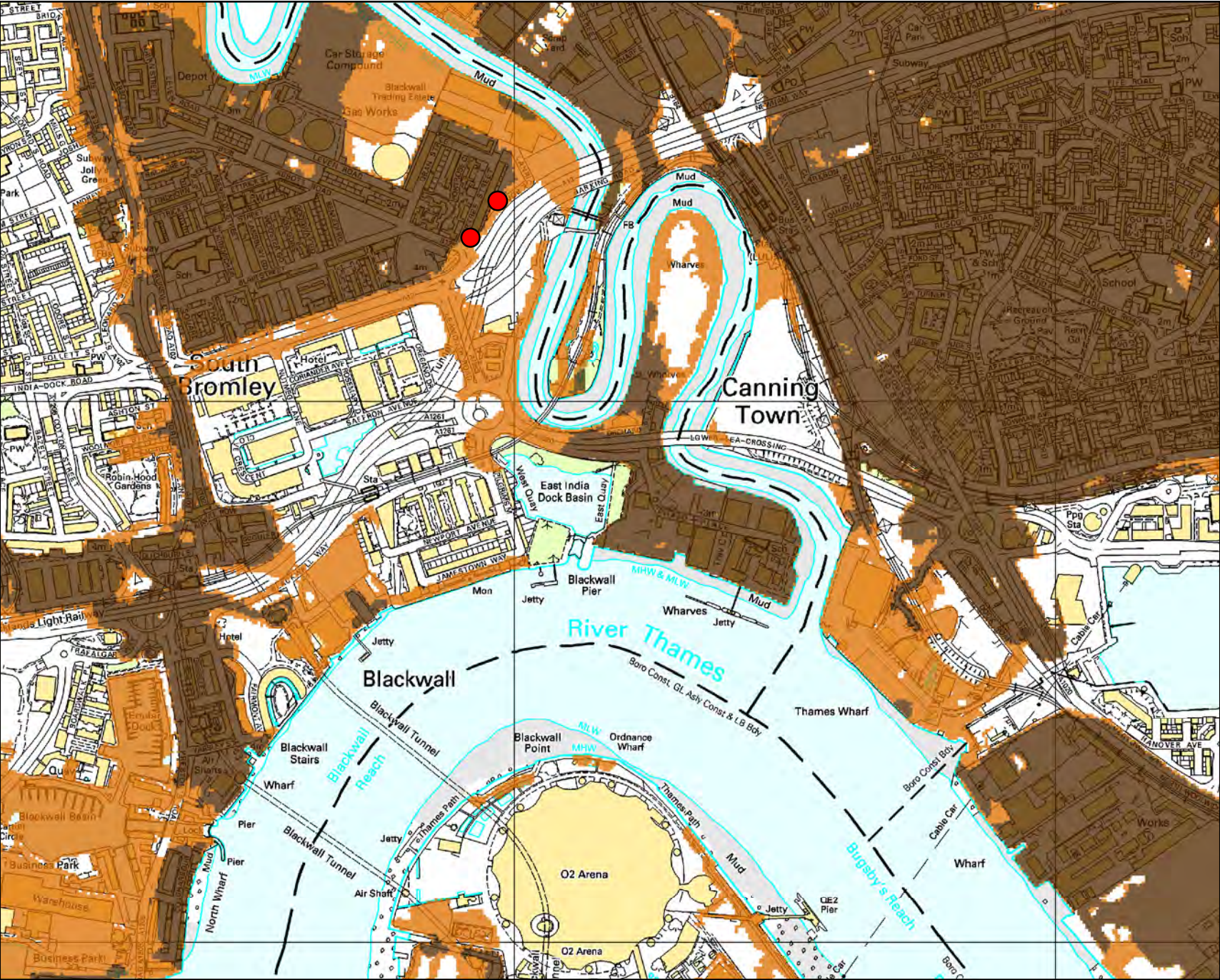
- Legend**
- Site Location
 - TTD Defences SDL (mAODN)
 - SDL
 - RKU
 - RCP
 - RCU
 - RRP

Flood Map for Planning (assuming no defences)

Flood Zone 3 - Areas at high risk of flooding from the River Thames and its tributaries, including the River Lea and the River Roding. This zone includes the area around the O2 Arena and the Blackwall Tunnel.

Flood Zone 2 - Areas at medium risk of flooding from the River Thames and its tributaries, including the River Lea and the River Roding. This zone includes the area around the Blackwall Tunnel and the Blackwall Basin.

Breach Modelling Map for: Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



Legend

● Site Location

Upriver Breach Inundation Outlines

Epoch

2014 (Current year)

2100

Thames Tidal Upriver Breach Inundation Modelling 2017

A modelled representation of all upriver tidal breach locations along the Thames from Teddington to the Thames Barrier, based on low floodplain topography. For hard and composite defences breaches are set at 20 m wide; for soft defences, breaches are set at 50 m wide. In both cases, the defence breach scour distance was assumed to extend into the floodplain by the same distance as the breach width. The modelling is based on the 2008 TE2100 in-channel levels, with an allowance for climate change for epoch 2100.

Modelled Flood Levels For: Lanrick Road, Tower Hamlets, E14 0JP - 20/07/2017 - HNL52203



0 5 10 20
Meters



Legend

- Site Location
- Points

Thames Tidal Upriver Breach Inundation Modelling 2017

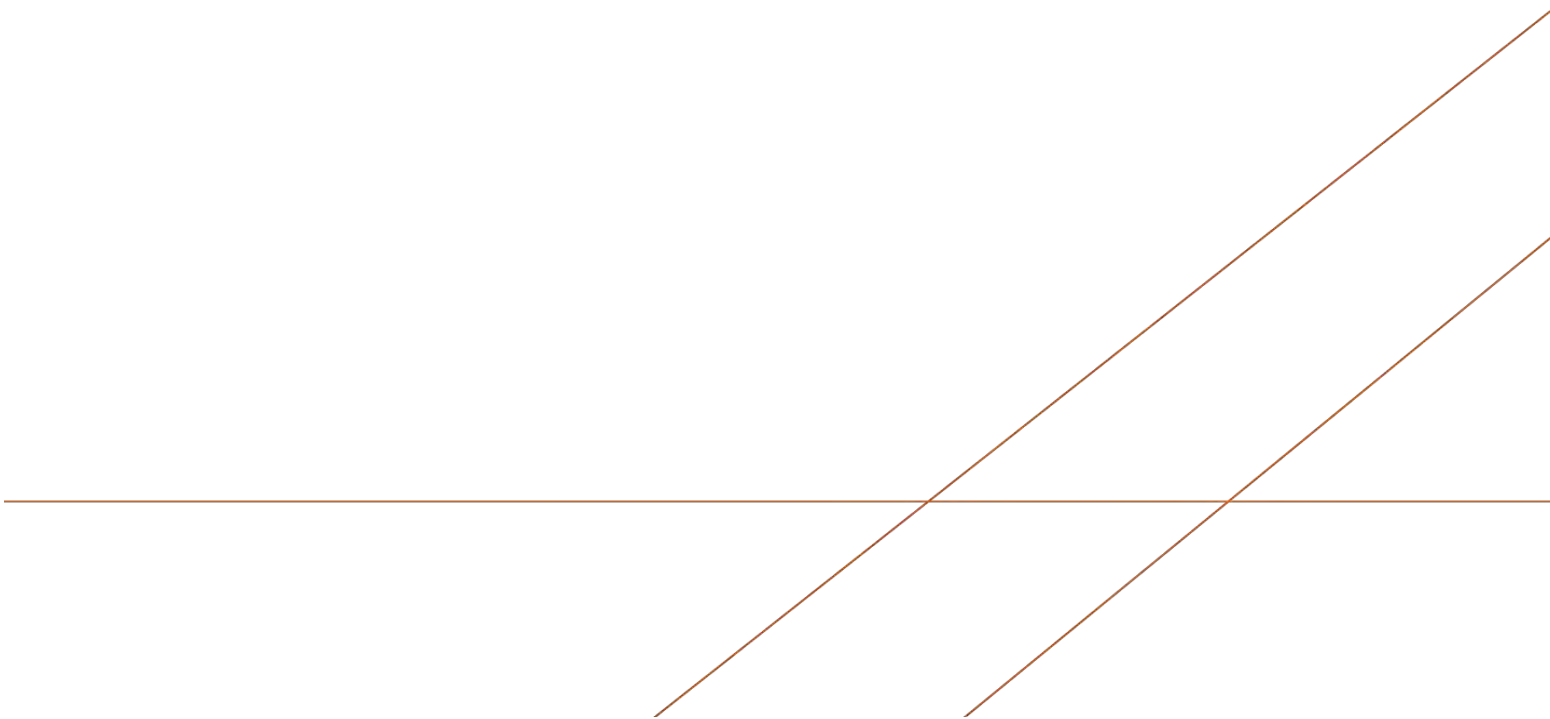
A modelled representation of all upriver tidal breach locations along the Thames from Teddington to the Thames Barrier, based on low floodplain topography. For hard and composite defences breaches are set at 20 m wide; for soft defences, breaches are 50 m wide. In both cases, the defence breach scour distance was assumed to extend into the floodplain by the same distance as the breach width. The modelling is based on the 2008 TE2100 in-channel levels, with an allowance for climate change for epoch 2100.

Arcadis

Arcadis House
34 York Way
London N1 9AB
United Kingdom

T: +44 (0)20 7812 2000

[arcadis.com](https://www.arcadis.com)

A decorative graphic consisting of three thin, parallel lines in a light brown color. One line is horizontal, starting from the left edge and extending across the page. Two other lines are diagonal, starting from the bottom left and extending towards the top right, intersecting the horizontal line.

TFL_PSF_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE

LAND AT PORTTREE STREET, TOWER HAMLETS, E14

Site Ref: 2748
Ecological Assessment

OCTOBER 2017

Incorporating

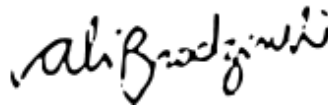
EC HARRIS
BUILT ASSET
CONSULTANCY


Hyder

LAND AT PORTREE STREET

Ecological Assessment Report

Author Aline Brodzinski



Checker Brandon Murray



Approver Martina Girvan



Report No 1402-UA009686- UE21R-02

Date OCTOBER 2017

VERSION CONTROL

Version	Date	Author	Changes
01	September 2017	Aline Brodzinski	1 st Issue
02	October 2017	Aline Brodzinski	Final Issue

This report dated 02 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 (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

CONTENTS

- 1 INTRODUCTION 1
 - 1.1 Background 1
 - 1.2 Site Location & Setting 1
- 2 METHODOLOGY 2
 - 2.1 Desk Study 2
 - 2.2 Field Survey..... 2
 - 2.3 Limitations and Expectations..... 2
- 3 SURVEY RESULTS..... 4
 - 3.1 Reporting Outline 4
 - 3.2 Desk Study Results 4
 - 3.3 Site Overview 4
 - 3.4 Habitats..... 4
 - 3.5 Protected and Notable Species..... 5
 - 3.6 Invasive Species 5
- 4 POTENTIAL ECOLOGICAL CONSTRAINTS 6
 - 4.1 Habitats / Invasive Species..... 6
 - 4.2 Protected and Notable Species..... 6
- 5 LEGISLATION AND KEY POLICY REQUIREMENTS..... 7
 - 5.1 Relevant Legislation..... 7
 - 5.2 Relevant Policy 7
 - 5.3 Potential for Enhancement Within a Development 7

6 SUMMARY OF ECOLOGICAL CONSTRAINTS AND MITIGATION REQUIRED	8
7 CONCLUSIONS	9
SITE PHOTOGRAPHS	10
FIGURE 1: STATUTORY DESIGNATED SITES WITHIN 2KM OF THE SITE CENTRE	11
FIGURE 2: EXTENDED PHASE 1 HABITAT MAP (WITH DEDICATED SURVEY RESULTS AND TARGET NOTES).....	12
APPENDIX A: DESK STUDY RESULTS	13
APPENDIX B: BAT HABITAT SUITABILITY AND LONDON POPULATION STATUS.....	18
APPENDIX C: SELECTED LEGISLATION, NATURE CONSERVATION STATUS AND POLICY.....	21

1 INTRODUCTION

1.1 Background

Arcadis (UK) Limited (Arcadis) was commissioned by Transport for London (TfL) to undertake an ecological assessment to support the feasibility for potential development at Land at Portree Street, hereafter referred to as “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 report is to identify potential ecological development constraints due to current ecological conditions on site as based on the findings of a desk study and ecological constraints survey. The report outlines the ecological constraints associated with the Site with regards to biodiversity legislation and policy and provides advice on mitigation and enhancement opportunities, including requirement for any further assessment or licensing, if necessary.

1.2 Site Location & Setting

The Site is located east of Portree Street, west of Lanrick Road and A13 and north of Abbott Road, in the London Borough of Tower Hamlets. The Site is centred at grid reference of 538914, 181303 and around the postcode of E14 0HT.

It is approximately 0.03ha in area with the majority of the Site currently comprised of dense introduced shrubs with scattered scrub, a small area of tall ruderals and scattered trees.

The immediate surrounding residential area is characterised by low rise housing. Approximately 20m west of the Site is the A13.

The Site boundary used for this assessment is presented on Figure 2.

2 METHODOLOGY

2.1 Desk Study

Desk-based ecological information was collated from multiple sources.

The Multi-Agency Geographic Information for the Countryside (MAGIC) website¹ and other Natural England and Forestry Commission datasets were used to search for any statutory or non-statutory designated sites of nature conservation importance within a specific radius of the Site boundary, as follows:

- Special Protection Areas (SPAs) or Ramsar Sites designated for their bird interests (5km radius);
- Special Areas of Conservation (SACs) (5km radius);
- Sites of Special Scientific Interest (SSSIs) and all other statutory designated sites (2km radius);
- National Nature Reserves (NNR);
- Local Nature Reserves (LNR); and
- Woodlands registered on the Ancient Woodland Inventory (AWI).

Records of protected or otherwise notable species of conservation concern (that the Site has the potential to support) located 1km of the Site boundary were obtained from the following sources:

- Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006) Species of Principle Importance in England²;
- National Biodiversity Network Atlas³;
- London Biodiversity Action Plan⁴; and
- Local Biodiversity Action Plan.

In addition, the Local Plan was reviewed for citations of any non-statutory designated sites located within a 1km radius of the Site, including Local Wildlife Sites (LWS) and the locations of Sites of Importance for Nature Conservation (SINCs) were also obtained from London Borough of Barnet. No citations for these sites were obtained other than where information was publically accessible.

SINCs fall into three sub designations:

- Sites of Metropolitan Importance for Nature Conservation (SMINCs);
- Sites of Borough Importance for Nature Conservation (SBINCs) Grades I and II; and
- Sites of Local Importance for Nature Conservation (SLINCs).

Waterbodies located within 250m of the Site identified from OS mapping were assessed with regards to their connectivity to the Site and their potential suitability for supporting a population of breeding great crested newts (*Triturus cristatus*).

2.2 Field Survey

This survey was conducted by Aline Brodzinski in July 2017 (MCIEEM). Habitats were classified according to their JNCC Phase 1 habitat categories (JNCC 2010)⁵ and plants named after Stace (1997)⁶ and are presented on Figure 2.

2.3 Limitations and Expectations

This report has been prepared for TfL 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.

¹ MAGIC (2002). MAGIC Map Search. [online] Available at <http://magic.defra.gov.uk> [Accessed May 2017]

² NERC Act (2006) Section 41 Species <http://www.nhm.ac.uk/our-science/data/uk-species/checklists/NHMSYS0020515439/index.html>

³ National Biodiversity Network <https://nbn.org.uk/> [Accessed May 2017]

⁴ London BAP (Reviewed 2007) <http://www.gigl.org.uk/london-bap-priority-species/> [Accessed May 2017]

⁵ Joint Nature Conservation Committee (2010), *Handbook for Phase 1 habitat survey - a technique for environmental audit*

⁶ Stace, C. (1997). *New Flora of the British Isles Second Edition*. Cambridge University Press

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.

3 SURVEY RESULTS

3.1 Reporting Outline

The results of the desk study and ecological constraints survey are described below, with Sites or features of particular nature conservation interest detailed as appropriate.

Supporting information to be read in conjunction with the results and subsequent discussion are as follows:

- Figure 1: Designated Sites within 2km of the Site centre;
- Figure 2: Extended Phase 1 Habitat Map (with dedicated survey results and target notes);
- Table 1: Ecological Constraints and Mitigation Summary Table; and
- Table 2: Site photographs.

Only information potentially relevant to the development of the Sites is included within the report other information is appended as follows:

- Appendix A: Desk Study Results;
- Appendix B: Bat Habitat Suitability Assessment and London Bat Population Status; and
- Appendix C: Selected Legislation, Nature Conservation Status and Policy.

3.2 Desk Study Results

Only desk study results that are potentially relevant to the Site will be presented within the report. Detailed status and protections conferred by the relevant designations below are presented in Appendix A and Figure 1. The relevant Site information is summarised below.

- There are two records of fox (*Vulpes Vulpes*) from 2010 and 2015 approximately 0.6km from the Site;
- There were no relevant records of protected or notable reptiles, amphibians or birds or of badger within 1km of the Site.
- No Statutory or non-statutory designated sites (including ancient woodlands or woodlands listed on the Ancient Woodland Inventory (AWI)) were identified within the vicinity of the Site which were considered to have the potential to be significantly impacted by development on the Site.

3.3 Site Overview

The Site supported a limited range of habitats and was dominated by introduced shrubs with scattered scrub, a small area of tall ruderals and scattered trees.

3.4 Habitats

Phase 1 habitat categories and descriptions of these habitats are presented below and the locations of these habitats are presented in Figure 2.

- **Introduced shrubs with scattered scrub:** The largest proportion of the Site was formed of introduced shrubs. Species identified included Bramble (*Rubus fruticosus* agg.) and Snowberry cultivar (*Symphoricarpos* sp. cult.) species listed on LISI.
- **Species poor semi-improved grassland with Tall Ruderals:** A small area of tall ruderals is located to the north-west corner of the Site. Species identified included False Oat-grass (*Arrhenatherum elatius*), Hoary Mustard (*Hirschfeldia incana*), Hemlock (*Conium maculatum*) and Groundsel (*Senecio vulgaris*) as well as Greater Bindweed (*Calystegia sepium*) and Ivy cultivar (*Hedera helix* cult.).
- **Individual scattered trees:** trees were scattered across the Site and species identified included London Plane (*Platanus × hispanica*), Silver Birch (*Betula pendula*) and Rowan cultivar (*Sorbus* cult.).

3.5 Protected and Notable Species

The following protected or notable species have the potential to be present on / adjacent to the Site:

- **Nesting Birds:** there is potential for nesting birds to be utilising the trees and scrub on the Site, including species listed on the London BAP such as house sparrow (*Passer domesticus*). House sparrow and blackbird (*Turdus merula*) were observed on Site during the survey.

The Site offered no suitable habitat for reptiles. No suitable ponds were present within 500m of the Site with connectivity to the Site, so the presence of great crested newts is extremely unlikely. Overall, within the Site, there was limited potential for protected or notable species.

3.6 Invasive Species

On Site, no invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded during the survey.

Snowberry listed on the LISI (London Invasive Species List) was recorded on Site.

4 POTENTIAL ECOLOGICAL CONSTRAINTS

The potential ecological constraints and associated further works including mitigation is briefly presented below, further detail is presented in Table 1.

4.1 Habitats / Invasive Species

The habitats on Site are likely to be considered as 'less than local' value according the CIEEMs *Guidelines for Ecological Impact Assessment* (CIEEM 2016)⁷. However, these habitats have value as green infrastructure, likely performing important ecosystem services (such as drainage, air quality etc.) in addition to the ecological value they have.

There will be some ecological benefit from the removal of non-native and invasive species listed on the LISI (London Invasive Species Initiative) list. There is no legal obligation to control or remove the species recorded (Snowberry) but it is good practice to do so. Removal of the vegetation from the site to facilitate the development would likely adequately eradicate the majority of the LISI species from the site.

For any loss of trees, trees should be re-provisioned on the Site, of a suitable species, preferably native species of local origin appropriate to the sylvan culture of the area. An ecologist and arboriculturist should contribute to the evolution of the development and landscaping design to minimise biodiversity loss and to maximise the replacement green infrastructure with regards to biodiversity.

4.2 Protected and Notable Species

The following notable or protected species have the potential to be impacted by the works:

- **Nesting birds:** it is likely that nesting birds will utilise the Site, clearance of vegetation should be avoided during the nesting bird season (March to August inclusive) replacement nesting opportunities should be provided within any development.

⁷ CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater and Coastal.

5 LEGISLATION AND KEY POLICY REQUIREMENTS

Potentially relevant Legislation and Policy are presented in Appendix C and further detail with regards to surveys and mitigation required are presented in Table 1.

5.1 Relevant Legislation

Development of the Site will require surveys and or mitigation to fulfil legislative requirements for the following protected species:

- WCA, as amended 1981, for nesting birds: works will need to be timed to avoid the nesting bird season (March to August inclusive) or supervised to prevent impacts to nesting birds.

Full details of subsequent works required are included within section 6, Table 1 below.

5.2 Relevant Policy

Elements of national, London and local policies and plans have the potential to be applicable to any development of the Site, these relate to:

- The safeguarding and replacement of trees to be lost to development;
- Creation and enhancement of biodiversity where possible;
- Material consideration of S41 species; and
- Although no invasive species with legal obligations were recorded on the Site, there were plants recorded listed on LISI (London Invasive Species List), while there is no legal requirement to remove or control these species (Snowberry) it would be appropriate and beneficial to remove them as part of a future development.

An ecology report addressing the required design and construction mitigation for any proposed development will be required in support of planning.

5.3 Potential for Enhancement Within a Development

In addition to the recommended further works, enhancements should be considered within any development. For example, biodiversity roofs, rain gardens and other green infrastructure should be considered and the soft landscaping should be designed to maximise the biodiversity potential.

There are also opportunities for enhancements for London BAP species. Bird boxes for sparrows would be a valuable enhancement, along with bat roosting boxes.

6 SUMMARY OF ECOLOGICAL CONSTRAINTS AND MITIGATION REQUIRED

Table 1 Ecological Constraints and Mitigation Summary Table

Key Issues	Legislation/Policy	Assumption	Further Survey / input?	Seasonal Timing	Mitigation Required	Seasonal Timing	Programme Delay Risk	Survey/ Mitigation Cost Estimate*	Risk Rating
Nesting Birds									
All green infrastructure listed below is suitable for nesting birds. These are likely to be removed for development. - Introduced shrubs with scattered scrub; - Tall ruderals; - Individual trees.	WCA, 1981, as amended	Removed for development / site investigation.	No (but see mitigation recommendations)	N/A	Remove any remaining trees and scrub vegetation outside the core nesting bird season (March to August inclusive) or vegetation removal will need to be supervised by an ecological watching brief.	September to February remove trees and shrubs	If vegetation removal is required during the nesting bird season and nest are found by the ecological watching brief, a delay of 6 weeks is likely to be required until chicks have fledged.	Mitigation £500 - £1000 per day for ecological supervision / nesting bird check. Design and replacement of green infrastructure not costed.	Low
Green Infrastructure/ Trees									
A number of trees / groups may be felled for development	Potential TPOs (although unlikely) although removal will be granted with planning permission national and local policy on no net loss	Trees and shrubs will be removed or damaged due to development	Yes: BS 3857 2012 Tree survey	Removal of trees affected by bird nesting season see above.	Protection of trees replacement of trees and green infrastructure	As above.	N/A for the vegetation but see above.	Survey: £1,900 Mitigation: £1,000 demarcation and Arboricultural Method Statement. Replacement of green infrastructure.	Low
Non-native Invasive species									
Snowberry	London Invasive Species Index	Development could cause these species to spread	No	N/A	It would be good practice to remove these species during subsequent development and to implement mitigation to ensure they are not spread	N/A	N/A	N/A Can be undertaken with vegetation clearance for development.	Low

* Cost estimates only, actual costs would depend on the design and programme of any subsequent development and do not include costs for reports in support of planning application or any associated protected species licencing

7 CONCLUSIONS

There are no likely significant ecological constraints with regards to the development of this Site.

No statutory or non-statutory designated sites were considered to have the potential to be significantly impacted by development on the Site.

Potential constraints requiring mitigation and recommendations for enhancement are listed below:

- The Site supported a limited range of habitats and comprised of dense introduced shrubs with scattered scrub, small area of tall ruderals and scattered trees. The habitats on Site were generally of poor quality and with limited potential for protected or notable species due to the small area and limited value of the habitats. However, these habitats have some value in terms of green infrastructure, likely performing important ecosystem services (such as water quality and volume attenuation and air quality attenuation etc.). Retention, replacement and/or enhancement should be included within the design of any future development.
- There is potential for nesting birds to be utilising the trees and introduced shrub with scattered scrub on the Site, including species listed on the London BAP such as house sparrow. Removal of all trees and scrub vegetation on the Site will need to be conducted outside of the bird nesting season (March – August inclusive) or under an ecological watching brief.
- There will be some ecological benefit from the removal of non-native invasive species on the LSI, which is likely to occur when the site is cleared for any construction. There is no legal obligation to control any of the LSI species recorded on the Site or to remove of them as controlled but it is good practice to remove them and to avoid their spread.
- Trees and other vegetation should be replaced within any proposed soft landscaping and these designs should be evolved in liaison with an ecologist and arboriculturist. In addition, rain gardens, biodiversity roofs and other green infrastructure should be considered within any development.
- There are also opportunities for enhancements for London BAP species. Bird boxes for sparrows would be a valuable enhancement, along with bat roosting boxes.

SITE PHOTOGRAPHS

Table 2: Land at Portree Site photographs

Land at Portree Site photographs	
	
Photograph 1: Introduced shrubs	Photograph 2: Species poor semi-improved grassland
	
Photograph 3: Non-native Invasive Snowberry	

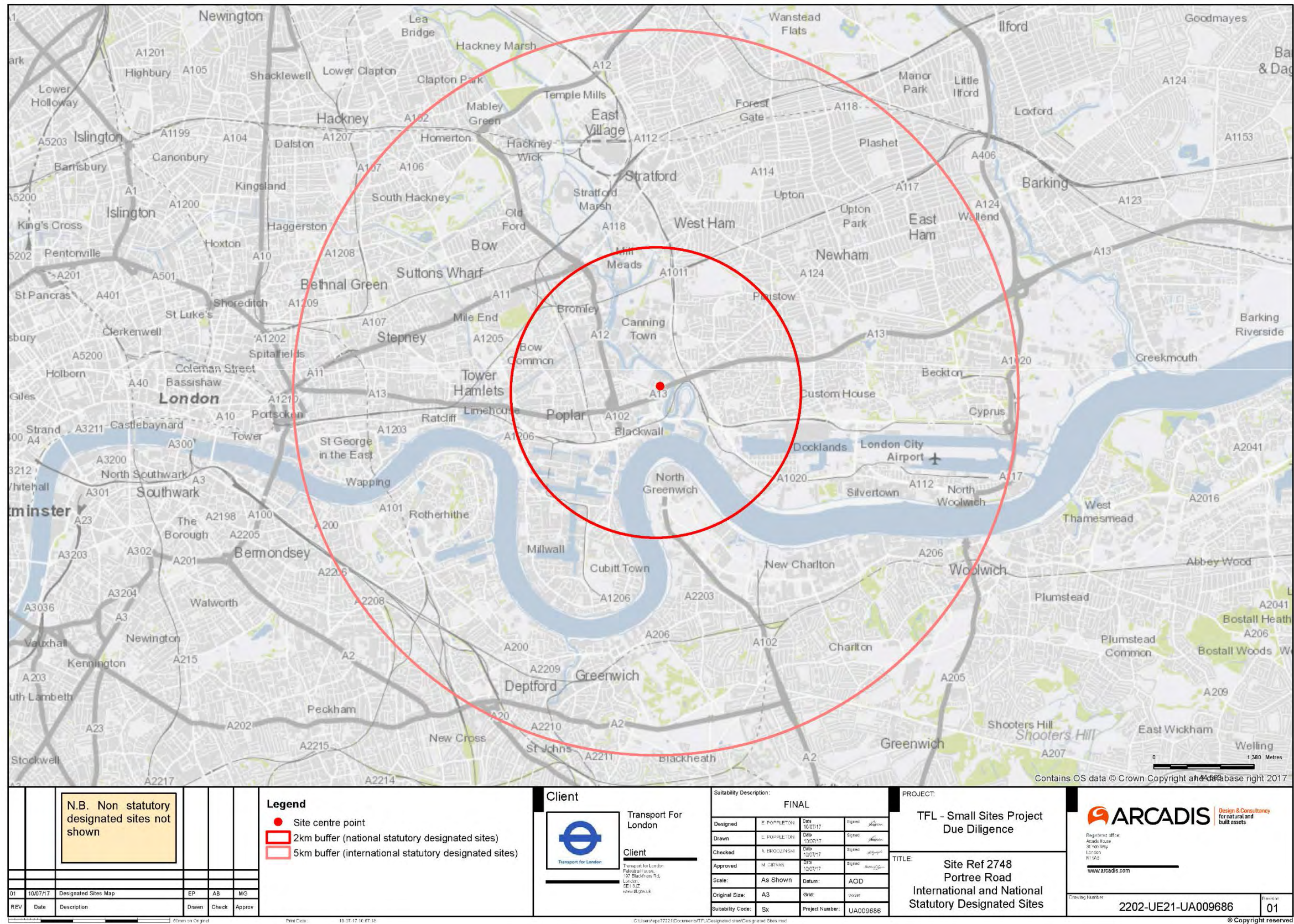


FIGURE 1: STATUTORY DESIGNATED SITES WITHIN 2KM OF THE SITE CENTRE

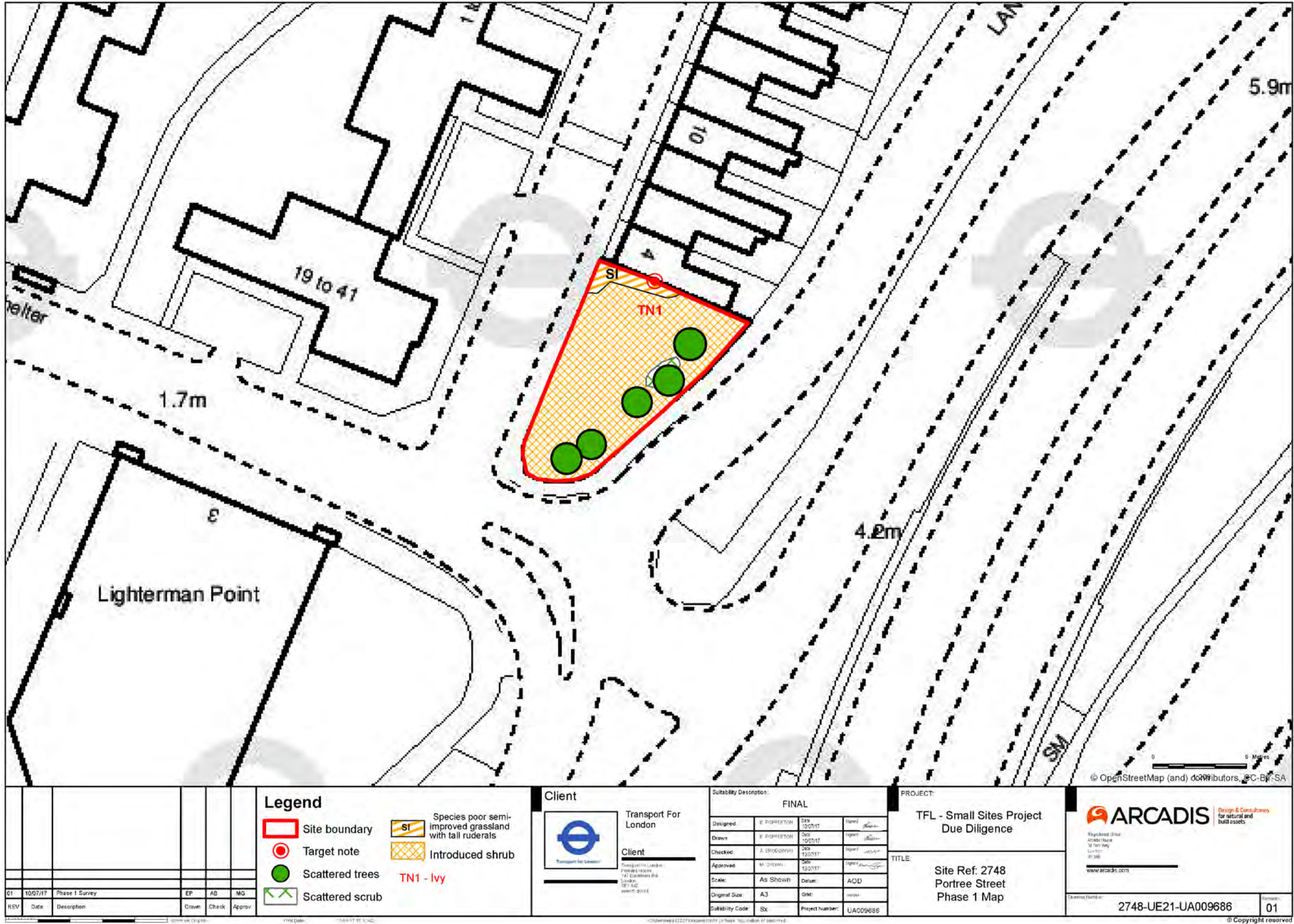


FIGURE 2: EXTENDED PHASE 1 HABITAT MAP (WITH DEDICATED SURVEY RESULTS AND TARGET NOTES)

Appendix A: Desk Study Results

Statutory Designated Sites

The desk study found no Natura 2000 sites (SPAs, SACs, Ramsar) within 5km of the Site nor Statutory Designated Sites present within 2km of the Site.

Non-Statutory Designated Sites

The desk study found the following non-statutory designated sites within 1km of the Site. A selection of the sites is presented below:

Metropolitan Importance:

- River Thames and Tidal Tributaries

Local Importance:

- Bow Creek Ecology Park;
- Saffron Avenue Pond.

Borough Importance (Grade 1):

- East India Dock basin.

Non-Statutory Designated Sites

Table A:2: Non-Statutory Designated Sites

Site Name	Designation	Size (Ha)	Distance (m)	Direction	Description
River Thames and Tidal Tributaries	Metropolitan Importance	--	120	South-east	unknown
Bow Creek Ecology Park	Local Importance	2.6	250	South-east	unknown
Saffron Avenue Pond	Local importance	--	490	south	unknown
East India Dock basin	Borough Importance (Grade 1)	7.3	500	south	unknown
Robin Hood Gardens	Local Importance	--	820	South-west	unknown

Overview of Protected, Notable and Invasive Species in London

This section of this report outlines the status of protected and notable species in London. The status of these species on the Site is fully discussed in section 3. Relevant conservation status and legislation is presented in Appendix D and E.

Non-native invasive species in Greater London

London is an extremely urbanised area and is a major international port for both people and goods, this in addition to its climate and major levels of construction has encouraged the spread of a number of non-native invasive species that are becoming pests. Therefore, in addition to those species listed on Schedule 9 of the Wildlife and Countryside Act (WCA) **Error! Bookmark not defined.** (1981, as amended) there is a London Invasive Species Initiative (LISI)^{**Error! Bookmark not defined.**} managed by the London Biodiversity Partnership, which lists non-native invasive species that should be controlled in London. Species potentially relevant to the Site include those presented in Table A3..

Table A:3: *Potential Schedule 9 (WCA 1981, as amended) or LISI species*

Common Name	English Name	Status
Japanese Knotweed	<i>Fallopia japonica</i>	Schedule 9 and LISI
Cotoneaster (numerous)	<i>Cotoneaster</i> spp.	Schedule 9 and LISI
Rhododendron	<i>Rhododendron ponticum</i>	Schedule 9 and LISI
Indian (or Himalayan balsam)	<i>Impatiens glandulifera</i>	Schedule 9 and LISI
Virginia creeper	<i>Parthenocissus quinquefolia</i>	Schedule 9
Montbretia	<i>Crocsmia x crocosmiiflora</i>	LISI
Cherry Laurel	<i>Prunus laurocerasus</i>	LISI
False acacia	<i>Robinia pseudoacacia</i>	LISI
Green alkanet	<i>Pentaglottis sempervirens</i>	LISI
Butterfly-bush	<i>Buddleia davidii</i>	LISI
Snowberry	<i>Symphoricarpos albus</i>	LISI
Tree of heaven	<i>Ailanthus altissima</i>	LISI
Holm oak	<i>Quercus ilex</i>	LISI
Passion flower	<i>Passiflora caerulea</i>	LISI
Spanish bluebell	<i>Hyacinthoides hispanica</i> & <i>H. x massartiana</i>	LISI
Holm oak	<i>Quercus ilex</i>	LISI

Bats in Greater London

From previous Arcadis work in London and from data from the London Bat Group the most likely bats species to be present are common and soprano pipistrelle (*Pipistrellus pipistrellus* and *P. pygmaeus*) which are by far the more frequent, followed by Daubenton's (*Myotis daubentonii* in the vicinity of open water) noctule (*Nyctalus noctula*) and brown long-eared (*Plecotus auritus*). These are all London BAP species and S41 species with the exception of Daubenton's and common pipistrelle. Full details of the conservation status of these species and the results from the London Bat Group Species Action Plan Audit are presented in Appendix B Table B2.

In general, every borough will have bats present, as even in the inner boroughs there are usually some areas of suitable habitat that can provide feeding habitat for small numbers of common and light tolerant bat species such as soprano and common pipistrelles. In general, the outer boroughs with larger areas of more suitable habitat should be expected to have higher numbers of bats and a greater diversity of species.

Birds in Greater London

There are a number of bird species that although relatively common are in decline and have been highlighted section 41 or London Priority BAP species and/or birds of conservation concern that have the potential to be present (Table A4).

Table A4: *Birds of conservation concern associated with London*

Common Name	English Name	Status	Typical London habitats
Black redstart	<i>Phoenicurus ochrurus</i>	L	Traditionally found on brownfield sites around the built environment in proximity to standing or tidal Thames water
Dunnock	<i>Prunella modularis</i>	S41:L:	Associated with dense scrub and trees in private gardens and pocket parks
Grey heron	<i>Ardea cinerea</i>	L	associated with tidal Thames and standing water
House sparrow	<i>Passer domesticus</i>	S41:L:R	Associated with dense scrub and trees in private gardens and pocket parks traditionally a species associated with nesting in buildings
Peregrine	<i>Falco peregrinus</i>	L	Tidal Thames and the built environment using tall buildings for roosting and nesting and foraging on other birds particularly pigeons
Song thrush	<i>Turdus philomelos</i>	S41:L:R	Associated with dense scrub and trees in private gardens and pocket parks
Starling	<i>Sturnus vulgaris</i>	S41:L:R	Built environment
Tree sparrow	<i>Passer montanus</i>	S41:L:R	Associated with dense scrub and trees in private gardens and pocket parks

Section 41 = S41: London BAP = L: R = Birds of Conservation Concern Red List

Reptiles in Greater London

Records from SARG (Surrey Amphibian and Reptile Group) and the London Biodiversity Action Plan show that the presence of European Protected Species of reptile in the London area is generally very unlikely. Common lizard (*Zootoca vivipara*) and Slow worm (*Anguis fragilis*) are the most likely reptiles to be present followed by Grass snake (*Natrix natrix*) with Adder (*Vipera berus*) being unlikely to be present these are all Section 41 and London BAP species.

Badger in Greater London

Badger is a London BAP species and can be found using private gardens, woodlands and parklands across London.

Amphibians including Great Crested Newts (GCN) in Greater London

GCN are Section 41 and London BAP species, that while uncommon are found breeding in ponds associated with private gardens, from data available from Froglife (2012), 71 Sites across Greater London were surveyed where historical GCN records were identified, of none of these sites were located within the London Borough of Barnet⁸. Of the other amphibians that are London BAP species Common frog (*Rana temporaria*), palmate newt (*Triturus helveticus*) and Common toad (*Bufo bufo*), common toad is also a Section 41 species

Other Potentially Relevant S41 and London BAP species

There are a number of other species that have the potential to be relevant to the Site:

- Black poplar (*Populus nigra*);
- Mistletoe (*Viscum album*);
- Hedgehog (*Erinaceus europaeus*); and
- Stag beetle (*Lucanus cervus*), there was an NBN record within 500m of the Site.

Table A.5: Designated sites descriptions

Designation	Description
Special Areas of Conservation (SAC) Special Protected Areas (SPAs)	Sites designated under European law and are the most important sites for wildlife in the UK, along with Special Protected Areas (SPAs). SACs are designated under the European Habitats Directive (Council Directive 92/43/EEC). Both the Habitats and Birds Directives provide for the creation of a network of protected areas across the EU, to be known as 'Natura 2000'. The designations aim to conserve important or threatened species and habitats and provide them with increased protection and management
National Nature Reserve (NNR)	Statutory reserves established for the nation under the Wildlife and Countryside Act, 1981. NNRs may be owned by a relevant national body, e.g. Natural England, or by established agreement; a few are owned and managed by non-statutory bodies. NNRs cover a selection of the most important sites for nature conservation in the UK.
Sites of Special Scientific Interest (SSSI)	Are areas notified under the Wildlife and Countryside Act 1981 by Natural England as being of special interest for nature conservation. SSSI notification forms the statutory bedrock for site protection. Biological SSSIs form a national network of wildlife sites, with each site being of national significance for its nature conservation value. Consultation and some form of agreement with the national statutory conservation agency is mandatory before any listed, potentially damaging development or change in land use can be carried out
Local nature reserves (LNR)	These are land owned, leased or managed by Local Authorities and designated under the National Parks and Access to the Countryside Act. These are sites of some nature conservation value managed for educational objectives. In some cases it is managed by a non-statutory body (e.g. the London Wildlife Trust). Local Authorities have the power to pass bylaws controlling (e.g.) access, special protection measures.

⁸ Capital Great Crested Newts Revisited (2012). Project report – Public Web Edition

Designation	Description
Sites of Metropolitan Importance for Nature Conservation (SMINCs)	These are sites that contain the best examples of London's habitats. These sites are of strategic significance and are therefore of the highest priority against damage or loss
Sites of Borough Importance for Nature Conservation (SBINCs) Grades I and II	Sites of Borough Importance for Nature Conservation (SBINCs) Grades I and II are important in the context of the borough. The nature conservation quality of these sites varies and so these sites are graded as I or II in relation to their nature conservation potential.
Sites of Local Importance for Nature Conservation (SINCs)	These are sites of particular importance to people nearby (such as residents and schools). Local sites are particularly important in areas otherwise deficient in nearby wildlife sites.

Appendix B: Bat Habitat Suitability and London Population Status

Table B: 1 BCT (2016) – Habitat Suitability Criteria

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions^a and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

Table B: 2 Bat species status in London from the London Bat Species Action Plan Audit

Common Name	Latin Name	UK Status	London Status	Notes
Greater horseshoe bat	<i>Rhinolophus ferrumequinum</i>	Endangered BAP Priority	Extinct	Last Greater London record from Oxleas Wood in 1953.
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	Endangered BAP Priority	Extinct	Last Greater London record from Abbey Wood (Woolwich) in 1952-3.
Whiskered bat	<i>Myotis mystacinus</i>	Vulnerable	Rare	
Brandt's bat	<i>Myotis brandtii</i>	Vulnerable	Rare	
Natterer's bat	<i>Myotis nattereri</i>	Vulnerable	Scarce	Still relatively few records in Greater London. Most central locations are Highgate Wood and Hampstead Heath, otherwise Richmond and Hounslow and occasionally other outer London Boroughs. 8 current known roosts (mostly winter).
Daubenton's bat	<i>Myotis daubentoni</i>	Not Threatened	Locally frequent but declining	Relatively widespread and strongly associated with ponds, lakes & rivers. Occasional summer roosts have been found in trees on Wimbledon Common and in Ruislip Woods. Contrary to the national trend, this species is apparently declining in London and its sensitivity to increasing ambient light levels is a possible reason. 4 current known winter roosts.
Serotine	<i>Eptesicus serotinus</i>	Vulnerable	Rare; has declined	Serotines are found in outer London Boroughs, especially Bromley, Havering, Sutton and Richmond. 2 current known summer roosts, in Bromley and Teddington.
Noctule	<i>Nyctalus noctula</i>	Vulnerable; declining BAP Priority	Widespread but declining	The status of this large, wide-ranging bat is difficult to assess, but the past two decades have seen a rapid decline in the species and this mirrors the national trend. An exclusively tree-roosting bat; current known roosts number <10 London-wide.
Leisler's bat	<i>Nyctalus leisleri</i>	Vulnerable	Scarce	Leisler's bat has been recorded infrequently in London area, yet sightings have doubled in the last three years. New foraging sites for the species include the Barnes area, Wandsworth Common and Brent Reservoir. 3 current known roosts (Haringey, Bromley and Bexley).

Ecological Assessment

Common Name	Latin Name	UK Status	London Status	Notes
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	Not Threatened	Common	A widespread species, the common pipistrelle is believed to occur in all London boroughs. Roosts are still discovered relatively infrequently, however.
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	BAP Priority	Common	Also widespread and probably London's commonest bat. Apparently more associated with wetland habitats than its close relative, <i>P. pipistrellus</i> . Known roosts currently number 15-25?, but many more pass undetected.
Nathusius's pipistrelle	<i>Pipistrellus nathusii</i>	Rare	Rare	Only recently confirmed as a UK breeding species. Detector records from an increasing list of sites include Lesnes Abbey Woods, Chislehurst Ponds and the Wetland Centre at Barnes. 1 known current roost site in bat boxes in Hounslow.
Brown long-eared bat	<i>Plecotus auritus</i>	Declining BAP Priority	Scarce	Brown long-eared bats are fairly secretive and may be under-recorded in Greater London, although reasons for the national decline are also likely to affect London's population. Roosts have been found in Bexley, Bromley, Hillingdon, Wandsworth, Kensington & Chelsea, Barnet, and Richmond.

NB: This audit is based on data from the London Bat Project collected in the mid-1980s, as well as that collected since by the London Bat Group and is therefore not systematic. This audit is the best possible understanding of the status of bats in London that can currently be realised by the London Bat Group.

Appendix C: Selected Legislation, Nature Conservation Status and Policy

Legislation

Table C: 1 Legislation Summary

Receptor	Legislation
Nesting Birds	The legislation relevant to the potential ecological constraints on Site associated with nesting birds. All wild birds, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended)Error! Bookmark not defined.. Section 1 of the Act makes it an offence to: - intentionally kill, injure or take any wild bird; - intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; or - intentionally take or destroy an egg of any wild bird. It is also an offence to: - intentionally disturb any wild bird included in Schedule 1 of the Act while it is building a nest or is in, on or near a nest containing eggs or young; or - disturb dependent young of such a bird. - Species listed on Schedule 1 include the black redstart, barn owl (<i>Tyto alba</i>), Cetti's warbler (<i>Cettia cetti</i>) and kingfisher (<i>Alcedo atthis</i>). There is no potential for Schedule 1 birds to be nesting on Site, the legislation regarding common nesting birds will be complied with due to the precautionary mitigation previously stated.
Badgers	Badgers are protected from inhumane killing or injury under the Badgers Act (1992)⁹ this also protects their setts from damage and prohibits blocking access to their setts.
Bats	The legislation relevant to the constraint identified associated with bats. Bats are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (as amended).. Bats are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are subject to the provisions of Section 9 of the Act, which make it an offence to: - intentionally or recklessly disturb a wild animal listed on Schedule 5 whilst it is occupying a structure or place which it uses for shelter or protection; - intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a wild animal listed on Schedule 5; - sell, offer or expose for sale, or to possess or transport for sale alive or dead wild animal listed on Schedule 5 or any part of or anything derived from a wild animal listed on Schedule 5. Bats are also listed on Schedule 2 (European protected species of animals) of the Conservation of Habitats and Species Regulations 2010 (as amended) and are subject to the provisions of Regulation 41 which makes it an offence to: - deliberately capture, injure or kill any wild animal of a European protected species; - deliberately disturb wild animals of any such species (where disturbance is likely to impair their ability to survive, breed or reproduce, rear or nurture their young; or to

⁹ Protection of Badgers Act 1992 (as amended)

Receptor	Legislation
	hibernate or migrate; or to affect significantly the local distribution or abundance of the species); • damage or destroy a breeding site or resting place of such an animal; or • be in possession of, control, transport, sell or exchange, or offer for sale or exchange any live or dead animal of such a species or any part of a wild animal or anything derived from an animal or any part of an animal of such a species.
Great Crested Newts	Great crested newts are a European Protected Species (EPS), listed on Annex II and IV of the EEC Directive on the Conservation of Natural Habitats and Wild Fauna and Flora, receiving protection under The Conservation of Habitats and Species Regulations 2010. This species is also afforded full protection under the Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (WCA 1981). Under such legislation it is an offence to: • Intentionally or recklessly kill, injure or take a great crested newt; • Possess or control any live or dead specimen or anything derived from a great crested newt; • Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a great crested newt; and • Intentionally or recklessly disturb a great crested newt while it is occupying a structure or place which it uses for that purpose.
Reptiles	The relevant legislation relevant to the constraint identified associated with reptiles All native British reptile species are protected under the Wildlife and Countryside Act 1981 (as amended). Reptiles are listed under Schedule 5 of the Act. The four more widespread species including common lizard, slow worm, adder and grass snake are subject to some of the provisions of Section 9 of the Act, which make it an offence to: * • intentionally kill or injure a reptile; or * sell, offer or expose for sale, or • to possess or transport for sale alive or dead reptile or any part of, or anything derived from, a reptile.
Other Mammals	Other mammals not protected by their own legislation are protected by the Mammal Act (1996). The Act makes provision for the protection of wild mammals from certain cruel acts. An offence is committed if any person mutilates, kicks, beats, nails, or otherwise impales, stabs, burns, stones, crushes, drowns, drags, or asphyxiates any wild mammal with intent to inflict unnecessary suffering.
Non Native Invasive Species	Numerous species are listed on Schedule 9 (of the Wildlife and Countryside Act 1981, as amended) whereby it is an offence to grow or to cause this species to grow in the wild. A species on Schedule 9 that commonly occurs in London is Japanese Knotweed (<i>Fallopia japonica</i>) which is also covered by the Environmental Protection Act (EPA) 1990 which designates this as a controlled waste.

Nature Conservation Status

• Birds of Conservation Concern (BOCC) (2015)

The UK's leading bird conservation organisations worked together to produce The Population Status of Birds in the UK: Birds of Conservation Concern Four (BoCC).

Commonly referred to as the UK Red List for birds, this is the fourth review of the status of birds in the UK, Channel Islands and Isle of Man, and updates the last assessment in 2009. Using standardised criteria, 244 species with breeding, passage or wintering populations in the UK were assessed by experts from a range of bird NGOs and assigned to the Red, Amber or Green lists of conservation concern.

Table C: 2 Bird Population Status Criteria for Birds of Conservation Concern in the UK

Criteria	Status
Red list criteria	Globally threatened Historical population decline in UK during 1800–1995 Rapid (> or =50%) decline in UK breeding population over last 25 years Rapid (> or =50%) contraction of UK breeding range over last 25 years
Amber list criteria	Historical population decline during 1800–1995, but recovering; population size has more than doubled over last 25 years Moderate (25–49%) decline in UK breeding population over last 25 years Moderate (25–49%) contraction of UK breeding range over last 25 years Moderate (25–49%) decline in UK non-breeding population over last 25 years Species with unfavourable conservation status in Europe, termed Species of European Conservation Concern (SPEC) Five-year mean of 1–300 breeding pairs in UK > or =50% of UK breeding population in 10 or fewer sites, but not rare breeders > or =50% of UK non-breeding population in 10 or fewer sites > or =20% of European breeding population in UK > or =20% of northwest European (wildfowl), East Atlantic Flyway (waders) or European (others) non-breeding populations in UK
Green list	No identified threat to the population's status

Relevant Policy

National

The Site survey, assessment and recommended mitigation ensure compliance with the following policies, any additional enhancement measures would further comply with these policies:

- **The National Planning Policy Framework (NPPF 2012)**¹⁰ sets out how the planning system should protect and enhance nature conservation interests. Section 11 is concerned with conserving and enhancing the natural environment Opportunities to enhance biodiversity are also encouraged.
- **The Natural Environment and Rural Communities (NERC) Act 2006**¹¹ places a duty upon public bodies to consider Section 41 lists flora, fauna and habitats (previously UK BAP habitats and species) as a material consideration in planning and to consider enhancement of biodiversity.
- **Biodiversity 2020: A strategy for England's Wildlife and Ecosystem Services**¹² includes a list of Habitats of Principal Importance in England (HPIEs) and Species of Principal Importance in England (SPIEs). These were previously included as Priority Habitats and Priority Species in the UK BAP.

London

- **London Invasive Species Initiative (LISI)**¹³: Managed by the London Biodiversity Partnership, LISI lists non-native invasive species that should be controlled in London. Species relevant to the Scheme include Japanese Knotweed and Butterfly-bush.
- **London Biodiversity Action Plan (BAP)**¹⁴: Managed by the London Biodiversity Partnership (2006), the London BAP sets out priority habitats and species for the city. London BAP habitats relevant to the Scheme include reed beds, standing water and wasteland.
- **The London Plan (2011) Strategic Policy 7.19 Biodiversity and Access to Nature and Policy 7.21 Trees and woodlands) (updated with the Minor Alterations to the London Plan 2016)**¹⁵: Regional planning policy for London is presented in the London Plan: Spatial Development Strategy for Greater London. It contains various policies with regard to nature conservation in London, which include commitments to protect, enhance, create, promote, expand and manage the extent and quality of green infrastructure and biodiversity and to increase access to nature, the following elements of SP 7 are as follows:
 - **Strategic Policy 7.19 Biodiversity and Access to Nature and Policy:**
 - o A) The Mayor will work with all relevant partners to ensure a proactive approach to the protection, enhancement, creation, promotion and management of biodiversity in support of the Mayor's Biodiversity Strategy.
 - o B) Any proposals promoted or brought forward by the London Plan will not adversely affect the integrity of any European site of nature conservation importance.
 - o C) Development Proposals should:
 - a) wherever possible, make a positive contribution to the protection, enhancement, creation and management of biodiversity
 - b) prioritise assisting in achieving targets in biodiversity action plans (BAPs), set out in Table 7.3, and/or improving access to nature in areas deficient in accessible wildlife sites
 - c) not adversely affect the integrity of European sites and be resisted where they have significant adverse impact on European or nationally designated sites or on the population or conservation status of a protected species or a priority species or habitat identified in a UK, London or appropriate regional BAP or borough BAP.

¹⁰ Anon (2012) The National Planning Policy Framework HMSO, London

¹¹ Anon (2006) The Natural Environment and Rural Communities Act HMSO, London

¹² Department for Environment, Food and Rural Affairs (2011) *Biodiversity 2020: A strategy for England's Wildlife and Ecosystem Services*

¹³ London Invasive Species Plan (2012). Legislative and Information Exchange Framework. [online] Available at <http://www.londonisi.org.uk/tackling-inns/lisp/>. [Available June 2016]

¹⁴ City of London (2009). *London Biodiversity Action Plan 2010 – 2015*

¹⁵ Greater London Authority (2011) *The London Plan Strategic Policy 7.19 Biodiversity and Access to Nature and Policy 7.21 Trees and woodlands) (updated with the Minor Alterations to the London Plan 2016)*

- o D) On Sites of Importance for Nature Conservation development proposals should:
 - a) give the highest protection to sites with existing or proposed international designations¹ (SACs, SPAs, Ramsar sites) and national designations² (SSSIs, NNRs) in line with the relevant EU and UK guidance and regulations
 - b) give strong protection to sites of metropolitan importance for nature conservation (SMIs). These are sites jointly identified by the Mayor and boroughs as having strategic nature conservation importance
 - c) give sites of borough and local importance for nature conservation the level of protection commensurate with their importance.
- o E) When considering proposals that would affect directly, indirectly or cumulatively a site of recognised nature conservation interest, the following hierarchy will apply:
 - 1 avoid adverse impact to the biodiversity interest
 - 2 minimize impact and seek mitigation
 - 3 only in exceptional cases where the benefits of the proposal clearly outweigh the biodiversity impacts, seek appropriate compensation.
- o F) In their LDFs, Boroughs should:
 - a use the procedures in the Mayor's Biodiversity Strategy to identify and secure the appropriate management of sites of borough and local importance for nature conservation in consultation with the London Wildlife Sites Board.
 - b identify areas deficient in accessible wildlife sites and seek opportunities to address them
 - c include policies and proposals for the protection of protected/priority species and habitats and the enhancement of their populations and their extent via appropriate BAP targets
 - d ensure sites of European or National Nature Conservation Importance are clearly identified
 - e identify and protect and enhance corridors of movement, such as green corridors, that are of strategic importance in enabling species to colonise, re-colonise and move between sites.
- **Strategic Policy 7.21 Trees and Woodlands:**
 - o A) Trees and woodlands should be protected, maintained and enhanced, following the guidance of the London Tree and Woodland Framework (or any successor strategy). In collaboration with the Forestry Commission the Mayor has produced supplementary guidance on Tree Strategies to guide each borough's production of a Tree Strategy covering the audit, protection, planting and management of trees and woodland. This should be linked to a green infrastructure strategy.
 - o B) Existing trees of value should be retained and any loss as the result of development should be replaced following the principle of 'right place, right tree'. Wherever appropriate, the planting of additional trees should be included in new developments, particularly large-canopied species.
 - o C) Boroughs should follow the advice of paragraph 118 of the NPPF to protect 'veteran' trees and ancient woodland where these are not already part of a protected site.
 - o D) Boroughs should develop appropriate policies to implement their borough tree strategy.
- **The London Plan (2011) , Housing Supplementary Planning Guidance (March 2016)¹⁶:** With regards to housing, recently a dedicated supplementary planning guidance has been produced, the relevant elements of which are presented below
 - Standard 40 and Policy 7.19 "Biodiversity and access to nature promotes a proactive approach to the protection, promotion and management of biodiversity across the capital" and that "Proposals for development should give full consideration to their direct

¹⁶ Greater London Authority (2016) *London Plan 2016 Implementation Housing Supplementary Planning Guidance adopted in March 2016*

and indirect effects on ecology. Ecological improvements can be achieved as part of Sustainable Urban Drainage Systems and incorporated into green or brown roofs, green walls and soft landscaping.”

- Policies 7.19 and 7.21 “supporting biodiversity, protecting London’s trees, ‘green corridors and networks”.
- Development proposals should also enhance provision of green infrastructure in the public realm, helping to mitigate and adapt to climate change (Policy 5.10 Urban Greening), extend tree cover (Policy 7.21), improve biodiversity (Policy 7.19).
- Public, communal and private open spaces should be protected and enhanced, and where possible new open spaces should be created. This is supported by Policy 2.18 Green Infrastructure, Policy 7.18 Protecting open space, Policy 7.19 Biodiversity and Policy 7.21 Trees and Woodlands.
- **The Mayor’s Biodiversity Strategy (2002)**¹⁷: Connecting with London’s Nature: The Mayor’s Biodiversity Strategy provides a statutory framework for the delivery of biodiversity policies in London. It seeks to ensure that there is no overall loss of wildlife habitats in London.
- **The London Plan (2011), Sustainable Design and Construction Supplementary Planning Guidance (April 2014)**¹⁸:
 - Mayor’s Priority - Developments should contribute to the Mayor’s target to increase tree cover across London by 5% by 2025.
 - Mayor’s Priority - There is no net loss in the quality and quantity of biodiversity.
 - Mayor’s Priority - Developers make a contribution to biodiversity on their development site.
 - Mayor’s Priority - Any loss of a tree/s resulting from development should be replaced with an appropriate tree or group of trees for the location, with the aim of providing the same canopy cover as that provided by the original tree/s.

Local

Tower Hamlets - Managing Development: Development Plan Document

- **DM10: Delivering open space** ¹⁹

Development will be required to provide or contribute to the delivery of an improved network of open spaces in accordance with the Council’s Green Grid Strategy and Open Space Strategy;

- **DM11: Living buildings & biodiversity**

Development will be required to provide elements of a ‘living building’;

Existing elements of biodiversity value should be protected or replaced within the development and additional habitat provision made to increase biodiversity value.

- **DM13: Sustainable Drainage**

Development will be required to show how it reduces the amount of water usage, runoff and discharge from the site, through the use of appropriate water reuse and Sustainable Urban Drainage (SUD) techniques.

¹⁷ Greater London Authority (2002), *Connecting with Nature: The Mayor’s Biodiversity Strategy adopted in 2002*

¹⁸ Greater London Authority (2011), *The London Plan Sustainable Design and Construction Supplementary Planning Guidance adopted in April 2014*

¹⁹ <http://www.towerhamlets.gov.uk/Documents/Planning-and-building-control/Strategic-Planning/Neighbourhood-Planning/Managing-Development-Document-April-2013.pdf>.

Arcadis (UK) Limited

Arcadis House,
34 York Way,
London, N1 9AB
United Kingdom

www.arcadis.com

TFL_PSF_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE LAND AT PORTTREE STREET, TOWER HAMLETS, E14

Site Ref: 2748

Preliminary BS5837:2012 Tree Survey Report

OCTOBER 2017

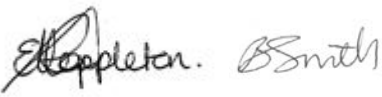
Incorporating

EC HARRIS
BUILT ASSET
CONSULTANCY

Hyder 

LAND AT PORTREE STREET

Preliminary BS5837:2012 Tree Survey Report

Author	Ellen Poppleton/ Beverly Smith	
Checker	Brandon Murray	
Approver	Martina Girvan	
Report No	1403-UA009686-UE21R-02	
Date	OCTOBER 2017	

VERSION CONTROL

Version	Date	Author	Changes
01	September 2017	Ellen Poppleton/ Beverly Smith	1 st Issue
02	October 2017	Ellen Poppleton/ Beverly Smith	Final Issue

This report dated 02 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

CONTENTS

1	INTRODUCTION	1
1.1	Overview	1
1.2	Site Location and Setting.....	1
2	METHODOLOGY	2
2.1	Tree Survey Methodology.....	2
2.2	Individual Trees and General Data Capture	2
2.3	Categorisation.....	2
2.4	Root Protection Area.....	2
2.5	Survey Limitations.....	2
2.6	Statutory Tree Protection.....	3
3	TREE SURVEY RESULTS	4
3.1	Tree Assessment and Categorisation	4
3.2	Tree Species Diversity	4
3.3	Age Diversity	5
3.4	Root Protection Area.....	5
4	CONCLUSIONS	6
5	FURTHER WORK	7
6	REFERENCES	8
	FIGURE 1. TREE CONSTRAINTS PLAN	9
	APPENDIX A. EXPLANATION OF TERMS.....	10
	APPENDIX B. TREE SCHEDULES	12
	APPENDIX C. PRELIMINARY ARBORICULTURAL METHOD STATEMENT	15
	APPENDIX D. PHOTOGRAPHS.....	20

1 Introduction

1.1 Overview

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Transport for London (TfL) 'the Client' to undertake a number of technical surveys for Land at Portree Street, Poplar, London ('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 assessment is to present the potential constraints and future survey requirements with regards to trees and any proposed future development.

1.2 Site Location and Setting

The Site is located east of Portree Street, west of Lanrick Road and the A13 and north of Abbott Road, in the London Borough of Tower Hamlets. It is predominantly comprised of dense introduced shrub with a small area of grassland and scattered trees and is 0.023ha in area. The Site is located within postcode of E14.

An aerial screen shot illustrating the Site boundary is presented in Image 1-1. Photographs of the Site and trees can be found in Appendix D - Photographs.

Image 1-1 Site Location Plan



2 Methodology

2.1 Tree Survey Methodology

An Arboricultural Survey was undertaken by Beverly Smith FDSoc. Tech.Arbor.A on 17th August 2017 in accordance with BS 5837:2012.

Observations were conducted from ground level, utilising the “Visual Tree Assessment” (VTA) system as outlined in The Body Language of Trees, A Handbook for Failure Analysis Research for Amenity Trees No.4 (Department of the Environment, 1994) with the aid of binoculars.

The Site and its immediate surroundings were surveyed, this area is referred to as the study area.

2.2 Individual Trees and General Data Capture

For reference, individual trees are identified with the letter T and associated unique number on the Tree Schedules and Tree Constraints Plan. The stem diameter of the trees on site was recorded using a rounded-down diameter tape at 1.5m above ground level. Measurements were taken in millimetres. The height of the subject trees was estimated to the nearest metre using a digital clinometer.

The maximum crown spread of each tree was measured from the centre of the trunk to the tips of the live lateral branches taken at four compass points (N-E-S-W) using a ground tape. Crown spread measurements were taken in metres.

Tree age was estimated from visual indicators (such as tree size and appearance of bark) which were taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records and local knowledge.

Where direct access to the tree was not possible, estimations from appropriate vantage points were taken; any limitations or estimations are presented within the survey limitations section and noted in the associated schedules.

2.3 Categorisation

In compliance with Table 1 of BS 5837: 2012 the trees surveyed have been categorised according to their arboricultural quality and value. A glossary of survey terms can be found in Appendix A - Explanation of Terms.

2.4 Root Protection Area

The Root Protection Areas (RPA) of the trees were calculated in accordance with Section 4.6.1 in BS: 5837:2012. This is calculated from the measurement of the stem diameter at 1.5m above ground level or at ground level if the tree is multi-stemmed. These are recorded in Table B2 in the appendix and form the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the Site. The RPA is represented by pink-shaded areas. The shape and size of RPAs can be amended in accordance with Section 4.6.3 in BS: 5837:2012.

Within Section 5.3.1 in BS: 5837:2012 it is stated the default position is that proposed development should not be within the RPA of retained trees. However, where there is an overriding need for construction and associated activity with the RPA of trees arboricultural mitigation should take place to protect the trees.

2.5 Survey Limitations

Topographical base mapping was provided. For the purposes of BS 5837: 2012, only trees with a stem diameter greater than 75mm, (measured at 1.5m above ground level), have been included within the survey. However, it should be noted that a number of individual trees and shrubs with a stem diameter of less than 75mm were present within the study area.

Only trees within the study area as defined above were assessed. The RPAs are based on a given tree stem diameter taken at 1.5m above ground level with each RPA (see Appendix B - Tree Schedules) being calculated from the above ground portions of the tree. It should be recognised that the RPA may not entirely encompass all of the tree's rooting material.

Trees are living organisms and as such their health and condition are naturally subject to change over time. Unforeseen future circumstances such as neglect, wilful damage or severe/extreme weather conditions may affect the future health and condition of the trees included in this report.

2.6 Statutory Tree Protection

A search was undertaken on the Tower Hamlets Website <http://towerhamlets.maps.arcgis.com> , on 31st August 2017. This resource showed that the Site is not within a Conservation Area. In addition to this, none of the trees within the Site or adjoining the site were shown as being protected by Tree Preservation Orders (TPO) and there are no Planning Application Conditions protecting the trees.

3 Tree Survey Results

3.1 Tree Assessment and Categorisation

A total of five arboricultural items were recorded within the study area. All of these items are recorded as individual trees. Full details of the survey data are presented within the Tree Schedules in Appendix B and Figure 1 Tree Constraints Plan.

Each arboricultural item was assigned to one of four categories, as listed below:

- Category A individual trees: No arboricultural items were graded as Category A (trees of high quality) as part of this survey;
- Category B individual trees: One individual tree was graded as Category B (trees of moderate quality) as part of this survey;
- Category C individual trees: Four individual trees have been identified as Category C (trees of low quality) as part of this survey due to poor form or inappropriate past management;
- Category U individual trees: No trees have been identified as Category U (trees of poor quality unsuitable for retention) as part of this survey due to poor structural and physiological condition.

3.2 Tree Species Diversity

Three different tree species and cultivars were recorded during the survey and are represented throughout the study area. A summary of the species surveyed can be found within the Tree Schedule in Appendix B and also provided in Table 1 .

Table 1 Tree Species Recorded

Tree Species	Number of Individual Stems	Approximate Percentage
Silver birch (<i>Betula pendula</i>)	1	20%
Rowan (<i>Sorbus aucuparia</i>)	2	40%
London plane (<i>Platanus x hispanica</i>)	2	40%
Totals	5	100%

3.3 Age Diversity

Analysis of the data identified that the majority of the trees within the study area were within the young classification set by BS 5837: 2012 being within the first fifth of full life expectancy, as illustrated in Table 2.

Table 2 Age Diversity

Age Class	Number of Individual Stems	Approximate Percentage
Young	4	80%
Early-mature	1	20%
Semi-mature	0	0
Mature	0	0
Over-mature	0	0
Totals	5	100%

3.4 Root Protection Area

The RPAs are shown in Figure 1 Tree Constraints Plan.

4 Conclusions

A total of five arboricultural items were recorded during the survey. All of these items were recorded as individual trees.

The Site is not within a Conservation Area and none of the trees within the Site or adjoining the site were shown as being protected by TPOs and there are no Planning Application Conditions protecting the trees.

There is currently no proposed design layout and therefore it is not possible to state whether the trees would need to be removed and if there is space for any new trees to be re-provisioned on the site. This can be determined once designs are developed.

One individual tree has been identified as Category B (trees of moderate quality) and should be considered for retention where possible. Four individual trees have been identified as Category C (trees of low quality). These trees should not place a constraint on the development layout but should be considered or replacement should they be removed.

Two London Plane (*Platanus x hispanica*) trees (T4, T5) are located in the south of the Site. T5 is a Category B tree, reaching 14m in height with a large canopy spread. It is of an early-mature age class with an estimated life expectancy of over 20 years. Due to its location and size it is likely that it is probably the most significant tree on Site in terms of contribution to roadside landscaping and public amenity space. This tree should be retained where possible but if removal is required then re-planting elsewhere on-site post development is recommended.

While unlikely to prevent development, tree protection for trees to be retained and tree re-provisioning for any trees lost due to development are a material consideration for planning determination. If trees cannot be replaced on-Site due to development, off-Site options for tree re-provisioning to ensure no net loss should be considered. Individual Local Planning Authorities may ask for re-provisioning in excess of 1 to 1 for trees of Category B grade.

5 Further Work

Should any future proposed development require tree removals or RPA incursions within RPA's of the retained trees an Arboricultural Impact Assessment (AIA) will be required by the LPA in support of a planning application.

The AIA should include a tree schedule, as included within this report and a review of any proposed development should be undertaken to ensure that there are no additional trees within the zone of influence of the development. For example, parking requirements often extend the zone of influence.

The AIA should state the trees to be removed due to the design and access requirements and any proposed tree facilitation pruning works. This should also be accompanied by an assessment of the likely impacts due to construction activity on the trees to be retained. Indicative arboricultural mitigation measures should be provided which would include recommendations for tree re-provisioning. The AIA should be accompanied by an updated Tree Constraints Plan and a Tree Impact and Protection Plan based on the proposed design.

The AIA should also include a Tree Replacement Strategy which should take into consideration the landscape character, local treescape and biodiversity features of the immediate and adjoining areas. The species, number, size, type of stock, location and planting aids for the compensating planting should be chosen for landscape, wildlife and arboriculture values. To ensure that appropriate and sustainable planting is achieved advice should be sought from an ecologist and arboriculturist. Furthermore, liaison with the LPA Tree Officer will be necessary during the planning process to agree an approved tree compensation and or landscape scheme plan.

All new tree planting should be in accordance with British Standard 8545: Trees: From Nursery to Independence in the Landscape – Recommendations, 2014 and all tree works must be carried out by a qualified contractor in accordance with BS3998:2010: Tree Work – Recommendations.

This document encloses a Preliminary Arboricultural Method Statement (AMS) outlining tree protection measures. However following planning determination and when full construction measures are known a bespoke AMS may be required to ensure protection of the trees to be retained on and adjoining the Site.

6 References

British Standards Institution (2010) BS 3998:2010, Tree Work Recommendations.

British Standards Institution (2012) BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations.

British Standards Institution (2014) BS 8545: Trees: From nursery to Independence in the Landscape – Recommendations.

Mattheck, C. and Broeler, H. DETR (1994) The Body Language of Trees: A Handbook for Failure Analysis Research for Amenity Trees No.4.



FIGURE 1. Tree Constraints Plan

APPENDIX A. Explanation of Terms

Age Class

Young – Trees in the first fifth of full life expectancy

Semi-mature – Trees in the second fifth of full life expectancy

Early-mature – Trees in the third fifth of full life expectancy

Mature – Trees in the fourth fifth of full life expectancy

Over Mature – Trees having reached full life expectancy and trees in natural decline

Veteran – Trees of interest biologically, culturally and aesthetically because of their age

Stem Diameter

The diameter of the stem measured in millimetres (mm) at a height of 1.5m above ground level

Crown Spread

Average measured in metres using a ground tape where possible

Physiological Condition

Good – Healthy tree with no signs of ill health and signs of good extension growth for species

Fair – Trees with signs of disease, minor defects and decreased life expectancy due to physical damage

Poor – Trees with significant disease, significantly reduced life expectancy and/or under major physiological stress

Dead – Dead tree or trees with over 70% crown dieback

Structural Condition

Good – Trees with no significant defects

Fair – Trees with remedial defects which require minor tree surgery works

Poor – Trees with remedial defects which require significant tree surgery works or felling

Dead – Trees which require felling

BS 5837 Retention Category

Each tree, group of trees or hedge is assigned to a retention category where:

Table A1 Categorisation of trees

Category	Description
A	Trees of high quality and value, retention is highly desirable
B	Trees of moderate quality and value where retention is desirable
C	Trees of low quality and value, or young trees with a stem diameter <150mm. Category C trees may be retained, replaced or in the case of younger trees, relocated
U	Trees of poor quality and value, unsuitable for retention or trees which should be removed

In addition, each tree, group of trees or hedge is assigned to a retention sub-category where categorisation is for:

Table A2 Reasons for Categorisation

Sub-category	Reason for Categorisation
1	Mainly arboricultural qualities
2	Mainly landscape qualities
3	Mainly cultural values, including conservation

APPENDIX B. Tree Schedules

Client: **Transport for London (TfL)**
Survey date: **17th August 2017**
Table B1 Tree Schedule

Project: **Land at Portree Street, Poplar, London, E14**
Surveyor: **Beverly Smith FDSc. Tech.Arbor.A**

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	Age class	Physiological condition	Structural condition	Additional Information	Estimated remaining contribution (years)	Category grading
				N	E	S	W							
T1	Silver birch (<i>Betula pendula</i>)	6	40	1	1	1	1	0	Young	Good	Good	None	10-20	C1
T2	Rowan (<i>Sorbus aucuparia</i>)	3	30	1	0.5	0.5	0.5	0	Young	Fair	Good	Dieback at top of crown.	10-20	C1
T3	Rowan (<i>Sorbus aucuparia</i>)	3	40	1	0.5	1	0.5	1	Young	Good	Good	None	10-20	C1
T4	London plane (<i>Platanus x hispanica</i>)	10	100	2	1	1	1	1.5	Young	Good	Good	None	10-20	C1
T5	London plane (<i>Platanus x hispanica</i>)	14	330	5	5	5	5	1	Early-Mature	Good	Good	None	20-40	B1

Table B2 Root Protection Area

Tree reference number	Species	Stem diameter (mm)	Radius of nominal circle (m)	RPA (m ²)
T1	Silver birch (<i>Betula pendula</i>)	40	0.5	0.72
T2	Rowan (<i>Sorbus aucuparia</i>)	30	0.4	0.41
T3	Rowan (<i>Sorbus aucuparia</i>)	40	0.5	0.72
T4	London plane (<i>Platanus x hispanica</i>)	100	1.2	4.52
T5	London plane (<i>Platanus x hispanica</i>)	330	4.0	49.27

Table B3 Key to Categories

Tree Reference Number	Category
T/GXX	Category A
T/GXX	Category B
T/GXX	Category C
T/GXX	Category U

APPENDIX C. Preliminary Arboricultural Method Statement

Overview

This Preliminary Arboricultural Method Statement provides generic best practice measures to be adopted in order to protect retained trees during the development process. It has been prepared in order to inform the planning and the construction/ development process.

Protective Fencing

The purpose of this fencing is to provide protection to the RPA of retained trees/groups and to protect trees and hedgerows prior to their translocation. The type of fencing used shall be appropriate to the level of adjacent construction activity and shall be agreed with the Local Authority tree officer. Weather-proof notices shall be attached to any protective fencing located adjacent to retained trees displaying the words “Construction Exclusion Zone” and listing restrictions which apply. All personnel must be made aware of these restrictions.

It is anticipated that three specifications for fencing would be employed during construction.

Low-use areas

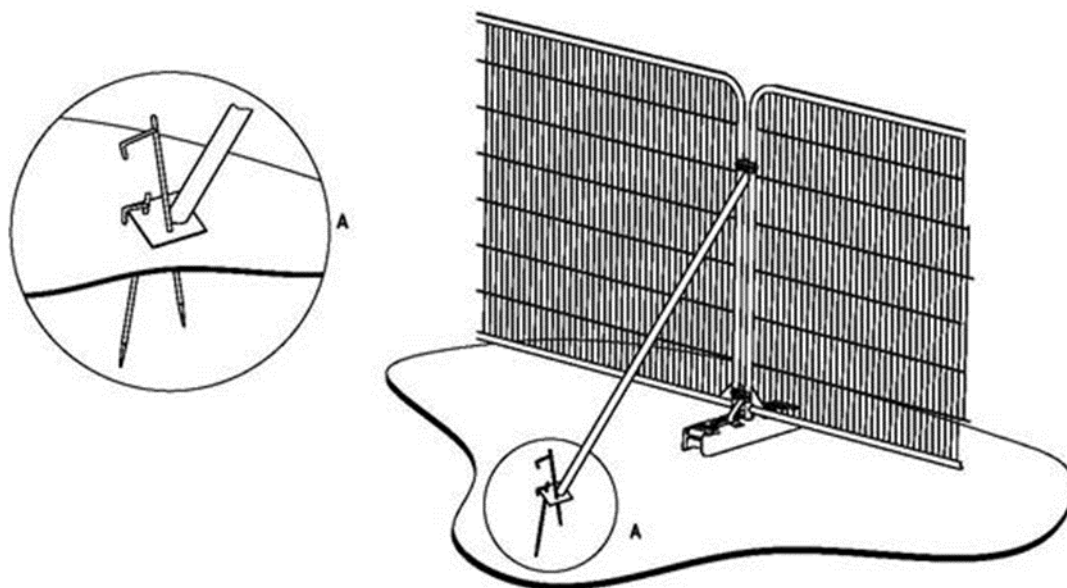
The system illustrated in Figure C1 is adequate to define areas of protected vegetation and exclude traffic, and comprises Cleft Chestnut Pale Fence in accordance with *BS 1722 Part 4: Specification for cleft chestnut pale fences (British Standards Institution, 1991)* supported by 150mm wooden stakes. Assembled with galvanized 14-gauge (2 mm) wire, four strands per row, peeled and pointed one end. Approximate spacing of pales 75 mm.



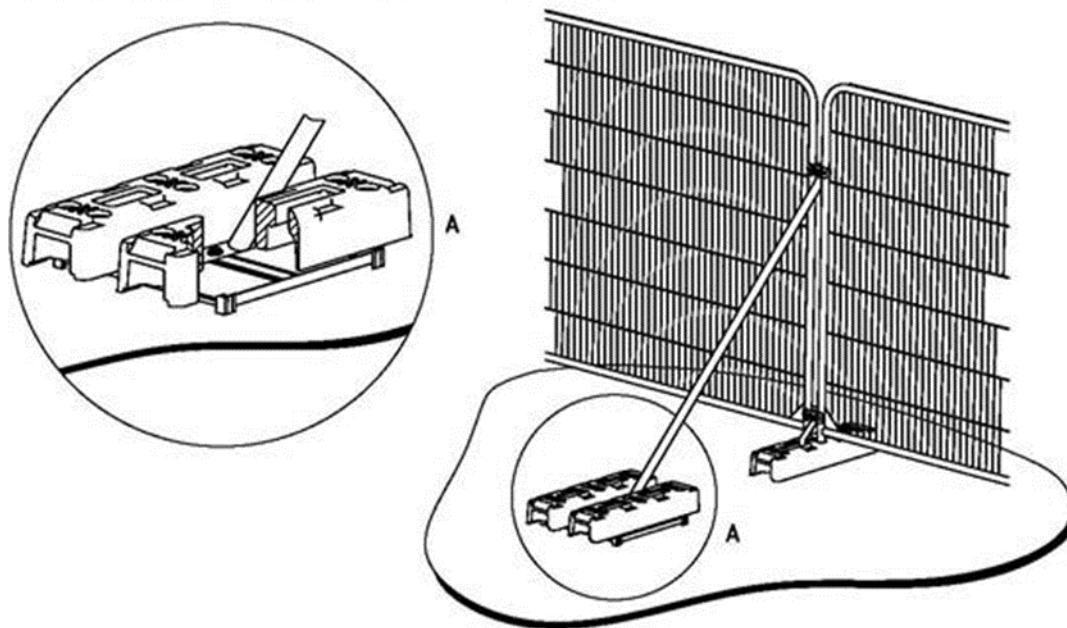
Figure C1 Tree Protection fencing example for low use areas

Medium-use areas

This system comprises anti-climb weldmesh panels connected by clamps and supported by rubber or concrete bases and bracing struts. The system is illustrated in Figure C2 and is based on *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012)* guidelines. This kind of system is robust enough to withstand occasional knocks by plant machinery.



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Figure C2 Tree Protection Fencing specification (extract from BS 5837)

High-use areas

This system involves driving scaffold poles into the ground, onto which are affixed horizontal scaffold poles and diagonal bracing struts. Anti-climb weldmesh panels are secured to this scaffold framework using standard scaffold clips or wire. The system is illustrated in diagram Figure. C3 and is based on *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* (British Standards Institution, 2012) guidelines. This kind of system provides the highest level of security.

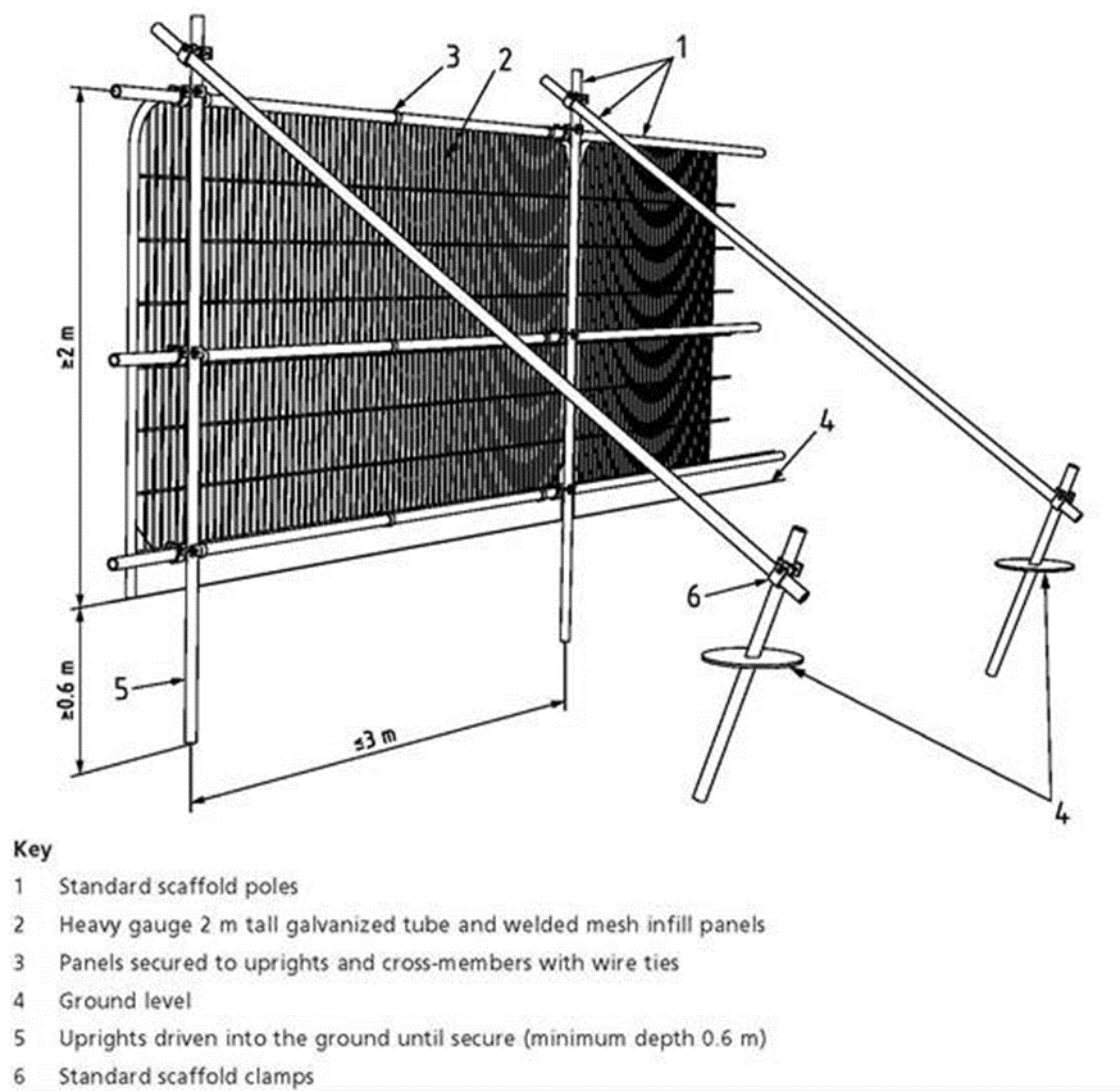


Figure C3 Tree Protection Fencing specification (extract from BS5837)

Construction Exclusion Zone (CEZ)

The Construction Exclusion Zone (CEZ) is the area identified by an arboriculturist to be protected during development, including Site clearance and construction work, through the use of barriers and/or ground protection fit-for-purpose to ensure the successful long-term retention of a tree. The area within the construction exclusion zone is to be regarded as sacrosanct and the fencing shall not be taken down or relocated at any time.

All areas excluded by protective tree fencing shall be treated as CEZs, and the following restrictions shall apply:

- No construction activity whatsoever must occur within these areas.
- No tree works, without the written consent from the Local Authority.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures. *
- No storage of soil, rubble or other materials.
- No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the likely loading applied.
- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.

1

**Sales Cabins or Site huts, provided they are of the Jack Leg type, can be sited to act as ground protection for the duration of the construction.*

General construction activity

Since the canopies of retained trees may be in close proximity to areas of crane operation, the following restrictions will apply:

- All cranes will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the Site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.
- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additional tree removal or pruning be required the Local Authority Tree Officer shall be contacted and the scope of works agreed in writing.
- All materials will be stored within designated areas and no materials shall be stored within any RPA.

Hazardous materials

Any mixing of cement-based materials is to take place outside the RPAs of all trees. Provision shall be made to ensure that the mixing area is contained so that no water runoff enters the RPAs of any trees. All mixers and barrows shall be cleaned within this dedicated mixing area.

All other chemicals hazardous to tree health, including petrol and diesel, are to be stored in suitable containers as specified by the Control of Substances Hazardous to Health (COSHH) Regulations (2002), and kept away from the RPAs.

Example of Protective Fencing Signs



APPENDIX D. **Photographs**

Tree No.	Description	Photograph
T1, T2, T3	Viewed from the south looking north-east.	
T3	Rowan	

Tree No.	Description	Photograph
T5	London Plane	

Arcadis (UK) Limited

Arcadis House,
34 York Way,
London, N1 9AB
United Kingdom

www.arcadis.com

TFL_PSF_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE LAND AT PORTTREE STREET, TOWER HAMLETS, E14 0HT

Site Ref: 2748

Archaeology Desktop Review

OCTOBER 2017

Incorporating

EC HARRIS
BUILT ASSET
CONSULTANCY


Hyder

Land at Portree Street, Tower Hamlets, E14 0HT

Archaeology Desktop Review

Author Kate Clover



Checker Jenny Wylie



Approver Jenny Wylie



Report No 1400-UA009686-UE21R-02

Date OCTOBER 2017

VERSION CONTROL

Version	Date	Author	Changes
01	07/07/2017	Kate Clover	First review
02	02/10/2017	Kate Clover	Final issue

This report dated 02 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.

CONTENTS

1 INTRODUCTION.....	1
1.1 Background	1
1.2 Scope of Works	1
1.3 Limitations	1
2 SITE OVERVIEW.....	2
3 DATA SOURCES.....	2
4 BASELINE CONDITIONS.....	3
4.1 Designated Heritage Assets	3
4.2 Non-designated Heritage Assets.....	3
5 CONCLUSIONS.....	7

FIGURES

Figure 1: Designated and Un-Designated heritage assets within the study area	8
--	---

1 INTRODUCTION

1.1 Background

Arcadis Consulting (UK) Limited (Arcadis) have been commissioned by Transport for London (“TfL”) ‘the Client’ to undertake a number of technical surveys for land at Portree Street, Tower Hamlets (‘the Site’).

TfL is aiming to divest a number of small sites to enable prospective regeneration. The objective of this archaeology desktop review is to identify potential development constraints due to the presence of below ground archaeological remains and above ground heritage assets on Site.

1.2 Scope of Works

The scope of the review is to carry out a desk-top search of publicly available information on designated and un-designated heritage assets within a study area of 500m of the Site boundary. Using this information, a brief assessment of potential heritage/archaeological constraints and opportunities at the Site has been made, focusing on key constraints. The review also highlights when a Site should be subject to further detailed assessment (i.e. additional scope) to support a planning application for any future development.

1.3 Limitations

This report has been prepared for TfL 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 OVERVIEW

The Site is located on the corner of Portree Street, Abbott Road and Lanrick Road, in the London Borough of Tower Hamlets (NGR 538914, 181303). The sub-triangular piece of land comprises 0.03 hectares and is covered by low vegetation and several small trees. The Site is not flat but rises from west to east reflecting the difference in ground level between Lanrick Road and Portree Street. The ground level of the Site is markedly higher than the adjacent property as well as the Portree Street pavement level suggesting some dumping of material has taken place on the Site. It is bounded by low iron railings on the north and south sides although these do not extend the full way across the south boundary. To the west the Site is bounded by the wall of the adjacent property – 4 Portree Street. The Site lies to the west of the River Lea. Alluvium from the River Lea overlies bedrock of the London Clay Formation. Borehole data shows that organic matter (e.g. peat and wood) survives within the silty clay at up to 3.8m below ground level.

3 DATA SOURCES

Records for the Site and a 500m study area were examined. Data was obtained for designated heritage assets from the Heritage List for England on 3rd July 2017 and for un-designated heritage assets and Archaeology Priority Areas (APA) from the Greater London Historic Environment Record (GLHER) on the 3rd July 2017. Information of Conservation Areas was obtained from Tower Hamlets Borough Council's website:

((http://www.towerhamlets.gov.uk/lgnl/environment_and_planning/conservation/conservation_areas/character_appraisals.aspx).

Numbers in brackets in the text are unique identifiers assigned to heritage assets for the purposes of this report. A list of all heritage assets including relevant archaeological events can be found on Tables 1 and 2. All heritage assets and APAs are shown on GL Figure 1.

4 BASELINE CONDITIONS

4.1 Designated Heritage Assets

There are no scheduled monuments within the Site or study area. There are two Listed Buildings within the study area (both former East India Company buildings Listed Grade II) but none within the Site boundary (Table 1). The study area does not fall within a Conservation Area; the nearest Conservation Area being Naval Row which is situated approximately 80m outside the Study area and 480m to the south-west of the Site. More information is provided on the Borough Council's website. There are no Registered Parks and Gardens or London Squares or Historic Green Spaces within the study area.

The study area covers three APAs; Tower Hamlets APA; Canning Town/Newham Way APA (Tier III) which is to the east of the Site and Thames Ironworks APA (Tier II) which lies to the south-east of the Site. The Site itself lies within the eastern side of Tower Hamlets APA which was assigned in 2013. The Tower Hamlets APA is currently not tiered and not divided up into separate named areas. Information on this APA is available online in the council's Heritage Resource document (<http://www.towerhamlets.gov.uk/Documents/Planning-and-building-control/Development-control/Conservation-areas/4-Tower-Hamlets-Heritage-Resource.pdf>) and it appears that it has been assigned due to the archaeological and paleoenvironmental potential of the lower reaches of the River Lea.

Whilst APAs do not receive statutory protection they have been identified in the Borough's Heritage Resource Document as areas where potential for below-ground archaeological remains to survive is high and where archaeological investigations are therefore likely to be required. Historic England's website provides more information about APAs and the different levels of sensitivity to development (<https://www.historicengland.org.uk/services-skills/our-planning-services/greater-london-archaeology-advisory-service/greater-london-archaeological-priority-areas/>).

There are no Locally Listed Buildings or Local Landmarks (as defined in the Council's Heritage Resource document) within the Site or study area.

4.2 Non-designated Heritage Assets

There are twelve non-designated heritage assets within the study area and nine archaeological 'events' (Table 2). The 'events' are archaeological investigations including excavations and trial trench evaluations.

Within the study area there are important paleoenvironmental remains in the deep alluvial deposits associated with the River Thames and Lea floodplain which can reveal evidence of changing environmental conditions from prehistory through to the recent past. To the east of the Site an evaluation recorded undated environmental deposits of silts and peats by the River Lea, possibly representing low velocity water such as a lagoon (13). To the west of the Site at Ada Gardens, a watching brief recorded waterlain clays and sand above the terrace gravels sealed by peaty deposits with alluvial deposits above, suggesting inundations interrupted by a period of marsh or peat build-up. The peat deposit may relate to one of the Tilbury phases (14). Evaluation to the south-west of the Site at Blair Street found a sequence of alluvial layers, natural gravel, overlain by silty sand, overlain by 'peat' organic layer and in turn by a clay layer, thought to be a land surface. These deposits could range from Middle Palaeolithic to Roman date (3). 60m to the west of the Site an evaluation recorded deep alluvial layers to 1.93m depth in places suggests the location of a palaeochannel (23). An evaluation on test pits excavated along the route of the Jubilee Line extension which skirts the north-eastern edge of the study area recorded alluvial deposits and potential archaeological layers (21).

Little is known from the Mesolithic or Neolithic periods in the study area however Bronze Age metal finds have been found to the south of the Site, near the River Lea (4 and 5) including a Bronze Age rapier found in Bow Creek (4). These finds indicate transitory activity or possible ritual deposits in this marshy area.

In the Roman period the Site lay to the east of the Roman city of Londinium. At that time the majority of the area would have been farmland or marshland grazing to provide food for the city's large population. A Roman watchtower (6) was located to the south of the Site on the River Lea, possibly Sited to watch Woolwich Reach.

There is no known evidence for the Anglo-Saxon or medieval periods within the study area, probably due the fact that settlement in Tower Hamlets area was very light before AD 1300. Flooding continued to be a problem across much of the Borough, although embanking and drainage had created much arable land by the early 13th century. The medieval economy across the majority of the Borough was essentially rural, with a settlement pattern of isolated farms with the beginning of ribbon development along the main routes. By the mid 14th century there was a small settlement at Poplar (to the west of and outside the study area).

Improved drainage initiatives in the 16th century, using the skills of the immigrant Dutch engineers, allowed larger areas to become useable pasture. The East India Company constructed the Blackwall Yard in 1614 on the northern bank of the River Thames which became the largest private shipyard in the country and attracted a number of associated industries and services in the hinterland to the north (1 and 2). The eastern half of the Borough was largely undeveloped by the mid 19th century however, this was set to change rapidly and by the end of the century the urbanisation of the Borough was largely complete partly due the development of passenger railway. The population hit a peak at the turn of the 19th and 20th centuries, with trade through the docks at a high and industry along the River Lea continuing to develop. Associated industrial buildings within the Study area include timber seasoning sheds (7 and 10) and a warehouse (12).

Bombing in WW2 aimed at the destruction of the docks had a massive impact. Almost half of the houses in the Borough were destroyed or damaged. The 1960s saw the closure of East India Docks as well as others in the Borough such as St Katherine's Dock. The London Docklands Development Corporation (LDDC) was created in 1981 to address the problems of regenerating these vast redundant areas and in the later 1980s Canary Wharf was developed to the south-west of the study area (<http://www.towerhamlets.gov.uk/Documents/Planning-and-building-control/Development-control/Conservation-areas/3-History-of-Tower-Hamlets.pdf>)

A brief appraisal of OS historic mapping shows that in 1850 the Site was open land in between the River Lea (Bow Creek) and the East India Dock. Later maps show it as being within Bromley Marsh. By 1885 the current layout of residential streets had been laid out and the Site is shown as covered by a terrace of 6 houses fronting Abbott Street. The 1949-1951 map shows the area of 6 terraced house marked as 'ruins' as well as 2 Portree Street, presumably the result of WW2 bombing.

Table 1: Designated Heritage Assets (Listed Buildings)

ID Number	Grade	Asset Name	NGR	GLHER Number
1	II	Entrance Gateway to Blackwall Goods Yard, Leamouth Road. Comprising a pair of gatepiers, joined by later brick wall. Dated 1807-15. Originally an entrance to East India Company's Cos Pepper group of Warehouses.	538908 181144	DLO28347 and MLO93363
2	II	East India Dock wall and gateway, Leamouth Road. Dated Early 19th century.	538900 181122	DLO28468 and MLO 93484

Table 2: Non-designated Heritage Assets

ID Number	Asset Name	NGR	Description	GLHER Number
3	Blair Street	538475 181125	Evaluation by PCA in 1999 found a sequence of alluvial layers, natural gravel, overlain by silty sand, overlain by 'peat' organic layer and in turn by a clay layer. Thought to be a land surface. Deposits could range from Middle Palaeolithic to Roman.	MLO74164
4	Bow Creek	539005 181005	Bronze Age rapier of Wiburton type found in 1929.	MLO25415
5	Near Leamouth Road, Canning Town	539005 181005	A socketed axe of a late Bronze Age date was found near Leamouth Road, by the modern nature reserve in Canning Town.	MLO25630
6	Blackwall	538950 180950	Roman watchtower possibly sited to watch Woolwich Reach.	MLO3893
7	Orchard Place	539305 181040	Pair of late 19th century, or possibly earlier timber seasoning sheds.	MLO35
8	Eastern Dock	538705 181005	Post Medieval landfill site. Information taken from BGS data.	MLO72842
9	Aberfeldy Estate	538745 181575	Excavation undertaken by PCA in 2000. 19th century dump deposits were observed covering earlier alluvial deposits relating to the Bromley Marshes. The dumps related to land reclamation.	MLO74989
10	Jubilee Wharf Timber Sheds, Orchard Place	539297 181038	Timber seasoning sheds dated 1867 AD to 1899 AD.	MLO93264
11	Orchard Place, (Pura Foods site), Leamouth	539255 181055	A watching brief by PCA in 1996 recorded alluvial silts and clays 0.5m deep that had been deposited on the site until at least the middle of the 19th century. These were overlain by later 19th century house walls and back yard structures.	MLO67565
12	Leamouth North, (Pura Foods site)	539313 181089	Building assessment in 2004-6 by Wessex Archaeology of mid 19 th and 20 th century warehouse buildings prior to demolition.	MLO98915
13	Canning Town Station	539405 181405	Evaluation by OAU 1991 recorded undated environmental deposits of silts	MLO59193

ID Number	Asset Name	NGR	Description	GLHER Number
			and peats, possibly representing low velocity water such as a lagoon.	
14	9-15 Ada Gardens	538575 181305	Watching brief by MOLAS in 1993 recorded waterlain clays and sand above the terrace gravels sealed by peaty deposits with alluvial deposits above, suggesting inundations interrupted by a period of marsh or peat build-up. The peat deposit may relate to one of the Tilbury phases.	MLO64320
Events				
15	Orchard Place, Leamouth (Pura Foods)	539255 181055	Watching brief by PCA 1996.	ELO4234
16	9-15 Ada Gardens	538575 181305	Watching brief by MOLAS 1993.	ELO2642
17	Abbott Road, (Aberfeldy Estate)	538745 181575	Evaluation (Site D) by PCA in 2000.	ELO3868
18	Silvertown Way/Newham Way/Woodstock Street, [Canning Town Station site]	539400 181400	Evaluation by OAU in 1991.	ELO10128
19	Blackwall Way (DLR East India Station)	538768 180835	Geoarchaeological Evaluation by MOLAS 2009. The evaluation consisted of two boreholes which were drilled under the current railway track. The data from these boreholes suggests that the area lies at the northern part of an area truncated by the East India docks.	ELO10385
20	Blair Street, (Land to the rear), Poplar	538470 181120	Evaluation by PCA 1999	ELO10939
21	Stratford Market Depot, West Ham	53896 18291	An archaeological evaluation was carried out by the Passmore Edwards Museum on test pits excavated along the route of the Jubilee Line extension in 1993. Alluvial deposits and potential archaeological layers were observed in 13 of the pits.	ELO10132
22	Orchard Place, Leamouth North	539313 181089	Assessment and Building Recording by Wessex Archaeology 2004-6 of warehouse buildings.	ELO7575

5 CONCLUSIONS

Although the Site has potential for buried archaeological remains to exist, these heritage assets are not considered likely to be a barrier to development on the Site.

The review has assessed that the Site has a low to medium potential for buried archaeological and paleoenvironmental remains to be present. The Site lies in former marshland next to the River Lea. It lies within the Tower Hamlets APA where important paleoenvironmental remains survive in the deep alluvial deposits associated with the River Thames and Lea floodplain. These deposits have the potential to reveal evidence of changing environmental conditions from prehistory through to the recent past. There is also evidence of organic deposits such as peat being preserved which may contain information on past human activity.

There are no scheduled monuments within the Site or study area. There are two Listed Buildings within the study area but none within the Site boundary. The study area does not fall within a Conservation Area. There are no Registered Parks and Gardens or London Squares or Historic Green Spaces within the study area.

For any future planning application, the potential for below ground remains need to be fully evaluated. The Greater London Archaeological Advisory Service (GLAAS) who advise the local planning authority are likely to recommend a full archaeological desk-based assessment (DBA) for the Site as well as an evaluation to be undertaken prior to planning permission being determined. It is recommended that GLAAS are consulted at the earliest opportunity in order clarify if any field investigations such as trial trenching are required.

The DBA would include a specific archaeology Site walkover, a visit to the record office to gather historic maps and relevant documentary evidence, a map regression exercise as well as preparation of distribution maps showing designated and undesignated heritage assets. The evaluation would likely consist of a programme of trial trenching and subsequent reporting. If heritage assets of significance are encountered during the evaluation stage, there may be a requirement for further recording in the form of an excavation or watching brief. This may be delivered through a post-determination condition.

FIGURES

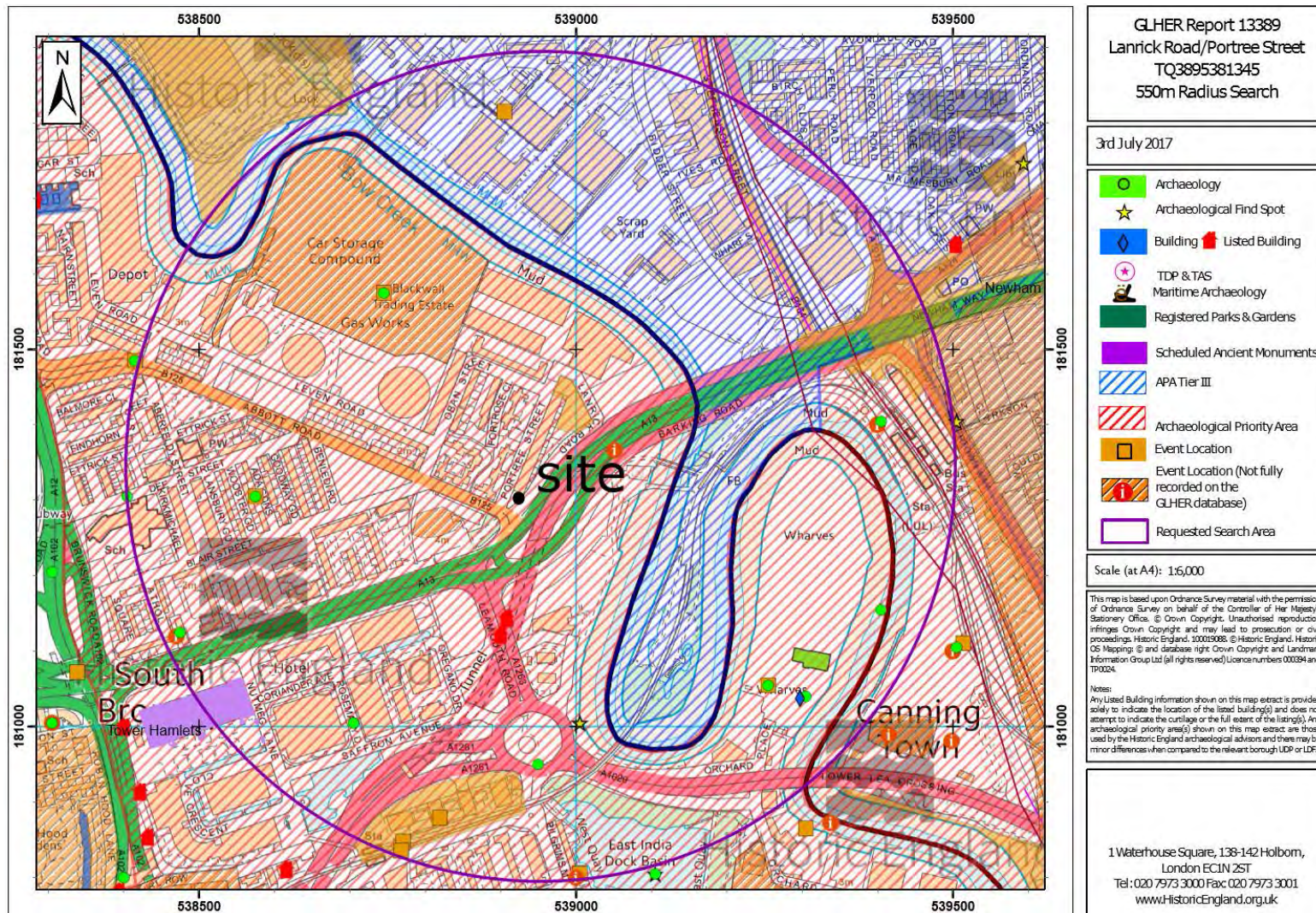


Figure 1: Designated and Un-Designated heritage assets within the study area

Arcadis (UK) Limited

Arcadis House

34 York Way

London

N1 9AB

T: +44 (0)20 7812 2000

[arcadis.com](https://www.arcadis.com)

**TFL_PSF_9131 SITE
INVESTIGATIONS: SMALL SITES
INITIATIVE
LAND AT PORTREE STREET,
POPLAR, LONDON, E14**

Site Ref. 2748

Geotechnical and Geo-Environmental Desk Study

OCTOBER 2017

Incorporating

EC HARRIS
BUILT ASSET
CONSULTANCY


Hyder

LAND AT PORTREE STREET, POPLAR, LONDON, E14

Geotechnical and Geo-Environmental Desk Study

Author Rojalin Mishra



pp

Checker Sarah Cork



pp

Approver Tony Windsor



Report No 1401-UA009686-UP32R-02

Date OCTOBER 2017

VERSION CONTROL

Version	Date	Author	Changes
01	August 2017	Rojalin Mishra	1 st Issue
02	October 2017		Final Issue

This report dated 12 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.

CONTENTS

1	INTRODUCTION	1
1.1	Terms of Reference	1
1.2	Sources of Information	2
1.3	Limitations and Expectations.....	2
2	SITE SETTING AND HISTORY	3
2.1	Site Location	3
2.2	Site History	3
2.3	Unexploded Ordnance	4
3	PHYSICAL AND ENVIRONMENTAL SETTING	5
3.1	Published Geology, Hydrogeology and Hydrology	5
3.2	Environmental Public Registers	6
4	PRELIMINARY CONCEPTUAL SITE MODEL.....	8
4.1	Potential Contaminant Sources	8
4.2	Potential Receptors	9
4.2.1	Human Health	9
4.2.2	Controlled Waters	9
4.2.3	Buildings	9
4.3	Potential Pathways	9
4.4	Preliminary Qualitative Risk Assessment.....	10
5	WASTE MANAGEMENT AND POTENTIAL DEVELOPMENT CONSTRAINTS	11
5.1	Waste Management	11
5.2	Potential Development Constraints	11
6	GEOTECHNICAL CONSIDERATIONS	12
7	CONCLUSIONS AND RECOMMENDATIONS	13
7.1	Design Considerations.....	13
7.2	Construction Considerations	13
8	REFERENCES	14

APPENDICES

APPENDIX A

Historical Maps

APPENDIX B

Groundsure Data Sheets

APPENDIX C

Zetica UXO Maps

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 Geotechnical and Geo-Environmental desk study report for a Site on Portree Street, Poplar, London ('the Site').

TfL is aiming to divest a number of small sites to enable positive regeneration. 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 aims of this desk study 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 of 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.

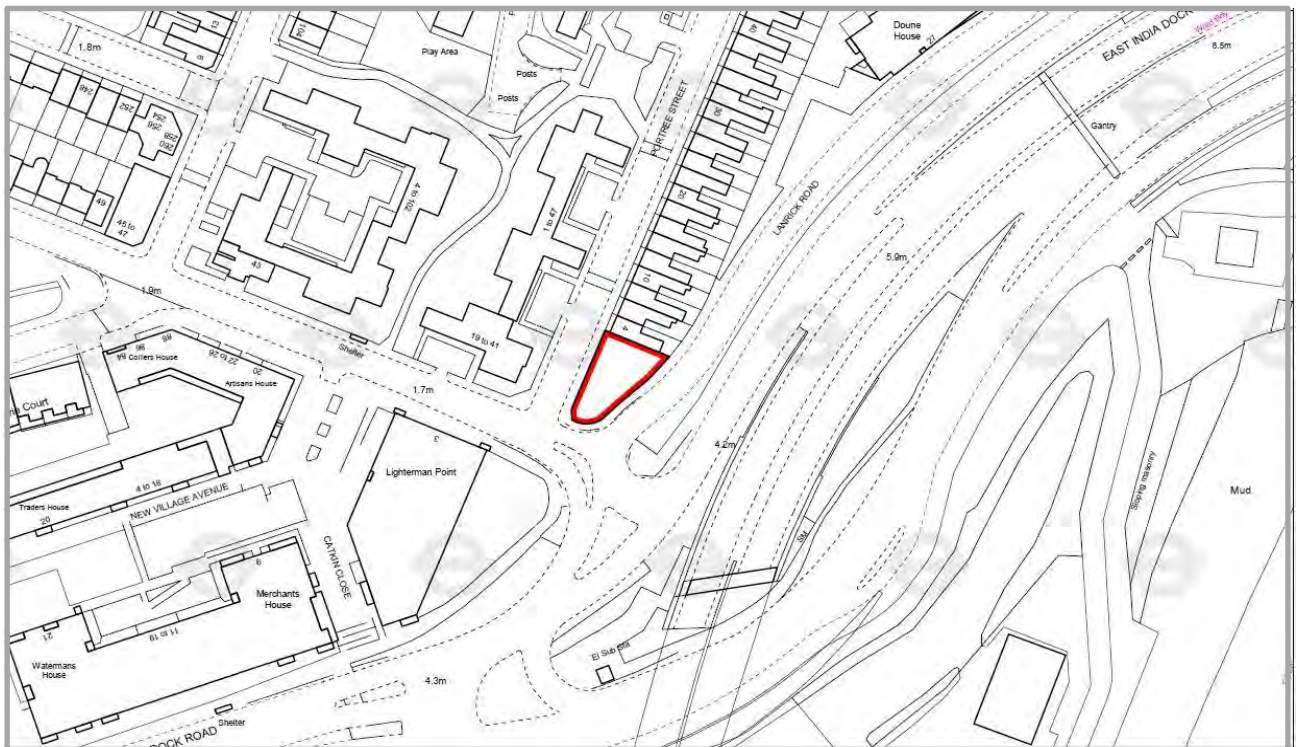


Figure 1: Site Location Plan provided by TfL

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;
- Historical Ordnance Survey maps (included in Appendix A);
- Groundsure datasheets (GeoInsight and EnviroInsight) in Appendix B;
- The Environment Agency (EA) What's in Your Backyard Website (Ref. 2);
- Google maps (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	Portree Street, Poplar, London, E14
National Grid Reference	538920, 181303
Approximate Site Area	The Site is triangular and covers an area of approximately 0.023 hectares.
Description of Site	The Site is currently an area of open space, with the majority of the Site currently comprised of dense introduced shrubs and scattered trees.
Topography	The Site appears to be relatively level.
Surrounding Area	The Site is located between Lanrick Road and the A13 beyond to the east and Portree Street to the west. The Site is located within a predominantly residential and industrial area with low rise 3-4 storey flats to the west, terraced houses on the northeast and apartments to the southwest with residential properties beyond. Approximately 20m west of the Site is the A13 main road. A Waste Transfer Station is approximately 200m to the north east. A gas works is approximately 200m to the north-west and approximately 20m west of the Site is the A13 main road. The site is situated within a meander of the River Lee.

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)
1863-1869	The site is located within the fields of Macintosh's Farm, with an associated track running through the centre of the site, within the wider area of Bromley Marsh. Bow Creek meanders to the north east of the Site at an approximate distance of 175m. Ship Building Works and associated wharfs are present approximately 180m to the north. The larger scale map of 1867 (1:10,560) shows industrial developments to the south of the Site, notably the East India Dock located from 90m to the south with associated railway including the Great Eastern Railway Wharf. 600m south-east of the Site, Thames Ironworks is present. To the north of the Site, a ship building yard is located at approximately 185m, West Ham Outfall Sewerage works present at 325m and a railway building towards the northeast at approximately 375m. Thames Plate Glassworks is located 275m to the east of the Site.

Date	Historical Development (Site and Surrounding Area)
1894	The site is now occupied by terraced housing. Macintosh Farm is no longer present and which now comprises a number of rows of terraced housing and the Poplar Gas Works, which is located approximately 200m to the north west. An oil refinery is labelled on the Bow Creek meander approximately 200m to the south east, beyond which is Cooperage Wharf.
1916	The site remains as terraced housing. A timber yard is now present approximately 50m to the north east. In the wider area to the east and south are further wharfs and associated industrial buildings, including Commercial Wharf, Creek Wharf and Moody Wharf.
1949 - 1950	Most of the Site is shown as ruins, and therefore appears to have suffered damage as a result of the Second World War. A timber yard is now present approximately 25m to the north east. An electrical substation is mapped approximately 154m southwest of the Site.
1951-1974	Most of the Site is still shown as ruins until 1970 when what appears to be a square shaped building outline occupies the majority of the Site. No significant changes are noted in the immediate vicinity.
1978-1982	The site remains as before. The terraced housing on Moness Street and Oban Street (to the west of Portree Street) have been replaced by a new residential development comprising blocks of flats.
1988-1991	The timber yards are labelled as depots. The lager depot beyond Lanrick Road approximately 150m to the north-east is shown to be a waste transfer station.
1990-1994	No significant changes noted on-site or in the immediate surrounding area.
2010 - 2014	By 2010 the square shaped building outline is no longer mapped.

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 “high” bomb risk area. Further reference has been made to the National Archives (www.bombsight.org – Ref. 4) which shows high explosive bombs having been dropped close to Lanrick Road and Portree Street. Furthermore, historical mapping has shown that the Site suffered bomb damage during the Second World War.

Therefore, based on the information provided by Zetica, the National Archives and historical OS mapping, the Site appears to have been affected by Second World War bombing and the presence of UXO cannot be ruled out.

3 Physical and Environmental Setting

3.1 Published Geology, Hydrogeology and Hydrology

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

Table 3.1 Information Regarding Geology, Hydrogeology and Hydrology

Geology / Aquifer Status	Superficial Deposit: Alluvium member described as clay, silt, sand and peat, classified as a Secondary (Undifferentiated) Aquifer. Solid Geology: London Clay Formation described as clay, silt and sand, classified as an Unproductive Strata. There are no geological faults recorded within 500m of the Site.
BGS Boreholes (within 100m of the site)	There are no records within the Site. The closest sixteen (TQ38SE3072, TQ38SE1215, TQ38SE3073, TQ38SE3487, TQ38SE1229, TQ38SE3881, TQ38SE2747, TQ38SE137, TQ38SE3489, TQ38SE3485, TQ38SE3486, TQ38SE2748, TQ38SE1699, TQ38SE2588, TQ38SE3484 and TQ38SE3483) are located within 100m (to northeast, east and south) of the Site. Whilst there is little description, Made Ground (in some areas consisting of a thick layer of concrete, brick rubble) ranged between 1.5 m to 3.20 m thick, underlain by grey brown gravel consisting of interbedded layers of sand / gravel, clay and silt.
Within a Source Protection Zone	The Site is not situated within a Source Protection Zone.
Licensed Groundwater Abstraction Points	There is one groundwater abstraction point noted within 500m to the southeast of the Site. The name of the abstraction is Limmo PeninSula and the status of abstraction is active at the point. The information available states: Licence No: 29/38/09/0162, Details: Make-Up or Top Up Water, Annual Volume (m³): 30000, Max Daily Volume (m³): 146.4.
Surface Water Feature	The Site is situated close to a meander of the River Lea, approximately 150m to the east of the Site. This area is the Bow Creek, a tidal estuary of the River Lea. The confluence of the River Lea and the River Thames is approximately 750m to the south east of the Site.
Likely Groundwater Flow Direction	Based on the proximity of the Site to the River Lea, it is inferred that groundwater flow will be in south / east direction towards the river. However, groundwater flow and direction is understood to be tidal in this area and may also be influenced by significant underground features for example the East India Dock Road Tunnel.

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
Landfill sites	There are two landfill sites found within 250m to the northeast and south of the Site. 1. Site Address: Lanrick Road, London E14. No further details available. This is also recorded as a Waste Transfer Station. 2. Site Address: Eastern Dock, South Bromley, Tower Hamlets, London. No further details available.	Northeast - 50m South -140m
Current Industrial Data	There are twenty-one industrial land uses listed within a 250m radius of the Site. Three relate to electricity substations, six are mooring and unloading facilities, one vehicle breakdown and recovery service facility, one waste storage, processing and disposal facility, one industrial feature tank, two warehouses, two construction and tool hire services, one petrol and fuel station, one pylon, one industrial product store, one fisheries and one gas holder facility.	35-240 m north, south, east, west, northeast, southeast and northwest
Part A(2) and Part B Activities	Historical permit registered to Pj Lowe Furniture at Lanrick Road for timber processing. Orchard Wharf Service Station at Leamouth Road for unloading and storage of petrol at the service stations.	18m north east 229m south

The Site and immediate surrounding area have been subject to various phases of demolition and redevelopment into housing, roads including the construction of the East India Dock Road A13 and tunnel and railway lines. Made Ground is likely to be present within and immediately adjacent to the Site associated with these activities.

4 Preliminary Conceptual Site Model

Geo-environmental assessments are required, in accordance with current regulatory guidance (CIRIA C552 – Ref. 5 and CLR11 – Ref. 6), to consider the significance of potential contamination in terms of plausible contaminant source-pathway-receptor contaminant 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 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 and the Site information, there are a number of potential contaminative sources identified on and off-site. These are summarised in Table 4.1 below.

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

Table 4.1: Potential Sources of Contamination On-Site

Source	Potential Contaminants
On Site	
Made Ground associated with demolition and redevelopment.	Metals, polyaromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs), asbestos, ground gas and vapours.
Alluvium	Ground gas
London Clay	Sulphates
Off Site	
Made Ground from phases of demolition and redevelopment.	Metals, PAHs, TPHs, PCBs, asbestos, ground gas and vapours.
Historical use as Timber Yard in immediate vicinity.	Treatment process etc associated with the use of the Site as a timber yard may have resulted in residual contamination for example phenols, creosote, solvents, asbestos, metals.
Landfill site.	Leachate generation from the landfill facilities. Ground gas.
Historical and current land uses including gas works, industrial tanks, garage and motor vehicle repair services.	A range of contaminants from various industrial processes, including metals, PAHs, TPHs, PCBs, asbestos, ground gas and vapours.
Electricity substation and local industries/factories	Leakage of oils potentially containing PCBs from the transformers.
Railway Lines	Possible contamination associated with railway (heavy lubricating oils, asbestos etc).

4.2 Potential Receptors

The proposed land use is currently unknown. As a precautionary approach, 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 in this assessment.

4.2.2 Controlled Waters

- Groundwater beneath the Site – the Alluvium Member which is classified as Secondary (Undifferentiated) Aquifer;
- River Lea (tidal); and
- The Site is not within 500m of a groundwater Source Protection Zone.

4.2.3 Buildings

- Underground structures / services (water pipes, concrete, foundations) including sulphate attack; and
- 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 and maintenance workers)	Accidental ingestion of contaminants within soil, water and dust Inhalation of dust, vapours and ground gases Dermal contact with contaminants within soil, water and dust Ingestion of contaminated vegetables and soil attached to vegetables
Controlled Waters (Secondary (Undifferentiated Aquifer and River Lea)	Leaching of potential contaminants in soil or Made Ground into groundwater Vertical migration of soluble contaminants through the unsaturated zone into groundwater beneath the Site Surface run-off and lateral migration
Buildings	Direct contact of building services or foundations with contaminants in the soil and Made Ground Gas and / or vapour accumulation in confined and poorly ventilated spaces Aerial deposition of windblown dusts / fibres from offsite sources

4.4 Preliminary Qualitative Risk Assessment

Made Ground is likely to be present as a result of bomb damage, redevelopment/demolition and could be a source of contamination including asbestos. Locally potentially contaminative land uses, including the timber yards, Poplar Gas Works, waste transfer station and (historical) landfill have surrounded the Site both historically and in the current day. Residual contamination may therefore be present due to these site uses. Human exposure could occur in future 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 pose risk to future site users.

Made Ground is a potential source of contamination to the underlying Secondary (Undifferentiated) Aquifer. If contamination is disturbed during the development, rainfall derived leaching could be exacerbated causing contamination of the underlying Secondary Aquifer. This risk is especially prevalent if intrusive construction methods or piling create a preferential pathway for contaminants in the Made Ground to enter the underlying aquifer.

Based on the historic use of the Site and surrounding area and geology, gross contamination capable of impacting the built environment is not considered likely to be significant.

Alluvium may be a source of ground gas and the London Clay is a source of naturally occurring sulphates, which could impact buried concrete.

There is a potential (high) risk of Unexploded Ordnance and it is recommended that further assessment is undertaken based upon the Zetica report and historical mapping suggesting bomb damage occurred at the Site.

5 Waste Management and Potential Development Constraints

5.1 Waste Management

Consideration should be given to disposal of waste soils / Made Ground generated by the 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 disposed prior to acceptance, and that 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 Site was historically residential until it appears to have suffered bomb damage as a result of the Second World War, after which it remained as ruins for a number of years. Made Ground as a result of such bomb damage may well be present. According to historical mapping, a square building outline of unknown use occupied the majority of the Site between approximately 1970 and 2010. Residual contamination may therefore be present as a result of these on and off-site uses.

Given the Site's setting and former historical uses nearby, a ground investigation is recommended to determine the potential risk from the off-site migration of contaminants onto the Site.

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

- Removal of former foundations and concrete obstructions;
- Excavation and replacement of upper part of Made Ground;
- Asbestos protection measures during disturbance of Made Ground (depending on the findings of the ground investigation);
- Groundwater control measures and treatment of extracted groundwater (depending on the findings of the ground investigation);
- Provision of gas resistant membrane (depending on the findings of the ground investigation);
- Provision of contaminant resistant water supply pipes (depending on the findings of the ground investigation);
- Provision of clean cover system in garden areas and public open space;
- Further UXO assessment and investigation;
- Design specific ground investigation and consultancy advice to support planning obligations will be required.

6 Geotechnical Considerations

The anticipated geology is Made Ground, underlain by Alluvium, and in turn underlain by London Clay. Information from the 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) 3.20m thick, underlain by grey brown gravel consisting of interbedded layers of sand / gravel, clay and silt. Groundwater is likely to be influenced by the tidal nature of the Bow Creek (River Lea).

Potential founding solutions will be dependent on the thickness of Made Ground and Alluvium and the geotechnical properties of the natural deposits. 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 Alluvium 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 Alluvium, or where deeper soft / loose bands are recorded either piling or ground treatment e.g. vibro-stone columns should provide a suitable foundation solution, although ground improvement may not be possible if Alluvium is present. 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 road verge covered in grass and occasional trees / shrubs, located within a largely residential area of Poplar adjacent to Portree Street. An intrusive site investigation has not been undertaken at this stage, however based upon the historical review Made Ground is anticipated within the Site and surrounding area.

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 to human health from the off-site sources mentioned above. 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 CIRIA C665 and CLR11 (Refs. 5 & 6).

7.2 Construction Considerations

During construction works, 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 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 risk to the underlying Secondary (Undifferentiated) aquifer if foundations or piling which penetrate the base of the Made Ground are proposed and contamination is identified.

The Site is in an area where 'high' risk of encountering unexploded ordnance is present. Further assessment of the potential for encountering UXO should be undertaken and a watching brief for UXO by a qualified professional may be required during the works.

8 References

1. British Geological Survey (BGS) Online Viewer <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>
Accessed June 2017
2. Environment Agency (EA) What's in my backyard http://maps.environment-agency.gov.uk/wiyby/wiybyController?value=E140JP&submit.x=0&submit.y=0&submit=Search%09&lang=_e&ep=map&topic=groundwater&layerGroups=default&scale=9&textonly=off
Accessed June 2017
3. Google maps accessed 07/07/17
<https://www.google.com/maps/@51.5136477,0.000967,623m/data=!3m1!1e3>
4. National Archives Bomb Sight <http://www.bombsight.org/#16/51.4805/0.0221>
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 LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

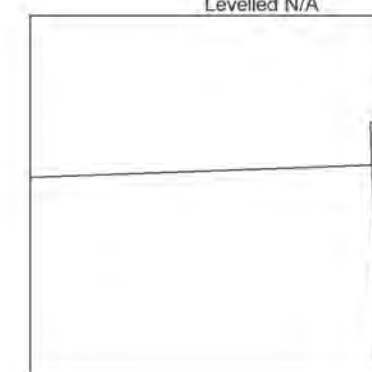
Map date: 1863-1866

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1863
Revised 1863
Edition N/A
Copyright N/A
Levelled N/A



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

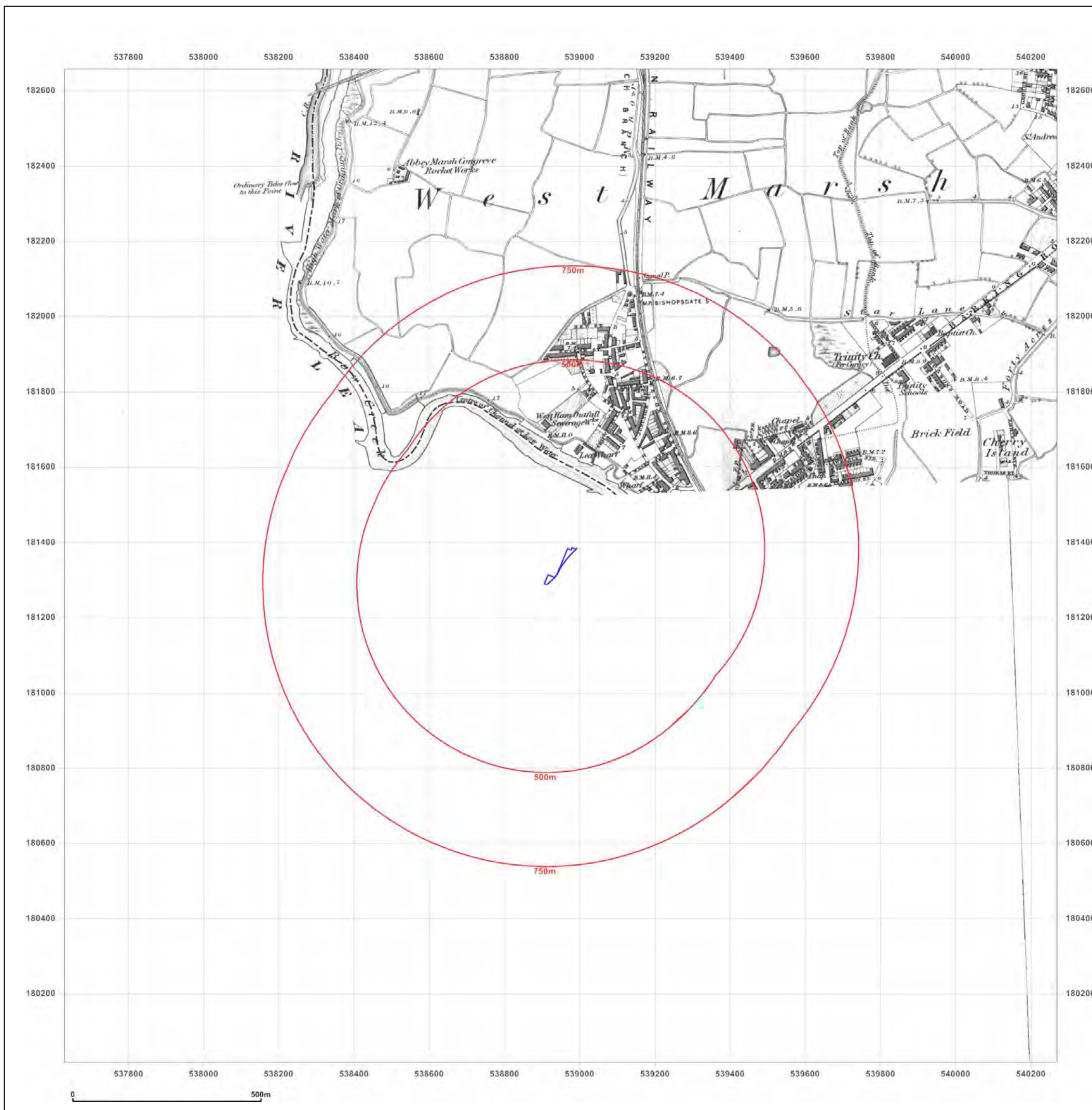


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1867

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1887
Revised 1867
Edition N/A
Copyright N/A
Levelled N/A

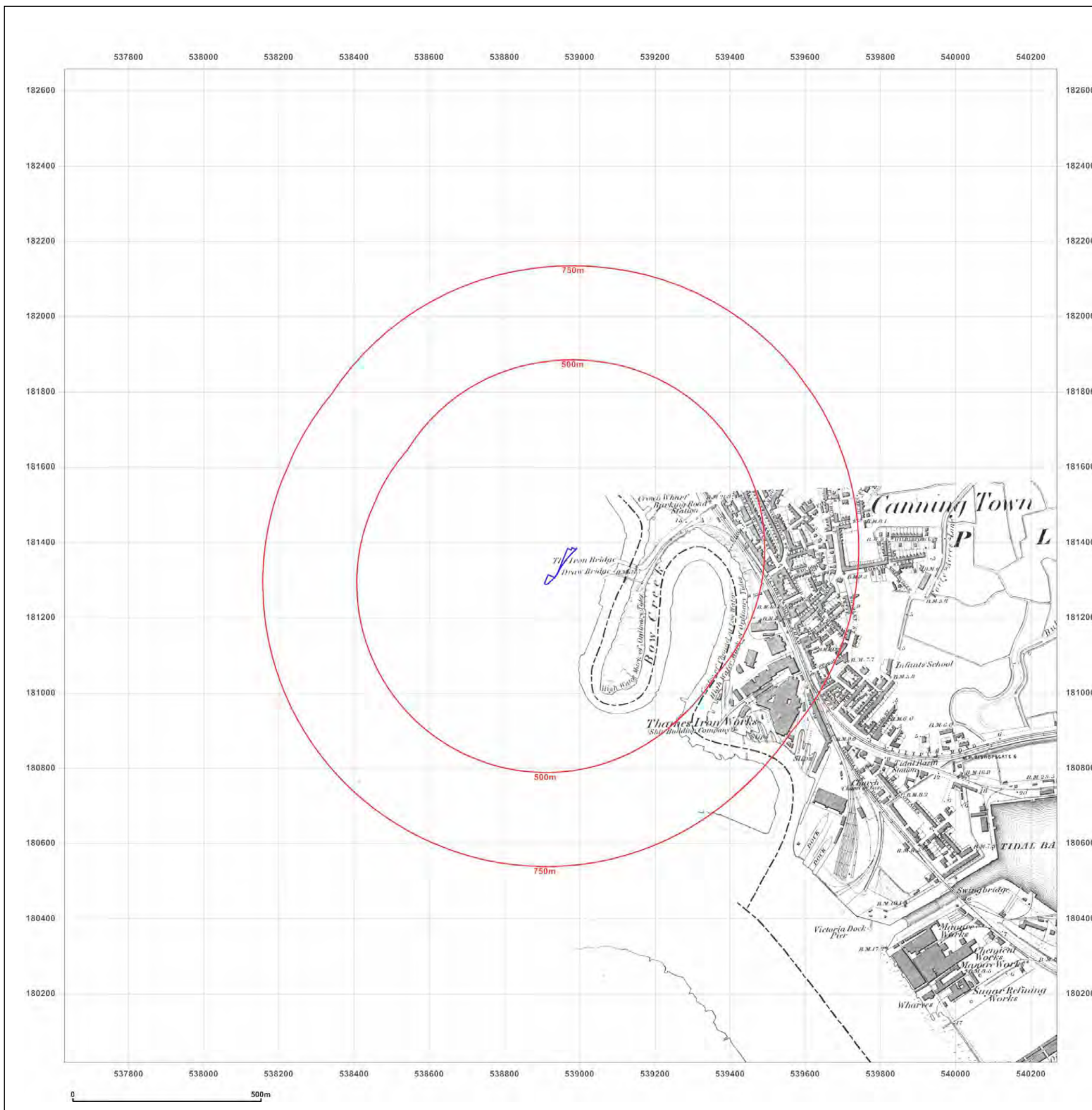


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1867

Scale: 1:10,560

Printed at: 1:10,560



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

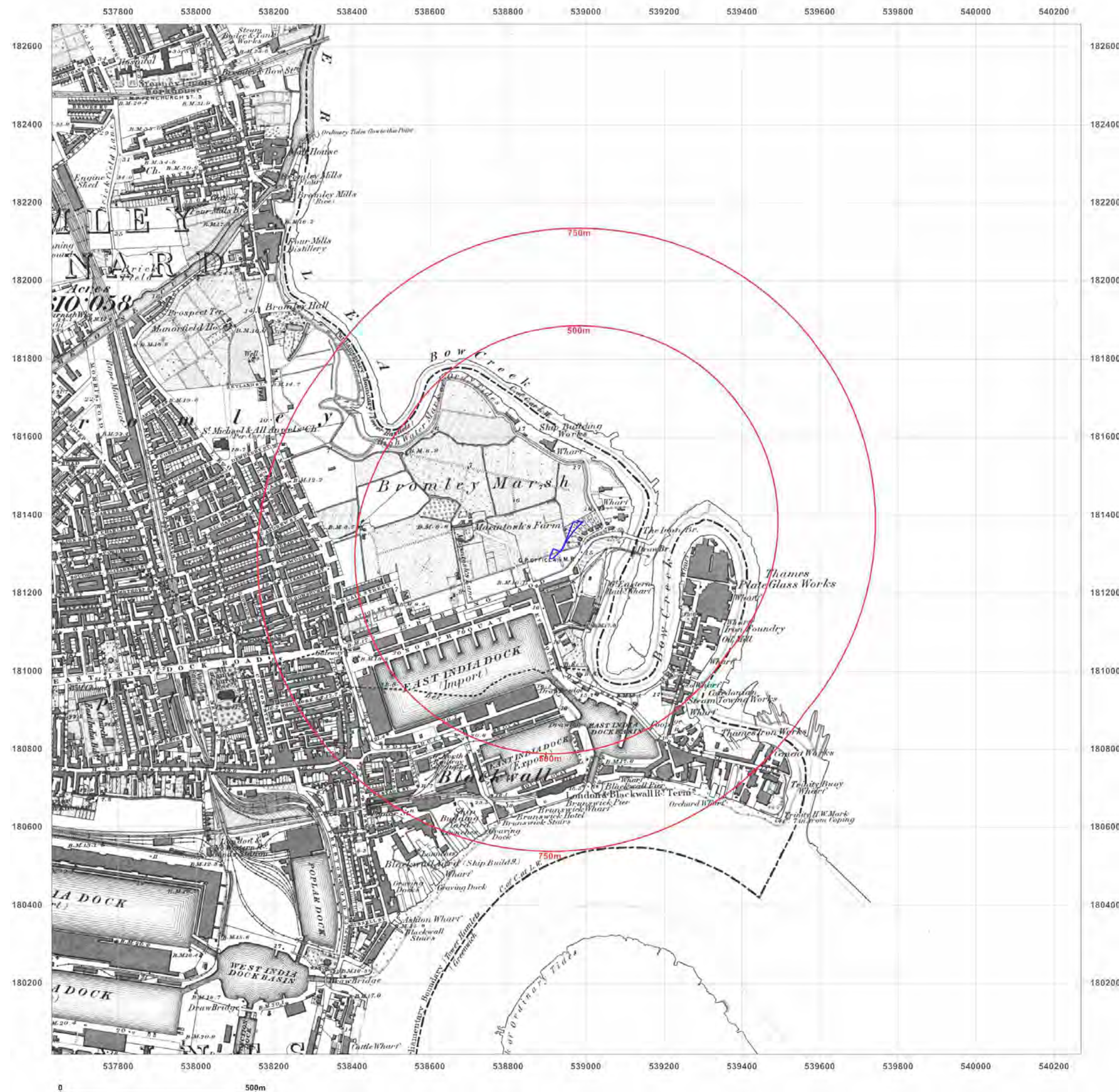


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1867

Scale: 1:10,560

Printed at: 1:10,560



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

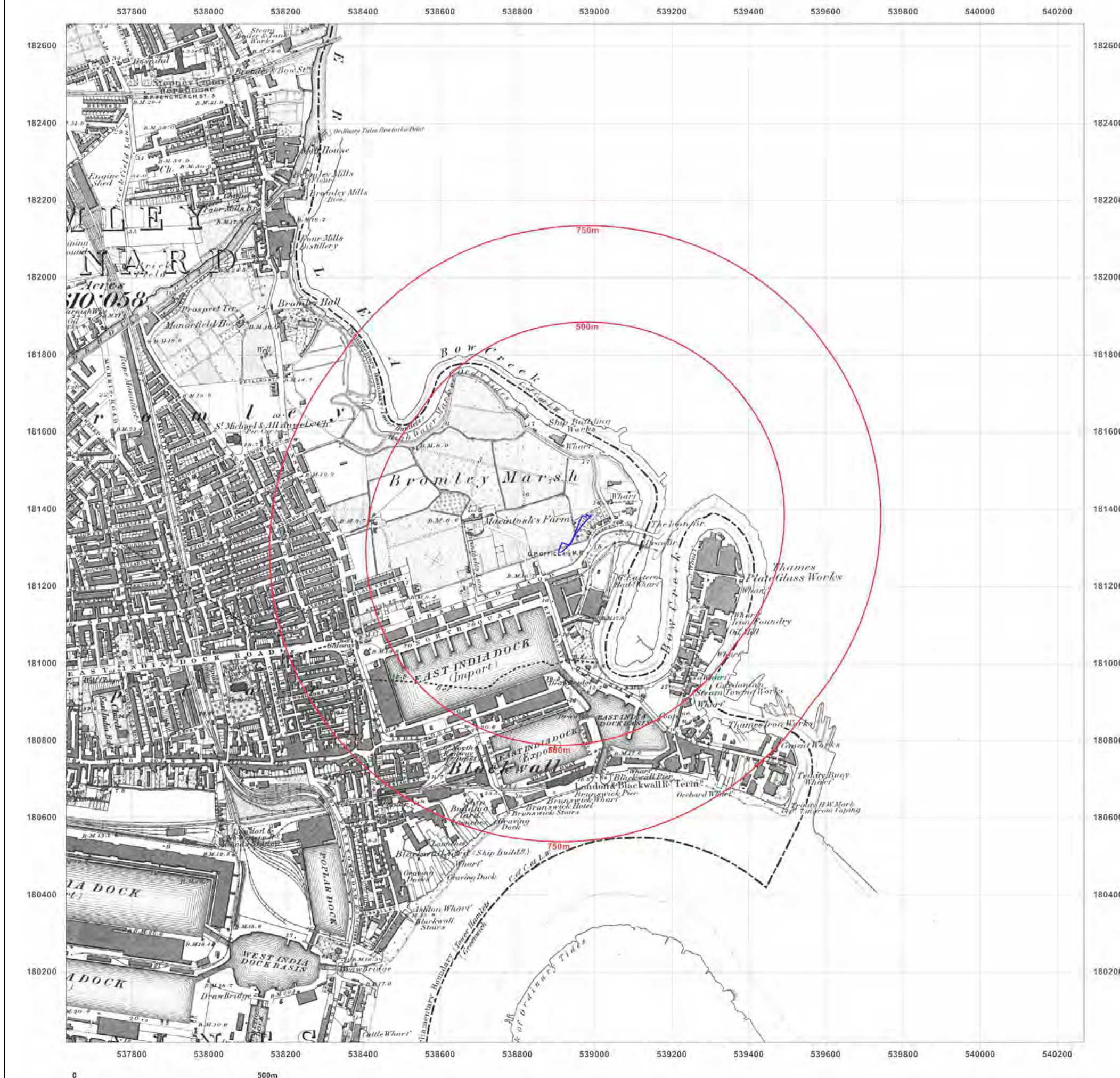


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1872

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1863
Revised N/A
Edition 1872
Copyright N/A
Levelled N/A

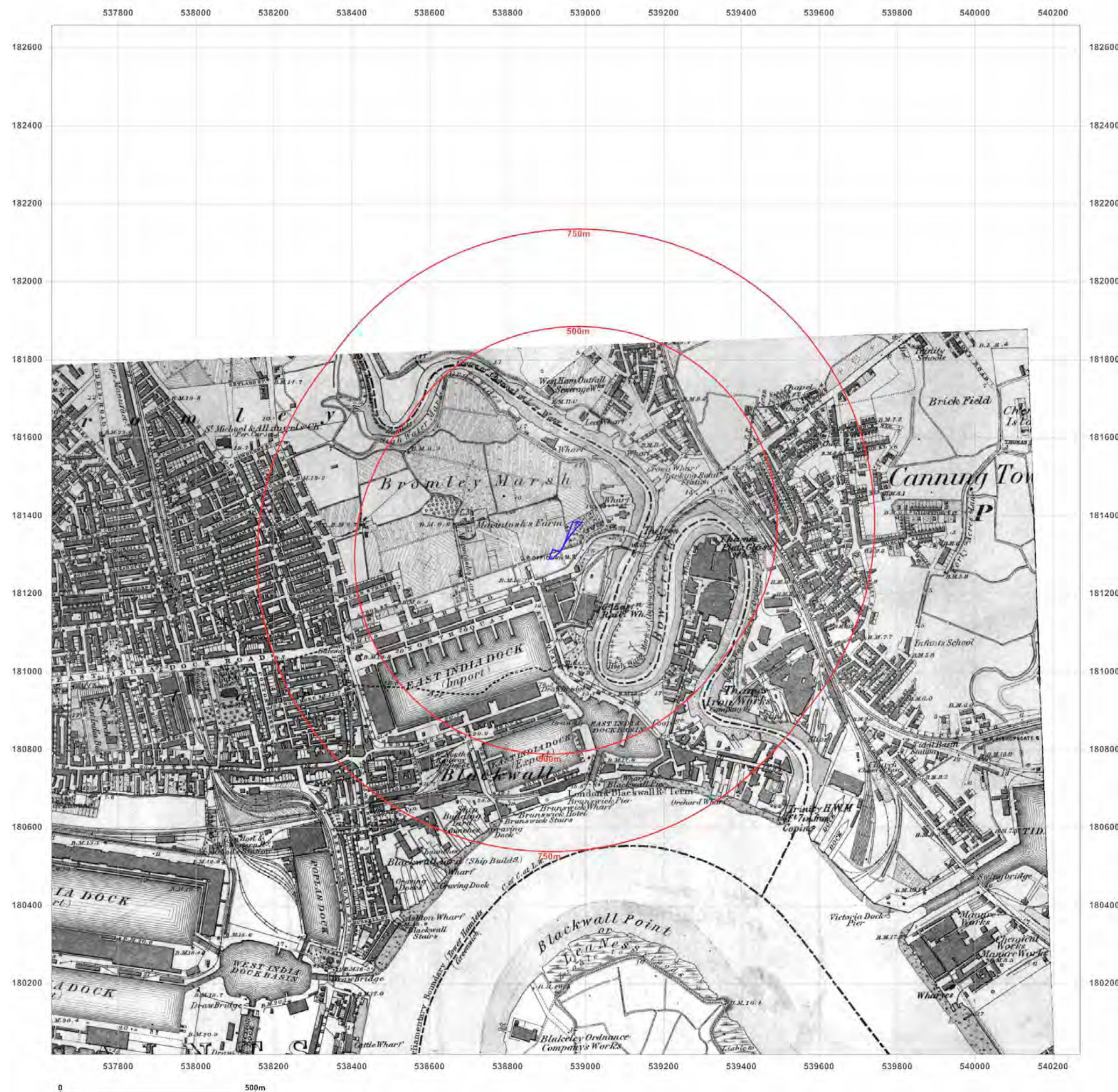


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

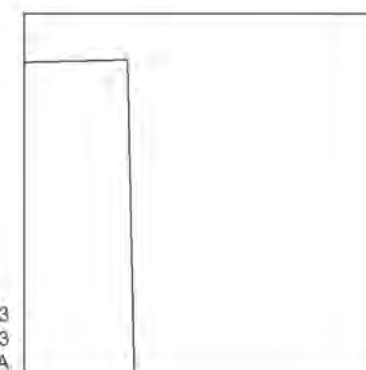
Map date: 1873

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

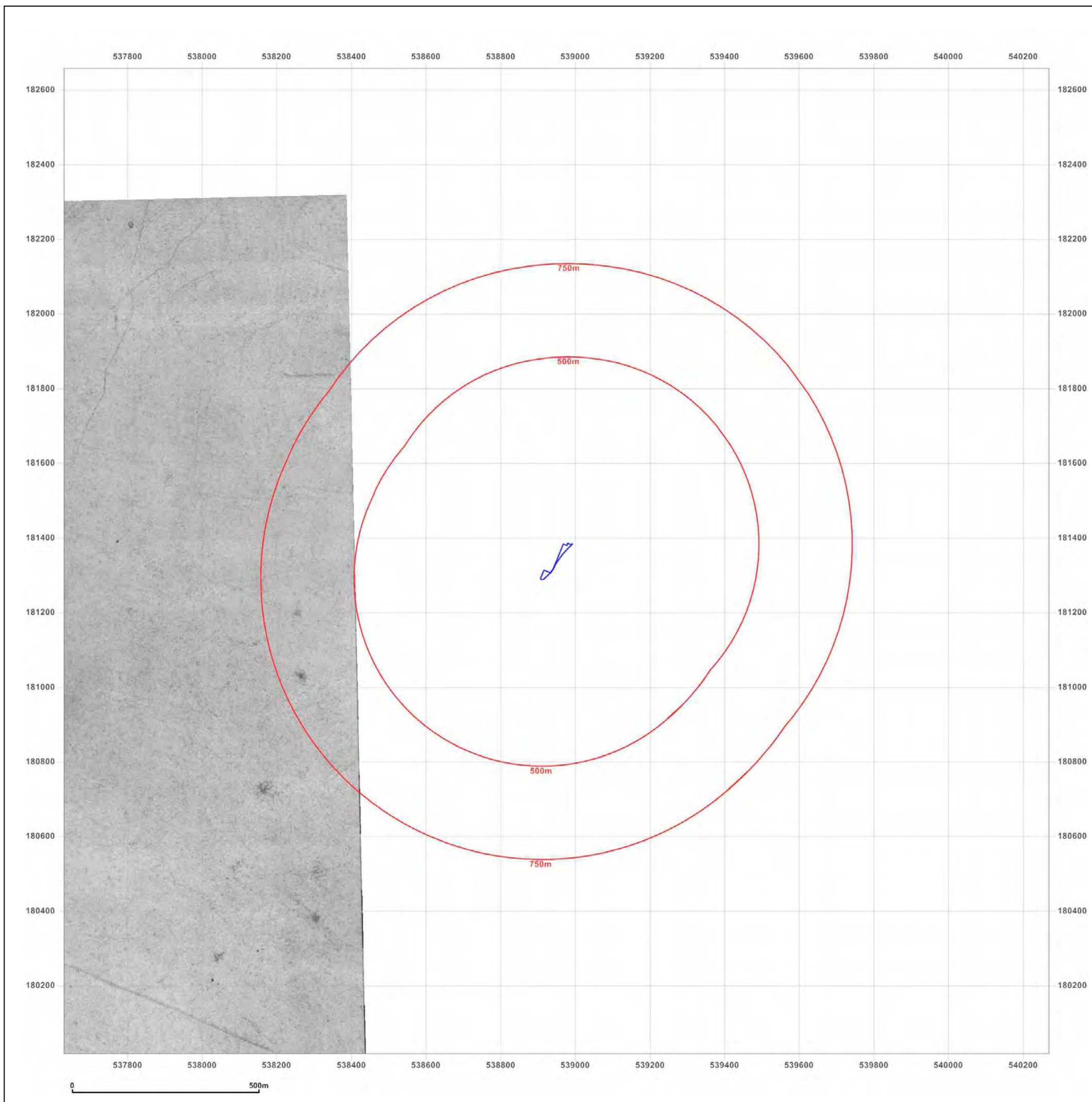


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 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

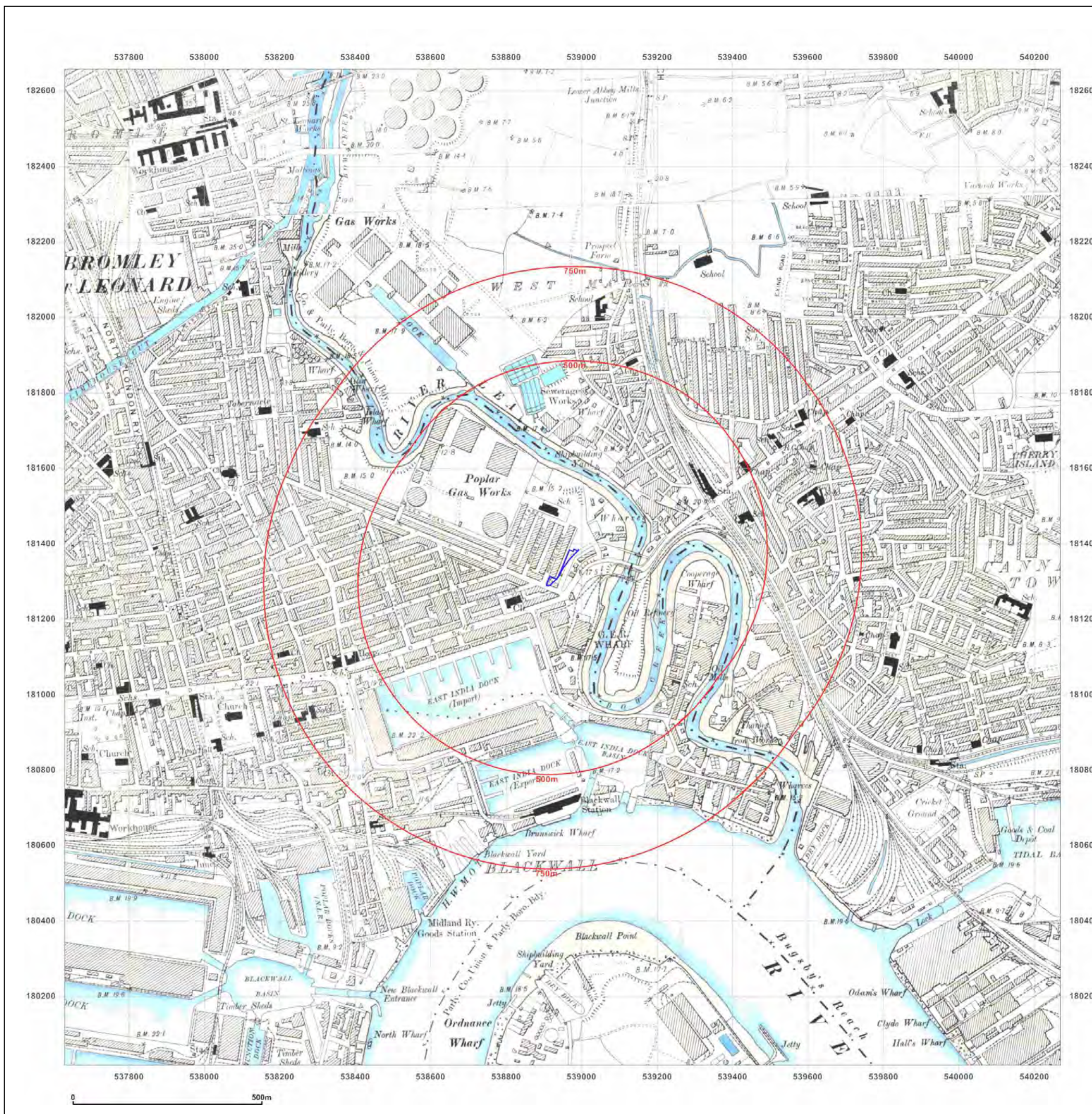


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1894

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 1894
Edition N/A
Copyright N/A
Levelled N/A

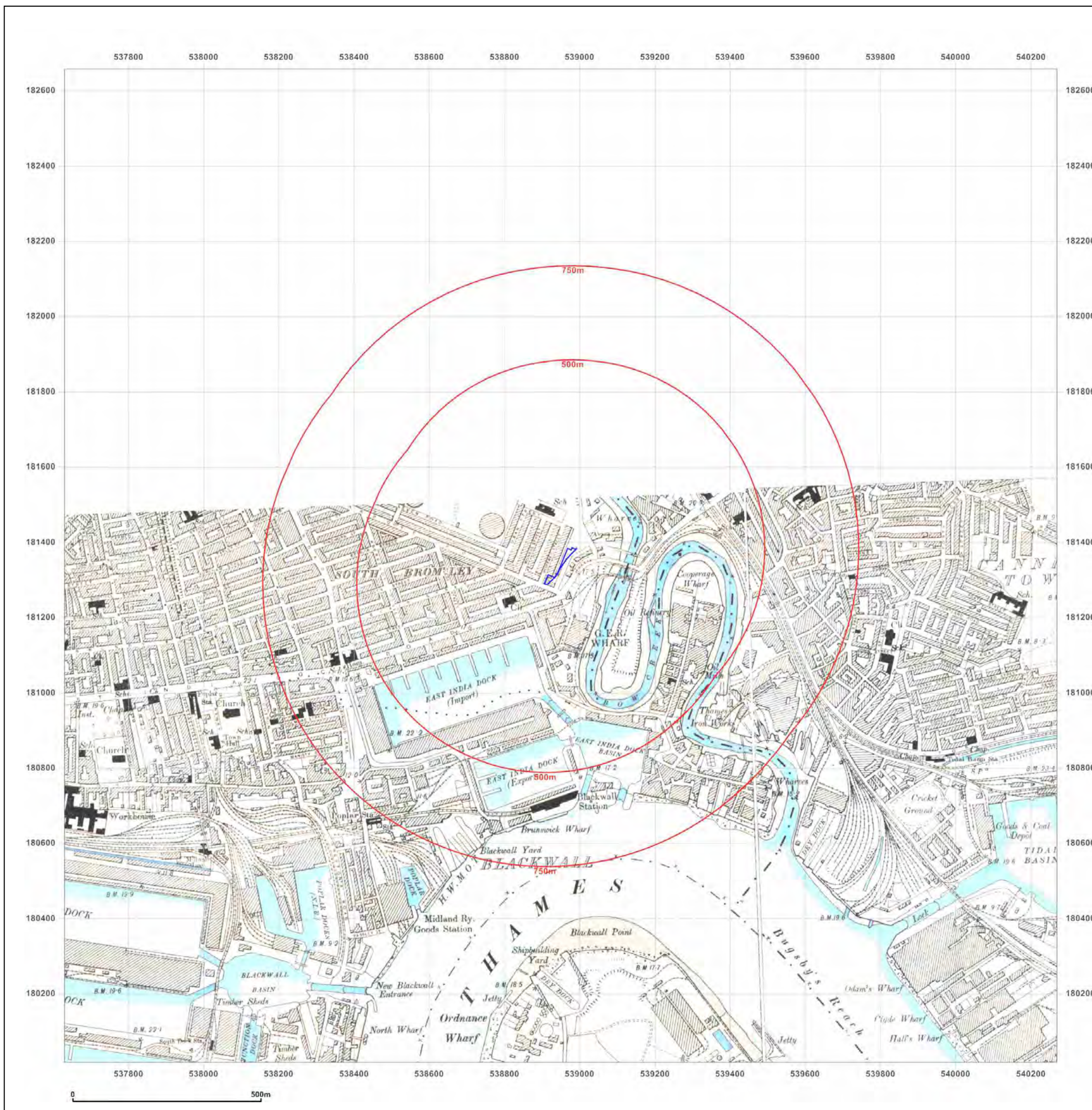


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1896

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1865
Revised 1894
Edition 1896
Copyright N/A
Levelled N/A

Surveyed 1870
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

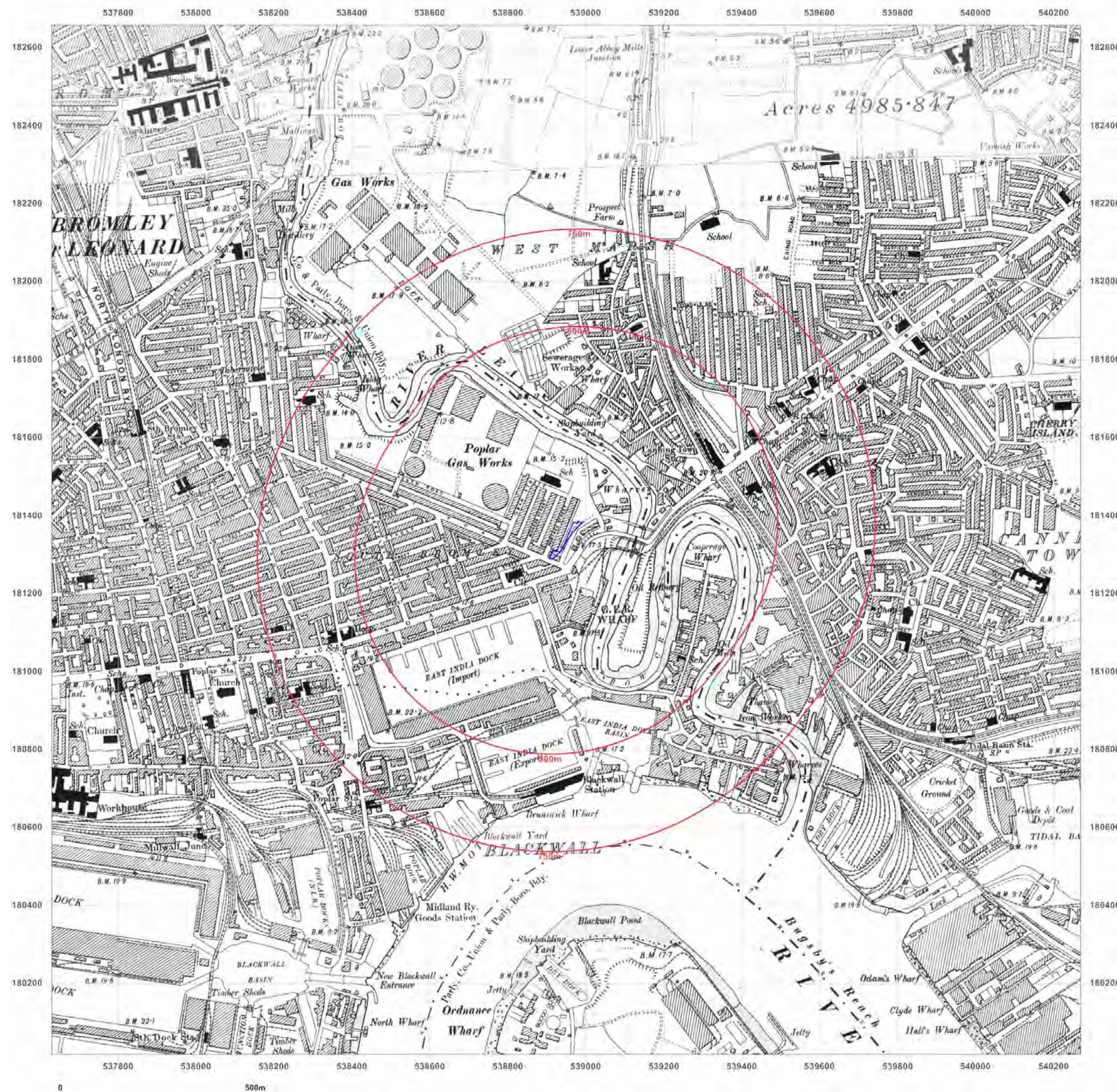


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

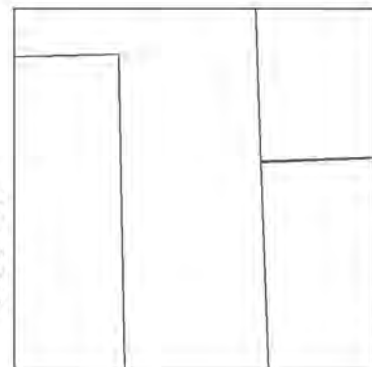
Map date: 1894-1898

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1862
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A



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

Surveyed 1867
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

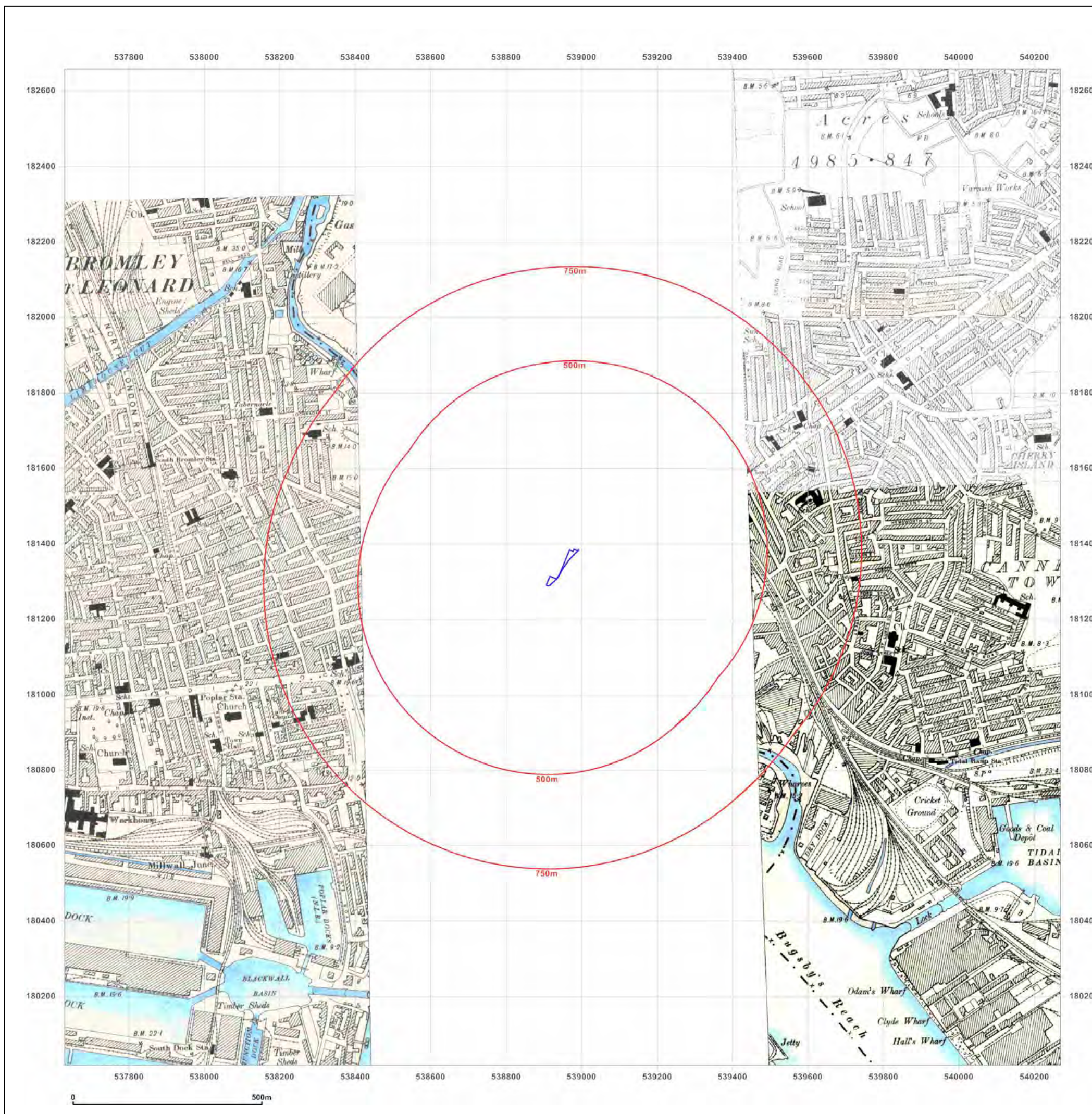


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1894-1899

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 1894
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
Revised 1894
Edition 1899
Copyright N/A
Levelled N/A

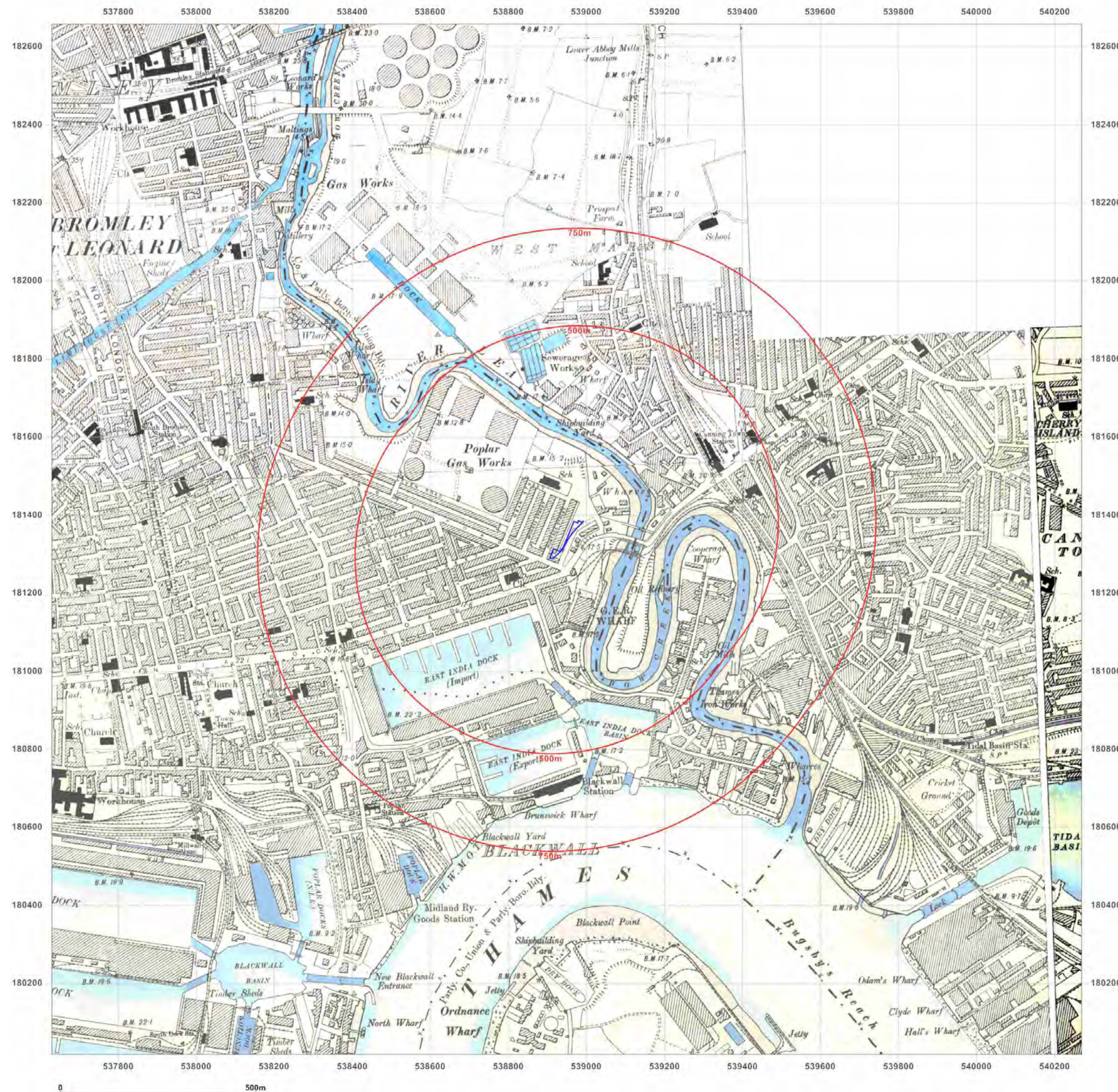


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1898-1899

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1894
Revised 1894
Edition 1898
Copyright N/A
Levelled N/A

Surveyed 1867
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

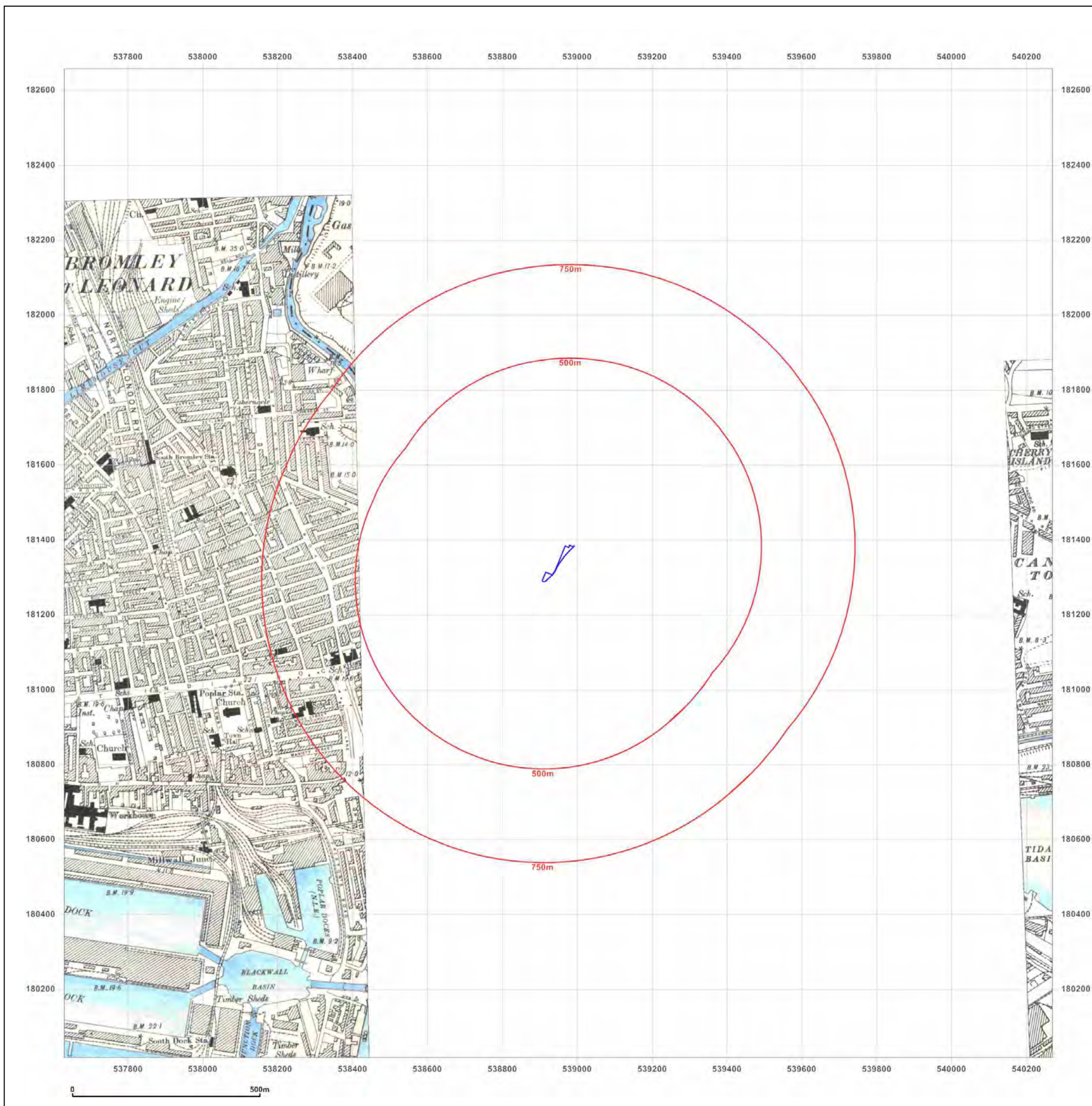


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1899

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1894
Edition 1899
Copyright N/A
Levelled N/A

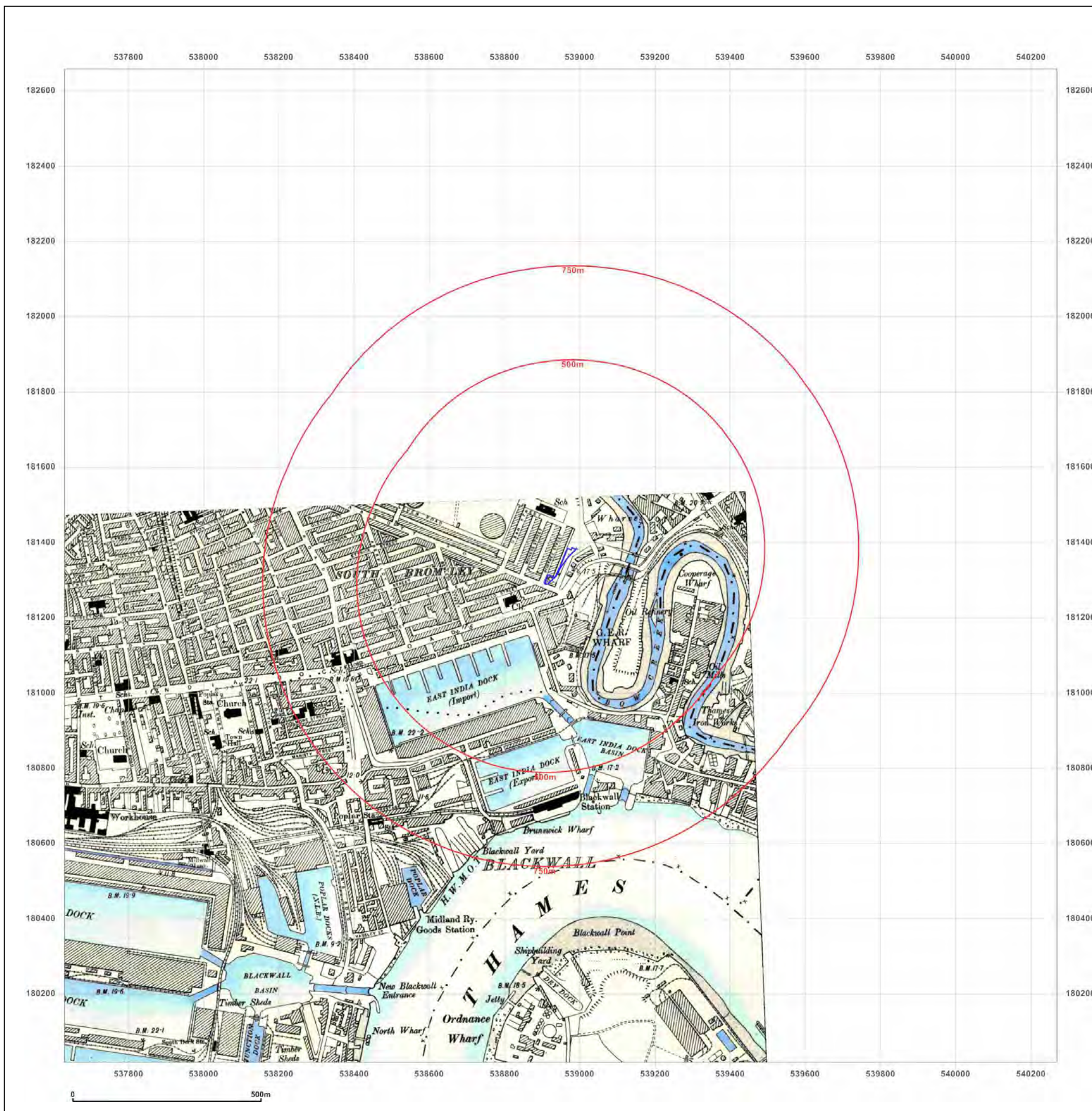


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: Provisional

Map date: 1948-1949

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
Revised 1949
Edition N/A
Copyright N/A
Levelled 1934

Surveyed N/A
Revised 1948
Edition N/A
Copyright N/A
Levelled 1934

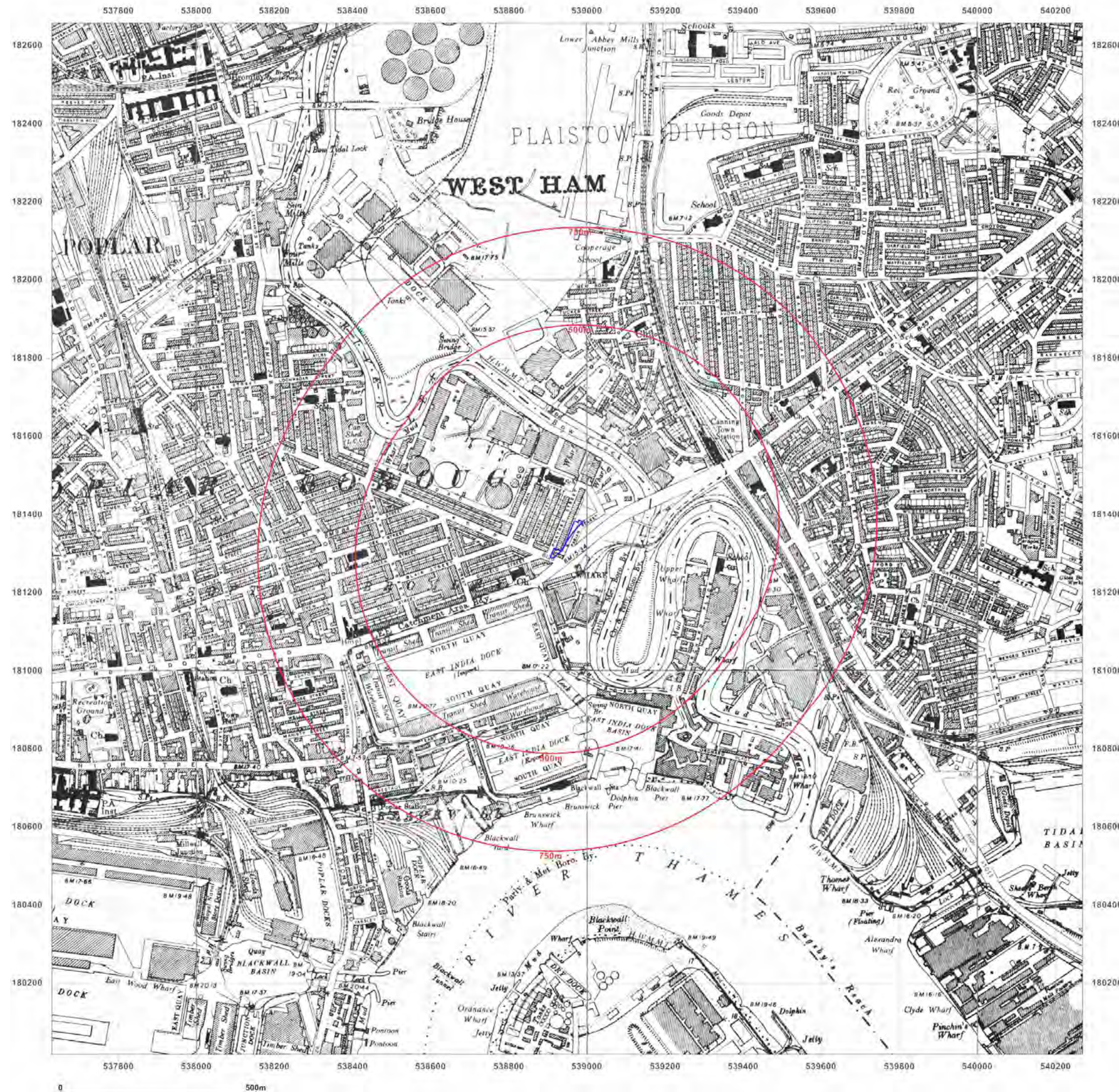


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: Provisional

Map date: 1950-1955

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1955
Revised 1955
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1940
Revised 1948
Edition N/A
Copyright 1950
Levelled N/A

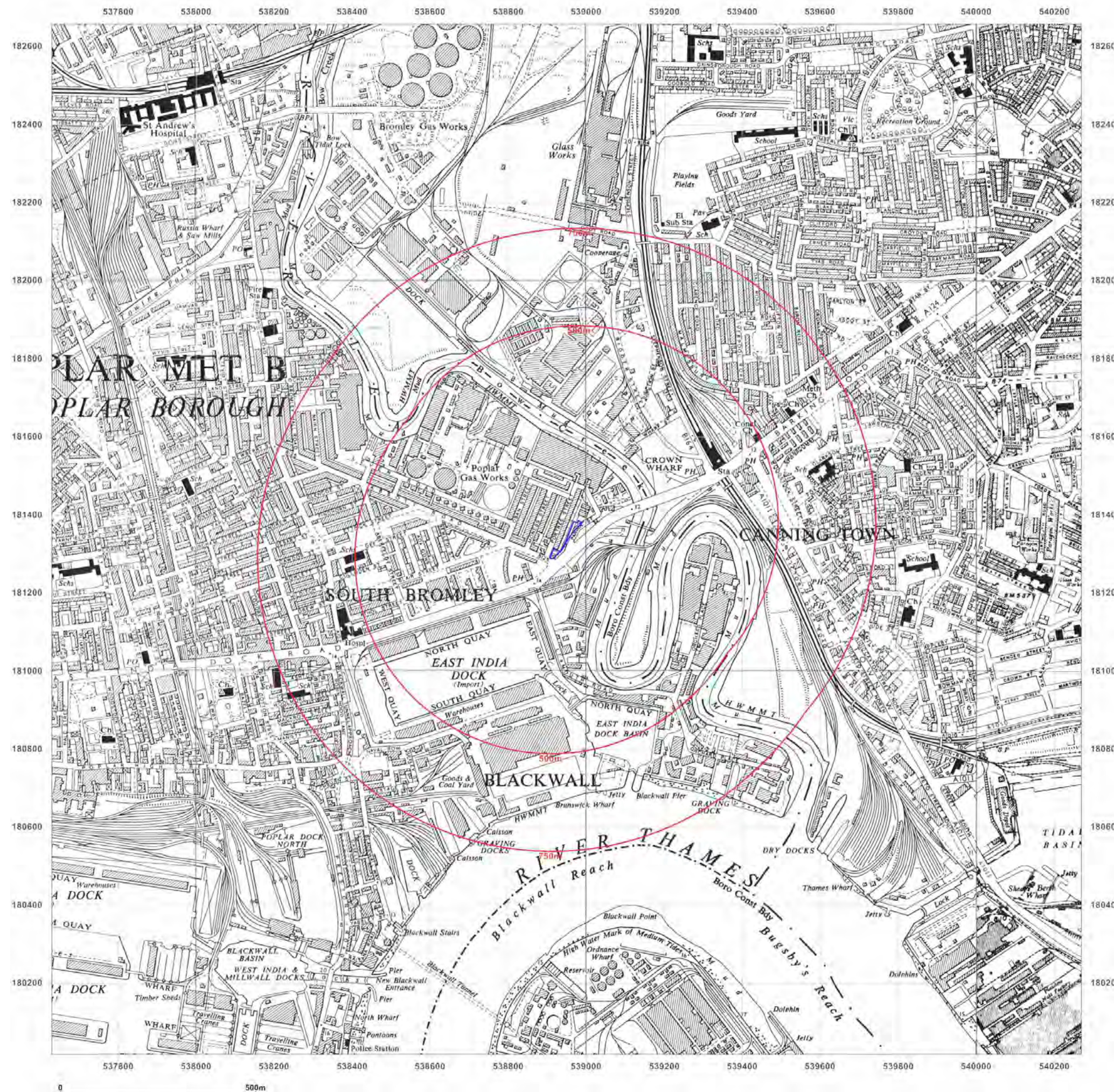


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: Provisional

Map date: 1965-1966

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1965
Revised 1965
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1966
Revised 1966
Edition N/A
Copyright N/A
Levelled N/A

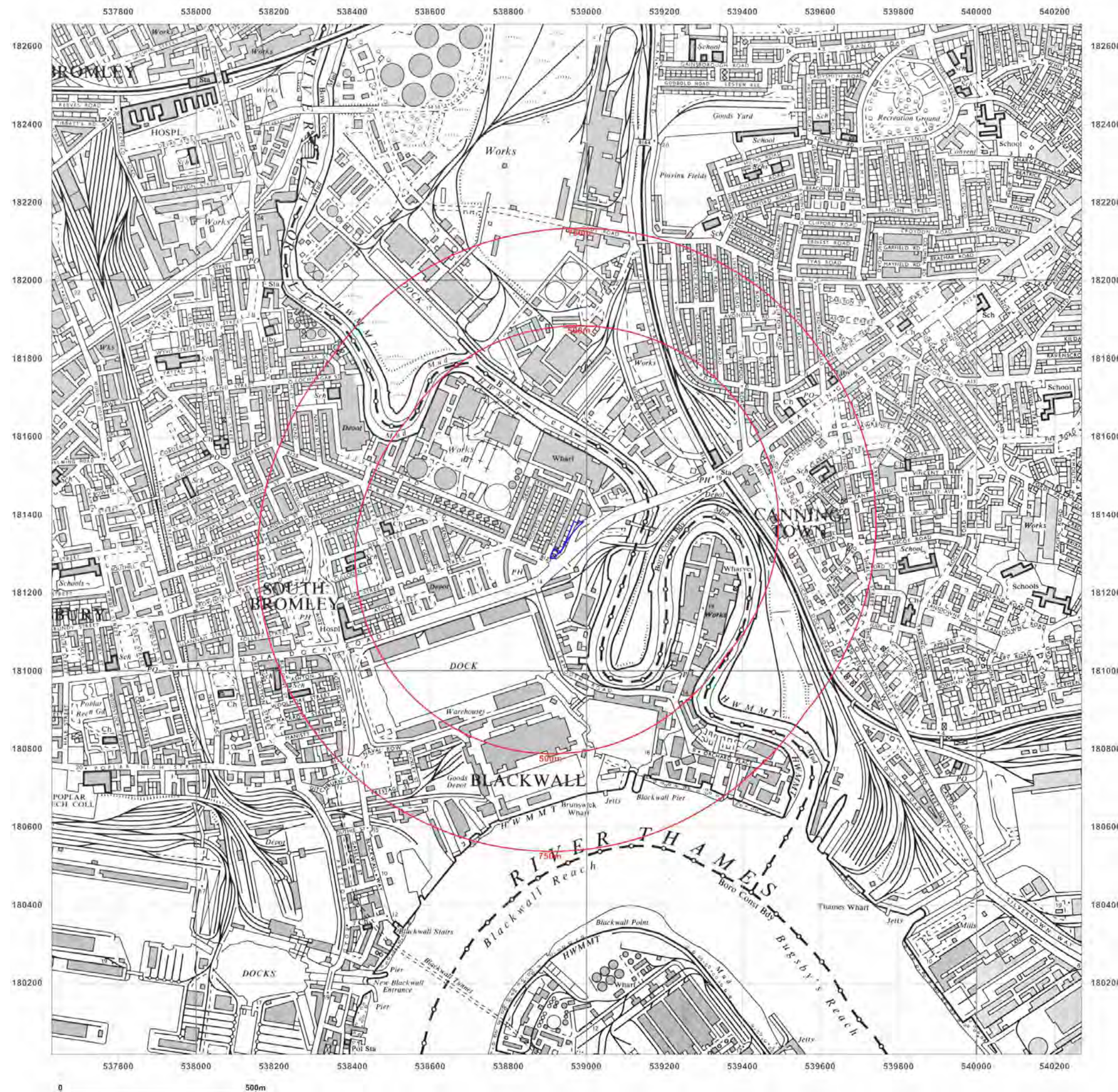


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1973-1974

Scale: 1:10,000

Printed at: 1:10,000



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

Surveyed 1973
Revised 1974
Edition N/A
Copyright N/A
Levelled N/A

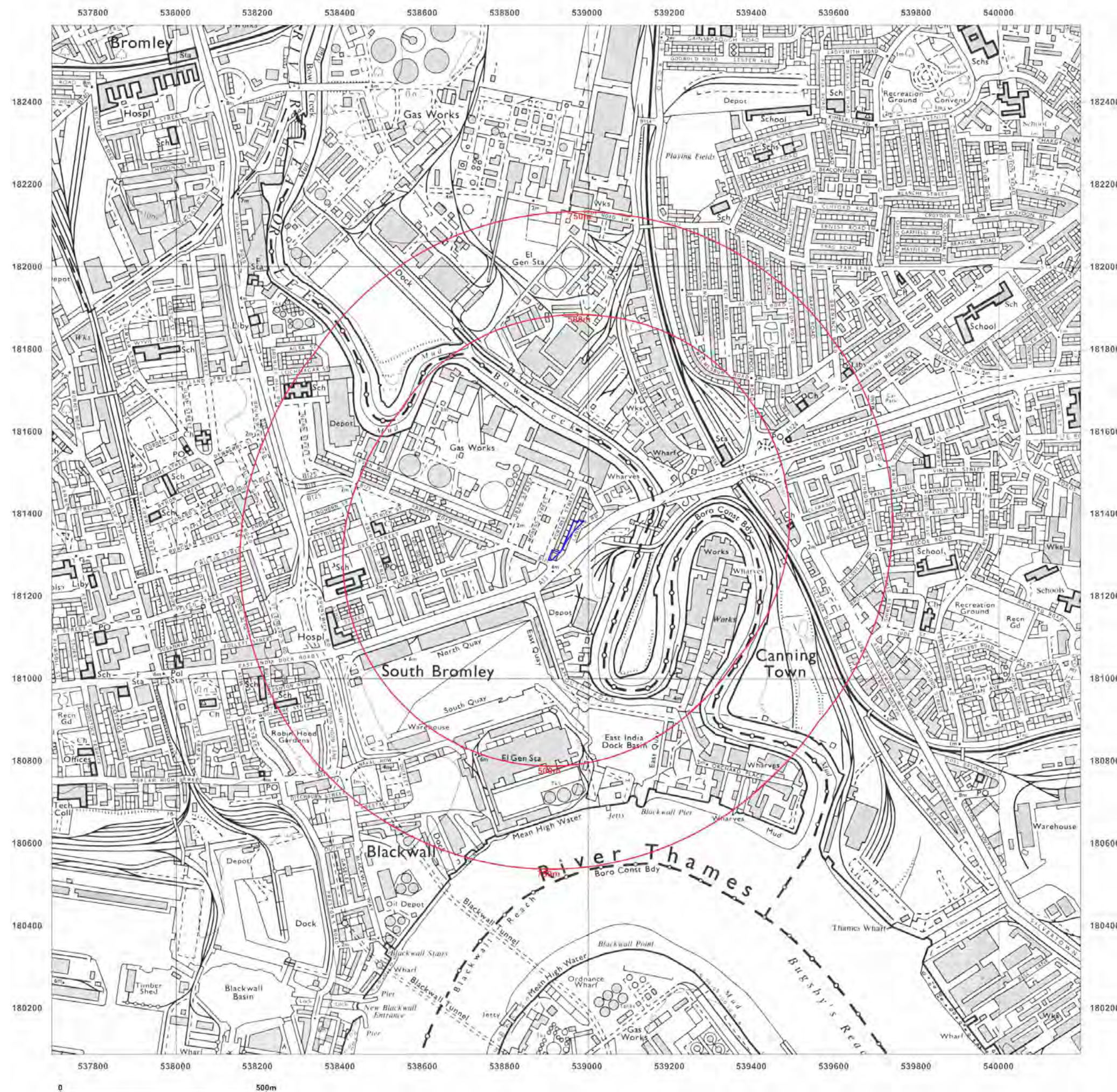


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1981-1982

Scale: 1:10,000

Printed at: 1:10,000



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

Surveyed 1981
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

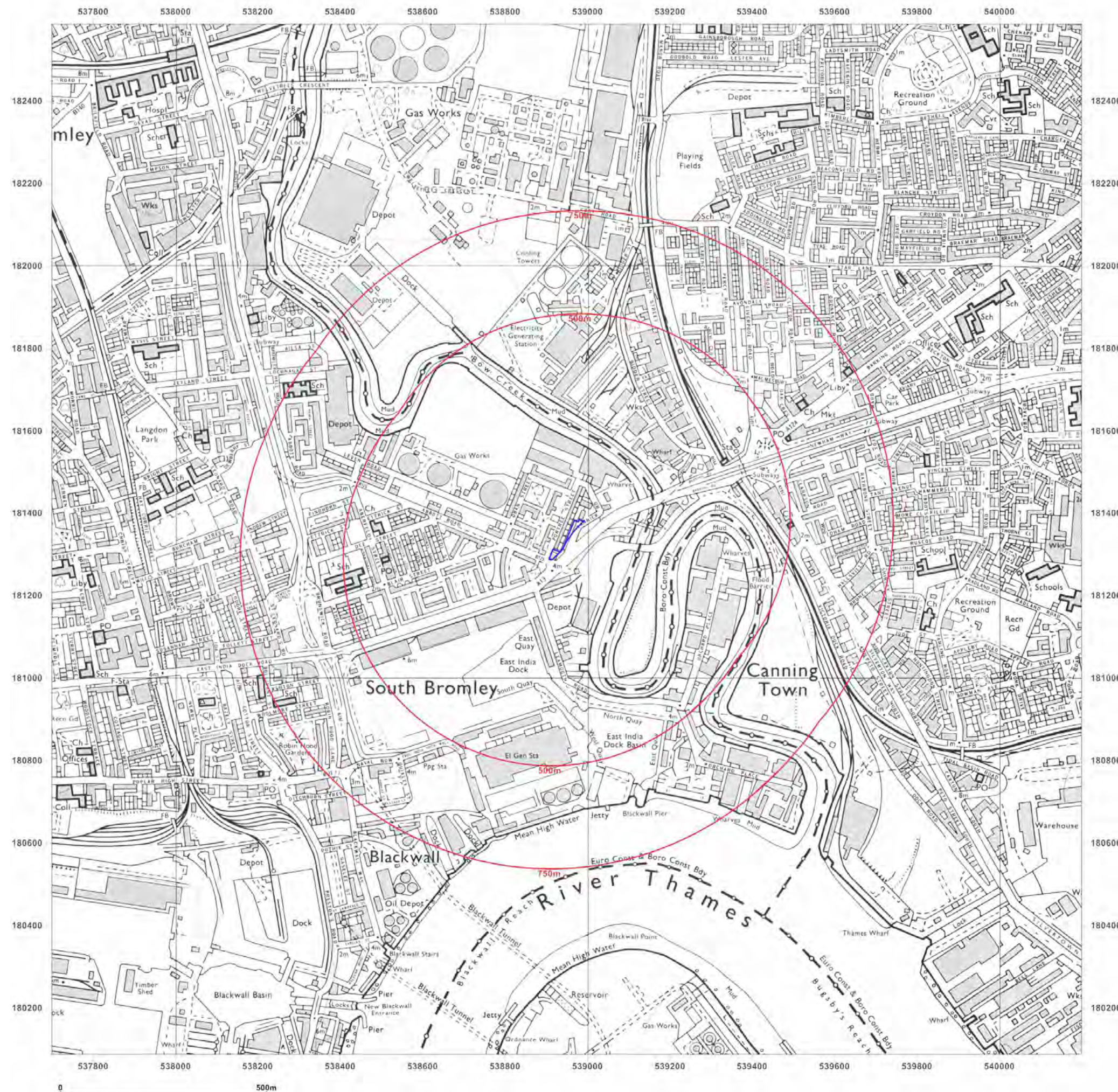


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1989-1990

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1988
Revised 1989
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1989
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

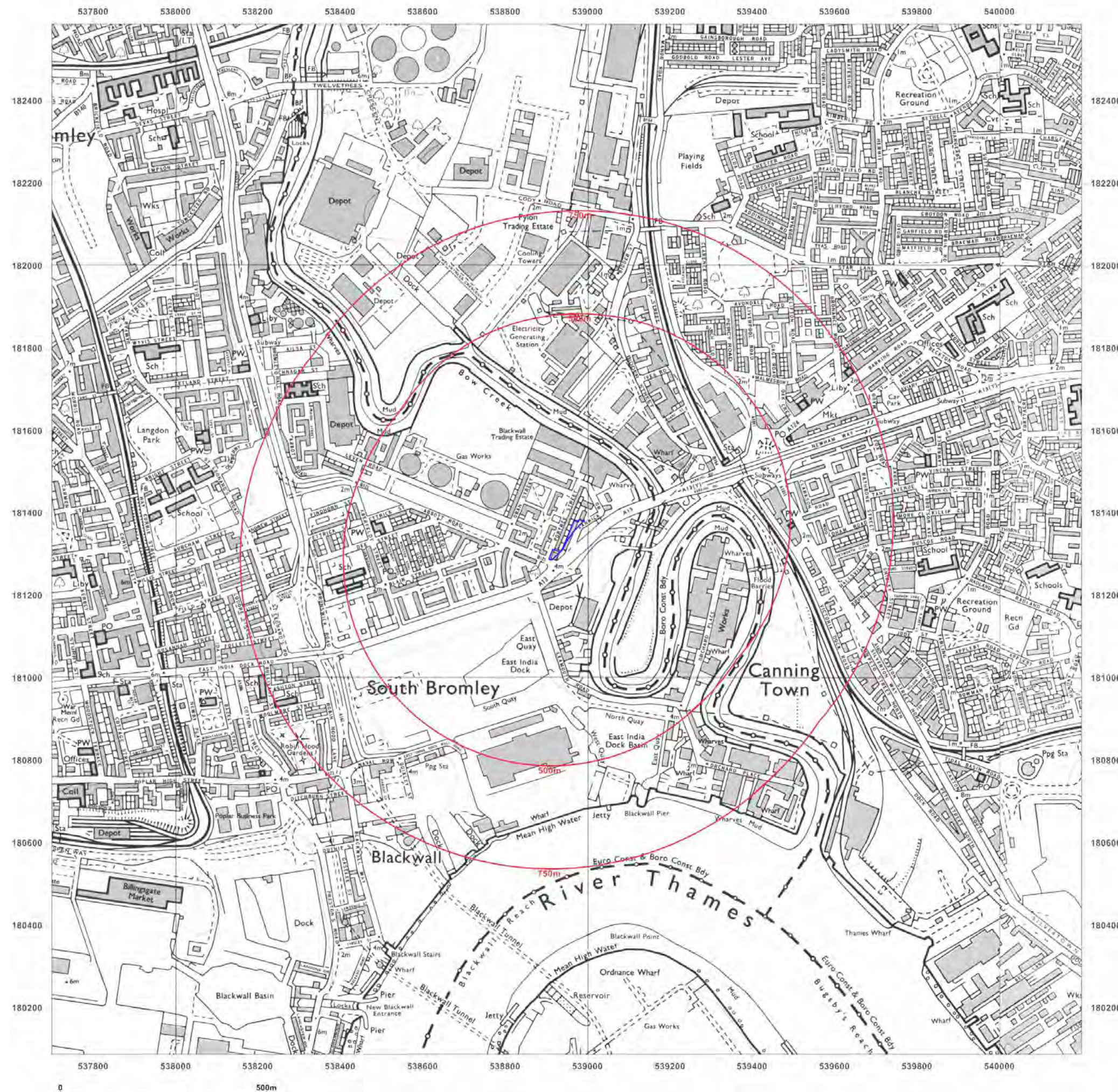


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1994-1995

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1988
Revised 1994
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1989
Revised 1995
Edition N/A
Copyright N/A
Levelled N/A

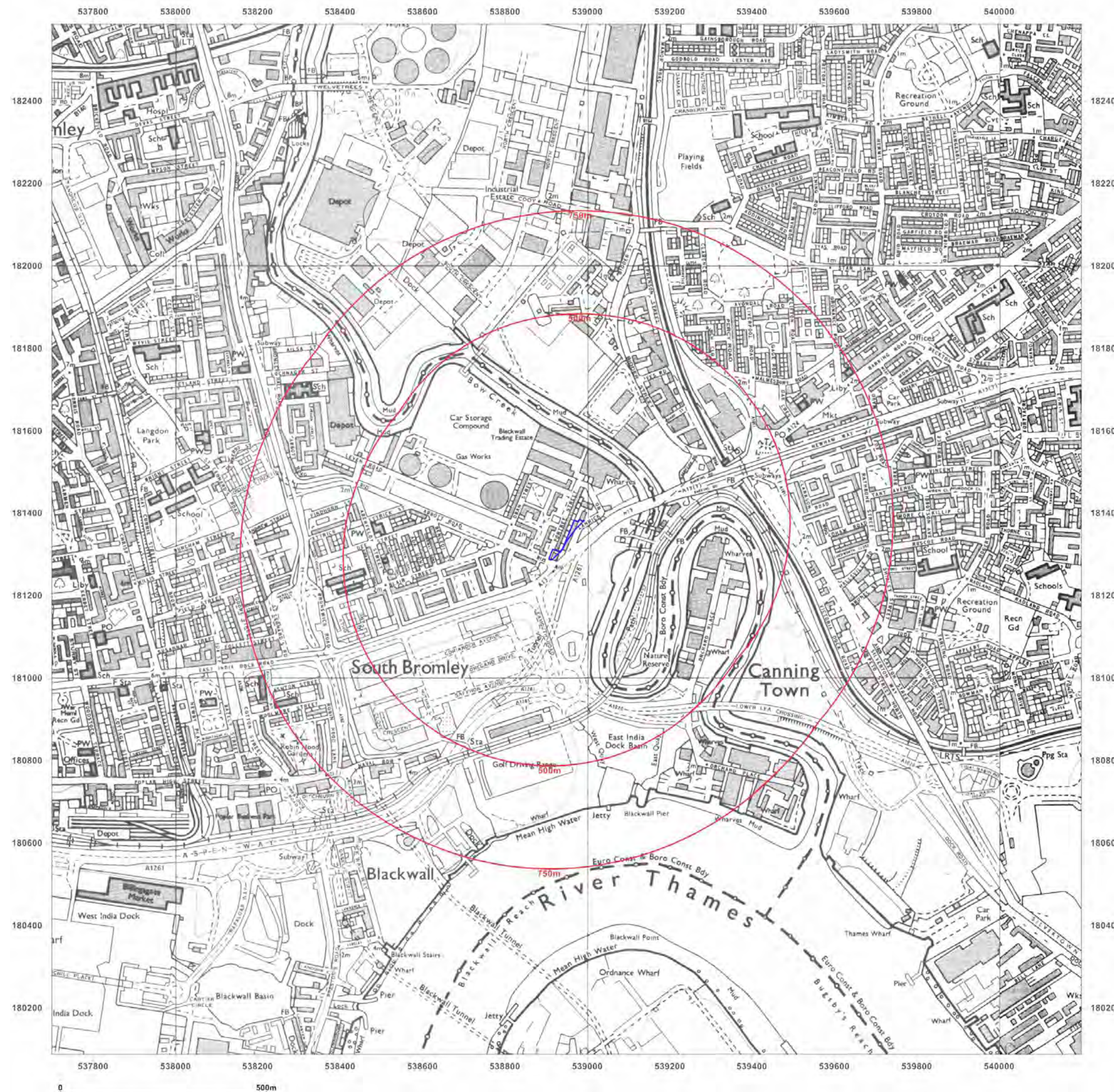


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000

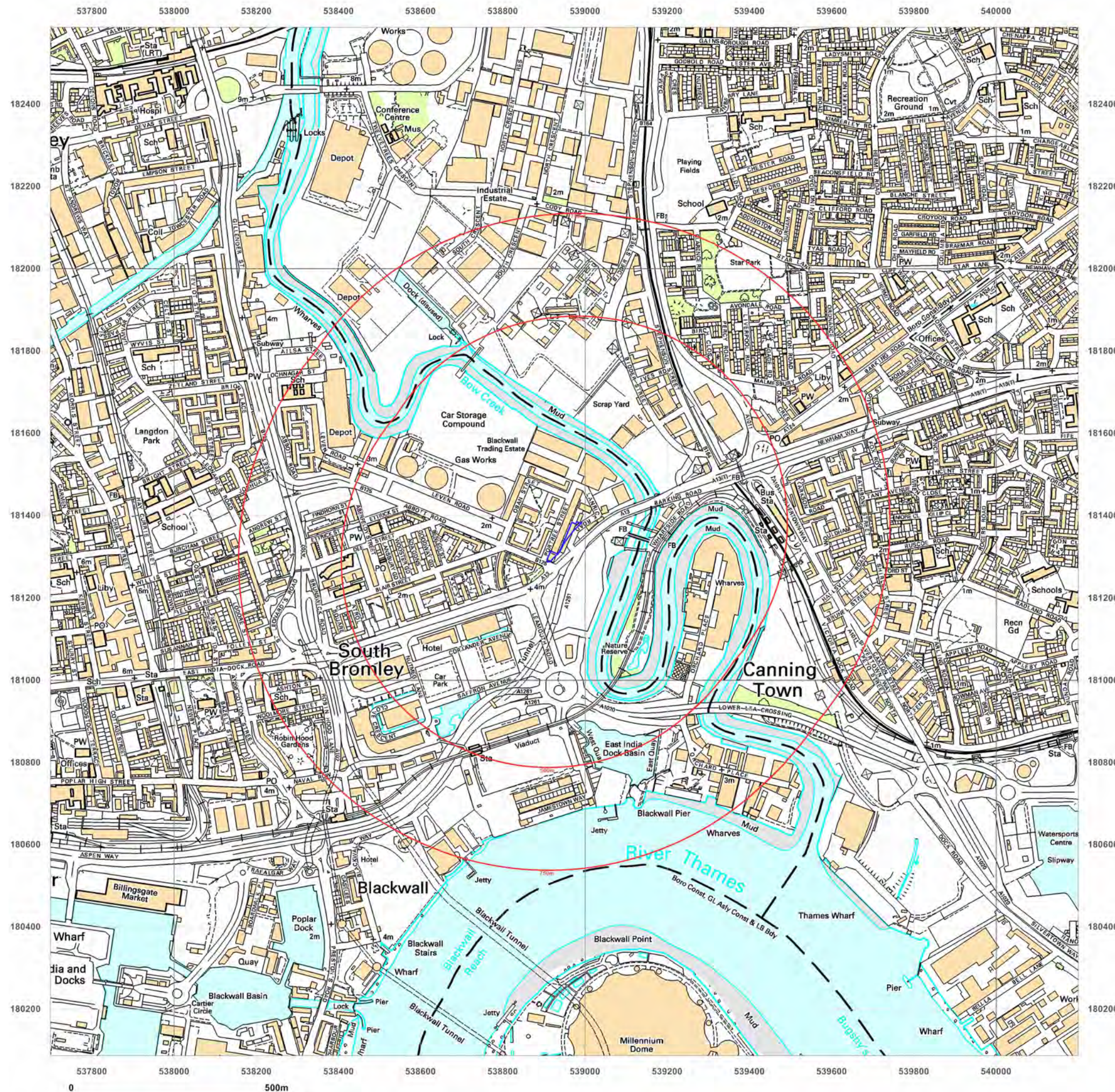


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000

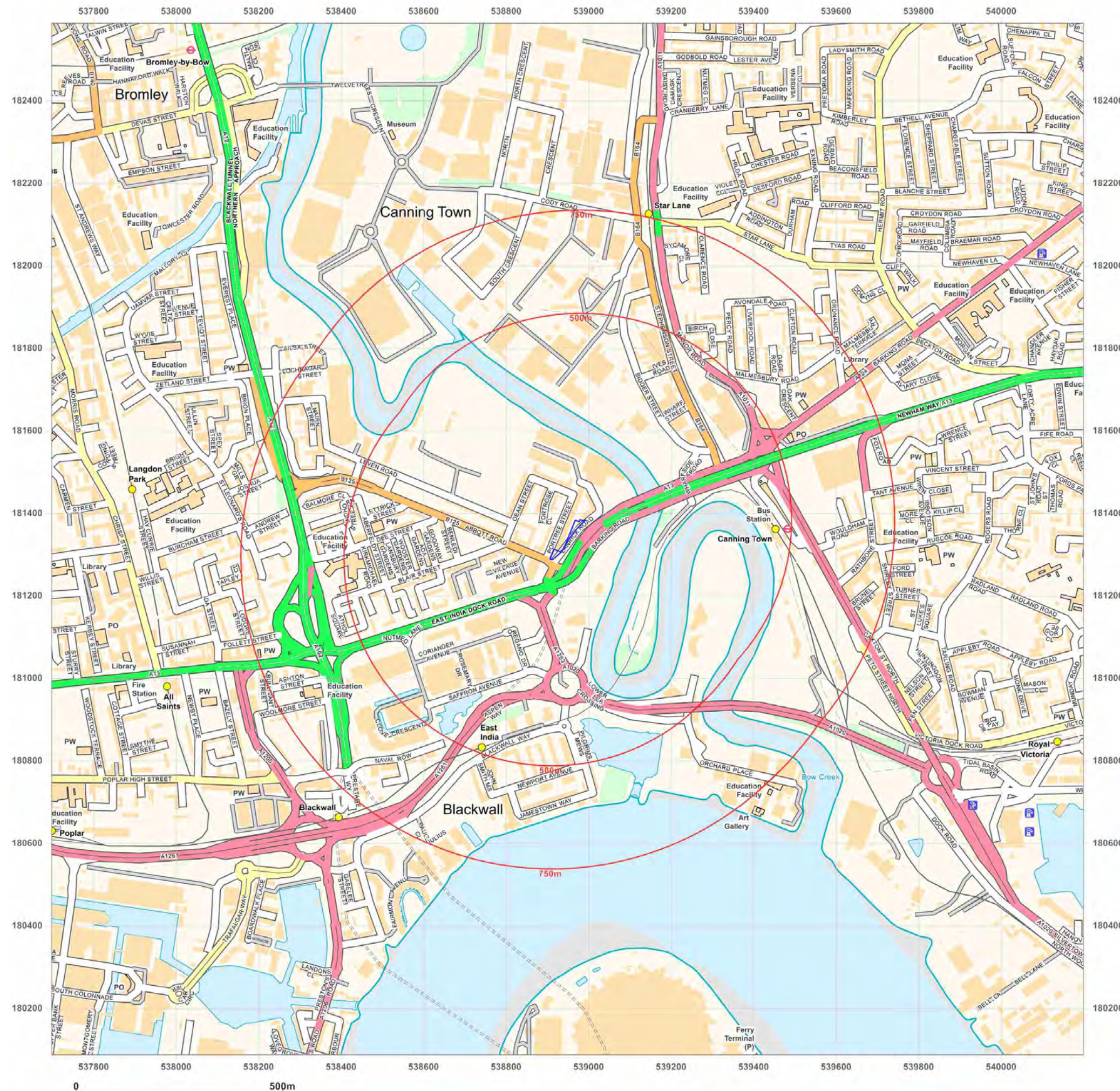


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: 1056 Scale Town Plan

Map date: 1869

Scale: 1:1,056

Printed at: 1:1,056



Surveyed 1887
Revised N/A
Edition 1869
Copyright N/A
Levelled N/A

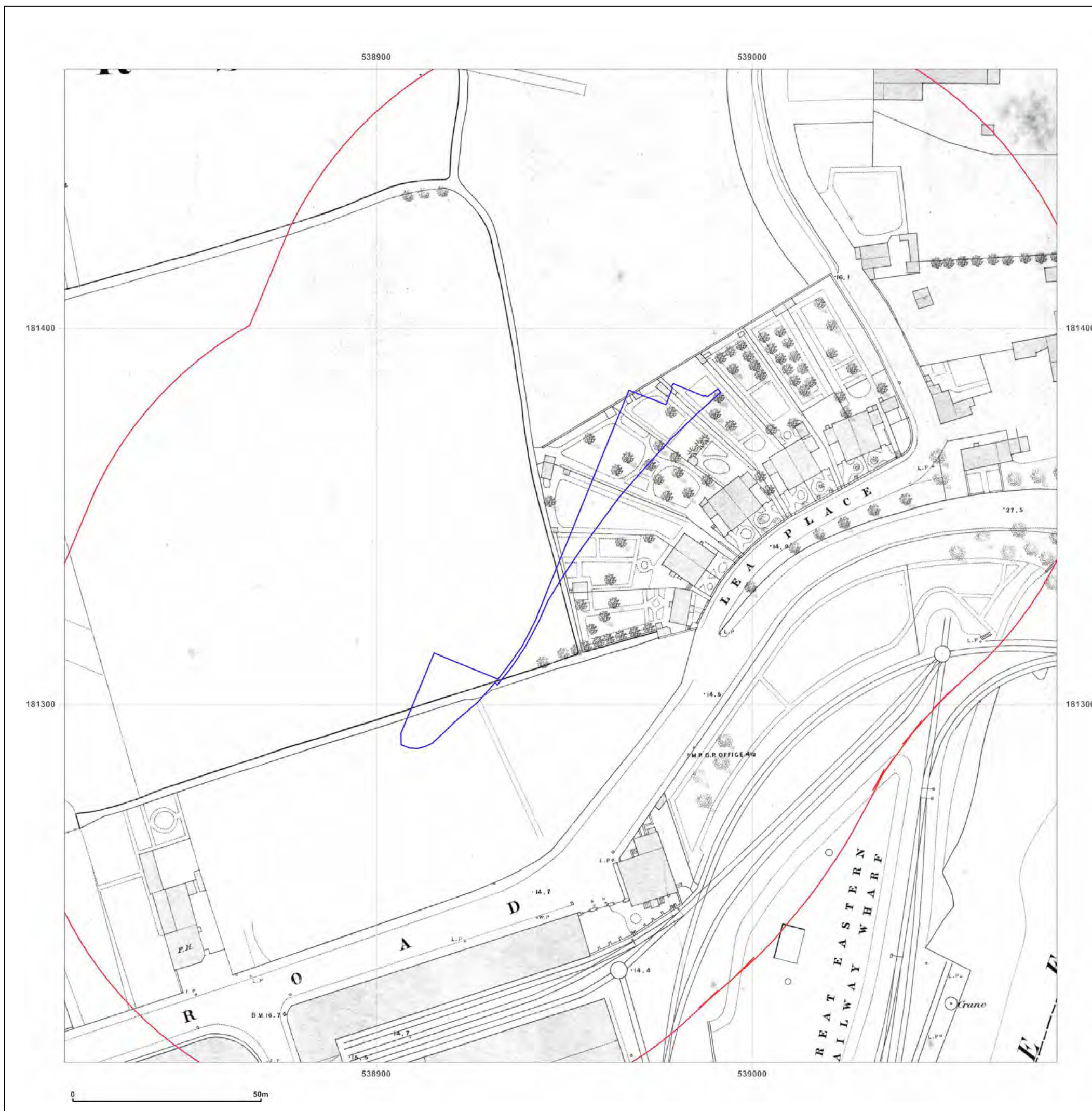


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: 1056 Scale Town Plan

Map date: 1869

Scale: 1:1,056

Printed at: 1:1,056



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



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: 1056 Scale Town Plan

Map date: 1869

Scale: 1:1,056

Printed at: 1:1,056



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

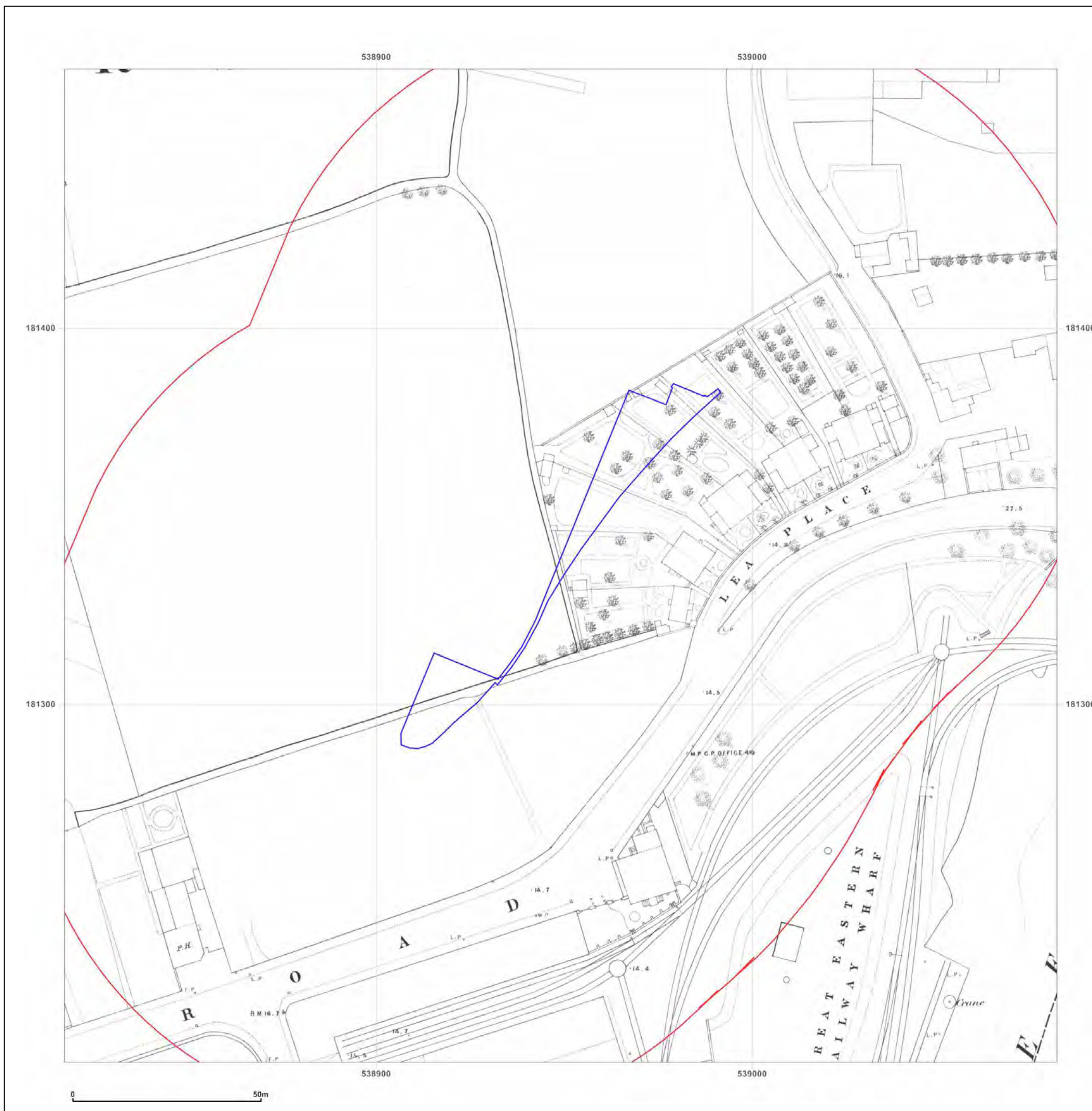


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1869

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1867
Revised N/A
Edition 1869
Copyright N/A
Levelled N/A

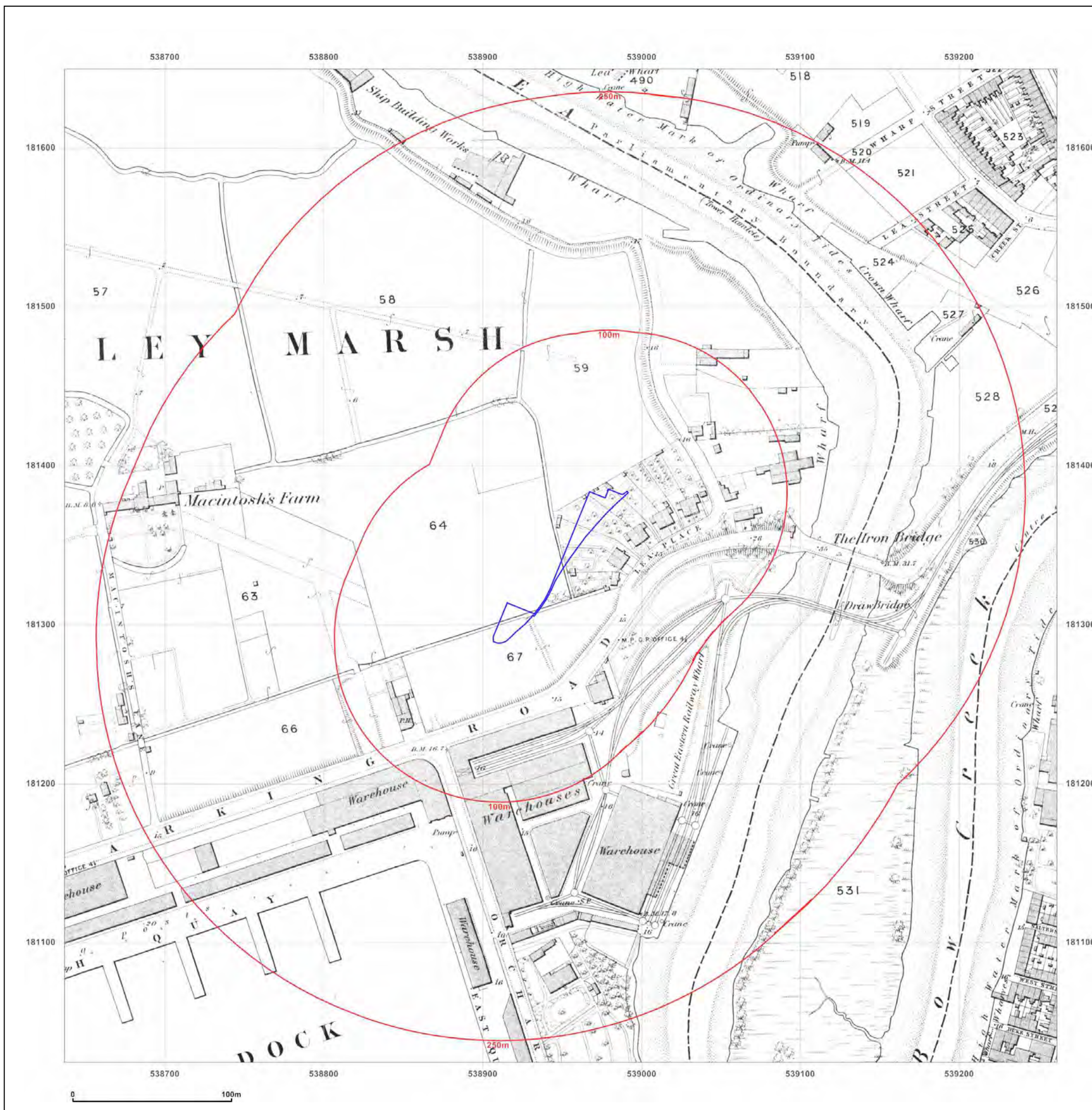


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)





Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

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



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)

Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1896

Scale: 1:2,500

Printed at: 1:2,500



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

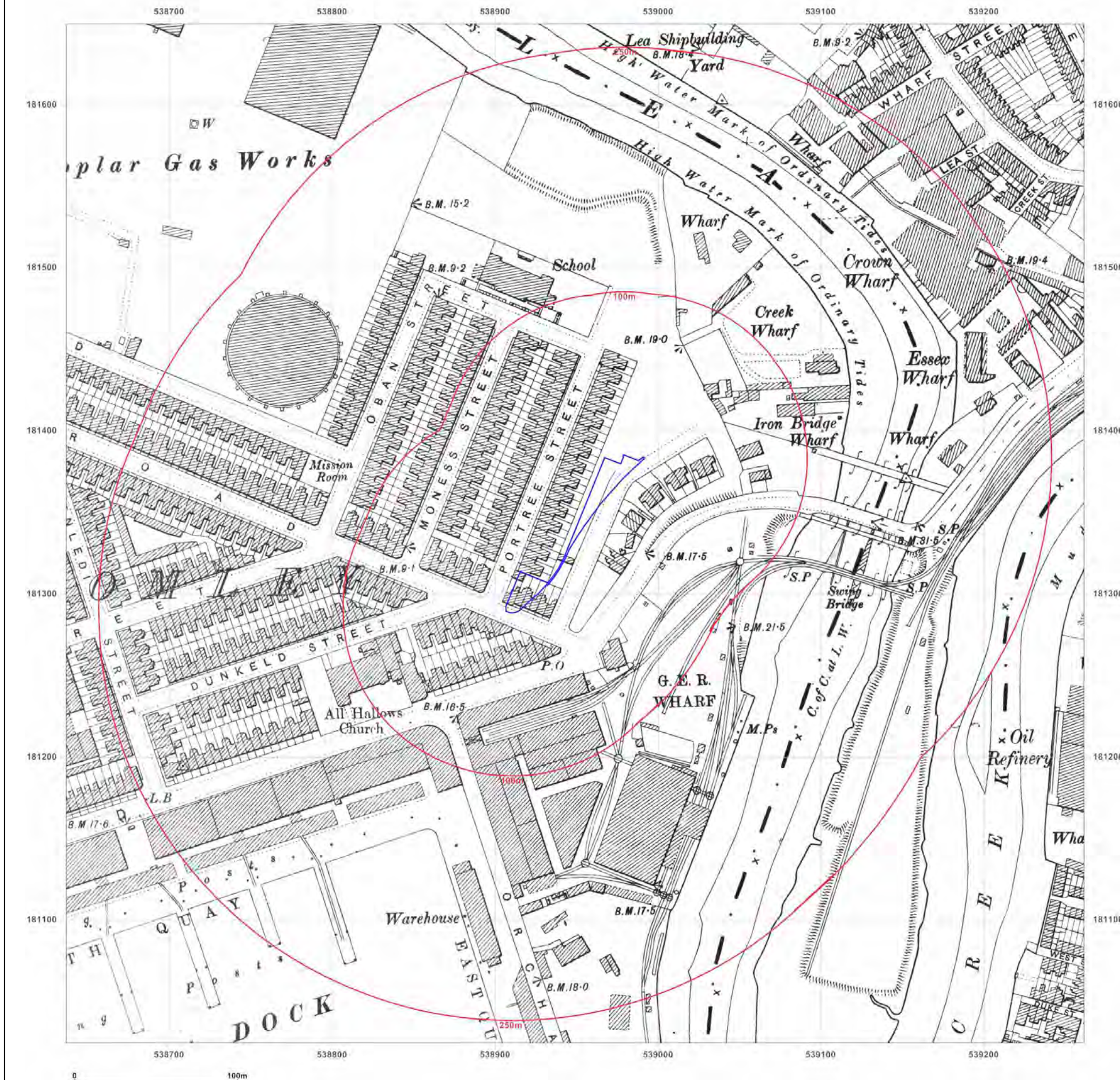


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: County Series

Map date: 1916

Scale: 1:2,500

Printed at: 1:2,500



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

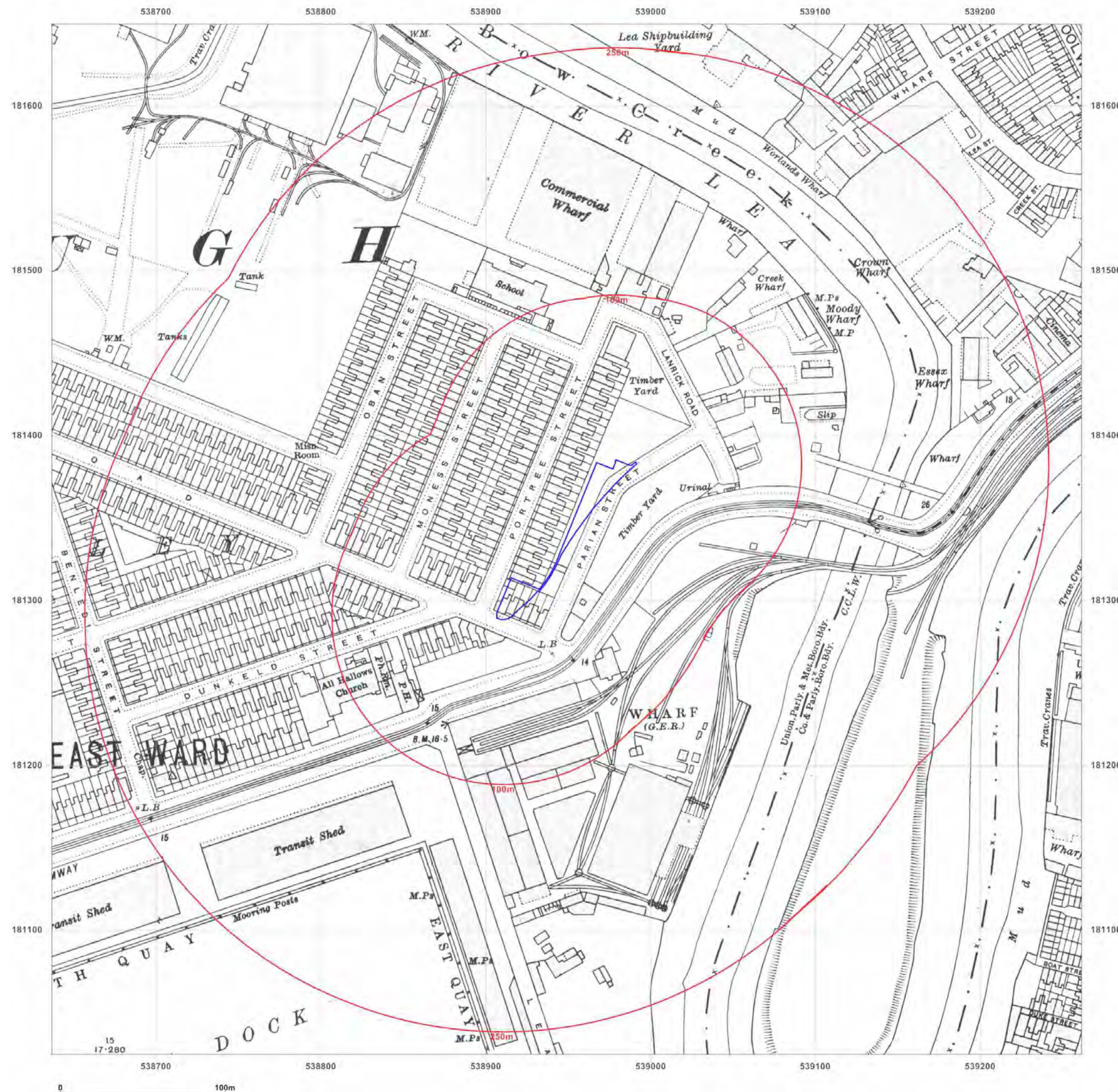


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

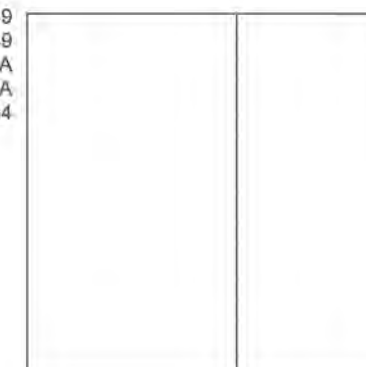
Map date: 1949

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1949
Revised 1949
Edition N/A
Copyright N/A
Levelled 1934

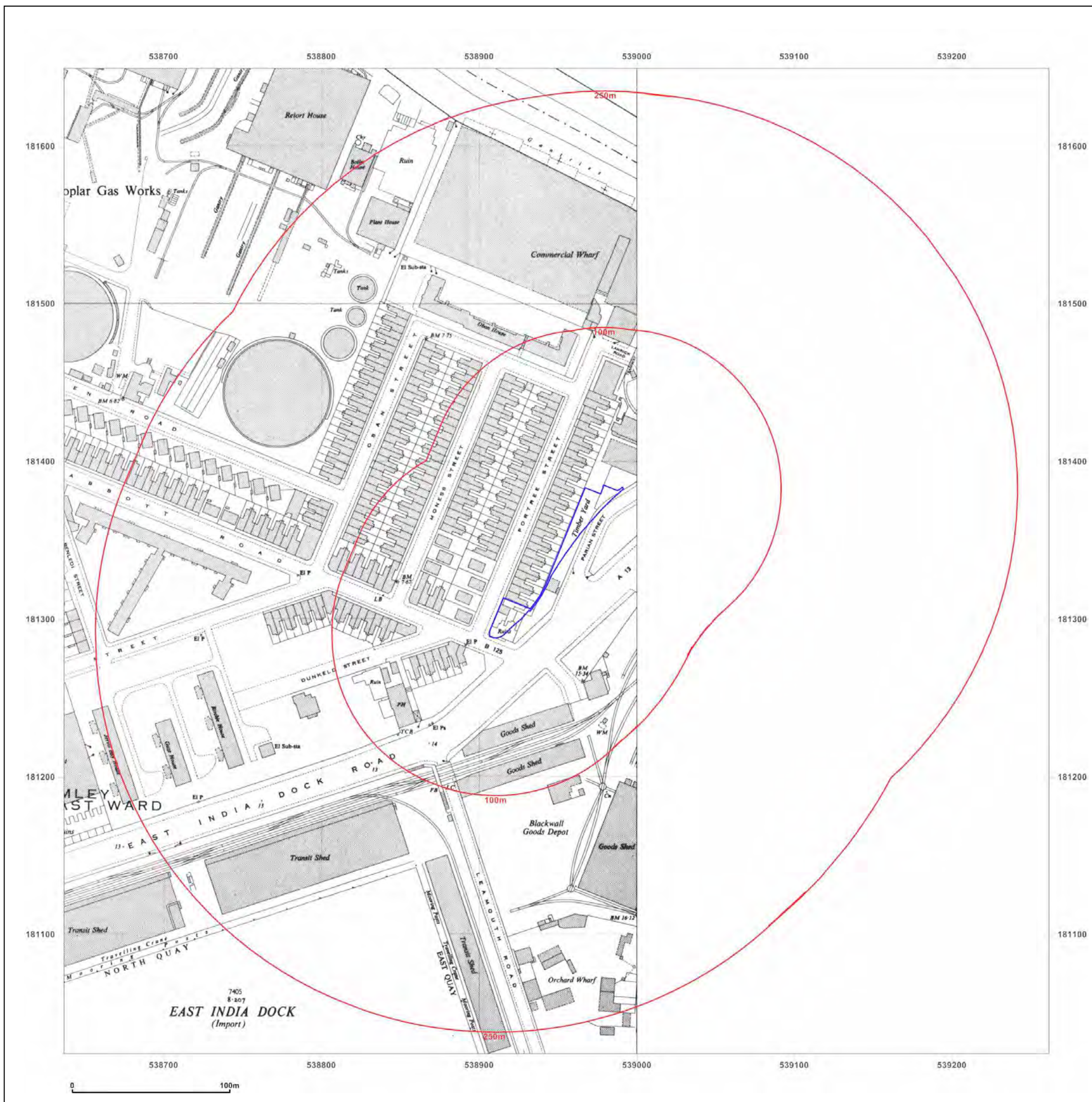


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1949-1950

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1949
Revised 1949
Edition N/A
Copyright N/A
Levelled 1934

Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled 1948

Surveyed 1949
Revised 1949
Edition N/A
Copyright N/A
Levelled 1934

Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled 1948

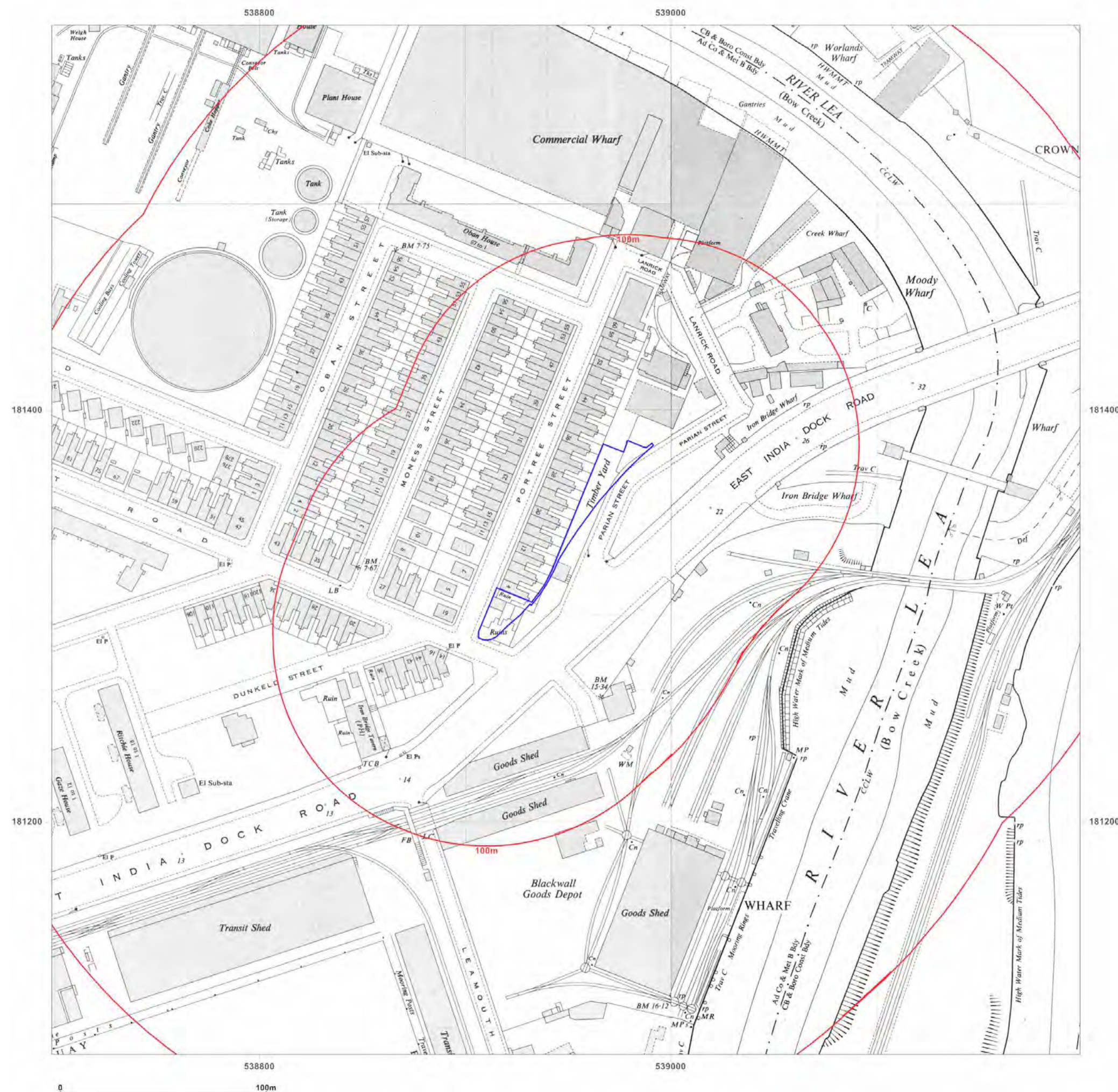


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1951-1953

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1952
Revised 1952
Edition N/A
Copyright N/A
Levelled 1934

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

Surveyed 1953
Revised 1953
Edition N/A
Copyright N/A
Levelled 1934

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

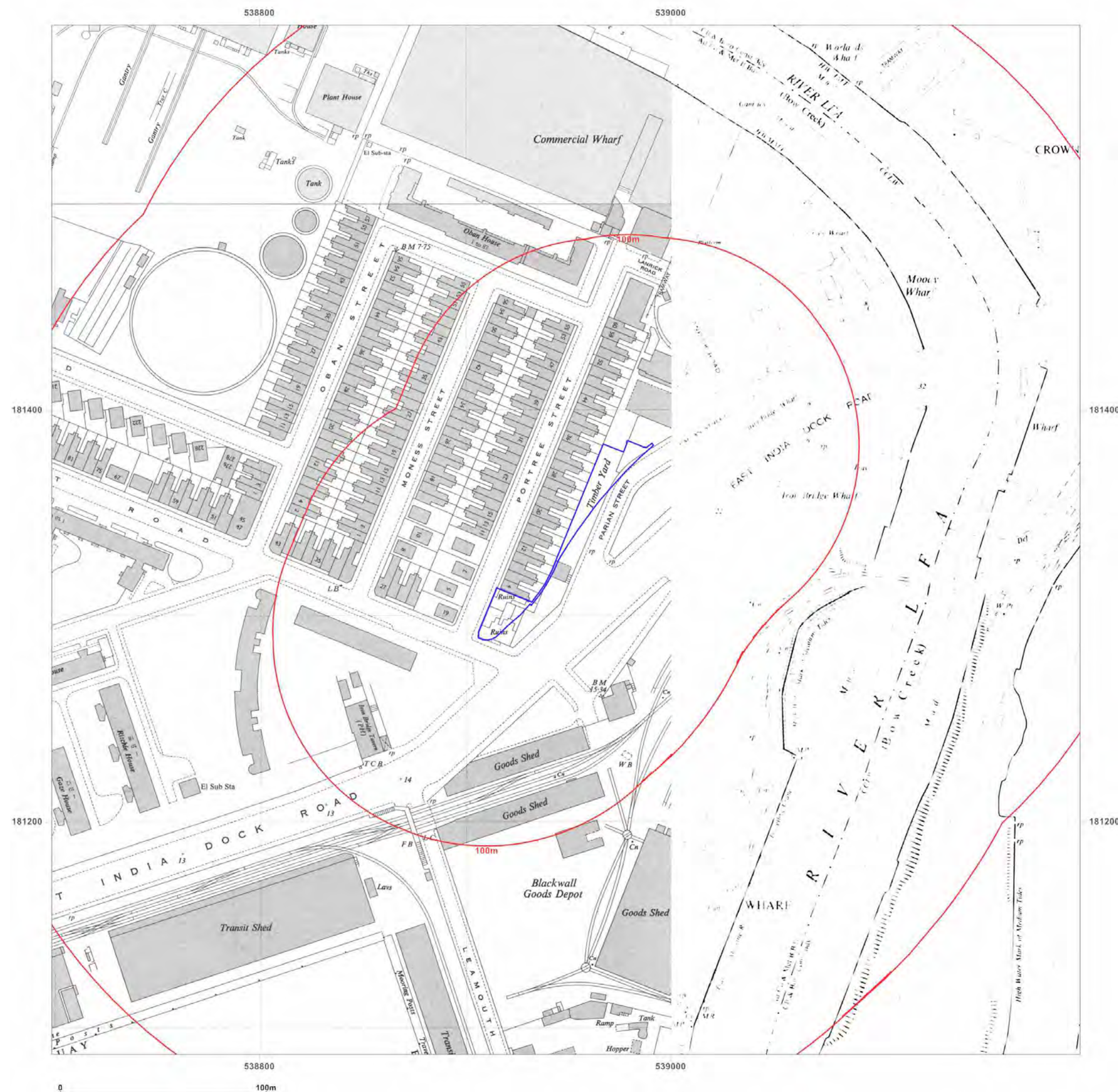


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1950-1953

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1953
Revised 1953
Edition 1954
Copyright N/A
Levelled 1934

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

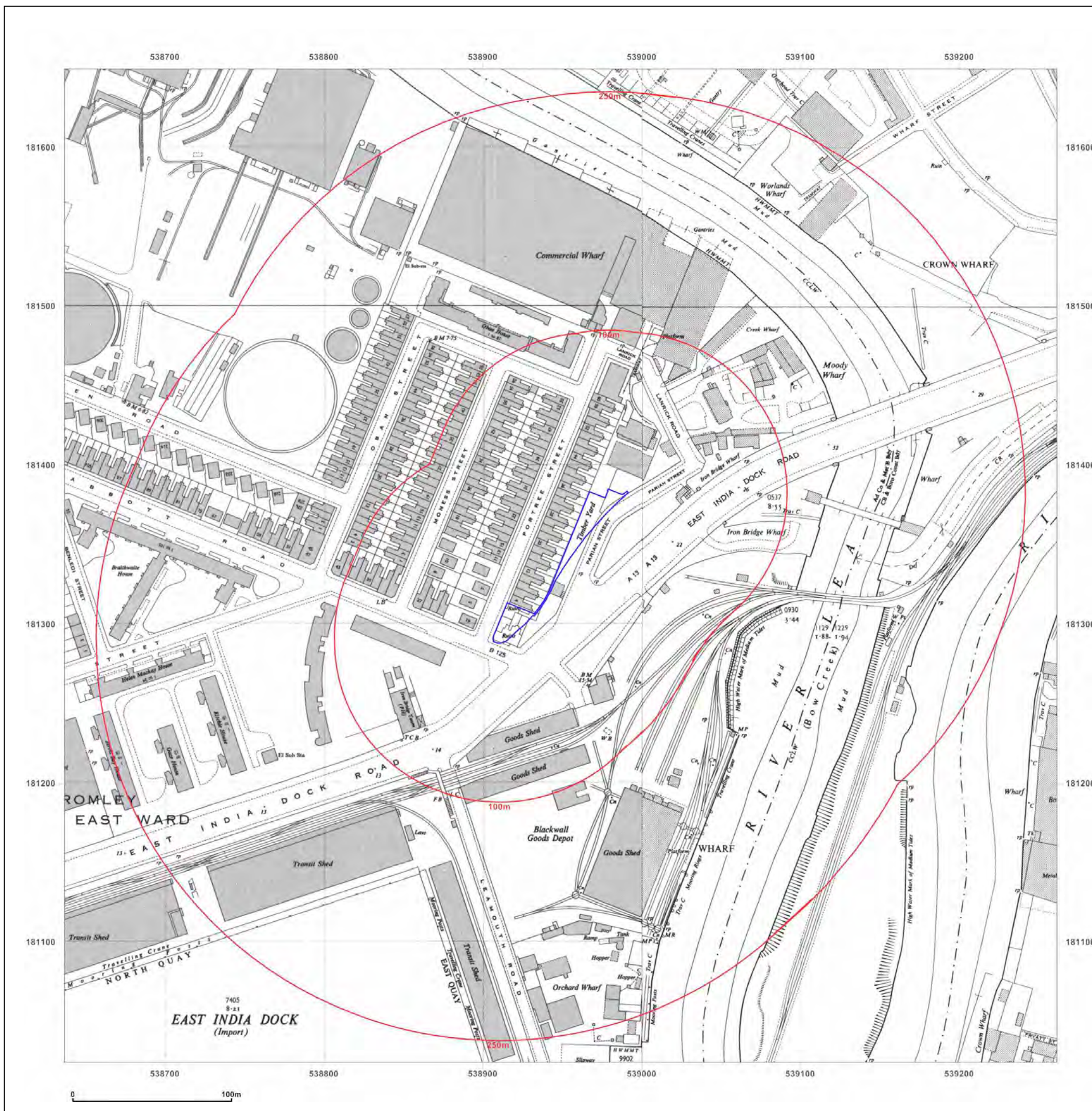


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1964

Scale: 1:2,500

Printed at: 1:2,500



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

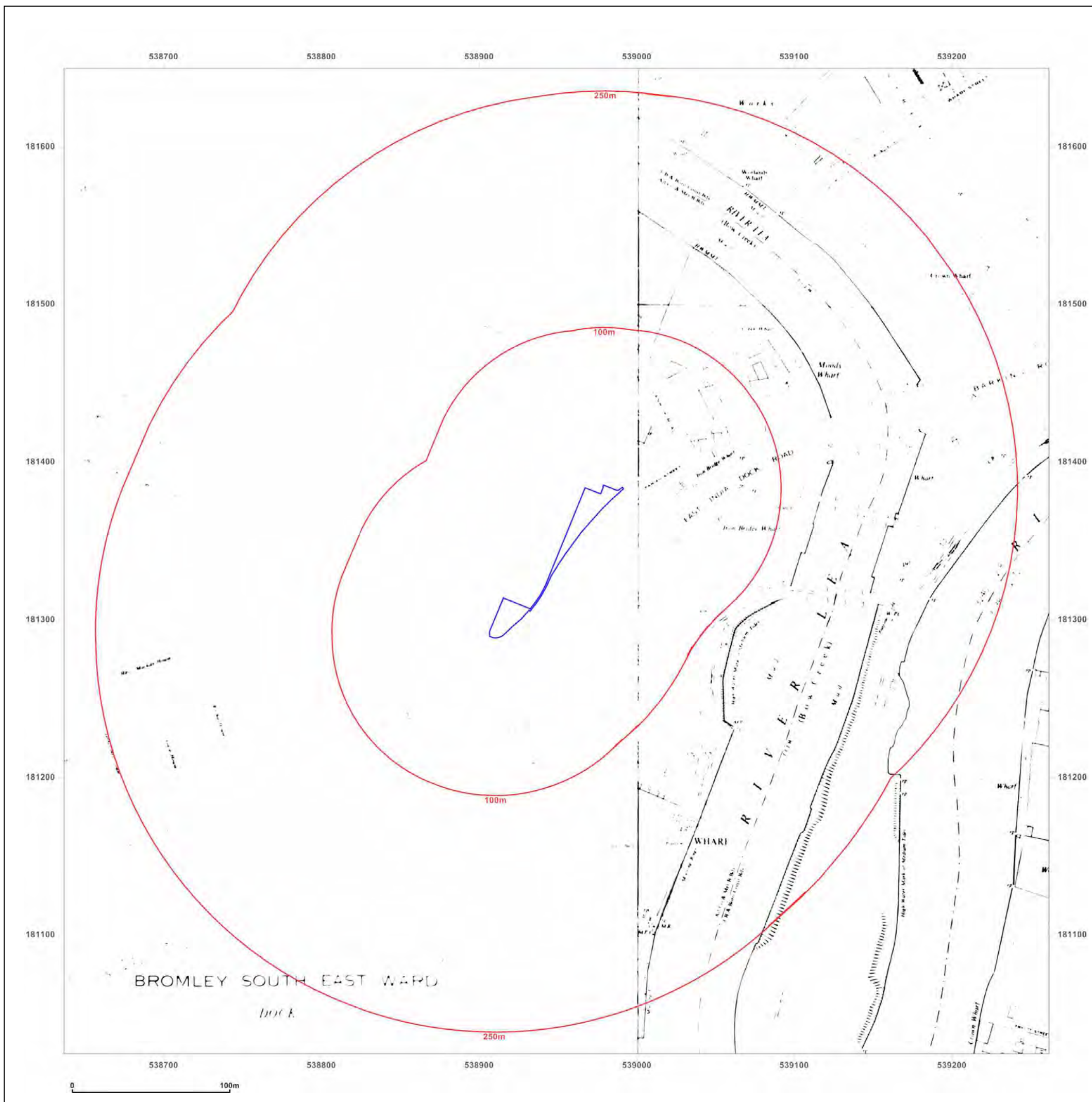


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1962-1967

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1950
Revised 1962
Edition N/A
Copyright 1962
Levelled 1953

Surveyed 1950
Revised 1965
Edition N/A
Copyright 1967
Levelled 1956

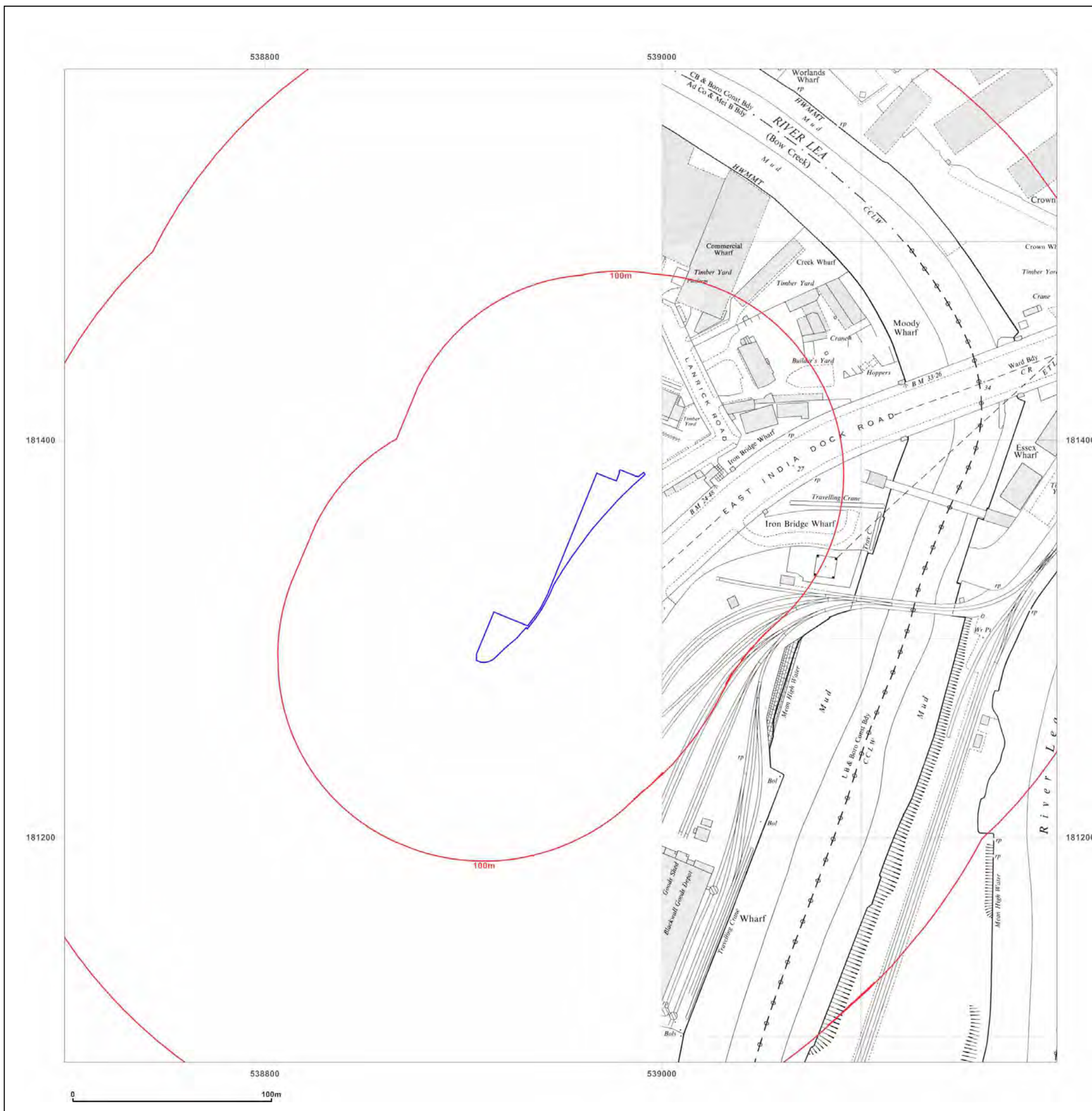


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1970-1974

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1950
Revised 1969
Edition N/A
Copyright 1970
Levelled 1956

Surveyed 1949
Revised 1969
Edition N/A
Copyright 1970
Levelled 1956

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

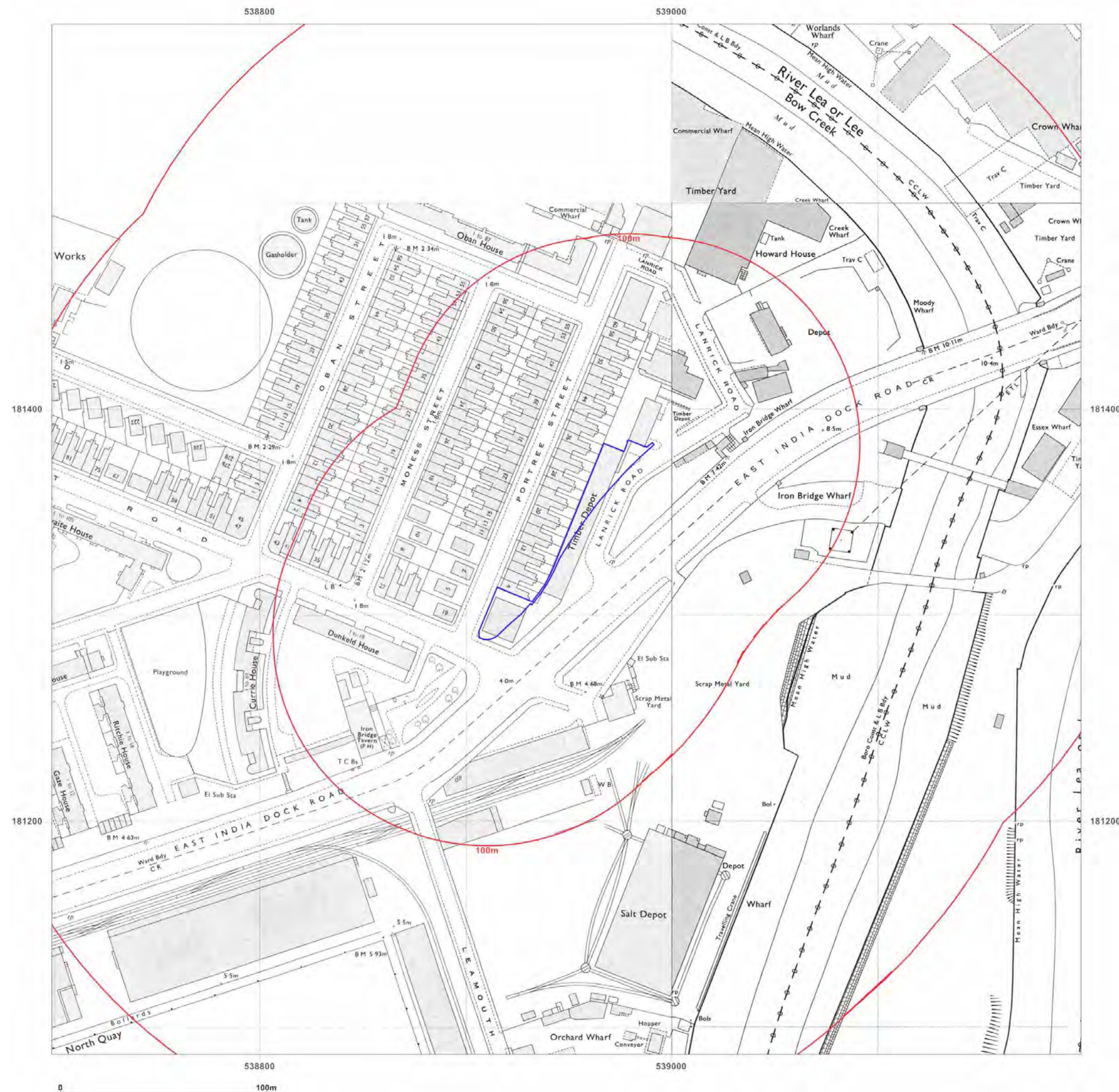


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1978-1982

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1981
Levelled 1977

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1982
Levelled 1977

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 1981
Levelled 1977

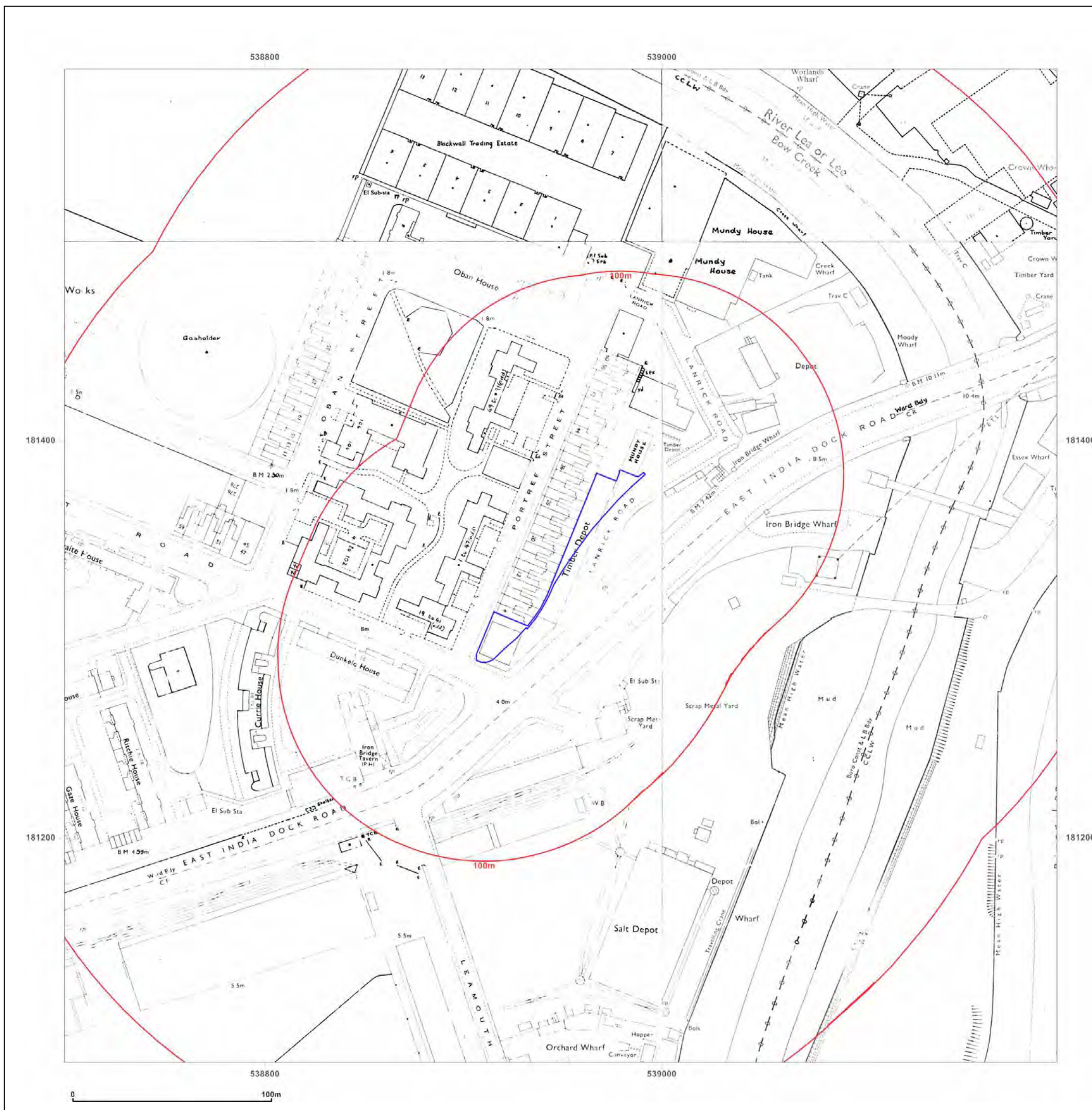


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1985-1990

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1977
Revised 1990
Edition N/A
Copyright 1990
Levelled 1977

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1985
Levelled 1977

Surveyed 1977
Revised 1990
Edition N/A
Copyright 1990
Levelled 1977

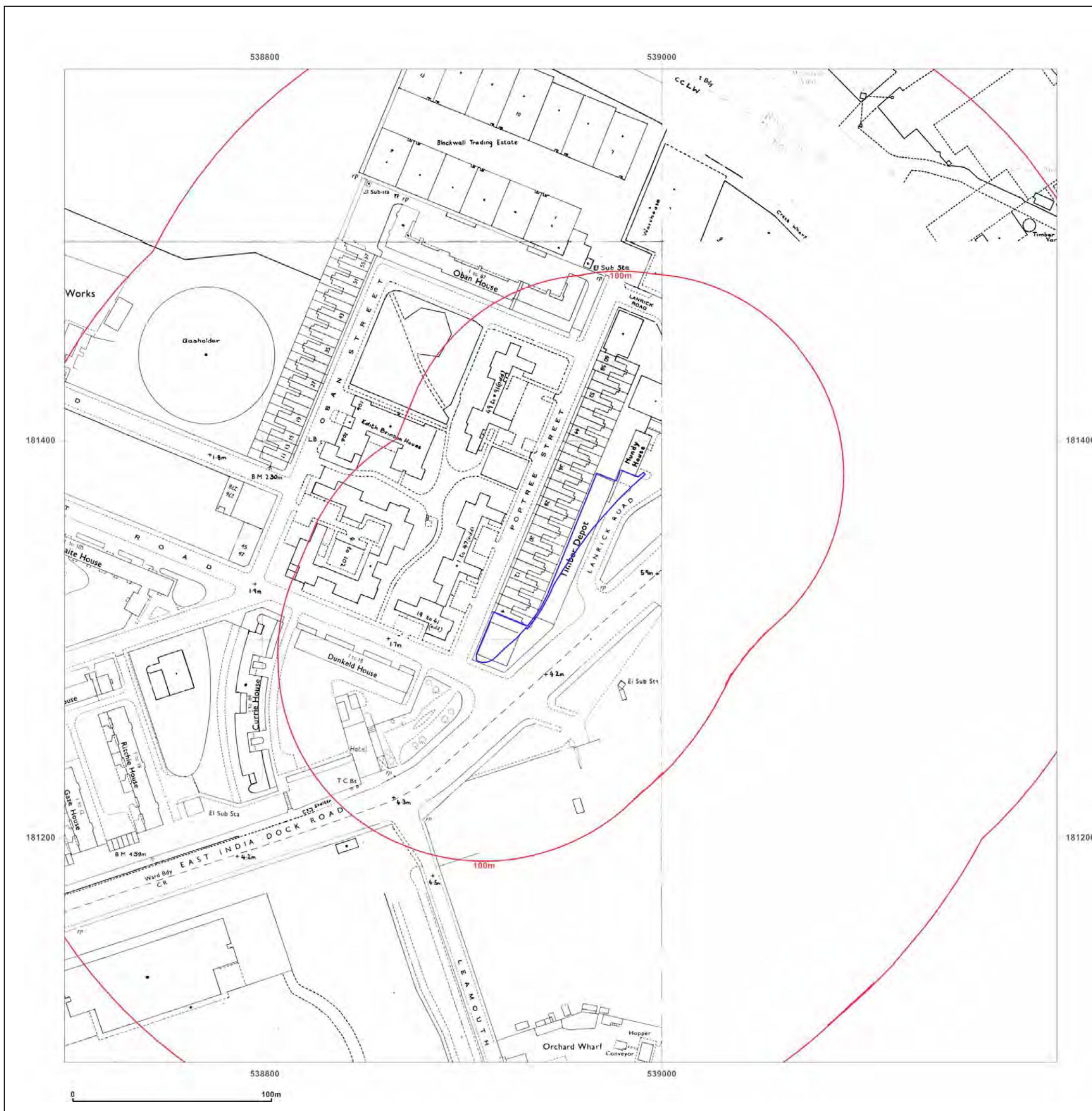


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

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

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

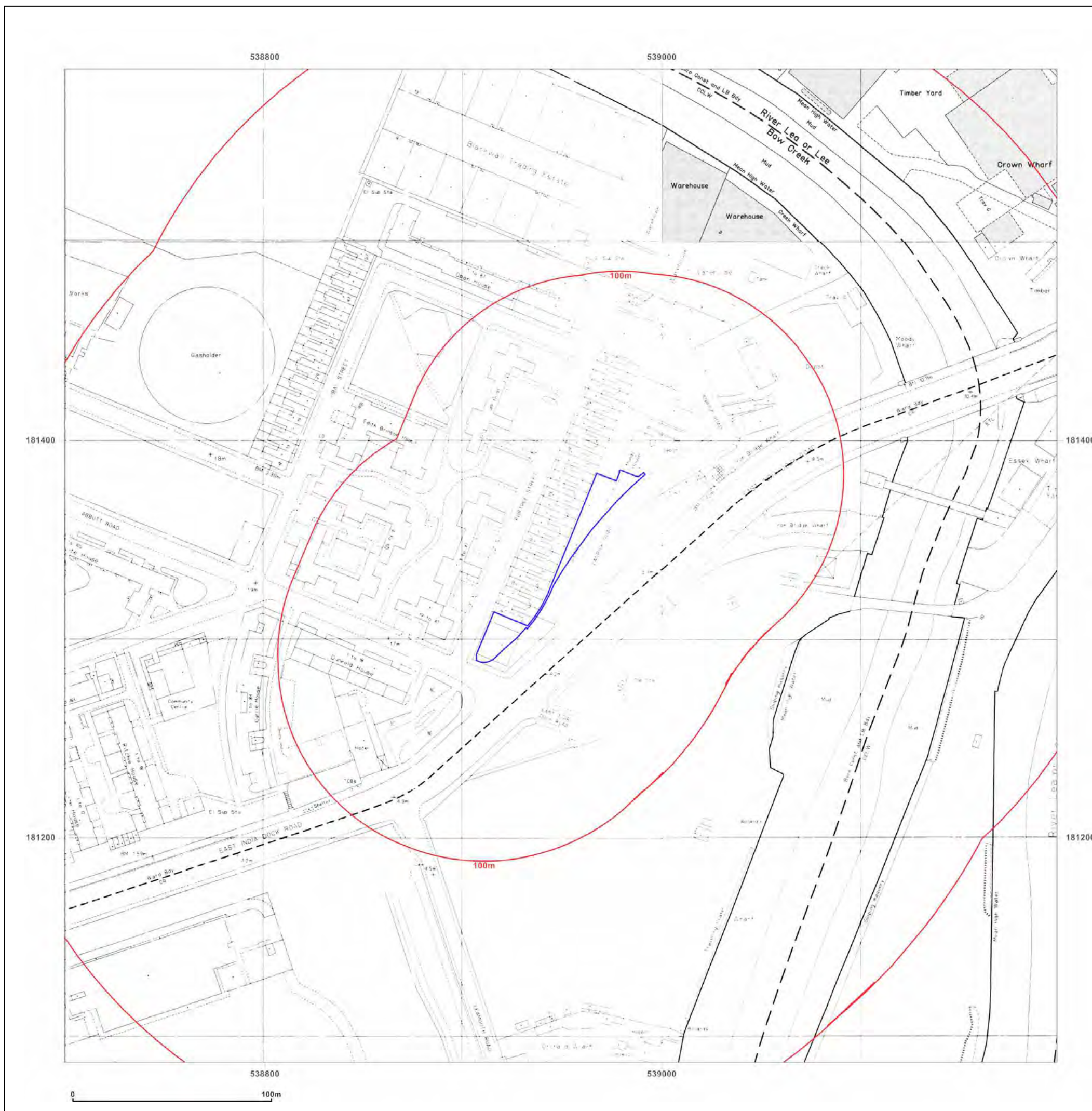


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1988-1991

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 N/A
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



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1989-1992

Scale: 1:1,250

Printed at: 1:2,000



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

Surveyed 1977
Revised 1989
Edition N/A
Copyright 1989
Levelled 1977

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

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



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1991-1992

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 1991
Levelled N/A

Surveyed 1991
Revised 1991
Edition 1992
Copyright 1991
Levelled N/A

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



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1991-1993

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 1993
Levelled N/A

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

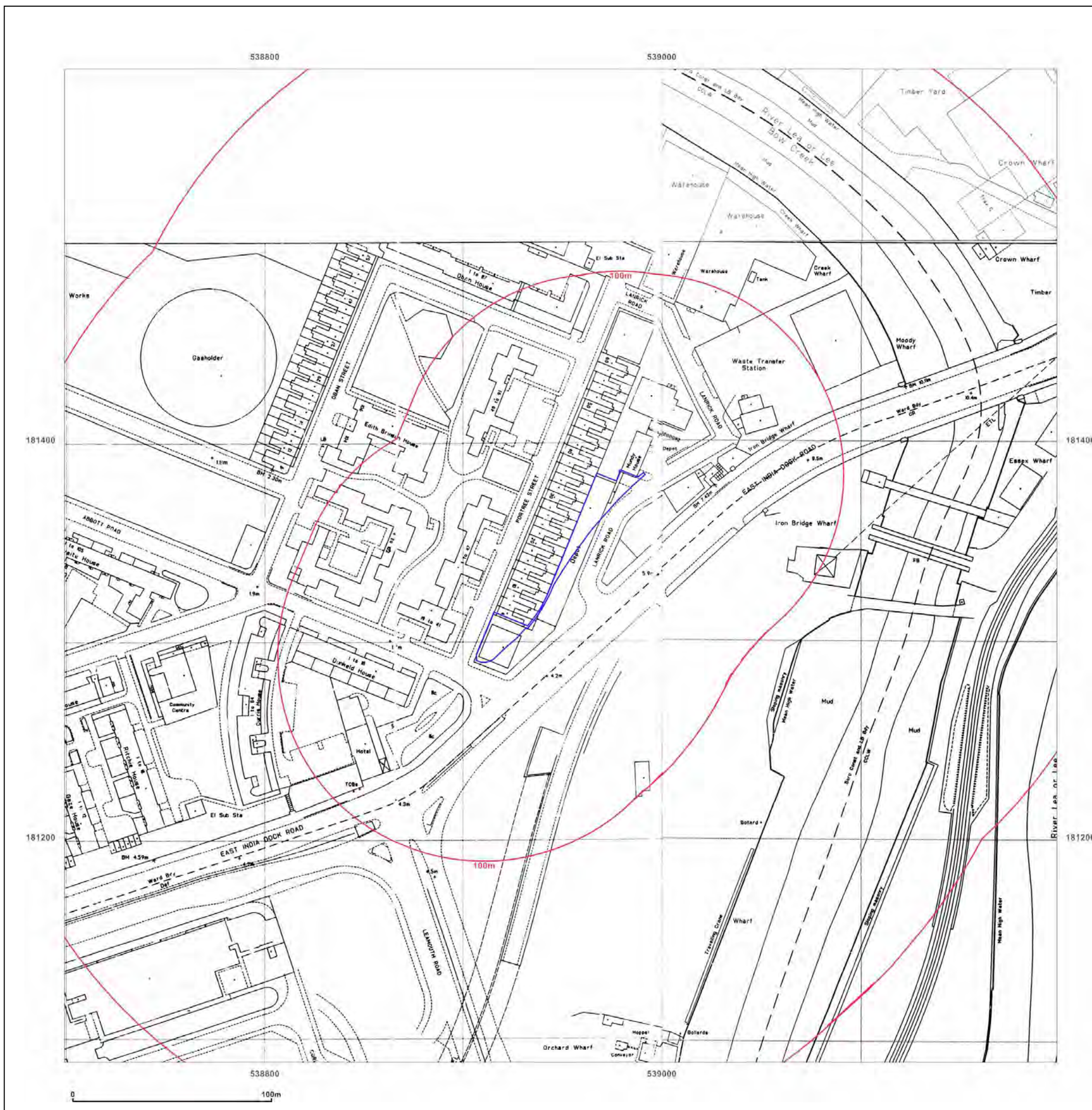


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1992-1994

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 1994
Levelled N/A

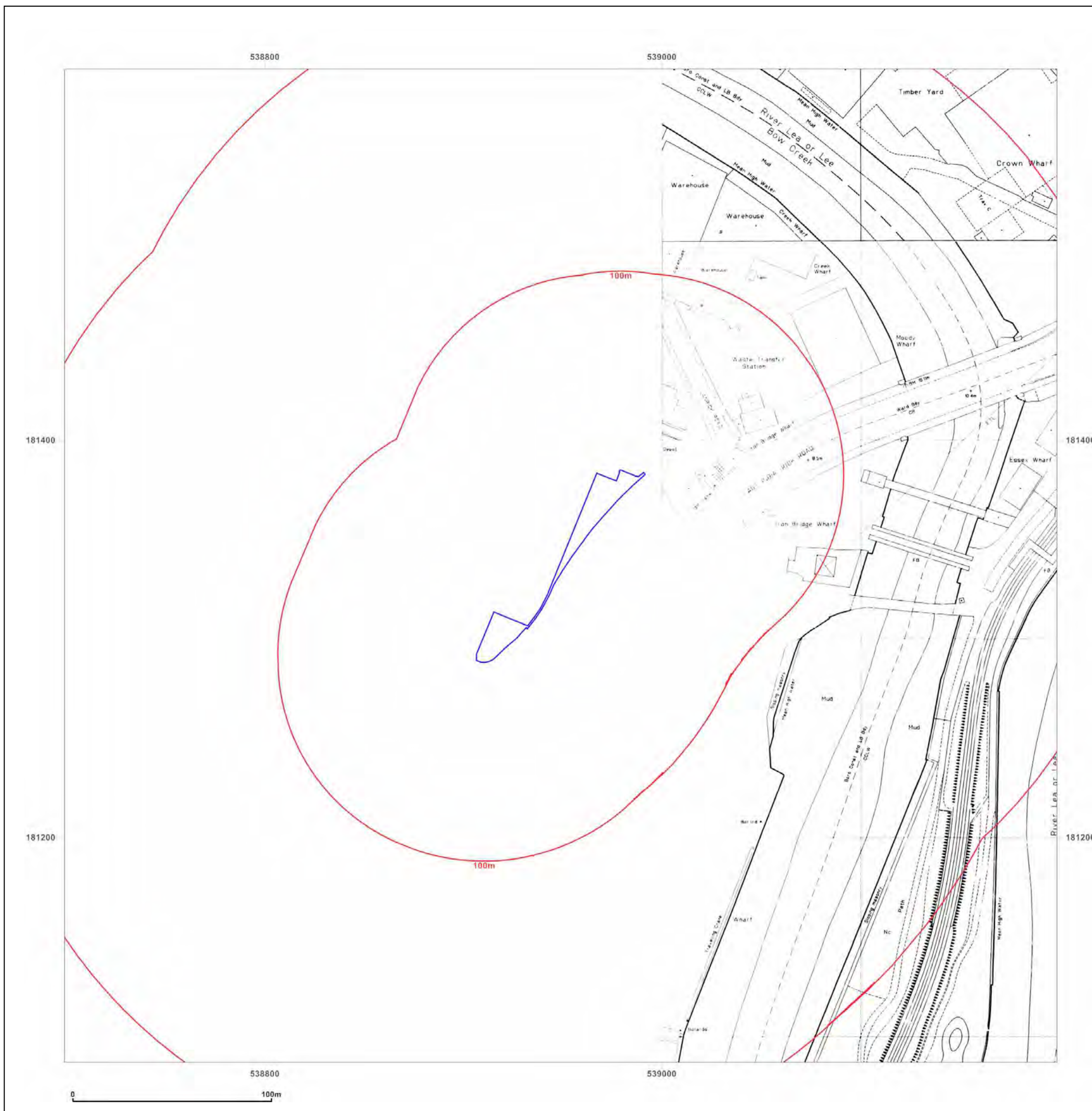


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



Site Details:

LAND AT LANRICK ROAD AND
PORTREE STREET

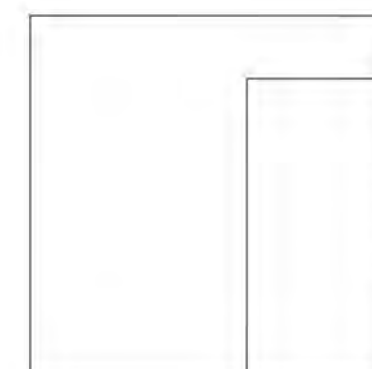
Client Ref: PO0067007-1
Report Ref: GS-4030416
Grid Ref: 538949, 181337

Map Name: National Grid

Map date: 1994

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1994
Revised 1994
Edition N/A
Copyright N/A
Levelled N/A

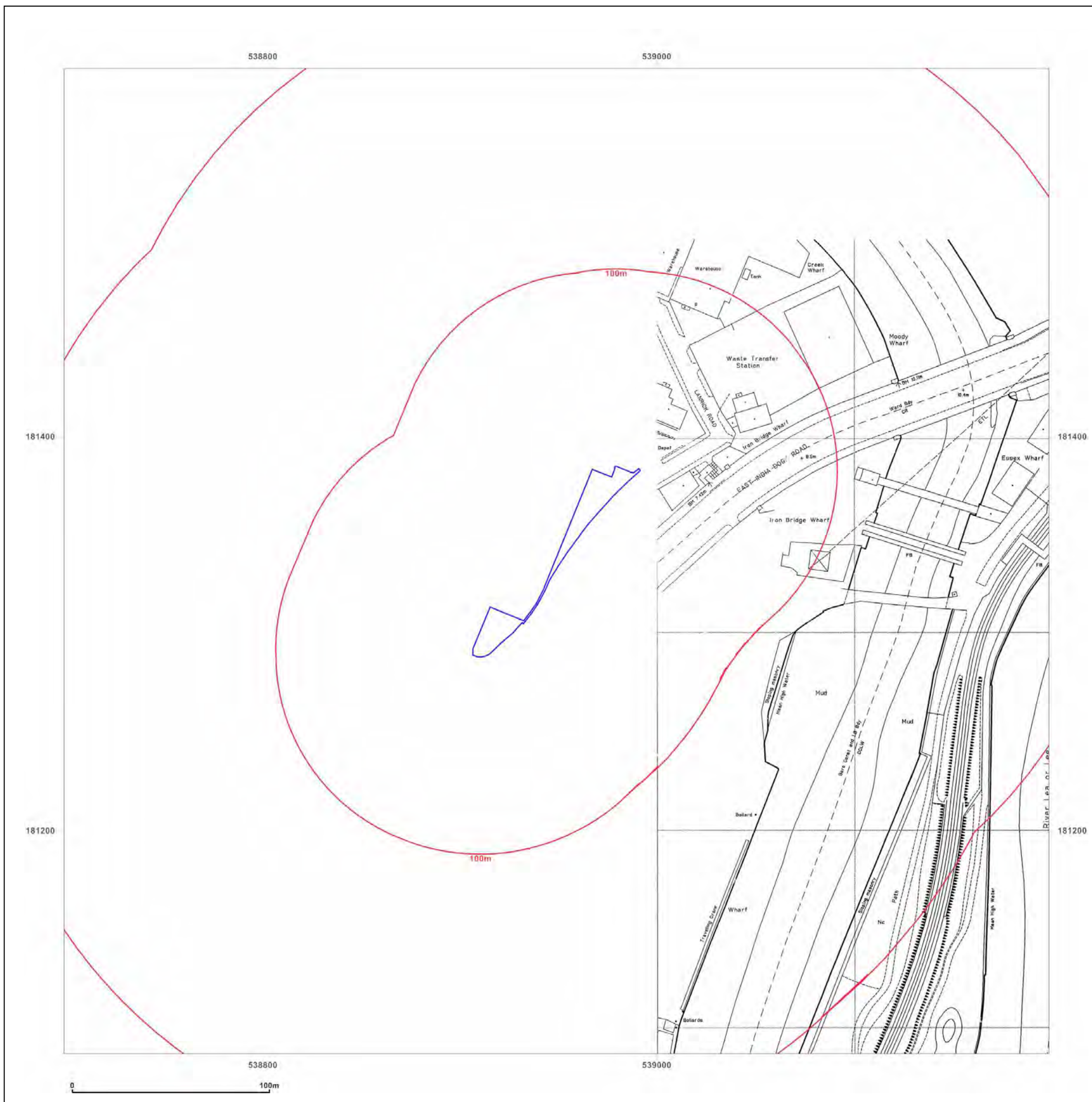


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 29 June 2017

To view map legend click here [Legend](#)



APPENDIX B
Groundsure Data Sheets

Arcadis

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

Groundsure
Reference:

GS-4030415

Your Reference: PO0067007-1

Report Date

29 Jun 2017

Report Delivery
Method:

Email - pdf

Geo Insight

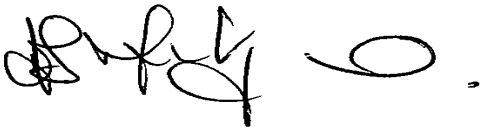
Address: LAND AT LANRICK ROAD AND PORTREE STREET,

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

Address: LAND AT LANRICK ROAD AND PORTREE STREET,
Date: 29 Jun 2017
Reference: GS-4030415
Client: Arcadis

NW N NE

W E



SW S SE

Aerial Photograph Capture date: 07-Jun-2015
Grid Reference: 538917,181295
Site Size: 0.09ha

Contents Page

Contents Page.....	3
Overview of Findings.....	5
1:10,000 Scale Availability.....	8
Availability of 1:10,000 Scale Geology Mapping.....	9
1 Geology (1:10,000 scale).....	10
1.1 Artificial Ground Map (1:10,000 scale).....	10
1. Geology 1:10,000 scale.....	11
1.1 Artificial Ground.....	11
1.2 Superficial Deposits and Landslips Map (1:10,000 scale).....	12
1.2 Superficial Deposits and Landslips.....	13
1.2.1 Superficial Deposits/ Drift Geology.....	13
1.2.2 Landslip.....	13
1.3 Bedrock and Faults Map (1:10,000 scale).....	14
1.3 Bedrock and Faults.....	15
1.3.1 Bedrock/ Solid Geology.....	15
1.3.2 Faults.....	15
2 Geology 1:50,000 Scale.....	16
2.1 Artificial Ground Map.....	16
2. Geology 1:50,000 scale.....	17
2.1 Artificial Ground.....	17
2.1.1 Artificial/ Made Ground	17
2.1.2 Permeability of Artificial Ground.....	17
2.2 Superficial Deposits and Landslips Map (1:50,000 scale).....	18
2.2 Superficial Deposits and Landslips.....	19
2.2.1 Superficial Deposits/ Drift Geology.....	19
2.2.2 Permeability of Superficial Ground	19
2.2.3 Landslip.....	19
2.2.4 Landslip Permeability.....	19
2.3 Bedrock and Faults Map (1:50,000 scale).....	20
2.3 Bedrock, Solid Geology & Faults.....	21
2.3.1 Bedrock/Solid Geology.....	21
2.3.2 Permeability of Bedrock Ground.....	21
2.3.3 Faults.....	21
3 Radon Data.....	22
3.1 Radon Affected Areas.....	22
3.2 Radon Protection.....	22
4 Ground Workings Map.....	23
4 Ground Workings.....	24
4.1 Historical Surface Ground Working Features derived from Historical Mapping.....	24
4.2 Historical Underground Working Features derived from Historical Mapping.....	26
4.3 Current Ground Workings.....	27
5 Mining, Extraction & Natural Cavities.....	29
5.1 Historical Mining.....	29
5.2 Coal Mining.....	29
5.3 Johnson Poole and Bloomer.....	29
5.4 Non-Coal Mining.....	30
5.5 Non-Coal Mining Cavities.....	30
5.6 Natural Cavities.....	30
5.7 Brine Extraction.....	30
5.8 Gypsum Extraction.....	31
5.9 Tin Mining.....	31
5.10 Clay Mining.....	31
6 Natural Ground Subsidence.....	32
6.1 Shrink-Swell Clay Map.....	32
6.2 Landslides Map.....	33
6.3 Ground Dissolution of Soluble Rocks Map.....	34
6.4 Compressible Deposits Map.....	35
6.5 Collapsible Deposits Map.....	36
6.6 Running Sand Map.....	37

6 Natural Ground Subsidence.....	38
6.1 Shrink-Swell Clays.....	38
6.2 Landslides.....	38
6.3 Ground Dissolution of Soluble Rocks.....	39
6.4 Compressible Deposits.....	39
6.5 Collapsible Deposits.....	39
6.6 Running Sands.....	39
7 Borehole Records.....	41
8 Estimated Background Soil Chemistry.....	49
9 Railways and Tunnels Map.....	50
9 Railways and Tunnels.....	51
9.1 Tunnels	51
9.2 Historical Railway and Tunnel Features	52
9.3 Historical Railways.....	55
9.4 Active Railways.....	56
9.5 Railway Projects.....	56

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	1	41	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	1	1	12
4.3 Current Ground Workings	0	0	1	0	0

Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	1	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	1	1	0	2	4
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	1

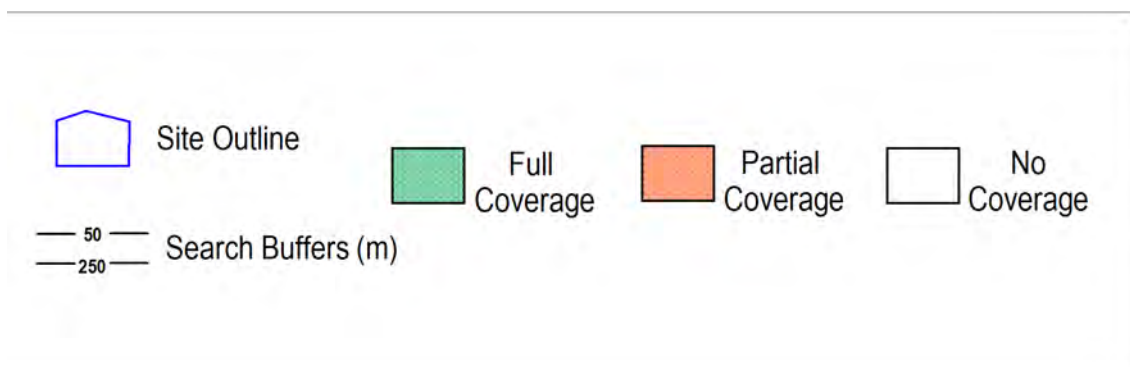
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Low				
6.2 Landslides	Very Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Moderate				
6.5 Collapsible Deposits	Negligible				
6.5 Running Sand	Very Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	4	100		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	1	1	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	1	Not Searched	
9.2 Historical Railway and Tunnel Features	0	14	87	Not Searched	
9.3 Historical Railways	0	0	3	Not Searched	
9.4 Active Railways	0	0	8	Not Searched	
9.5 Railway Projects	0	0	0	2	

1:10,000 Scale Availability



1_10,000 Availability Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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
2	1009.0	Some deposits are mapped	Full	Full	No coverage
N3	1288.0	Some deposits are mapped	Full	Full	No coverage
N4	1686.0	Some deposits are mapped	Full	Full	Some deposits are mapped

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

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



1. Geology 1:10,000 scale

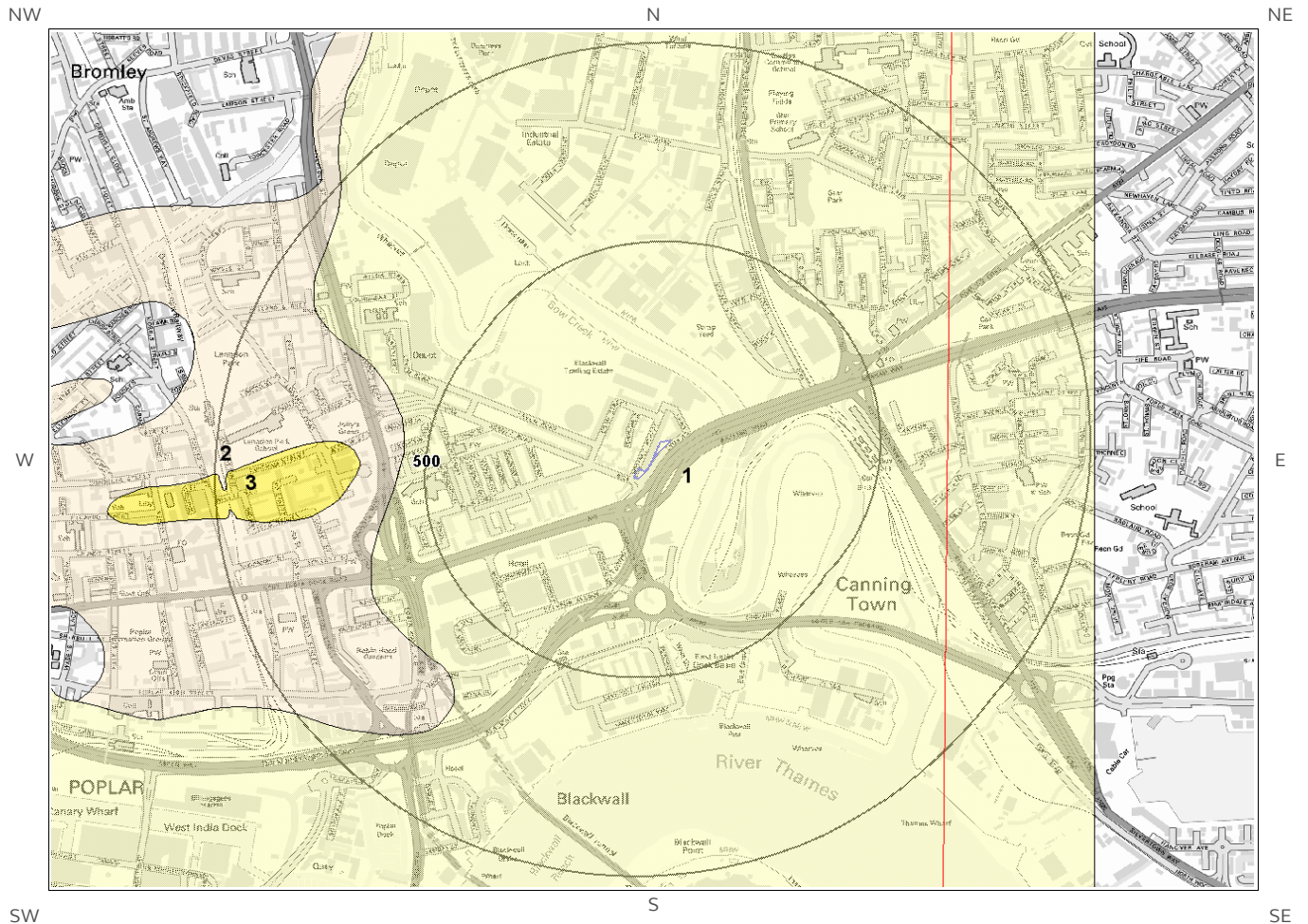
1.1 Artificial Ground

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

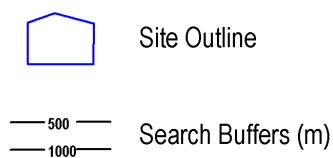
ID	Distance	Direction	LEX Code	Description	Rock Description
1	161.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	374.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	377.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	388.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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



Artificial Ground Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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	ALV-C	Alluvium - Clay (unlithified Deposits Coding Scheme)	Clay

1.2.2 Landslip

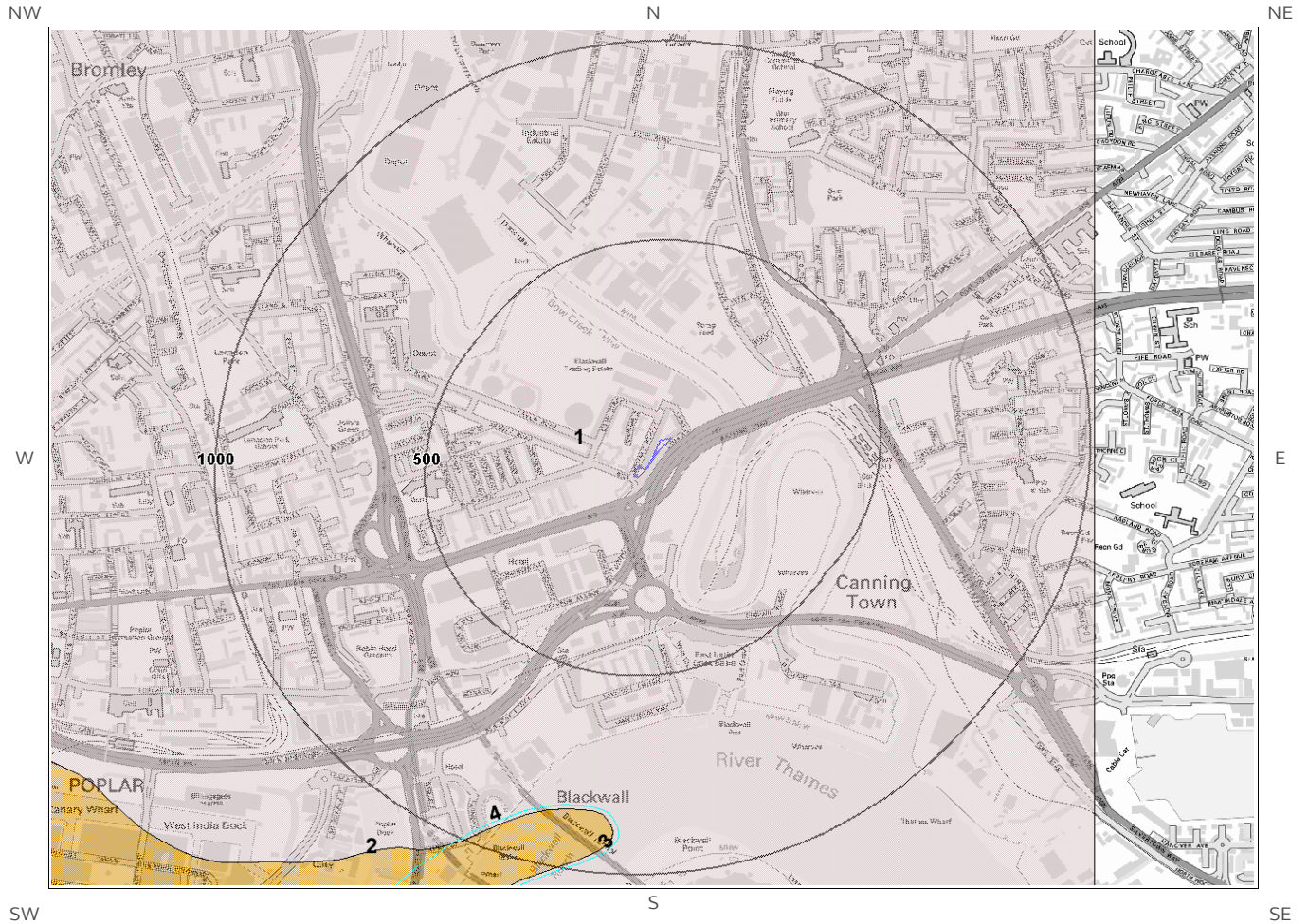
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

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)

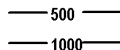


Bedrock and Faults Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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

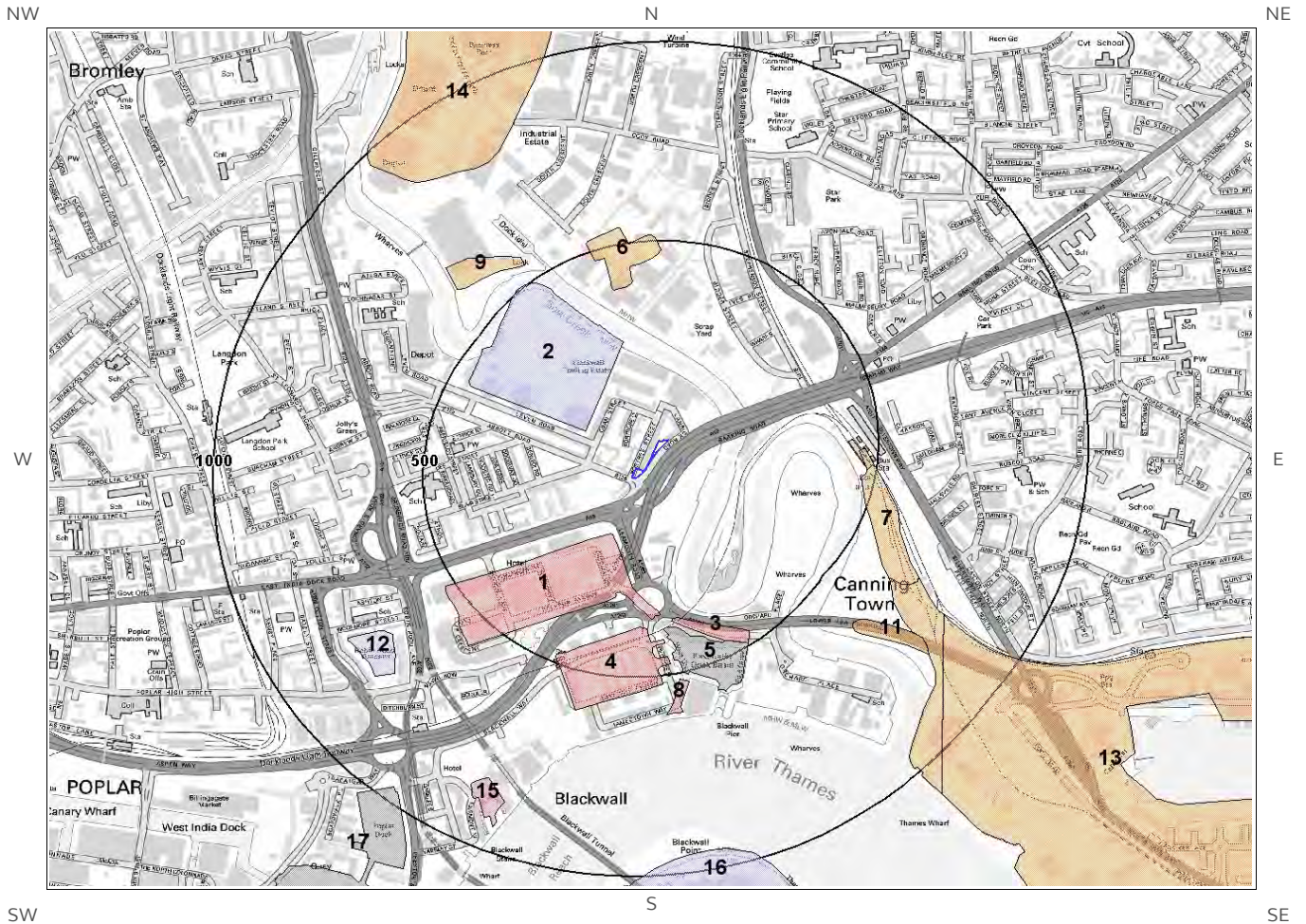
Database searched and no data found at this scale.

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.

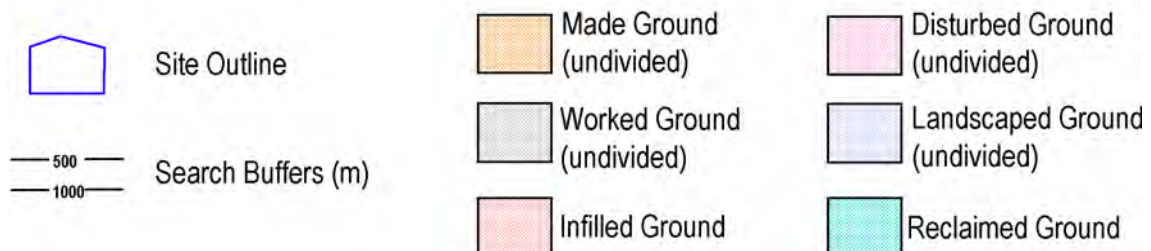
2 Geology 1:50,000 Scale

2.1 Artificial Ground Map



Ground Workings Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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: 256

2.1.1 Artificial/ Made Ground

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

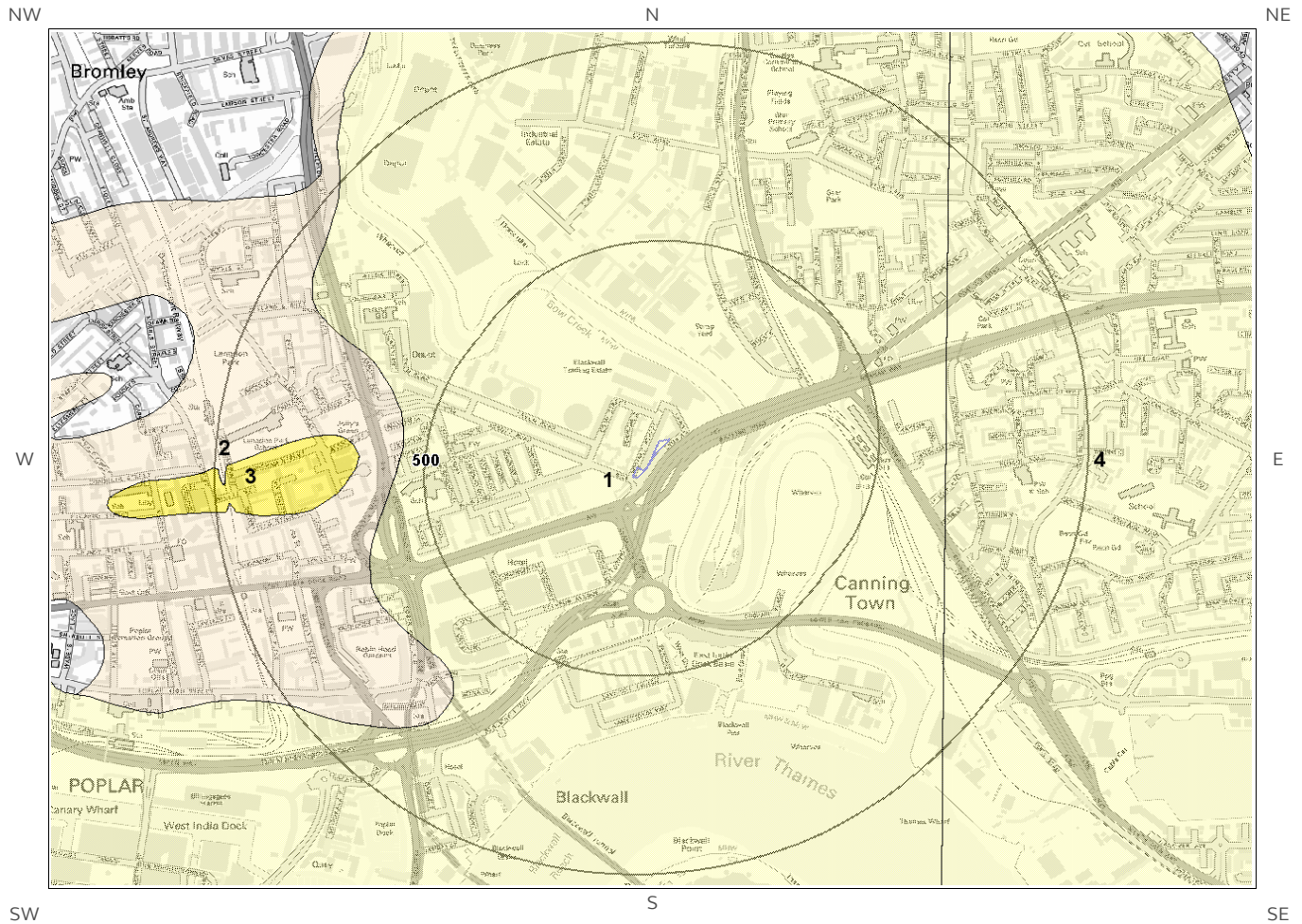
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	148.0	S	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
2	153.0	NW	LSGR-ARTGR	LANDSCAPED GROUND (UNDIVIDED)	ARTIFICIALLY MODIFIED GROUND
3	363.0	S	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
4	375.0	S	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
5	382.0	S	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
6	392.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
7	453.0	E	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

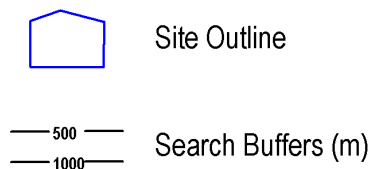
Database searched and no data found.

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



Ground Workings Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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	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	Moderate	Very Low

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.

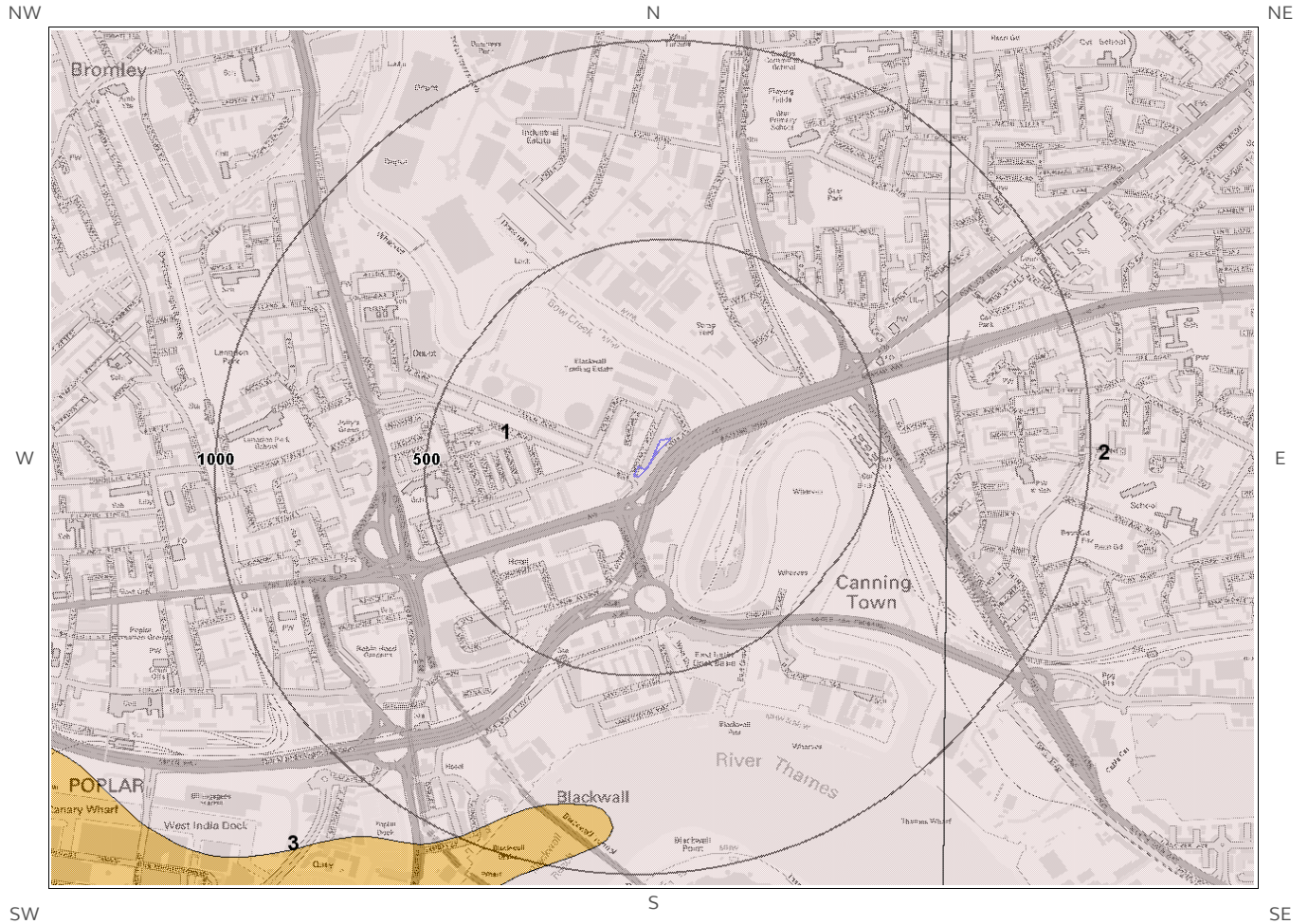
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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)

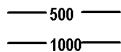


Ground Workings Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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: 256

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-XCZS	LONDON CLAY FORMATION - CLAY, SILT AND SAND	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	Moderate	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

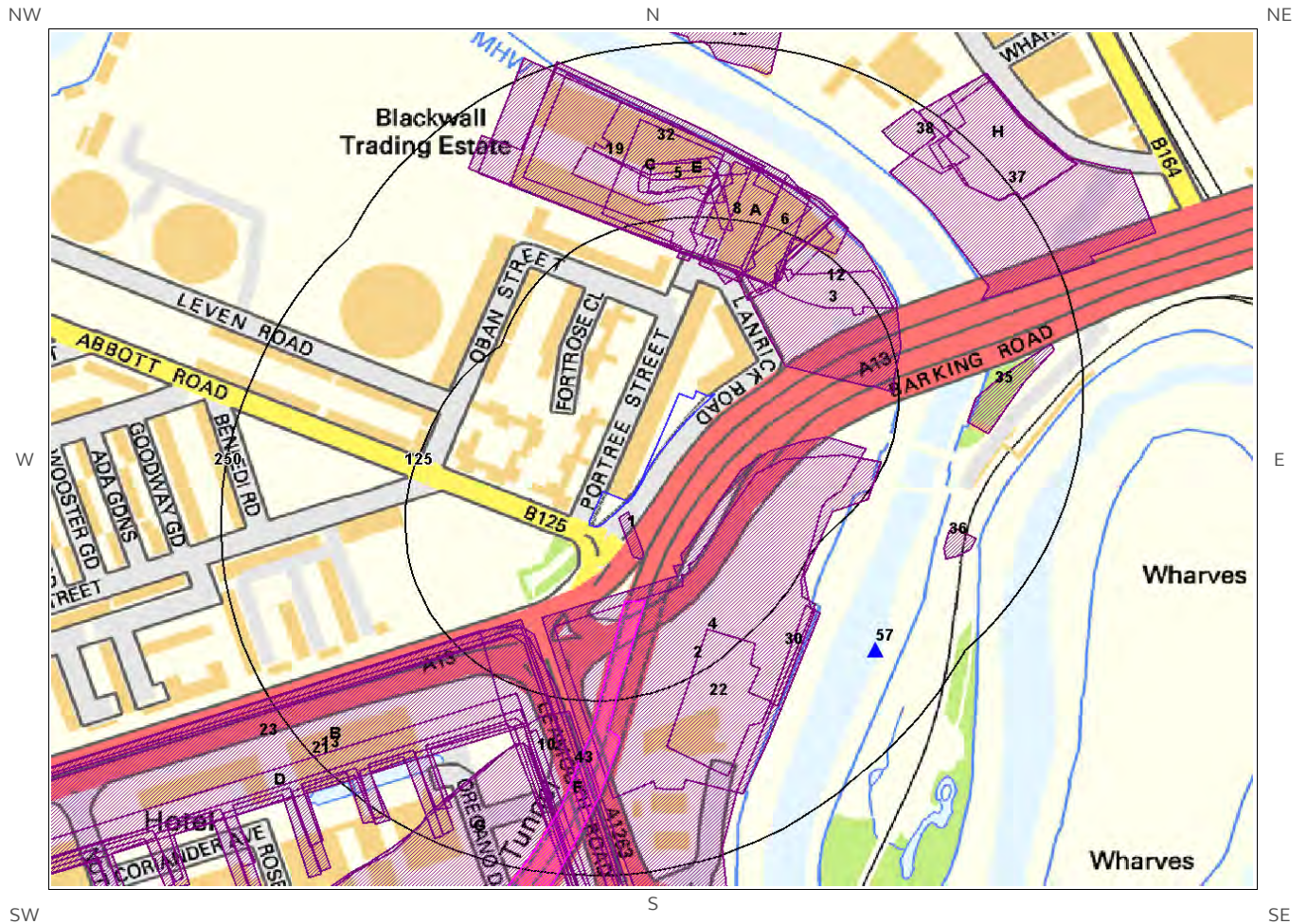
3.1 Radon Affected Areas

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

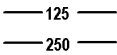
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings Map



Ground Workings Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.

-  Site Outline
-  Search Buffers (m)
-  Historic Surface Ground Workings
-  Historic Underground Workings
-  Current Ground Workings

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	4.0	SE	538935 181282	Unspecified Heap	1867
2	51.0	SE	538982 181226	Unspecified Wharf	1894
3	52.0	NE	539065 181448	Unspecified Wharves	1894
4	59.0	S	538993 181217	Unspecified Wharf	1915
5	71.0	N	538966 181532	Unspecified Wharf	1965
6	77.0	N	539042 181498	Unspecified Wharf	1940
7A	79.0	N	584691 179105	Unspecified Wharf	1938
8	81.0	N	539009 181505	Unspecified Wharf	1915
9B	82.0	SW	584086 178623	Dock	1938
10	85.0	SW	584562 178674	Quay	1938
11C	85.0	N	538944 181539	Unspecified Wharves	1973
12	86.0	NE	539072 181456	Unspecified Wharf	1867
13	86.0	SW	538421 181013	Dock	1894
14A	87.0	NE	539029 181510	Unspecified Wharves	1981
15A	87.0	NE	539029 181510	Unspecified Wharves	1989
16A	87.0	NE	539029 181510	Unspecified Wharves	1994
17B	90.0	SW	538423 181011	Dock	1867
18C	91.0	N	538947 181548	Unspecified Wharf	1940
19	92.0	N	584592 179151	Unspecified Wharf	1938
20C	94.0	N	538957 181529	Unspecified Wharf	1915
21	95.0	SW	538572 180774	Dock	1894

ID	Distance (m)	Direction	NGR	Use	Date
22	104.0	SE	538994 181162	Unspecified Wharf	1894
23	106.0	SW	584307 178718	Quay	1938
24E	117.0	N	538994 181527	Unspecified Heap	1894
25D	130.0	S	538661 181079	Quay	1867
26F	133.0	S	538902 181079	Quay	1940
27C	135.0	N	538969 181532	Unspecified Heap	1894
28D	140.0	S	538663 181086	Quay	1940
29E	141.0	N	538967 181539	Unspecified Heap	1894
30	141.0	SE	539044 181196	Unspecified Wharf	1867
31F	151.0	S	538887 181080	Quay	1915
32	152.0	N	538967 181565	Unspecified Wharf	1867
33G	162.0	S	538801 181032	Dock	1989
34G	163.0	S	538837 181024	Dock	1981
35	173.0	E	539192 181387	Unspecified Wharf	1915
36	187.0	SE	539158 181277	Unspecified Heap	1867
37	193.0	E	539200 181532	Unspecified Wharf	1955
38	216.0	NE	539718 181564	Unspecified Wharf	1863
39H	224.0	NE	539187 181567	Unspecified Wharf	1981
40H	224.0	NE	539187 181567	Unspecified Wharf	1973
41H	226.0	NE	539190 181565	Unspecified Wharf	1989
42	231.0	N	539576 181648	Unspecified Wharf	1863

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? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
43	57.0	S	538900 181090	Tunnel	1994
Not shown	472.0	E	539636 180839	Iron Workings	1894
Not shown	680.0	SW	538747 180397	Tunnel	1989
Not shown	680.0	SW	538747 180397	Tunnel	1973
Not shown	680.0	SW	538747 180397	Tunnel	1994
Not shown	680.0	SW	538747 180397	Tunnel	1981
Not shown	707.0	SW	538427 180396	Tunnel	1940
Not shown	717.0	SW	538585 180237	Tunnel	1915
Not shown	720.0	SW	538418 180393	Tunnel	1989
Not shown	720.0	SW	538418 180393	Tunnel	1965
Not shown	720.0	SW	538418 180393	Tunnel	1973
Not shown	720.0	SW	538418 180393	Tunnel	1994
Not shown	720.0	SW	538418 180393	Tunnel	1981
Not shown	720.0	SW	538418 180393	Tunnel	1955

4.3 Current Ground Workings

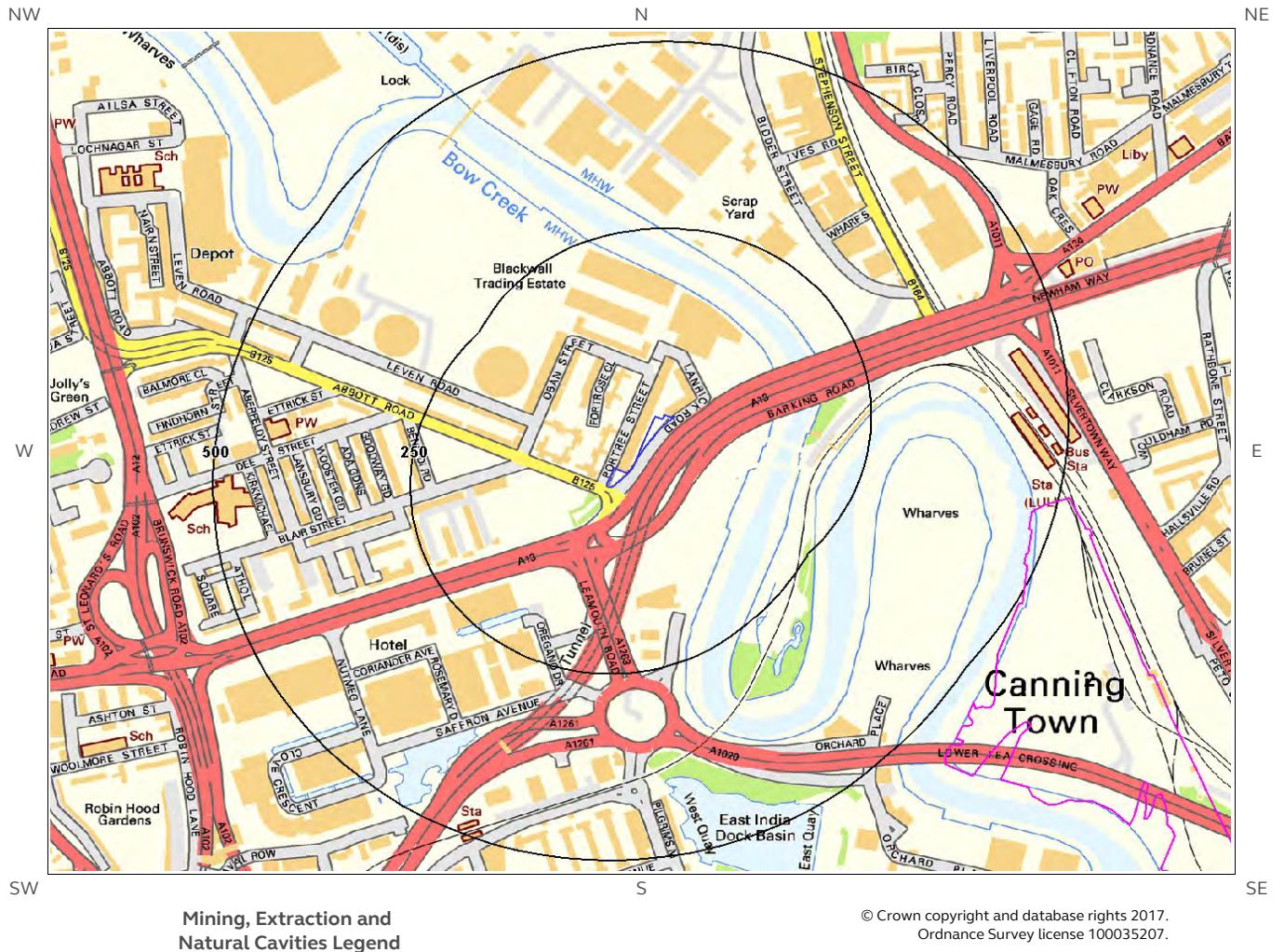
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

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
57	198.0	SE	539100 181200	Crushed Rock	Orchard Wharf	Sea, river or canal wharf where mineral commodities are unloaded and stored	Ceased

5 Mining, Extraction & Natural Cavities Map



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? Yes

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
2	472.0	E	539636 180839	Iron Workings	1894

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? Yes

The following information provided by JPB is not represented on mapping: Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property. Further details and a quote for services can be obtained by emailing this report to enquiries.gs@jpb.co.uk.

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? Yes

The following Natural Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Superficial Deposits	Bedrock Deposits	Cavity Type and Number
Not shown	831.0	SE	539480 180680	Alluvium	Chalk Group, Lambeth Group, London Clay Formation	Scour Hollows x 1

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

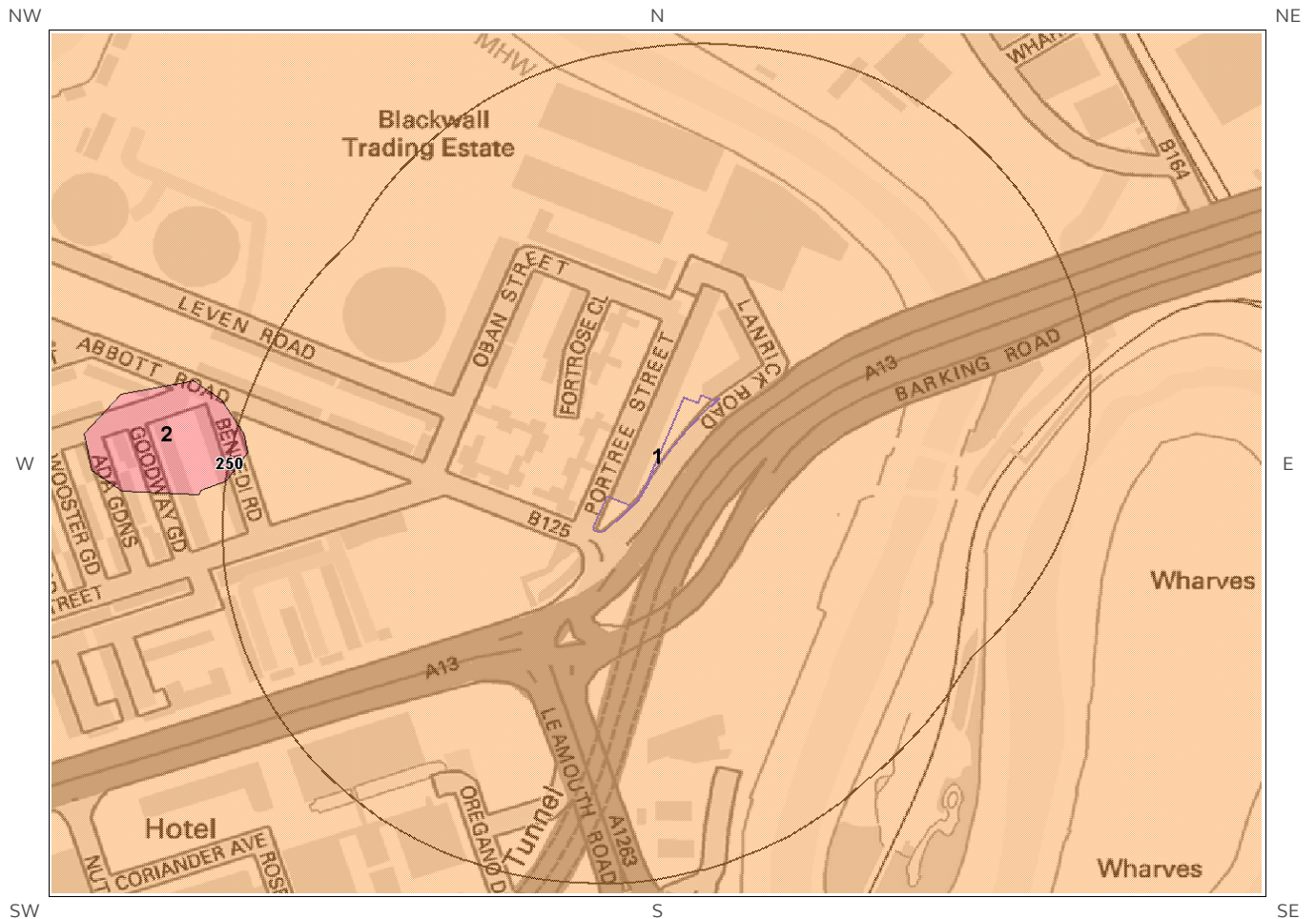
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

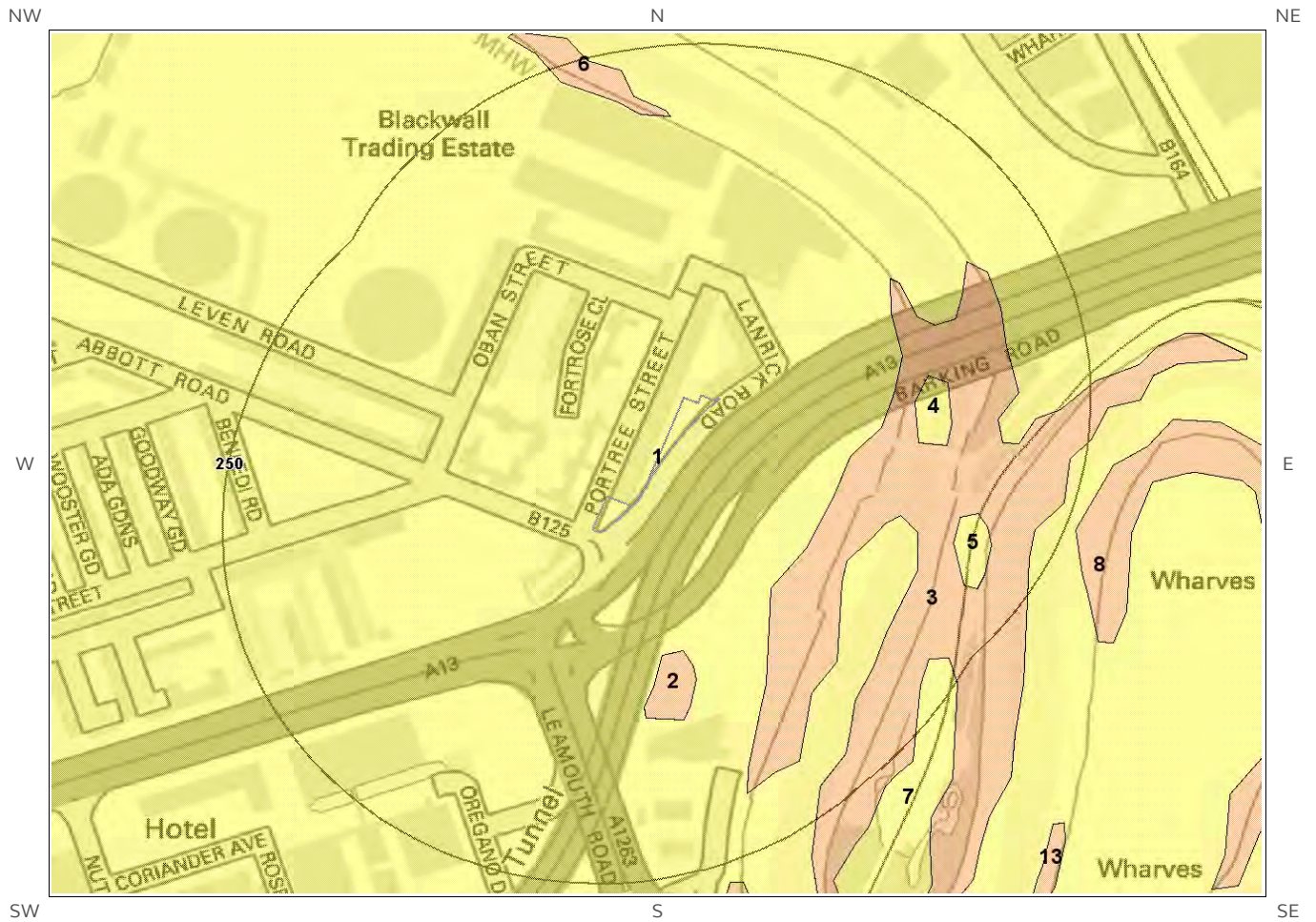


Shrink Swell Clay Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



6.2 Landslides Map

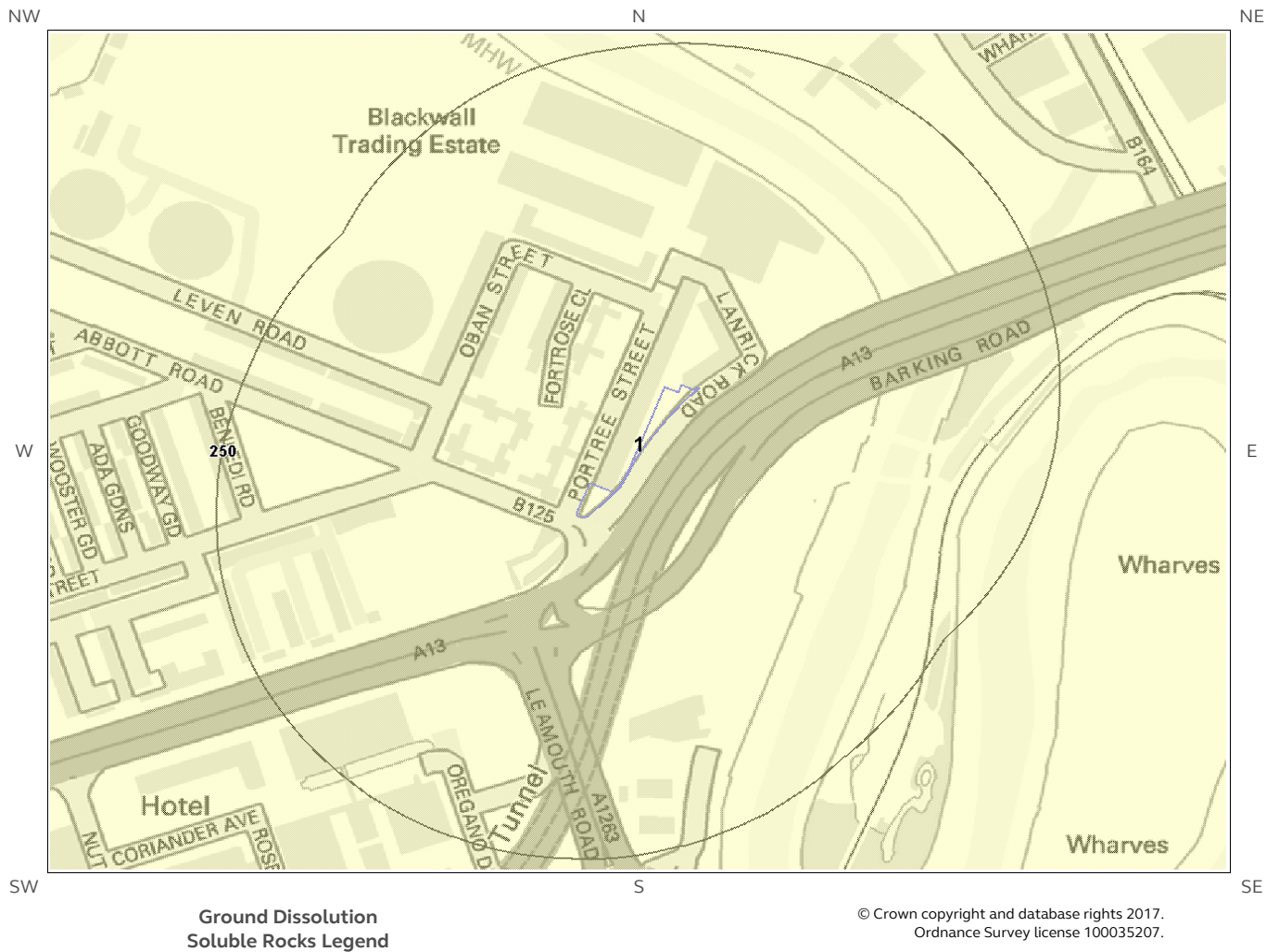


Landslides Legend

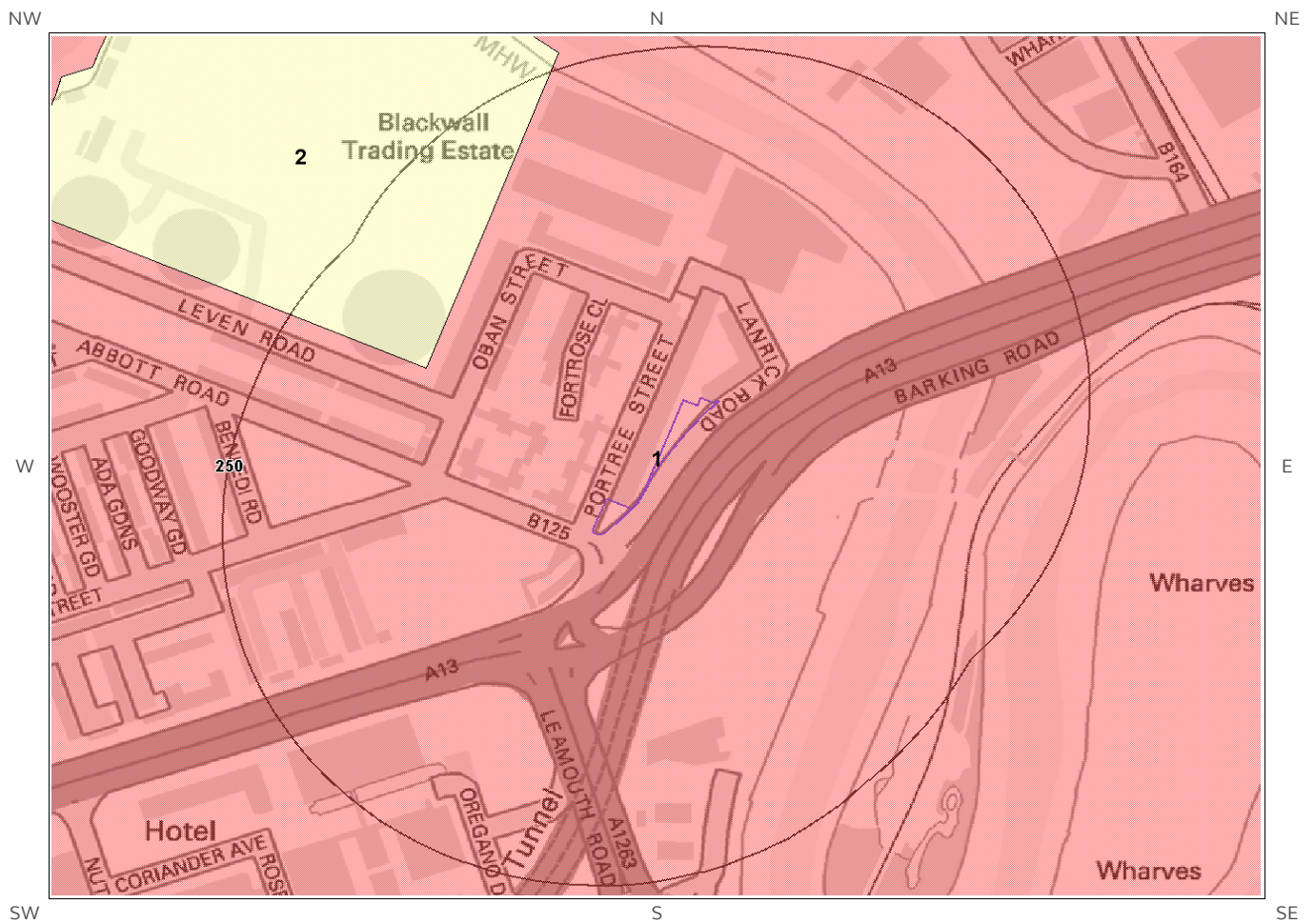
© Crown copyright and database rights 2017.
 Ordnance Survey license 100035207.



6.3 Ground Dissolution of Soluble Rocks Map



6.4 Compressible Deposits Map

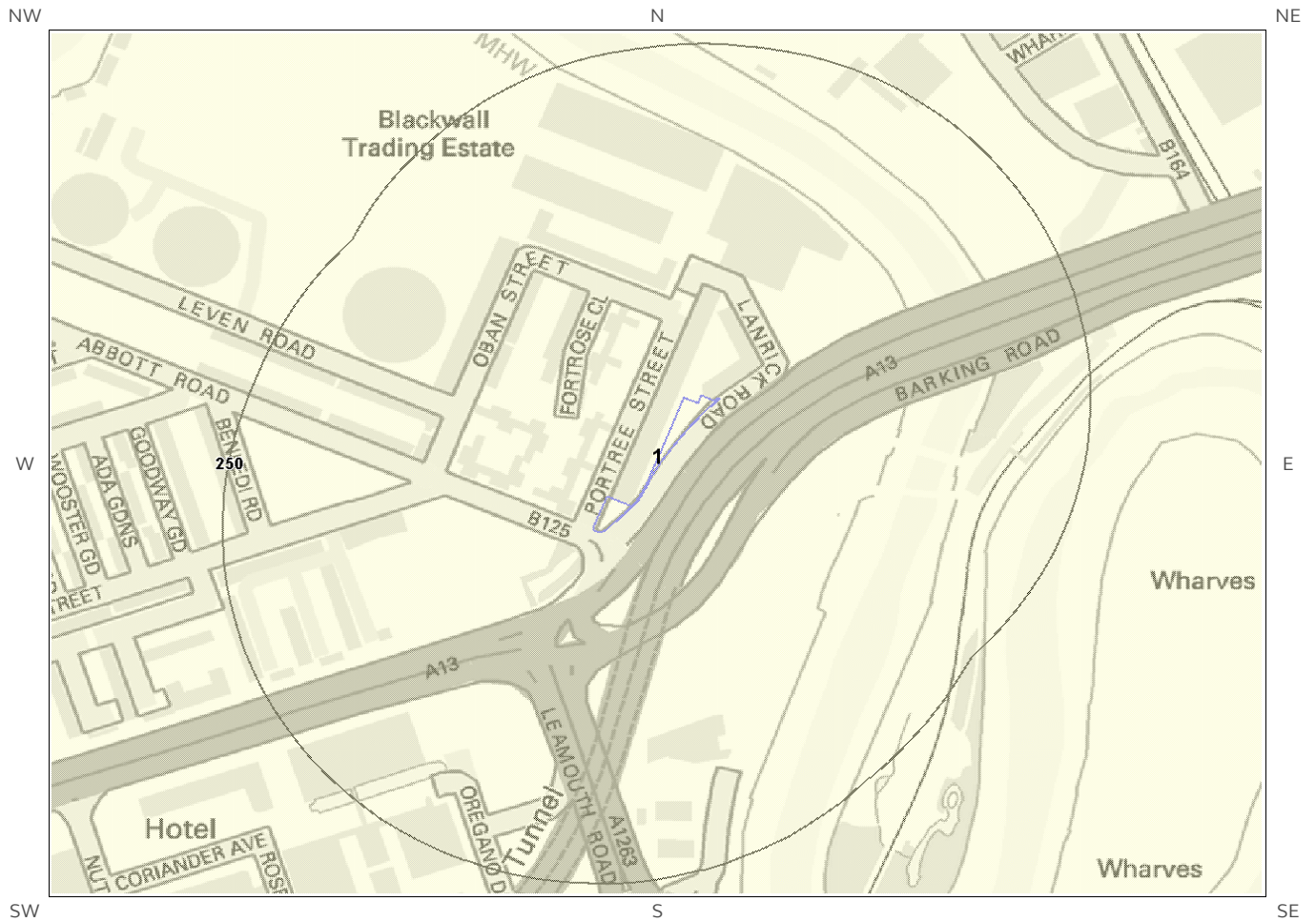


Compressible Deposits Legend

© Crown copyright and database rights 2017.
 Ordnance Survey license 100035207.



6.5 Collapsible Deposits Map

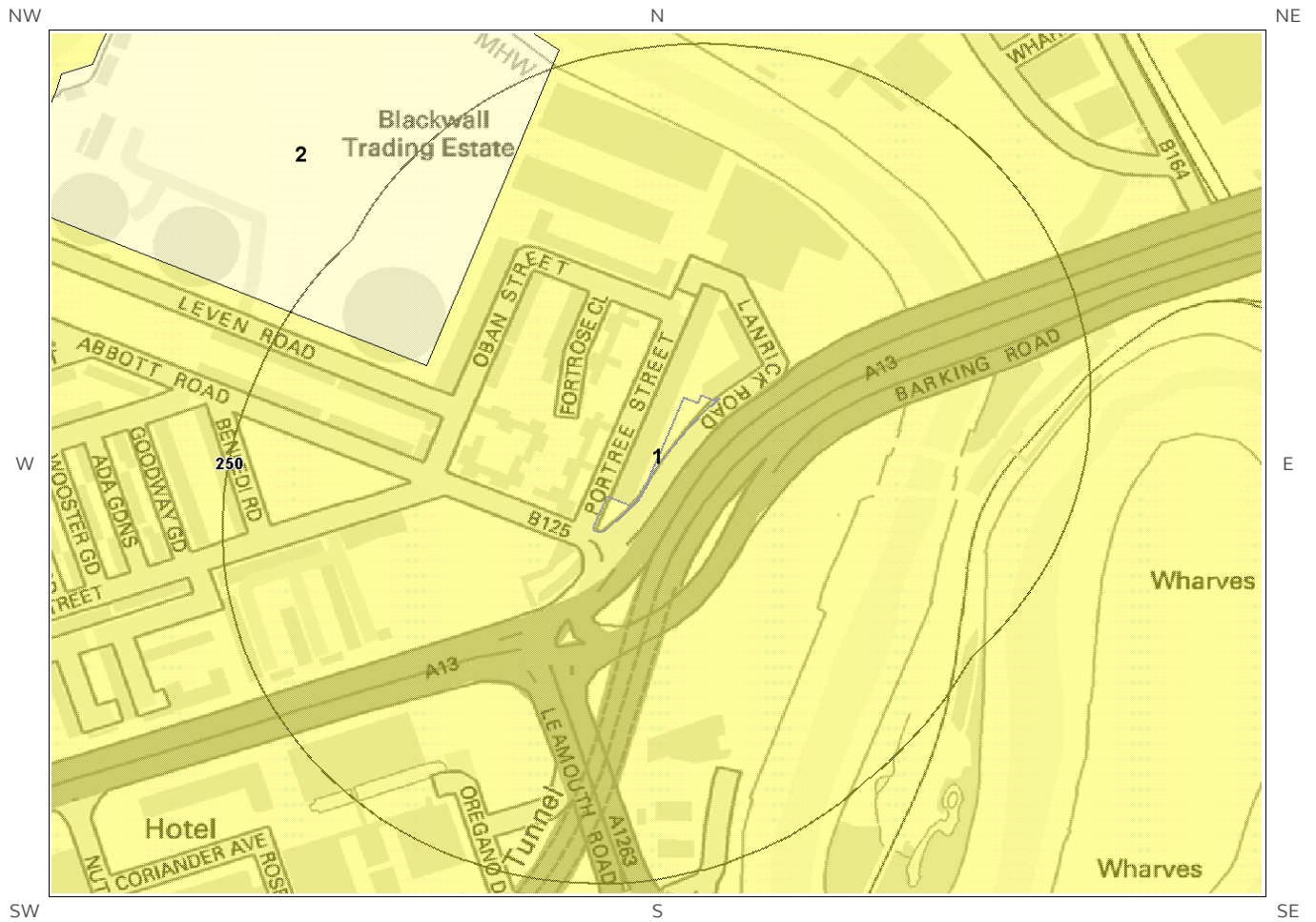


Collapsible Deposits Legend

© Crown copyright and database rights 2017.
 Ordnance Survey license 100035207.



6.6 Running Sand Map



Running Sand Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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? Moderate

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	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

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.

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

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.

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	Moderate	Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

6.5 Collapsible Deposits

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

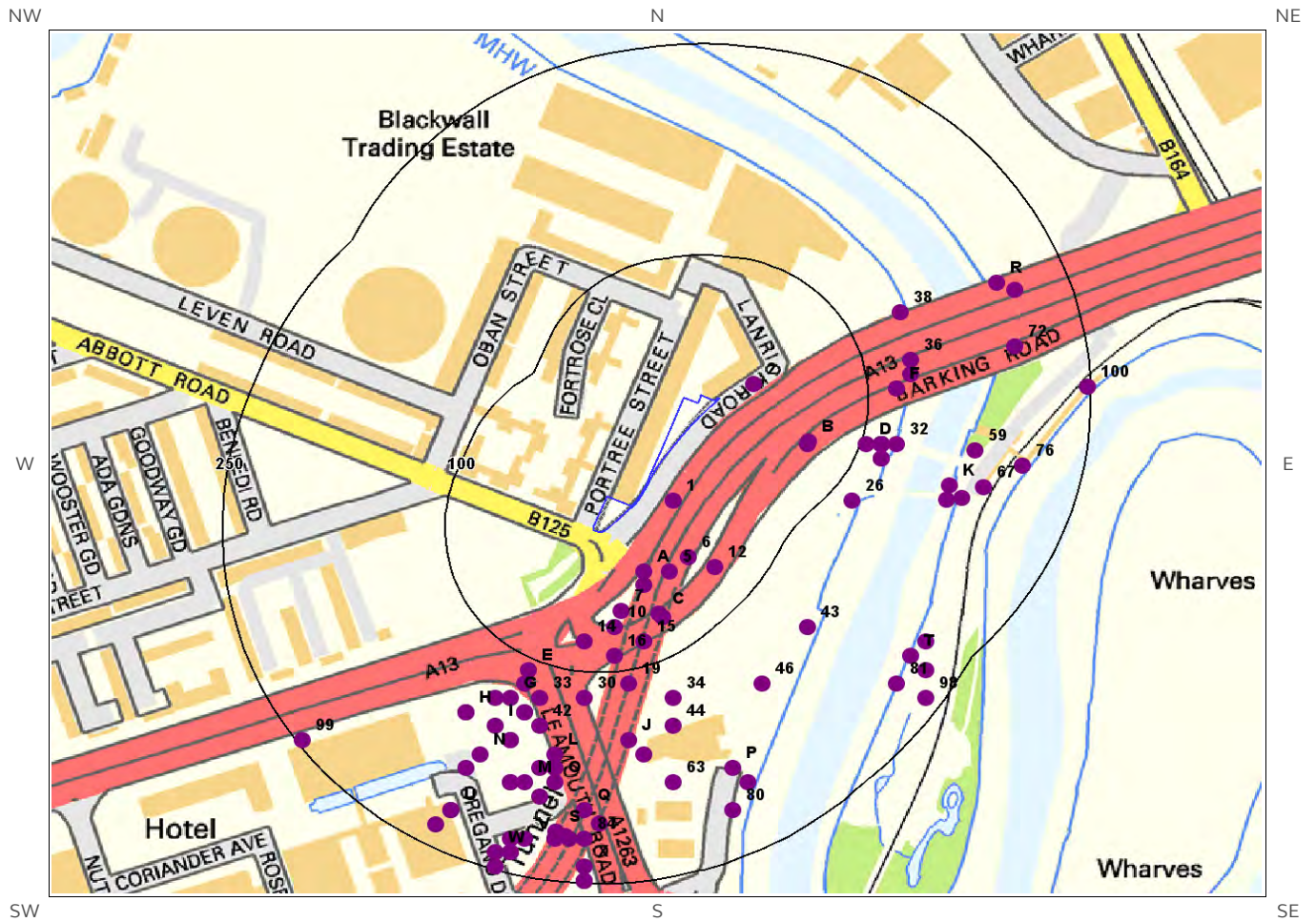
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential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

6.6 Running Sands

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

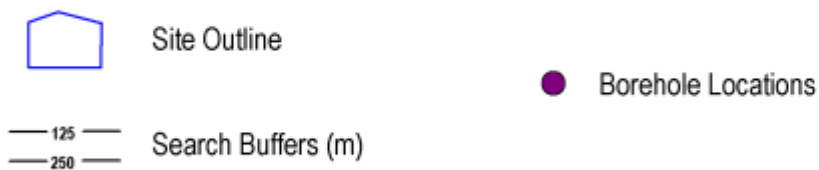
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased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

7 Borehole Records Map



Borehole Records Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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:

104

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	21.0	SE	538960 181310	TQ38SE3072	10.45	EAST INDIA DOCK ROAD 1
2	25.0	NE	539014 181393	TQ38SE1215	27.85	A13 ISLE OF DOGS 5
3A	39.0	SE	538940 181260	TQ38SE3073	8.0	EAST INDIA DOCK ROAD 2
4A	47.0	SE	538940 181250	TQ38SE3487	20.0	EAST INDIA DOCK A13 LINK 314
5	51.0	SE	538957 181260	TQ38SE1229	15.5	A13 ISLE OF DOGS 18
6	52.0	SE	538970 181270	TQ38SE3881	11.4	EAST INDIA DOCK GROUND WATER SURVEY 23
7	58.0	S	538925 181232	TQ38SE2747	28.9	EAST INDIA DOCK SERVICES CULVERT 1
8B	67.0	SE	539051 181352	TQ38SE137	12.07	BARKING RD BRIDGE OVER OVER CREST L102
9B	67.0	SE	539050 181350	TQ38SE3489	20.0	EAST INDIA DOCK A13 LINK 319
10	69.0	S	538920 181220	TQ38SE3485	25.0	EAST INDIA DOCK A13 LINK 312
11C	69.0	SE	538950 181230	TQ38SE3486	30.0	EAST INDIA DOCK A13 LINK 313
12	70.0	SE	538988 181263	TQ38SE2748	30.0	EAST INDIA DOCK SERVICES CULVERT 2
13C	74.0	SE	538953 181227	TQ38SE1699	35.0	A13 EAST INDIA LINK 323
14	79.0	S	538900 181210	TQ38SE2588	3.0	E. Z. ROAD PHASE 6 TP EZ
15	83.0	S	538940 181210	TQ38SE3484	20.0	EAST INDIA DOCK A13 LINK 311
16	89.0	S	538920 181200	TQ38SE3483	35.0	EAST INDIA DOCK A13 LINK 310
17D	104.0	E	539090 181350	TQ38SE3037	13.0	A13/ EAST INDIA DOCK SERVICES BRIDGE 8
18E	109.0	SW	538862 181190	TQ38SE756	24.69	EAST INDIA IMPORT DOCK POPLAR BH3
19	110.0	S	538930 181180	TQ38SE3482	20.0	EAST INDIA DOCK A13 LINK 309
20D	114.0	E	539100 181350	TQ38SE3032	13.0	A13/ EAST INDIA DOCK SERVICES BRIDGE 3
21D	114.0	E	539100 181350	TQ38SE3030	13.5	A13/ EAST INDIA DOCK SERVICES BRIDGE 1
22D	114.0	E	539100 181350	TQ38SE3038	0.7	A13/ EAST INDIA DOCK SERVICES BRIDGE TP 1

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
23D	114.0	E	539100 181350	TQ38SE3036	13.0	A13/ EAST INDIA DOCK SERVICES BRIDGE 7
24D	114.0	E	539100 181350	TQ38SE3031	10.0	A13/ EAST INDIA DOCK SERVICES BRIDGE 2
25D	114.0	E	539100 181350	TQ38SE3035	13.0	A13/ EAST INDIA DOCK SERVICES BRIDGE 6
26	115.0	SE	539080 181310	TQ38SE3131	30.0	BLACKWALL GOODS YARD 1
27D	117.0	E	539100 181340	TQ38SE3034	13.0	A13/ EAST INDIA DOCK SERVICES BRIDGE 5
28D	117.0	E	539100 181340	TQ38SE3033	13.0	A13/ EAST INDIA DOCK SERVICES BRIDGE 4
29F	119.0	E	539110 181390	TQ38SE3488	35.0	EAST INDIA DOCK A13 LINK 316
30	119.0	S	538900 181170	TQ38SE3804	3.0	BLACKWALL GOODS DEPOT TP A
31E	119.0	SW	538860 181180	TQ38SE3379	0.9	EAST INDIA DOCK LAKE TP 20
32	123.0	E	539110 181350	TQ38SE136	9.14	BARKING RD BRIDGE OVER OVER CREST L103
33	125.0	S	538870 181170	TQ38SE2678	15.0	EAST INDIA DOCK 1
34	128.0	S	538960 181170	TQ38SE3805	2.6	BLACKWALL GOODS DEPOT TP B
35F	130.0	E	539120 181400	TQ38SE295/B	15.24	BARKING ROAD BRIDGE 2
36	131.0	E	539120 181410	TQ38SE295/A	18.29	BARKING ROAD BRIDGE 1
37G	132.0	SW	538850 181170	TQ38SE3875	10.1	EAST INDIA DOCK GROUND WATER SURVEY 16
38	136.0	NE	539113 181444	TQ38SE1216	1.0	A13 ISLE OF DOGS 6
39G	137.0	SW	538840 181170	TQ38SE3432	0.4	EAST INDIA DOCK PHASE VI TP 2
40G	137.0	S	538860 181160	TQ38SE3404	9.9	EAST INDIA DOCK- GROUND WATER SURVEY 16
41G	137.0	S	538860 181160	TQ38SE5193	-1.0	EAST INDIA DOCK INFRASTRUCTURE PHASE 4 LONDON DOCKLANDS DEVELOPMENT CORPORATION 1
42	144.0	S	538870 181150	TQ38SE3378	3.5	EAST INDIA DOCK LAKE TP 19
43	145.0	SE	539050 181220	TQ38SE1177	14.02	BLACKWALL WHARF 1
44	147.0	S	538960 181150	TQ38SE2584	25.0	E. Z. ROAD PHASE 6 215
45J	150.0	S	538930 181140	TQ38SE3879	10.6	EAST INDIA DOCK GROUND WATER SURVEY 21
46	152.0	SE	539020 181180	TQ38SE3132	29.95	BLACKWALL GOODS YARD 2
47I	154.0	SW	538840 181150	TQ38SE3433	2.8	EAST INDIA DOCK PHASE VI TP 2A
48H	156.0	SW	538820 181160	TQ38SE3530	25.5	EAST INDIA DOCK ESTATE SITES 6 & 8 LD1

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
49H	156.0	SW	538820 181160	TQ38SE3431	3.1	EAST INDIA DOCK PHASE VI TP 1
50I	160.0	S	538850 181140	TQ38SE3531	27.0	EAST INDIA DOCK ESTATE SITES 6 & 8 LD2
51I	160.0	S	538850 181140	TQ38SE3435	2.9	EAST INDIA DOCK PHASE VI TP 4
52J	161.0	S	538940 181130	TQ38SE3408	10.2	EAST INDIA DOCK-GROUND WATER SURVEY 21
53L	161.0	S	538880 181130	TQ38SE2583	15.0	E. Z. ROAD PHASE 6 214
54K	167.0	E	539146 181321	TQ38SE1156	6.71	CANNING TOWN BRIDGE 3
55K	169.0	SE	539144 181311	TQ38SE1155	11.28	CANNING TOWN BRIDGE 2
56L	171.0	S	538880 181120	TQ38SE3377	2.0	EAST INDIA DOCK LAKE TP 18
57L	171.0	S	538880 181120	TQ38SE5194	-1.0	EAST INDIA DOCK INFRASTRUCTURE PHASE 4 LONDON DOCKLANDS DEVELOPMENT CORPORATION 2
58L	173.0	S	538870 181120	TQ38SE3885	9.4	EAST INDIA DOCK GROUND WATER SURVEY 27
59	176.0	E	539163 181346	TQ38SE135	12.95	BARKING RD BRIDGE OVER OVER CREST L104
60N	177.0	SW	538830 181130	TQ38SE3434	3.2	EAST INDIA DOCK PHASE VI TP 3
61K	177.0	SE	539154 181312	TQ38SE1154	16.99	CANNING TOWN BRIDGE 1
62O	181.0	S	538880 181110	TQ38SE3415	9.2	EAST INDIA DOCK-GROUND WATER SURVEY 27
63	185.0	S	538960 181110	TQ38SE3806	3.0	BLACKWALL GOODS DEPOT TP C
64M	185.0	S	538860 181110	TQ38SE3437	2.4	EAST INDIA DOCK PHASE VI TP 6
65M	188.0	S	538850 181110	TQ38SE3532	27.5	EAST INDIA DOCK ESTATE SITES 6 & 8 LD3
66M	188.0	S	538850 181110	TQ38SE3386	15.0	EAST INDIA DOCK PHASE VI 1
67	188.0	E	539169 181320	TQ38SE1219	30.0	A13 ISLE OF DOGS 9A
68P	190.0	SE	539000 181120	TQ38SE3133	30.0	BLACKWALL GOODS YARD 3
69N	190.0	SW	538820 181120	TQ38SE3526	15.5	EAST INDIA DOCK ESTATE SITES 6 & 8 BE1
70O	192.0	S	538870 181100	TQ38SE3376	3.5	EAST INDIA DOCK LAKE TP 17
71Q	199.0	S	538900 181090	TQ38SE3481	20.0	EAST INDIA DOCK A13 LINK 308
72	202.0	E	539190 181420	TQ38SE295/D	18.31	BARKING ROAD BRIDGE 4
73P	204.0	SE	539010 181110	TQ38SE3803	15.0	BLACKWALL GOODS DEPOT 2
74R	204.0	NE	539178 181465	TQ38SE1217	25.5	A13 ISLE OF DOGS 7

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
75Q	207.0	S	538910 181081	TQ38SE758	24.69	EAST INDIA IMPORT DOCK POPLAR BH5
76	209.0	E	539195 181335	TQ38SE1186	11.89	STRATFORD 3
77R	213.0	E	539190 181460	TQ38SE295/C	18.29	BARKING ROAD BRIDGE 3
78T	214.0	SE	539120 181200	TQ38SE3192	2.0	LIMMO PENINSULA TP 3
79S	215.0	S	538881 181075	TQ38SE1698	10.2	A13 EAST INDIA LINK 322A
80	217.0	SE	539000 181090	TQ38SE3134	29.95	BLACKWALL GOODS YARD 4
81	217.0	SE	539110 181180	TQ38SE3194	0.5	LIMMO PENINSULA 5
82S	218.0	S	538887 181072	TQ38SE1697	35.0	A13 EAST INDIA LINK 322
83T	218.0	SE	539130 181210	TQ38SE3190	20.45	LIMMO PENINSULA 1
84	219.0	S	538900 181070	TQ38SE3480	30.0	EAST INDIA DOCK A13 LINK 307
85S	219.0	S	538890 181070	TQ38SE3438	2.9	EAST INDIA DOCK PHASE VIII TP 1
86S	220.0	S	538880 181070	TQ38SE3528	10.2	EAST INDIA DOCK ESTATE SITES 6 & 8 322A
87S	220.0	S	538880 181070	TQ38SE3527	35.0	EAST INDIA DOCK ESTATE SITES 6 & 8 322
88U	222.0	SW	538810 181090	TQ38SE3403	12.7	EAST INDIA DOCK- GROUND WATER SURVEY 15
89U	222.0	SW	538810 181090	TQ38SE3874	12.9	EAST INDIA DOCK GROUND WATER SURVEY 15
90V	224.0	S	538860 181070	TQ38SE3529	15.0	EAST INDIA DOCK ESTATE SITES 6 & 8 1
91V	226.0	S	538850 181070	TQ38SE3387	15.0	EAST INDIA DOCK PHASE VIII 1
92T	228.0	SE	539130 181190	TQ38SE3193	2.1	LIMMO PENINSULA TP 4
93U	235.0	SW	538800 181080	TQ38SE3892	13.9	EAST INDIA DOCK GROUND WATER SURVEY FE203
94V	236.0	S	538850 181060	TQ38SE3441	0.55	EAST INDIA DOCK PHASE VIII TP 4
95V	236.0	S	538850 181060	TQ38SE3407	12.7	EAST INDIA DOCK- GROUND WATER SURVEY 20
96W	239.0	S	538840 181060	TQ38SE3878	13.0	EAST INDIA DOCK GROUND WATER SURVEY 20
97X	239.0	S	538900 181050	TQ38SE3479	30.0	EAST INDIA DOCK A13 LINK 306
98	239.0	SE	539130 181170	TQ38SE3191	20.45	LIMMO PENINSULA 2
99	247.0	SW	538710 181140	TQ38SE2679	15.0	EAST INDIA DOCK 2
100	248.0	E	539239 181391	TQ38SE1185	12.19	STRATFORD 2
101W	248.0	S	538840 181050	TQ38SE3533	26.5	EAST INDIA DOCK ESTATE SITES 6 & 8 LD4

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
102X	249.0	S	538900 181040	TQ38SE3884	10.3	EAST INDIA DOCK GROUND WATER SURVEY 26A
103X	249.0	S	538900 181040	TQ38SE3414	10.1	EAST INDIA DOCK- GROUND WATER SURVEY 26A
104X	249.0	S	538900 181040	TQ38SE3439	2.2	EAST INDIA DOCK PHASE VIII TP 2

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/13594926
#2: scans.bgs.ac.uk/sobi_scans/boreholes/1034274
#3A: scans.bgs.ac.uk/sobi_scans/boreholes/13594964
#4A: scans.bgs.ac.uk/sobi_scans/boreholes/13602245
#5: scans.bgs.ac.uk/sobi_scans/boreholes/1034288
#6: scans.bgs.ac.uk/sobi_scans/boreholes/13736841
#7: scans.bgs.ac.uk/sobi_scans/boreholes/13576648
#8B: scans.bgs.ac.uk/sobi_scans/boreholes/1032520
#9B: scans.bgs.ac.uk/sobi_scans/boreholes/13602249
#10: scans.bgs.ac.uk/sobi_scans/boreholes/13602240
#11C: scans.bgs.ac.uk/sobi_scans/boreholes/13602242
#12: scans.bgs.ac.uk/sobi_scans/boreholes/13576649
#13C: scans.bgs.ac.uk/sobi_scans/boreholes/1034758
#14: scans.bgs.ac.uk/sobi_scans/boreholes/13576354
#15: scans.bgs.ac.uk/sobi_scans/boreholes/13602238
#16: scans.bgs.ac.uk/sobi_scans/boreholes/13602236
#17D: scans.bgs.ac.uk/sobi_scans/boreholes/13594690
#18E: scans.bgs.ac.uk/sobi_scans/boreholes/1033712
#19: scans.bgs.ac.uk/sobi_scans/boreholes/13602235
#20D: scans.bgs.ac.uk/sobi_scans/boreholes/13594682
#21D: scans.bgs.ac.uk/sobi_scans/boreholes/13594677
#22D: scans.bgs.ac.uk/sobi_scans/boreholes/13594692
#23D: scans.bgs.ac.uk/sobi_scans/boreholes/13594688
#24D: scans.bgs.ac.uk/sobi_scans/boreholes/13594681
#25D: scans.bgs.ac.uk/sobi_scans/boreholes/13594687
#26: scans.bgs.ac.uk/sobi_scans/boreholes/13598476
#27D: scans.bgs.ac.uk/sobi_scans/boreholes/13594685
#28D: scans.bgs.ac.uk/sobi_scans/boreholes/13594683
#29F: scans.bgs.ac.uk/sobi_scans/boreholes/13602246
#30: scans.bgs.ac.uk/sobi_scans/boreholes/13725932
#31E: scans.bgs.ac.uk/sobi_scans/boreholes/13601806
#32: scans.bgs.ac.uk/sobi_scans/boreholes/1032519
#33: scans.bgs.ac.uk/sobi_scans/boreholes/13576506
#34: scans.bgs.ac.uk/sobi_scans/boreholes/13725933
#35F: scans.bgs.ac.uk/sobi_scans/boreholes/1032839
#36: scans.bgs.ac.uk/sobi_scans/boreholes/1032838
#37G: scans.bgs.ac.uk/sobi_scans/boreholes/13736828
#38: scans.bgs.ac.uk/sobi_scans/boreholes/1034275
#39G: scans.bgs.ac.uk/sobi_scans/boreholes/13601918
#40G: scans.bgs.ac.uk/sobi_scans/boreholes/13601840
#42: scans.bgs.ac.uk/sobi_scans/boreholes/13601805
#43: scans.bgs.ac.uk/sobi_scans/boreholes/1034236
#44: scans.bgs.ac.uk/sobi_scans/boreholes/13576342
#45J: scans.bgs.ac.uk/sobi_scans/boreholes/13736835
#46: scans.bgs.ac.uk/sobi_scans/boreholes/13598479
#47I: scans.bgs.ac.uk/sobi_scans/boreholes/13601946
#48H: scans.bgs.ac.uk/sobi_scans/boreholes/13602460
#49H: scans.bgs.ac.uk/sobi_scans/boreholes/13601916
#50I: scans.bgs.ac.uk/sobi_scans/boreholes/13602461
#51I: scans.bgs.ac.uk/sobi_scans/boreholes/13601949
#52J: scans.bgs.ac.uk/sobi_scans/boreholes/13601861
#53L: scans.bgs.ac.uk/sobi_scans/boreholes/13576340
#54K: scans.bgs.ac.uk/sobi_scans/boreholes/1034215
#55K: scans.bgs.ac.uk/sobi_scans/boreholes/1034214
#56L: scans.bgs.ac.uk/sobi_scans/boreholes/13601804
#58L: scans.bgs.ac.uk/sobi_scans/boreholes/13736848

#59: scans.bgs.ac.uk/sobi_scans/boreholes/1032518
#60N: scans.bgs.ac.uk/sobi_scans/boreholes/13601947
#61K: scans.bgs.ac.uk/sobi_scans/boreholes/1034213
#62O: scans.bgs.ac.uk/sobi_scans/boreholes/13601876
#63: scans.bgs.ac.uk/sobi_scans/boreholes/13725934
#64M: scans.bgs.ac.uk/sobi_scans/boreholes/13601951
#65M: scans.bgs.ac.uk/sobi_scans/boreholes/13602462
#66M: scans.bgs.ac.uk/sobi_scans/boreholes/13601813
#67: scans.bgs.ac.uk/sobi_scans/boreholes/1034278
#68P: scans.bgs.ac.uk/sobi_scans/boreholes/13598482
#69N: scans.bgs.ac.uk/sobi_scans/boreholes/13602453
#70O: scans.bgs.ac.uk/sobi_scans/boreholes/13601803
#71Q: scans.bgs.ac.uk/sobi_scans/boreholes/13602209
#72: scans.bgs.ac.uk/sobi_scans/boreholes/1032841
#73P: scans.bgs.ac.uk/sobi_scans/boreholes/13725931
#74R: scans.bgs.ac.uk/sobi_scans/boreholes/1034276
#75Q: scans.bgs.ac.uk/sobi_scans/boreholes/1033714
#76: scans.bgs.ac.uk/sobi_scans/boreholes/1034245
#77R: scans.bgs.ac.uk/sobi_scans/boreholes/1032840
#78T: scans.bgs.ac.uk/sobi_scans/boreholes/13600243
#79S: scans.bgs.ac.uk/sobi_scans/boreholes/1034757
#80: scans.bgs.ac.uk/sobi_scans/boreholes/13598484
#81: scans.bgs.ac.uk/sobi_scans/boreholes/13600247
#82S: scans.bgs.ac.uk/sobi_scans/boreholes/1034756
#83T: scans.bgs.ac.uk/sobi_scans/boreholes/13600222
#84: scans.bgs.ac.uk/sobi_scans/boreholes/13602208
#85S: scans.bgs.ac.uk/sobi_scans/boreholes/13601988
#86S: scans.bgs.ac.uk/sobi_scans/boreholes/13602457
#87S: scans.bgs.ac.uk/sobi_scans/boreholes/13602454
#88U: scans.bgs.ac.uk/sobi_scans/boreholes/13601839
#89U: scans.bgs.ac.uk/sobi_scans/boreholes/13736827
#90V: scans.bgs.ac.uk/sobi_scans/boreholes/13602459
#91V: scans.bgs.ac.uk/sobi_scans/boreholes/13601816
#92T: scans.bgs.ac.uk/sobi_scans/boreholes/13600245
#93U: scans.bgs.ac.uk/sobi_scans/boreholes/13736858
#94V: scans.bgs.ac.uk/sobi_scans/boreholes/13602013
#95V: scans.bgs.ac.uk/sobi_scans/boreholes/13601859
#96W: scans.bgs.ac.uk/sobi_scans/boreholes/13736833
#97X: scans.bgs.ac.uk/sobi_scans/boreholes/13602207
#98: scans.bgs.ac.uk/sobi_scans/boreholes/13600242
#99: scans.bgs.ac.uk/sobi_scans/boreholes/13576507
#100: scans.bgs.ac.uk/sobi_scans/boreholes/1034244
#101W: scans.bgs.ac.uk/sobi_scans/boreholes/13602463
#102X: scans.bgs.ac.uk/sobi_scans/boreholes/13736847
#103X: scans.bgs.ac.uk/sobi_scans/boreholes/13601874
#104X: scans.bgs.ac.uk/sobi_scans/boreholes/13602000

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
9.0	E	London	No data	No data	No data	No data	No data

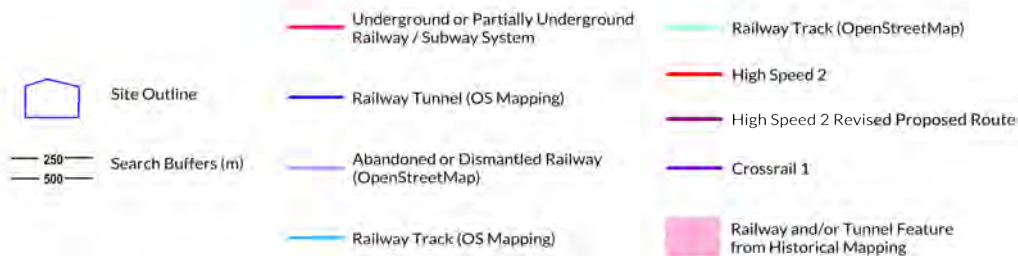
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels Map



Railways and Tunnels Legend

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.
© OpenStreetMapContributors



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? Yes

Distance (m)	Direction	Detail
193	SE	London Underground - Docklands Light Railway

The approximate depth value for the nearest London Underground line given in this dataset has been extrapolated from published depths of tube lines at station platforms, and assume a constant gradient between stations. Using this method, topographical variation has resulted in some parts of the line having associated depth values either shallower or deeper than the real-world situation. Depth values are for indication only and should not be relied upon for any calculation or technical purpose and are in no way a substitute for a professional survey.

Line
London Underground Line: Docklands Light Railway Depth: 0mbgl Track Type: Surface Track

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
33	41	SE	n/a	Railway	1896
34	42	N	539004 181427	Railway Sidings	1950
35	43	N	538994 181458	Tramway Sidings	1962
36G	43	N	538993 181450	Tramway Sidings	1949
37G	43	N	538993 181450	Tramway Sidings	1949
38G	43	N	538993 181450	Tramway Sidings	1953
39G	45	N	538993 181450	Tramway Sidings	1953
40G	45	N	538993 181450	Tramway Sidings	1949
1	47	SE	584660 178852	Railway Sidings	1938
2A	48	SE	539428 180952	Railway Sidings	1973
3A	48	SE	539428 180952	Railway Sidings	1965
4A	48	SE	539428 180952	Railway Sidings	1955
5	49	SE	539494 181107	Railway Sidings	1894
6	50	SE	539062 181348	Railway Sidings	1894
7	51	SE	538994 181228	Railway Sidings	1894
8	53	SE	539023 181221	Railway Sidings	1867
41	54	SE	n/a	Railway	1896
42	54	SE	n/a	Railway	1869
101	57	S	538900 181090	Tunnel	1994
9	59	S	539418 180939	Railway Sidings	1920
43	60	SE	539017 181236	Railway Sidings	1962
44	60	SE	539038 181236	Railway Sidings	1950
45H	60	SE	539011 181241	Railway Sidings	1950
46H	60	SE	539011 181241	Railway Sidings	1967
10I	61	SE	538991 181018	Railway Sidings	1896

ID	Distance (m)	Direction	NGR	Details	Date
31F	61	S	538905 181116	Tunnel	1993
32F	61	S	538905 181116	Tunnel	1996
47I	61	SE	538991 181018	Railway Sidings	1896
11	62	S	538703 181146	Railway Sidings	1981
12	62	S	539567 180954	Railway Sidings	1949
48	62	SE	539495 181087	Railway Sidings	1916
49	63	S	538999 181091	Railway Sidings	1896
13B	64	S	538957 181232	Railway Sidings	1899
14B	64	S	538957 181232	Railway Sidings	1899
50	64	S	539494 181077	Railway Sidings	1869
15	65	S	539031 181282	Railway Sidings	1872
51J	66	S	538704 181143	Railway Sidings	1949
52J	66	S	538704 181143	Railway Sidings	1949
53J	66	S	538704 181143	Railway Sidings	1953
54	66	S	538974 181180	Railway Sidings	1970
55	66	S	n/a	Railway	1894
56	66	S	n/a	Railway	1896
16N	67	S	539029 181211	Railway Sidings	1867
57K	68	SE	538994 181272	Railway Sidings	1953
58K	68	SE	538994 181272	Railway Sidings	1949
59	69	SE	n/a	Railway	1916
60L	83	SE	538974 181196	Railway Sidings	1949
61L	83	SE	538974 181196	Railway Sidings	1953
62M	87	N	539005 181481	Railway Sidings	1950
63M	87	N	539003 181481	Railway Sidings	1950
64M	87	N	539005 181475	Railway Sidings	1967
17	88	SE	539205 181369	Railway Sidings	1867
65	101	SE	n/a	Railway	1896
66N	108	SE	538997 181213	Railway Sidings	1949
67O	108	SE	538997 181213	Railway Sidings	1953
68O	108	SE	538997 181213	Railway Sidings	1949

ID	Distance (m)	Direction	NGR	Details	Date
69O	108	SE	538997 181213	Railway Sidings	1953
70O	108	SE	538997 181213	Railway Sidings	1949
71	113	NE	539104 181463	Railway Sidings	1916
18	117	S	538429 181044	Railway Sidings	1973
19	117	S	538429 181044	Railway Sidings	1965
20	117	S	538410 181008	Railway Sidings	1955
72P	118	N	538978 181506	Railway Sidings	1949
73P	118	N	538978 181506	Railway Sidings	1952
74Q	138	SE	n/a	Railway	1916
75Q	138	SE	n/a	Railway	1896
76Q	138	SE	n/a	Railway	1869
77R	156	SE	539014 181143	Railway Sidings	1974
78R	157	SE	539015 181143	Railway Sidings	1981
79	183	SW	538794 181117	Railway Sidings	1896
21C	186	NW	538777 181641	Railway Sidings	1920
22C	189	NW	538779 181646	Railway Sidings	1949
80C	195	NW	538759 181647	Railway Sidings	1916
81S	198	NW	538660 181635	Railway Sidings	1949
82S	198	NW	538660 181635	Railway Sidings	1949
23D	199	NW	584418 179255	Railway Sidings	1938
83T	199	NW	538737 181635	Railway Sidings	1952
84T	199	NW	538737 181635	Railway Sidings	1949
85	199	NW	538692 181633	Railway Sidings	1953
86	200	NE	539166 181530	Railway Sidings	1896
24D	201	NW	538735 181638	Railway Sidings	1965
25D	201	NW	538735 181638	Railway Sidings	1955
26U	203	NE	539106 181572	Railway Sidings	1955
87U	204	NE	539112 181572	Tramway Sidings	1950
88U	205	NE	539109 181570	Tramway Sidings	1952
89U	205	NE	539109 181570	Tramway Sidings	1950

ID	Distance (m)	Direction	NGR	Details	Date
90J	217	SW	538749 181128	Railway Sidings	1896
27	221	N	539060 181845	Railway Sidings	1981
28E	225	N	539066 181632	Railway Sidings	1973
29E	225	N	539066 181632	Railway Sidings	1965
91	225	N	539031 181803	Railway Sidings	1962
92V	226	N	539032 181690	Railway Sidings	1950
93X	227	N	539059 181724	Railway Sidings	1962
94V	227	N	539059 181724	Railway Sidings	1950
95	227	N	539059 181724	Railway Sidings	1952
96W	228	N	539054 181625	Railway Sidings	1985
97W	228	N	539054 181625	Railway Sidings	1982
98X	228	N	539016 181803	Railway Sidings	1970
99Y	237	NE	539146 181595	Railway Sidings	1962
30	239	NE	538477 182254	Railway Sidings	1955
100Y	239	NE	539147 181596	Railway Sidings	1962

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? Yes

Distance (m)	Direction	Status
69	SE	Dismantled
120	SE	Abandoned
175	SE	Dismantled

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? Yes

Distance (m)	Direction	Name	Type
190	SE	DLR	Light Rail
190	SE	DLR	Light Rail
193	SE	DLR	Light Rail
193	SE	DLR	Light Rail
230	SE	DLR	Light Rail
230	SE	DLR	Light Rail
233	SE	Docklands Light Railway	Light Rail
233	SE	Docklands Light Railway	Light Rail

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? No

Is the study site within 500m of the route of the Crossrail 1 rail project? Yes

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.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com



British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk



BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX



The Coal Authority

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



Public Health England

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



Johnson Poole & Bloomer Limited

Harris and Pearson Building, Brettell Lane
Brierley Hill, West Midlands
DY5 3LH
Tel: +44 (0) 1384 262 000
Email: enquiries.gs@jpb.co.uk
Website: www.jpb.co.uk



Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505
Website: <http://www.ordnancesurvey.co.uk/>



Getmapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444
Website: <http://www.1.getmapping.com/>



Peter Brett Associates
Caversham Bridge House
Waterman Place
Reading
Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail: reading@pba.co.uk
Website: <http://www.peterbrett.com/home>



Acknowledgements: Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028].
This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
<https://www.groundsure.com/terms-and-conditions-sept-2016/>



Arcadis

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

Groundsure
Reference:

GS-4030414

Your Reference: PO0067007-1

Report Date

29 Jun 2017

Report Delivery Method: Email - pdf

Enviro Insight

Address: LAND AT LANRICK ROAD AND PORTREE STREET,

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

Address: LAND AT LANRICK ROAD AND PORTREE STREET,

Date: 29 Jun 2017

Reference: GS-4030414

Client: Arcadis

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 07-Jun-2015

Grid Reference: 538917,181295

Site Size: 0.09ha

Report Reference: GS-4030414

Client Reference: PO0067007-1

Contents Page

Contents Page	3
Overview of Findings	6
Using this report	10
1. Historical Land Use	11
1. Historical Industrial Sites	12
1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping	12
1.2 Additional Information – Historical Tank Database	22
1.3 Additional Information – Historical Energy Features Database	30
1.4 Additional Information – Historical Petrol and Fuel Site Database	35
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	35
1.6 Potentially Infilled Land	36
2. Environmental Permits, Incidents and Registers Map	40
2. Environmental Permits, Incidents and Registers	41
2.1 Industrial Sites Holding Licences and/or Authorisations	41
2.1.1 Records of historic IPC Authorisations within 500m of the study site	41
2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site	41
2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site	41
2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site	41
2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site	41
2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site	42
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	42
2.1.8 Records of Licensed Discharge Consents within 500m of the study site	43
2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site	45
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	45
2.2 Dangerous or Hazardous Sites	46
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents	46
2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site	46
2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site	47
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	47
3. Landfill and Other Waste Sites Map	48
3. Landfill and Other Waste Sites	49
3.1 Landfill Sites	49
3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site	49
3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site	49
3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site	50
3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site	50
3.2 Other Waste Sites	50
3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site	50
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site	52
4. Current Land Use Map	59
4. Current Land Uses	60
4.1 Current Industrial Data	60
4.2 Petrol and Fuel Sites	61
4.3 National Grid High Voltage Underground Electricity Transmission Cables	61
4.4 National Grid High Pressure Gas Transmission Pipelines	62

5. Geology	63
5.1 Artificial Ground and Made Ground.....	63
5.2 Superficial Ground and Drift Geology	63
5.3 Bedrock and Solid Geology	63
6 Hydrogeology and Hydrology	64
6a. Aquifer Within Superficial Geology	64
6b. Aquifer Within Bedrock Geology and Abstraction Licences	65
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences	66
6d. Hydrogeology – Source Protection Zones within confined aquifer	67
6e. Hydrology – Detailed River Network and River Quality	68
6.Hydrogeology and Hydrology	69
6.1 Aquifer within Superficial Deposits.....	69
6.2 Aquifer within Bedrock Deposits.....	69
6.3 Groundwater Abstraction Licences.....	70
6.4 Surface Water Abstraction Licences.....	72
6.5 Potable Water Abstraction Licences.....	72
6.6 Source Protection Zones.....	72
6.7 Source Protection Zones within Confined Aquifer.....	73
6.8 Groundwater Vulnerability and Soil Leaching Potential.....	73
6.9 River Quality.....	73
6.9.1 Biological Quality:.....	73
6.9.2 Chemical Quality:.....	74
6.10 Detailed River Network.....	74
6.11 Surface Water Features.....	74
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)	75
7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS)	76
Map	76
7 Flooding	77
7.1 River and Coastal Zone 2 Flooding.....	77
7.2 River and Coastal Zone 3 Flooding.....	78
7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating.....	79
7.4 Flood Defences.....	79
7.5 Areas benefiting from Flood Defences.....	79
7.6 Areas benefiting from Flood Storage.....	79
7.7 Groundwater Flooding Susceptibility Areas.....	80
7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? No.....	80
7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?.....	80
7.8 Groundwater Flooding Confidence Areas.....	80
8. Designated Environmentally Sensitive Sites Map	81
8. Designated Environmentally Sensitive Sites	82
8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:.....	82
8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:.....	82
8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:.....	82
8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:.....	82
8.5 Records of Ramsar sites within 2000m of the study site:.....	82
8.6 Records of Ancient Woodland within 2000m of the study site:	83
8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:.....	83
8.8 Records of World Heritage Sites within 2000m of the study site:.....	83
8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:	83

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:	83
8.11 Records of National Parks (NP) within 2000m of the study site:	83
8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:.....	83
8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:.....	84
8.14 Records of Green Belt land within 2000m of the study site:.....	84
9. Natural Hazards Findings	85
9.1 Detailed BGS GeoSure Data.....	85
9.1.1 Shrink Swell.....	85
9.1.2 Landslides.....	85
9.1.3 Soluble Rocks.....	85
9.1.4 Compressible Ground.....	86
9.1.5 Collapsible Rocks.....	86
9.1.6 Running Sand.....	86
9.2 Radon.....	86
9.2.1 Radon Affected Areas.....	86
9.2.2 Radon Protection.....	87
10. Mining	88
10.1 Coal Mining.....	88
10.2 Non-Coal Mining.....	88
10.3 Brine Affected Areas	88
Contact Details	89
Standard Terms and Conditions	91

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	21	145	294
1.2 Additional Information – Historical Tank Database	0	0	74	244
1.3 Additional Information – Historical Energy Features Database	0	0	56	167
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	1	14
1.6 Potentially Infilled Land	0	8	63	99

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	1	2	3
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	3	14
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	1
2.2 Records of COMAH and NIHS sites	0	0	1	1
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	4	10
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	2	1	1	2
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	11	6	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	2	3	9	16

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	1	20	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	1	0
4.3 National Grid Underground Electricity Cables	0	0	0	6
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	1	0	0	15
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	0	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	Yes	No	Yes	Yes
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?	Not Prone					
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Not Applicable					

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	0
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	0
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	1	0	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?	Moderate
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Low
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?	Moderate
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Negligible
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.

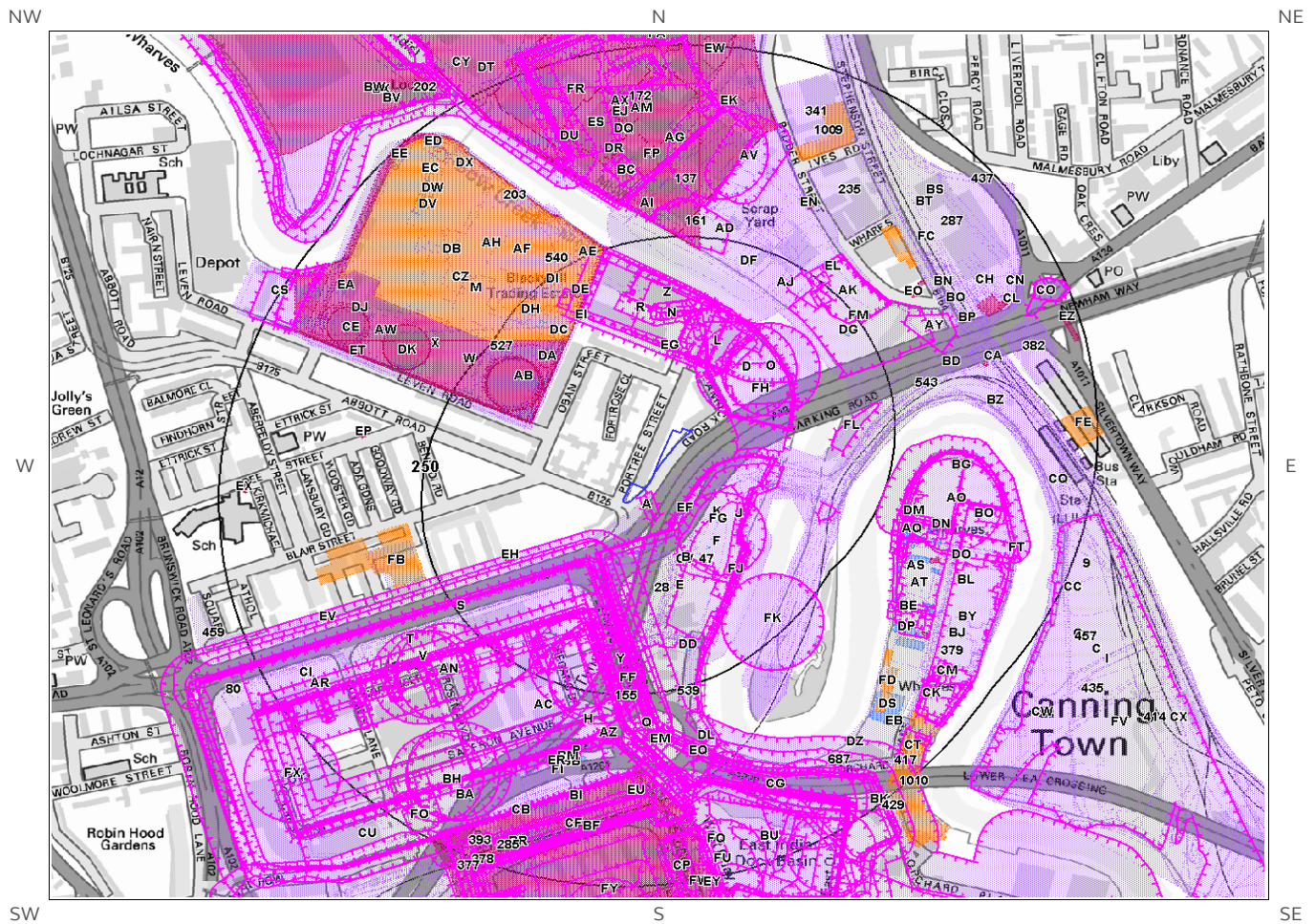
Note: Maps

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



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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: 460

ID	Distance [m]	Direction	Use	Date
1A	4	SE	Unspecified Heap	1867
2A	5	SE	Unspecified Disused Covered Pits	1898
3B	9	SE	Unspecified Commercial/Industrial	1949
4B	27	SE	Unspecified Commercial/Industrial	1938
5B	37	S	Unspecified Depot	1981
6B	37	S	Unspecified Depot	1989
7D	40	NE	Unspecified Wharves	1894
8ER	44	S	Docks	1920
9	47	SE	Railway Sidings	1938
10E	48	SE	Unspecified Wharf	1896
11C	48	SE	Railway Sidings	1955
12B	48	SE	Unspecified Commercial/Industrial	1955
13C	48	SE	Railway Sidings	1973
14C	48	SE	Railway Sidings	1965
15B	48	SE	Unspecified Depot	1973
16B	48	SE	Unspecified Commercial/Industrial	1965
17D	49	NE	Unspecified Wharves	1896
18CC	49	SE	Railway Sidings	1894
19K	50	SE	Railway Sidings	1894
20D	50	NE	Unspecified Wharves	1899
21D	50	NE	Unspecified Wharves	1899
22E	51	S	Unspecified Wharf	1899
23E	51	S	Unspecified Wharf	1899
24CV	51	SE	Railway Sidings	1894
25E	51	SE	Unspecified Wharf	1894
26D	52	NE	Unspecified Wharves	1894
27F	53	SE	Railway Sidings	1867
28	53	SE	Unspecified Commercial/Industrial	1867
29B	54	S	Unspecified Commercial/Industrial	1898
30AA	57	S	Tunnel	1994

31F	57	SE	Unspecified Wharf	1949
32I	59	S	Railway Sidings	1920
33G	59	S	Unspecified Commercial/Industrial	1920
34B	59	S	Unspecified Wharf	1920
35H	59	SW	Dock	1894
36G	61	SE	Railway Sidings	1896
37H	61	SW	Dock	1965
38H	61	SW	Dock	1955
39H	61	SW	Dock	1949
40S	62	S	Railway Sidings	1981
41I	62	S	Railway Sidings	1949
42J	64	S	Railway Sidings	1899
43J	64	S	Railway Sidings	1899
44FH	64	NE	Unspecified Wharf	1867
45O	64	NE	Unspecified Wharves	1894
46K	65	S	Railway Sidings	1898
47	67	S	Railway Sidings	1867
48L	69	N	Unspecified Wharf	1938
49F	69	SE	Unspecified Wharf	1867
50N	71	N	Unspecified Wharf	1965
51L	77	N	Unspecified Wharf	1949
52M	81	N	Unspecified Commercial/Industrial	1920
53L	81	N	Unspecified Wharf	1920
54H	82	SW	Dock	1898
55M	82	N	Unspecified Commercial/Industrial	1938
56R	82	N	Unspecified Wharf	1938
57F	85	SE	Unspecified Heap	1867
58N	85	N	Unspecified Wharves	1973
59O	86	NE	Unspecified Wharf	1867
60P	86	SW	Unspecified Dock	1899
61P	86	SW	Unspecified Dock	1899
62H	86	SW	Dock	1894
63L	87	NE	Unspecified Wharves	1994
64L	87	NE	Unspecified Wharves	1981
65L	87	NE	Unspecified Wharves	1989
66	88	SE	Railway Sidings	1867
67Q	89	SW	Dock	1938
68AR	89	SW	Import Dock	1896
69BM	89	SW	Unspecified Dock	1867
70Q	90	SW	Dock	1867
71R	91	N	Unspecified Wharf	1949
72O	92	NE	Wharf	1898
73FF	92	SW	Quay	1938
74N	94	N	Unspecified Wharf	1920

75FI	95	SW	Dock	1894
76E	104	SE	Unspecified Wharf	1894
77T	112	SW	Quay	1938
78S	115	SW	Transit Shed	1949
79N	117	N	Unspecified Heap	1894
80	117	S	Railway Sidings	1955
81U	117	S	Railway Sidings	1965
82T	117	S	Railway Sidings	1973
83U	122	S	Quay	1898
84S	124	SW	Transit Shed	1920
85S	127	SW	Transit Shed	1938
86V	130	S	Quay	1867
87T	132	S	Unspecified Quay	1867
88Y	133	S	Quay	1949
89N	135	N	Unspecified Heap	1894
90V	140	S	Quay	1949
91N	141	N	Unspecified Heap	1894
92FJ	141	SE	Unspecified Wharf	1867
93M	146	NW	Unspecified Commercial/Industrial	1949
94W	147	NW	Gas Works	1899
95W	147	NW	Gas Works	1899
96X	147	NW	Gas Works	1981
97X	147	NW	Gas Works	1994
98X	147	NW	Gas Works	1989
99CZ	148	NW	Gas Works	1973
100M	148	NW	Unspecified Works	1965
101M	148	NW	Gas Works	1955
102W	149	NW	Gas Works	1894
103M	150	NW	Gas Works	1894
104Y	151	S	Quay	1920
105Z	152	N	Unspecified Wharf	1867
106AD	152	N	Ship Building Yard	1894
107M	152	NW	Gas Works	1896
108Z	152	N	Unspecified Wharf	1867
109M	153	NW	Gas Works	1894
110AB	158	NW	Unspecified Tanks	1920
111AA	159	S	Quay	1989
112AB	159	NW	Unspecified Tanks	1949
113AB	160	NW	Gasometer	1994
114AB	160	NW	Gasometer	1981
115AB	160	NW	Gasometer	1989
116AB	161	NW	Gasometers	1955
117AB	161	NW	Gasometers	1973
118AB	161	NW	Gasometers	1965
119AB	162	NW	Gasometer	1899

120AB	162	NW	Gasometer	1899
121AC	162	S	Dock	1989
122AC	163	S	Dock	1981
123AB	165	NW	Gasometer	1894
124AB	165	NW	Gasometer	1894
125AB	165	NW	Gasometer	1896
126AA	167	S	Quay	1955
127AB	167	NW	Gasometer	1894
128AB	169	NW	Unspecified Tanks	1938
129FK	171	SE	Unspecified Wharf	1894
130AI	173	E	Unspecified Commercial/Industrial	1920
131FL	173	E	Unspecified Wharf	1920
132AA	174	S	Quay	1973
133AA	174	S	Quay	1981
134AD	180	N	Shipbuilding Yard	1894
135AE	182	N	Ship Building Yard	1867
136AE	183	N	Ship Building Works	1867
137	184	NE	Unspecified Commercial/Industrial	1938
138AE	185	N	Wharf	1898
139AF	186	NW	Railway Sidings	1920
140J	187	SE	Unspecified Heap	1867
141AF	189	NW	Railway Sidings	1949
142DB	189	NW	Gas Works	1894
143FM	193	E	Unspecified Wharf	1955
144AG	198	NE	Unspecified Commercial/Industrial	1955
145AG	198	NE	Unspecified Commercial/Industrial	1965
146AH	199	NW	Railway Sidings	1938
147AH	201	NW	Railway Sidings	1955
148AH	201	NW	Railway Sidings	1965
149AJ	203	NE	Railway Sidings	1955
150AD	209	N	Shipbuilding Yard	1896
151AI	210	N	Unspecified Works	1981
152AD	211	N	Ship Building Yard	1894
153AJ	216	NE	Unspecified Wharf	1863
154DY	221	N	Railway Sidings	1981
155	222	S	Unspecified Quay	1867
156AK	224	NE	Unspecified Wharf	1981
157AK	224	NE	Unspecified Wharf	1973
158AL	225	N	Railway Sidings	1965
159AL	225	N	Railway Sidings	1973
160AK	226	NE	Unspecified Wharf	1989
161	231	N	Unspecified Wharf	1863
162AU	239	NE	Railway Sidings	1955

163T	243	SW	Transit Shed	1949
164EL	244	NE	Wharf	1898
165AN	246	SW	Quay	1920
166AO	250	E	Unspecified Wharf	1894
167T	251	SW	Transit Shed	1920
168AL	251	NE	Wharf	1898
169AM	253	N	Electricity Generating Station	1981
170AM	253	N	Electricity Generating Station	1989
171T	258	SW	Transit Shed	1938
172	263	N	Electric Generating Station	1973
173FB	267	W	Unspecified Depot	1965
174AN	269	SW	Quay	1973
175AO	273	E	Cooperage Wharf	1896
176AP	275	N	Railway Sidings	1938
177AP	275	N	Unspecified Wharf	1894
178AO	275	E	Unspecified Wharf	1894
179AQ	275	SE	Unspecified Wharf	1938
180AO	275	E	Plate Glass Works	1867
181AS	276	SE	Oil Refinery	1896
182AP	276	N	Unspecified Wharf	1896
183AQ	276	SE	Mill Ponds	1867
184AO	277	E	Unspecified Wharf	1894
185AO	278	E	Unspecified Wharf	1899
186AO	278	E	Unspecified Wharf	1899
187BE	278	E	Unspecified Commercial/Industrial	1955
188AR	279	SW	Quay	1955
189AS	279	SE	Oil Refinery	1894
190AP	280	N	Railway Sidings	1920
191AT	281	SE	Oil Refinery	1899
192AT	281	SE	Oil Refinery	1899
193AO	282	E	Plate Glass Works	1867
194AO	283	E	Unspecified Wharves	1981
195AO	283	E	Unspecified Works	1973
196DM	283	E	Wharf	1898
197DO	283	E	Plate Glass Works	1898
198AS	284	E	Unspecified Wharf	1949
199AO	286	E	Unspecified Wharves	1994
200AQ	286	SE	Unspecified Wharf	1920
201AU	287	N	Railway Sidings	1965
202	287	N	Railway Sidings	1973
203	290	NW	Railway Sidings	1973
204BB	290	S	Unspecified Warehouse	1949
205DQ	294	N	Sewage Works	1894

206AS	295	SE	Unspecified Wharf	1867
207AZ	295	S	Quay	1949
208AY	296	NE	Unspecified Wharf	1867
209CD	297	S	Dock Basin	1973
210AS	298	SE	Oil Refinery	1894
211AW	299	NW	Unspecified Tanks	1949
212BK	299	S	Dock Basin	1894
213AV	300	N	Unspecified Wharf	1894
214AX	301	N	Sewerage Works	1896
215AV	301	N	Unspecified Wharf	1894
216AW	302	NW	Gasometer	1981
217AW	302	NW	Gasometer	1955
218AW	302	NW	Gasometer	1994
219AW	302	NW	Gasometer	1989
220AW	302	NW	Gasometer	1973
221AW	302	NW	Unspecified Tank	1965
222AX	302	N	Sewerage Works	1894
223BL	302	SE	Iron Foundry	1867
224AY	302	NE	Wharf	1898
225AZ	302	S	Quay	1981
226AX	302	N	Sewage Works	1894
227CB	304	S	Export Dock	1896
228BH	306	S	Quay	1949
229FN	307	S	Dock	1898
230AW	309	NW	Unspecified Tanks	1938
231BA	309	S	Transit Shed	1949
232BA	313	S	Unspecified Warehouse	1938
233BA	313	S	Transit Shed	1938
234BA	313	S	Quay	1938
235	313	NE	Unspecified Works	1973
236BB	317	S	Unspecified Warehouses	1955
237BB	317	S	Unspecified Warehouses	1965
238BB	319	S	Unspecified Warehouse	1920
239BC	319	N	Sewage Works	1898
240BD	321	E	Railway Building	1894
241BC	324	N	Sewerage Works	1863
242FQ	325	S	Dock	1894
243BD	326	E	Railway Building	1867
244BG	330	E	Unspecified Tank	1867
245BE	332	SE	Unspecified Wharf	1938
246BF	333	S	Dock	1898
247BF	337	S	Dock	1894
248BE	337	SE	Unspecified Wharf	1949
249BJ	338	E	Unspecified Commercial/Industrial	1955
250BF	338	S	Dock	1867

251BV	338	N	Dock	1949
252BO	339	E	Unspecified Wharves	1965
253BE	340	SE	Unspecified Wharf	1920
254BG	340	E	Unspecified Tanks	1898
255BD	341	E	Railway Building	1867
256BH	341	SW	Quay	1920
257BI	345	S	Unspecified Warehouse	1949
258BD	345	E	Railway Building	1894
259CG	345	S	Quay	1955
260BN	348	NE	Railway Station	1938
261BT	349	NE	Railway Sidings	1894
262BF	350	S	Unspecified Commercial/Industrial	1955
263BF	350	S	Dock	1938
264BI	350	S	Unspecified Warehouse	1938
265BC	350	N	Chimney	1938
266BJ	351	SE	Oil Mills	1896
267BF	351	S	Electric Generating Station	1981
268BF	351	S	Electric Generating Station	1973
269BF	351	S	Railway Sidings	1973
270BK	352	S	Dock	1949
271FS	352	S	Dock	1955
272BL	352	SE	Iron Foundry	1867
273BQ	353	NE	Railway Station	1894
274BJ	354	SE	Oil Mills	1894
275BK	354	S	Quay	1938
276BD	354	E	Railway Building	1894
277FP	354	N	Chimney	1920
278BJ	355	E	Oil Mills	1894
279FC	355	NE	Railway Sidings	1981
280BL	355	E	Unspecified Works	1973
281BM	355	S	Unspecified Warehouse	1920
282BJ	356	E	Oil Mills	1899
283BJ	356	E	Oil Mills	1899
284BH	356	SW	Quay	1973
285	356	S	Railway Sidings	1938
286BN	356	NE	Railway Station	1894
287	357	NE	Railway Sidings	1920
288BO	357	E	Unspecified Wharves	1989
289BP	358	E	Railway Station	1994
290BP	358	E	Railway Station	1981
291BP	358	E	Railway Station	1989
292BP	358	NE	Railway Station	1894
293BQ	358	NE	Railway Station	1955
294BR	359	S	Railway Sidings	1894

295BN	359	NE	Railway Station	1896
296BX	359	N	Dock	1920
297BR	359	S	Railway Sidings	1949
298BP	359	NE	Railway Station	1973
299BP	359	NE	Railway Station	1965
300BS	360	NE	Railway Sidings	1955
301BS	360	NE	Railway Sidings	1965
302BT	360	NE	Railway Sidings	1973
303BY	361	E	Unspecified Wharf	1949
304BQ	361	E	Railway Station	1920
305BR	362	S	Railway Sidings	1899
306BR	362	S	Railway Sidings	1899
307BU	363	S	Dock Basin	1981
308BU	363	S	Dock Basin	1989
309BR	363	S	Railway Sidings	1896
310BR	363	S	Railway Sidings	1894
311BR	364	S	Railway Sidings	1920
312BP	364	NE	Railway Station	1899
313BP	364	NE	Railway Station	1899
314BN	364	NE	Railway Station	1894
315BZ	365	E	Railway Building	1894
316BT	365	NE	Railway Sidings	1949
317BN	366	NE	Railway Station	1949
318BR	367	S	Railway Sidings	1894
319CA	367	E	Railway Building	1955
320BV	368	NW	Dock	1938
321BV	368	NW	Unspecified Commercial/Industrial	1938
322BW	369	N	Dock	1894
323BW	369	N	Gas Works	1894
324BH	369	SW	Quay	1955
325BU	370	S	Dock Basin	1899
326BU	370	S	Dock Basin	1899
327BU	370	S	Basin	1896
328BU	370	S	Dock Basin	1867
329BV	370	NW	Dock	1894
330BX	370	N	Unspecified Dock	1896
331BV	370	N	Gas Works	1896
332BY	370	SE	Unspecified Commercial/Industrial	1994
333BY	370	SE	Unspecified Commercial/Industrial	1981
334BY	370	SE	Unspecified Works	1989
335BZ	371	E	Railway Buildings	1894
336FO	372	S	Transit Shed	1920
337CA	372	E	Railway Building	1867
338BP	373	NE	Railway Building	1867

339CE	374	NW	Unspecified Tank	1920
340BY	374	SE	Unspecified Works	1965
341	375	N	Unspecified Works	1965
342CA	375	E	Railway Station	1898
343CB	375	S	Quay	1949
344BF	375	S	Dock	1949
345CF	376	S	Quay	1938
346CC	377	E	Railway Sidings	1989
347CD	378	S	Dock Basin	1994
348CA	380	E	Railway Station	1867
349BT	381	NE	Railway Sidings	1896
350CE	382	NW	Gasometer	1899
351CE	382	NW	Gasometer	1899
352CF	383	S	Quay	1867
353CF	383	S	Unspecified Quay	1867
354CE	384	NW	Gasometer	1981
355CE	384	NW	Gasometer	1994
356CE	384	NW	Gasometer	1955
357CE	384	NW	Unspecified Tank	1965
358CE	384	NW	Gasometer	1973
359CE	384	NW	Gasometer	1989
360CF	384	S	Railway Buildings	1949
361CE	384	NW	Gasometer	1894
362CE	384	NW	Gasometer	1894
363CE	385	NW	Gasometer	1894
364CE	386	NW	Gasometer	1896
365CH	389	NE	Railway Buildings	1938
366CE	389	NW	Gasometer	1894
367CI	389	SW	Transit Shed	1949
368CF	391	S	Railway Buildings	1894
369CG	392	S	Quay	1920
370	392	S	Railway Sidings	1898
371CH	393	NE	Railway Building	1894
372BK	394	SE	Quay	1949
373CI	394	SW	Transit Shed	1920
374CK	394	SE	Oil Mills	1894
375CM	395	SE	Oil Mill	1867
376BQ	395	NE	Railway Building	1894
377	396	S	Railway Sidings	1867
378	398	S	Railway Sidings	1867
379	399	SE	Oil Mill	1867
380CH	400	NE	Railway Building	1920
381CH	400	NE	Railway Building	1896
382	400	E	Unspecified Depot	1965
383CB	402	S	Quay	1920
384CI	403	SW	Transit Shed	1938

385CH	404	NE	Railway Buildings	1955
386CH	404	NE	Railway Buildings	1965
387CH	404	NE	Railway Buildings	1973
388CH	404	NE	Railway Building	1894
389CH	406	NE	Railway Building	1949
390CJ	410	SE	Unspecified Wharf	1867
391CL	416	NE	Railway Building	1894
392CJ	418	SE	Unspecified Wharf	1867
393	420	S	Railway Station	1994
394CK	422	SE	Unspecified Wharf	1938
395FT	426	E	Unspecified Wharves	1973
396CL	427	NE	Railway Building	1920
397FU	427	S	Quay	1994
398CM	428	SE	Unspecified Wharf	1994
399CM	428	SE	Unspecified Wharf	1989
400CN	429	NE	Railway Building	1949
401CK	430	SE	Unspecified Wharf	1920
402AM	430	N	Unspecified Ground Workings	1896
403CK	431	SE	Unspecified Wharf	1867
404CP	439	S	Quay	1867
405CN	441	NE	Railway Building	1955
406CN	441	NE	Railway Building	1965
407CO	441	E	Unspecified Heaps	1994
408CO	441	E	Unspecified Heaps	1981
409CO	441	E	Unspecified Heaps	1989
410G	446	SE	Unspecified Wharf	1867
411CT	448	SE	Unspecified Wharf	1867
412CP	450	S	Unspecified Quay	1867
413CQ	452	E	Railway Building	1894
414	452	E	Railway Sidings	1894
415CS	453	NW	Unspecified Commercial/Industrial	1955
416CO	456	E	Unspecified Heap	1973
417	457	SE	Steam Works	1867
418CQ	457	E	Railway Building	1894
419CC	458	E	Railway Sidings	1898
420CC	458	E	Railway Sidings	1898
421CR	458	E	Railway Sidings	1898
422CR	458	E	Railway Sidings	1898
423CS	464	NW	Unspecified Wharf	1920
424CD	464	SE	Quay	1973
425CD	464	SE	Quay	1994
426CS	465	NW	Unspecified Wharf	1938
427CT	465	SE	Unspecified Wharf	1867
428CS	466	NW	Unspecified Wharf	1949

429	467	SE	Unspecified Works	1867
430CU	467	SW	Unspecified Warehouses	1955
431CU	467	SW	Unspecified Warehouses	1965
432CX	470	E	Railway Sidings	1981
433ED	471	NW	Gasometer	1955
434FV	472	E	Iron Workings	1894
435	474	E	Unspecified Commercial/Industrial	1949
436C	475	E	Iron Works	1896
437	475	NE	Railway Building	1949
438C	477	E	Unspecified Commercial/Industrial	1938
439FW	478	S	Quay	1938
440BV	479	NW	Unspecified Commercial/Industrial	1955
441BV	479	NW	Unspecified Commercial/Industrial	1973
442BV	479	NW	Unspecified Commercial/Industrial	1965
443CV	479	E	Iron Works	1894
444CW	480	E	Iron Works	1899
445CW	480	E	Iron Works	1899
446CY	481	NW	Railway Sidings	1920
447CX	481	E	Unspecified Commercial/Industrial	1894
448CR	482	E	Railway Building	1981
449CR	482	E	Railway Building	1989
450CC	483	E	Unspecified Commercial/Industrial	1898
451CC	483	E	Unspecified Commercial/Industrial	1898
452CC	483	SE	Iron Works	1867
453EE	484	NW	Gasometers	1955
454FX	484	SW	Quay	1955
455CR	485	E	Railway Building	1973
456CR	485	E	Railway Building	1965
457	487	E	Unspecified Commercial/Industrial	1898
458FY	490	S	Quay	1920
459	497	SW	Hospital	1949
460CY	498	NW	Railway Sidings	1949

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:

318

ID	Distance (m)	Direction	Use	Date
461FG	97	SE	Unspecified Tank	1869
462F	108	SE	Unspecified Tank	1869
463L	110	NE	Unspecified Tank	1992
464L	110	NE	Unspecified Tank	1992
465L	110	NE	Unspecified Tank	1994
466L	110	NE	Unspecified Tank	1974
467L	111	NE	Unspecified Tank	1981
468L	111	NE	Unspecified Tank	1991
469CZ	146	NW	Gas Works	1949
470M	146	NW	Gas Works	1949
471W	146	NW	Gas Works	1949
472W	146	NW	Gas Works	1970
473W	146	NW	Gas Works	1996
474W	146	NW	Gas Works	1993
475W	147	NW	Gas Works	1990
476W	147	NW	Gas Works	1991
477W	147	NW	Gas Works	1992
478M	148	NW	Gas Works	1896
479M	152	NW	Gas Works	1896
480AB	158	NW	Unspecified Tank	1953
481AB	158	NW	Gasometer	1949
482AB	158	NW	Unspecified Tank	1962
483AB	159	NW	Unspecified Tank	1953
484AB	159	NW	Gasometer	1949
485AB	159	NW	Gasometer	1970
486AB	159	NW	Gas Holder	1996
487AB	159	NW	Gas Holder	1993
488AB	159	NW	Gasholder	1990
489AB	159	NW	Gasholder	1991
490AB	159	NW	Gasholder	1992
491AB	163	NW	Gasometer	1896
492AB	165	NW	Gasometer	1896
493DA	171	NW	Unspecified Tank	1953
494DA	171	NW	Gasometer	1949
495DA	171	NW	Unspecified Tank	1962
496DA	171	NW	Gas Holder	1970
497DA	171	NW	Unspecified Tank	1953
498DA	171	NW	Gasometer	1949
499DB	175	NW	Gas Works	1949
500DB	175	NW	Gas Works	1952
501DA	175	NW	Unspecified Tank	1953

502DA	175	NW	Storage Tank	1949
503DA	175	NW	Unspecified Tank	1970
504DA	176	NW	Unspecified Tank	1962
505DA	176	NW	Unspecified Tank	1953
506DA	176	NW	Unspecified Tank	1949
507DC	181	NW	Unspecified Tank	1949
508DC	181	NW	Unspecified Tank	1952
509DC	181	NW	Unspecified Tank	1949
510DC	181	NW	Unspecified Tank	1953
511DC	181	NW	Unspecified Tank	1962
512DD	198	S	Unspecified Tank	1953
513DD	198	S	Unspecified Tank	1953
514DC	203	NW	Tanks	1952
515DC	203	NW	Tanks	1949
516DE	207	NW	Tanks	1952
517DE	207	NW	Tanks	1949
518DC	208	NW	Tanks	1949
519DC	210	NW	Tanks	1952
520DC	210	NW	Tanks	1949
521DF	225	N	Unspecified Tank	1970
522DF	225	N	Unspecified Tank	1962
523DF	226	N	Unspecified Tank	1962
524DG	226	NE	Unspecified Tank	1982
525DG	226	NE	Unspecified Tank	1985
526W	229	NW	Tanks	1916
527	229	NW	Unspecified Tank	1916
528DH	231	NW	Unspecified Tank	1952
529DH	231	NW	Unspecified Tank	1949
530DI	239	NW	Tanks	1949
531DI	239	NW	Tanks	1952
532DF	240	N	Unspecified Tank	1962
533DF	241	N	Unspecified Tank	1970
534DF	241	N	Unspecified Tank	1962
535DJ	257	NW	Gas Works	1992
536DJ	257	NW	Gas Works	1981
537DJ	257	NW	Gas Works	1991
538DJ	257	NW	Gas Works	1990
539	260	S	Unspecified Tank	1970
540	260	NW	Unspecified Tank	1953
541AE	260	NW	Unspecified Tank	1949
542AQ	292	SE	Tanks	1974
543	293	E	Unspecified Tank	1916
544AQ	294	SE	Tanks	1981
545DK	300	NW	Gasometer	1949
546DK	300	NW	Gas Holder	1970
547DK	300	NW	Unspecified Tank	1953

548DK	300	NW	Gas Holder	1996
549DK	300	NW	Gas Holder	1993
550DK	300	NW	Gasholder	1990
551DK	300	NW	Gasholder	1991
552DK	300	NW	Gasholder	1992
553DK	300	NW	Gasometer	1949
554DK	300	NW	Unspecified Tank	1953
555DK	300	NW	Unspecified Tank	1962
556AQ	301	SE	Tanks	1991
557AQ	303	SE	Unspecified Tank	1962
558AQ	303	SE	Unspecified Tank	1950
559AQ	303	SE	Unspecified Tank	1967
560AQ	303	SE	Unspecified Tank	1950
561AS	307	SE	Unspecified Tank	1992
562AS	307	SE	Unspecified Tank	1992
563AS	307	SE	Unspecified Tank	1994
564AQ	308	SE	Tanks	1992
565AQ	308	SE	Tanks	1992
566AQ	308	SE	Tanks	1994
567AQ	308	SE	Tanks	1991
568AS	308	SE	Unspecified Tank	1981
569AS	308	SE	Unspecified Tank	1991
570AS	310	SE	Unspecified Tank	1974
571AW	311	NW	Gasometer	1949
572AW	311	NW	Gasometer	1952
573AW	311	NW	Gas Holder	1981
574AW	311	NW	Gas Holder	1990
575AW	311	NW	Gas Holder	1992
576AW	311	NW	Gas Holder	1991
577AS	312	SE	Tanks	1992
578AS	312	SE	Tanks	1994
579AS	312	SE	Tanks	1992
580AS	314	SE	Tanks	1981
581AS	314	SE	Tanks	1991
582CZ	315	NW	Tanks	1949
583CZ	316	NW	Tanks	1949
584DL	316	S	Tanks	1987
585DL	317	S	Tanks	1969
586AQ	317	E	Tanks	1994
587AQ	317	E	Tanks	1992
588AQ	317	E	Tanks	1992
589AQ	317	E	Tanks	1991
590CZ	318	NW	Gasometer	1952
591CZ	318	NW	Unspecified Tank	1953
592CZ	318	NW	Unspecified Tank	1962
593AQ	325	SE	Tanks	1991

594AS	327	SE	Tanks	1981
595BC	328	N	Unspecified Tank	1949
596DM	330	E	Unspecified Tank	1994
597DN	330	E	Unspecified Tank	1992
598DN	330	E	Unspecified Tank	1992
599DN	330	E	Unspecified Tank	1991
600AT	331	SE	Unspecified Tank	1950
601AT	333	SE	Unspecified Tank	1950
602BG	333	E	Gasometer	1869
603BB	334	S	Unspecified Tank	1993
604BB	334	S	Unspecified Tank	1994
605AS	346	SE	Tanks	1992
606AS	346	SE	Tanks	1992
607AS	346	SE	Tanks	1994
608AS	346	SE	Tanks	1991
609AS	347	SE	Unspecified Tank	1981
610DO	350	SE	Unspecified Tank	1981
611BC	350	N	Unspecified Tank	1949
612BC	350	N	Unspecified Tank	1952
613AT	351	SE	Tank or Trough	1869
614DP	352	SE	Tanks	1994
615DP	352	SE	Tanks	1992
616DP	352	SE	Tanks	1992
617DP	354	SE	Tanks	1981
618DP	354	SE	Tanks	1991
619DP	361	SE	Tanks	1974
620BE	364	SE	Tanks	1994
621BE	364	SE	Tanks	1992
622BE	364	SE	Tanks	1992
623DP	365	SE	Tanks	1994
624DP	365	SE	Tanks	1992
625DP	365	SE	Tanks	1992
626BE	366	SE	Tanks	1981
627BE	366	SE	Tanks	1991
628DR	367	N	Unspecified Tank	1896
629DP	367	SE	Tanks	1981
630DP	367	SE	Tanks	1991
631BV	370	N	Gas Works	1896
632BE	371	SE	Tanks	1992
633BE	371	SE	Tanks	1992
634BE	371	SE	Tanks	1994
635DQ	372	N	Unspecified Tank	1949
636DR	372	N	Unspecified Tank	1952
637CE	378	NW	Gasometer	1949
638CE	378	NW	Unspecified Tank	1953
639CE	378	NW	Unspecified Tank	1962

640CE	378	NW	Gas Holder	1981
641CE	378	NW	Gas Holder	1990
642CE	378	NW	Gas Holder	1992
643CE	378	NW	Gas Holder	1991
644CE	378	NW	Gasometer	1949
645CE	378	NW	Gasometer	1952
646CE	379	NW	Unspecified Tank	1953
647CE	379	NW	Gasometer	1949
648CE	379	NW	Gasholder	1970
649CE	379	NW	Gas Holder	1993
650CE	379	NW	Gas Holder	1996
651CE	379	NW	Gasholder	1990
652CE	379	NW	Gasholder	1991
653CE	379	NW	Gasholder	1992
654DT	380	NW	Gas Works	1949
655CE	381	NW	Gasometer	1896
656CE	384	NW	Unspecified Tank	1949
657CE	385	NW	Unspecified Tank	1916
658CE	386	NW	Gasometer	1896
659BQ	387	NE	Unspecified Tank	1950
660BQ	387	NE	Unspecified Tank	1952
661DJ	387	NW	Unspecified Tank	1896
662BQ	388	NE	Unspecified Tank	1950
663DS	390	SE	Tanks	1991
664DS	391	SE	Tanks	1992
665DS	391	SE	Tanks	1994
666DS	391	SE	Tanks	1992
667DT	393	NW	Gas Works	1952
668DU	396	N	Unspecified Tank	1952
669DU	396	N	Unspecified Tank	1949
670DS	400	SE	Tanks	1981
671DJ	411	NW	Unspecified Tank	1952
672DJ	411	NW	Unspecified Tank	1949
673DV	418	NW	Tanks	1949
674DV	418	NW	Tanks	1952
675DV	418	NW	Unspecified Tank	1953
676DV	418	NW	Unspecified Tank	1962
677DV	418	NW	Unspecified Tank	1949
678DZ	420	SE	Unspecified Tank	1987
679DV	421	NW	Tanks	1949
680DV	421	NW	Tanks	1949
681DV	421	NW	Tanks	1952
682DW	423	NW	Tanks	1916
683DW	423	NW	Tanks	1952
684DW	423	NW	Tanks	1949
685DW	424	NW	Tanks	1949

686DW	424	NW	Tanks	1949
687	425	SE	Unspecified Tank	1987
688DX	426	NW	Unspecified Tank	1952
689DX	426	NW	Unspecified Tank	1949
690DY	426	N	Tanks	1987
691DY	427	N	Tanks	1989
692DY	427	N	Tanks	1991
693DZ	427	SE	Unspecified Tank	1987
694DW	427	NW	Tanks	1952
695DW	428	NW	Tanks	1952
696DW	428	NW	Tanks	1949
697DW	428	NW	Unspecified Tank	1949
698DW	428	NW	Unspecified Tank	1962
699DW	428	NW	Unspecified Tank	1953
700DX	429	NW	Tanks	1949
701DX	429	NW	Tanks	1952
702DY	432	N	Tanks	1952
703EA	432	NW	Unspecified Tank	1981
704EA	432	NW	Unspecified Tank	1990
705EA	432	NW	Unspecified Tank	1992
706EA	432	NW	Unspecified Tank	1991
707EB	432	SE	Unspecified Tank	1991
708EB	432	SE	Unspecified Tank	1992
709DY	433	N	Unspecified Tank	1962
710DY	433	N	Unspecified Tank	1970
711DW	434	NW	Unspecified Tank	1953
712DW	434	NW	Unspecified Tank	1949
713DW	434	NW	Unspecified Tank	1962
714DW	434	NW	Tanks	1952
715DW	434	NW	Tanks	1949
716DW	434	NW	Tanks	1949
717DW	434	NW	Tanks	1952
718DY	434	N	Unspecified Tank	1962
719BS	434	NE	Unspecified Tank	1950
720BS	434	NE	Unspecified Tank	1952
721BS	434	NE	Unspecified Tank	1962
722BS	435	NE	Unspecified Tank	1962
723BS	435	NE	Unspecified Tank	1950
724EA	435	NW	Unspecified Tank	1981
725EA	435	NW	Unspecified Tank	1990
726EA	435	NW	Unspecified Tank	1991
727DX	437	NW	Unspecified Tank	1952
728DX	437	NW	Unspecified Tank	1949
729DX	437	NW	Unspecified Tank	1949
730DX	437	NW	Unspecified Tank	1953
731DX	437	NW	Unspecified Tank	1962

732DX	441	NW	Unspecified Tank	1916
733DX	445	NW	Unspecified Tank	1949
734DX	445	NW	Unspecified Tank	1952
735DX	445	NW	Unspecified Tank	1953
736DX	445	NW	Unspecified Tank	1962
737DX	445	NW	Unspecified Tank	1949
738EC	447	NW	Tanks	1962
739EC	447	NW	Tanks	1953
740EC	447	NW	Tanks	1949
741EC	447	NW	Tanks	1952
742EC	448	NW	Unspecified Tank	1949
743EC	450	NW	Unspecified Tank	1949
744ED	452	NW	Unspecified Tank	1916
745ED	464	NW	Tanks	1949
746ED	464	NW	Tanks	1952
747ED	464	NW	Unspecified Tank	1949
748ED	464	NW	Unspecified Tank	1962
749ED	464	NW	Unspecified Tank	1953
750ED	465	NW	Unspecified Tank	1916
751ED	467	NW	Tanks	1896
752ED	469	NW	Tanks	1952
753ED	469	NW	Tanks	1949
754ED	470	NW	Unspecified Tank	1962
755ED	470	NW	Unspecified Tank	1949
756ED	470	NW	Unspecified Tank	1953
757ED	471	NW	Unspecified Tank	1916
758EE	481	NW	Tanks	1916
759EE	481	NW	Unspecified Tank	1952
760EE	481	NW	Tanks	1949
761EE	481	NW	Tanks	1949
762EE	482	NW	Unspecified Tank	1962
763EE	482	NW	Unspecified Tank	1953
764CS	484	NW	Unspecified Tank	1953
765CS	484	NW	Unspecified Tank	1952
766CS	484	NW	Unspecified Tank	1949
767EE	485	NW	Tanks	1896
768CS	486	NW	Unspecified Tank	1990
769CS	486	NW	Unspecified Tank	1981
770CS	486	NW	Unspecified Tank	1991
771CS	486	NW	Unspecified Tank	1948
772CS	486	NW	Unspecified Tank	1953
773CS	486	NW	Unspecified Tank	1971
774CS	487	NW	Unspecified Tank	1990
775CS	487	NW	Unspecified Tank	1990
776CS	487	NW	Unspecified Tank	1987
777CS	487	NW	Unspecified Tank	1991

778DT	491	NW	Gas Works	1949
-------	-----	----	-----------	------

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:

223

ID	Distance (m)	Direction	Use	Date
779EF	53	SE	Electricity Substation	1992
780EF	53	SE	Electricity Substation	1990
781EF	53	SE	Electricity Substation	1991
782EF	54	SE	Electricity Substation	1970
783EG	102	N	Electricity Substation	1993
784EG	102	N	Electricity Substation	1996
785EG	102	N	Electricity Substation	1991
786EG	102	N	Electricity Substation	1990
787EG	102	N	Electricity Substation	1992
788M	146	NW	Gas Works	1949
789M	146	NW	Gas Works	1949
790W	146	NW	Gas Works	1949
791W	146	NW	Gas Works	1970
792W	146	NW	Gas Works	1996
793W	146	NW	Gas Works	1993
794W	147	NW	Gas Works	1992
795W	147	NW	Gas Works	1990
796W	147	NW	Gas Works	1991
797M	148	NW	Gas Works	1896
798M	152	NW	Gas Works	1896
799EH	154	SW	Electricity Substation	1953
800EH	154	SW	Electricity Substation	1949
801EH	154	SW	Electricity Substation	1949
802EH	154	SW	Electricity Substation	1993
803EH	154	SW	Electricity Substation	1996
804EH	155	SW	Electricity Substation	1949
805EH	155	SW	Electricity Substation	1953
806EH	155	SW	Electricity Substation	1970
807EH	156	SW	Electricity Substation	1992
808EH	156	SW	Electricity Substation	1990
809EH	156	SW	Electricity Substation	1991
810AB	158	NW	Gasometer	1949
811AB	159	NW	Gasometer	1949
812AB	159	NW	Gasometer	1970

813AB	159	NW	Gas Holder	1993
814AB	159	NW	Gas Holder	1996
815AB	159	NW	Gasholder	1991
816AB	159	NW	Gasholder	1992
817AB	159	NW	Gasholder	1990
818AB	163	NW	Gasometer	1896
819AB	165	NW	Gasometer	1896
820DA	171	NW	Gasometer	1949
821DA	171	NW	Gas Holder	1970
822DA	171	NW	Gasometer	1949
823DB	175	NW	Gas Works	1952
824DB	175	NW	Gas Works	1949
825EI	183	NW	Electricity Substation	1952
826EI	183	NW	Electricity Substation	1949
827EI	184	NW	Electricity Substation	1953
828EI	184	NW	Electricity Substation	1949
829EI	184	NW	Electricity Substation	1949
830EI	184	NW	Electricity Substation	1990
831EI	184	NW	Electricity Substation	1981
832EI	184	NW	Electricity Substation	1991
833EJ	233	N	Electricity Works	1949
834AX	234	N	Electricity Works	1949
835EJ	251	N	Electricity Generating Station	1981
836EJ	251	N	Electricity Works	1952
837DJ	257	NW	Gas Works	1991
838DJ	257	NW	Gas Works	1992
839DJ	257	NW	Gas Works	1990
840DJ	257	NW	Gas Works	1981
841EK	287	N	Electricity Works	1952
842EK	287	N	Electricity Works	1950
843EL	287	NE	Electricity Substation	1985
844EL	287	NE	Electricity Substation	1982
845EK	288	N	Electricity Works	1950
846EL	289	NE	Electricity Substation	1987
847EL	289	NE	Electricity Substation	1991
848EL	289	NE	Electricity Substation	1991
849EL	289	NE	Electricity Substation	1989
850DK	300	NW	Gas Holder	1970
851DK	300	NW	Gasometer	1949
852DK	300	NW	Gas Holder	1993
853DK	300	NW	Gas Holder	1996
854DK	300	NW	Gasholder	1991
855DK	300	NW	Gasholder	1992
856DK	300	NW	Gasholder	1990
857DK	300	NW	Gasometer	1949

858AW	311	NW	Gasometer	1952
859AW	311	NW	Gasometer	1949
860AW	311	NW	Gas Holder	1981
861AW	311	NW	Gas Holder	1992
862AW	311	NW	Gas Holder	1991
863AW	311	NW	Gas Holder	1990
864EM	312	S	Electricity Substation	1992
865EM	312	S	Electricity Substation	1992
866EM	312	S	Electricity Substation	1993
867EM	312	S	Electricity Substation	1994
868CZ	318	NW	Gasometer	1952
869EN	320	NE	Electricity Substation	1950
870EN	321	NE	Electricity Substation	1950
871EN	321	NE	Electricity Substation	1952
872EO	322	NE	Electricity Substation	1982
873EO	322	NE	Electricity Substation	1985
874EO	322	NE	Electricity Substation	1991
875EO	322	NE	Electricity Substation	1989
876EO	322	NE	Electricity Substation	1991
877EO	323	NE	Electricity Substation	1970
878EO	323	NE	Electricity Substation	1987
879EP	329	W	Electricity Substation	1993
880EP	329	W	Electricity Substation	1996
881EP	329	W	Electricity Substation	1991
882EP	329	W	Electricity Substation	1992
883EP	329	W	Electricity Substation	1990
884EP	329	W	Electricity Substation	1970
885BG	333	E	Gasometer	1869
886EQ	335	S	Electricity Substation	1951
887EQ	336	S	Electricity Substation	1991
888EQ	336	S	Electricity Substation	1987
889EQ	336	S	Electricity Substation	1969
890EQ	336	S	Electricity Substation	1951
891EQ	337	S	Electricity Substation	1951
892EO	337	NE	Electricity Substation	1985
893EO	337	NE	Electricity Substation	1989
894EO	337	NE	Electricity Substation	1982
895EO	337	NE	Electricity Substation	1991
896EO	337	NE	Electricity Substation	1991
897EO	338	NE	Electricity Substation	1970
898EO	338	NE	Electricity Substation	1987
899DO	338	SE	Electricity Substations	1992
900DO	338	SE	Electricity Substations	1994
901DO	338	SE	Electricity Substations	1992
902AS	340	SE	Electricity Substations	1991
903AS	340	SE	Electricity Substation	1981

904AO	342	E	Electricity Substation	1974
905EQ	342	S	Electricity Substation	1969
906AO	343	E	Electricity Substation	1981
907DO	344	SE	Electricity Substation	1974
908BF	346	S	Wharf Generating Station	1951
909BF	351	S	Electricity Generating Station	1969
910ER	351	S	Wharf Generating Station	1950
911DO	353	SE	Electricity Substation	1981
912DO	353	SE	Electricity Substations	1991
913ES	354	N	Power House	1952
914ES	354	N	Power House	1949
915ES	354	N	Power House	1949
916AG	365	N	Power House	1981
917AG	366	N	Power House	1952
918CA	369	E	Electricity Substation	1994
919CA	369	E	Electricity Substation	1992
920CA	369	E	Electricity Substation	1992
921CA	369	E	Electricity Substation	1974
922BV	370	N	Gas Works	1896
923CA	370	E	Electricity Substation	1991
924CA	370	E	Electricity Substation	1981
925ET	374	NW	Electricity Substation	1970
926ET	374	NW	Electricity Substation	1993
927ET	374	NW	Electricity Substation	1996
928ET	375	NW	Electricity Substation	1992
929ET	375	NW	Electricity Substation	1991
930ET	375	NW	Electricity Substation	1990
931EU	375	S	Electricity Substation	1950
932EU	376	S	Electricity Substation	1950
933EU	376	S	Electricity Substation	1951
934CE	378	NW	Gasometer	1949
935DJ	378	NW	Gas Holder	1991
936DJ	378	NW	Gas Holder	1992
937DJ	378	NW	Gas Holder	1981
938DJ	378	NW	Gas Holder	1990
939DJ	378	NW	Gasometer	1952
940DJ	378	NW	Gasometer	1949
941ET	379	NW	Gasholder	1970
942ET	379	NW	Gasometer	1949
943ET	379	NW	Gas Holder	1993
944ET	379	NW	Gas Holder	1996
945ET	379	NW	Gasholder	1991
946ET	379	NW	Gasholder	1990
947ET	379	NW	Gasholder	1992
948DT	380	NW	Gas Works	1949

949DJ	381	NW	Gasometer	1896
950DJ	386	NW	Gasometer	1896
951DP	386	SE	Electricity Substation	1994
952DP	386	SE	Electricity Substation	1992
953DP	386	SE	Electricity Substation	1992
954DP	387	SE	Electricity Substation	1974
955CL	387	NE	Electricity Substations	1991
956CL	387	NE	Electricity Substations	1989
957CL	387	NE	Electricity Substations	1991
958DP	388	SE	Electricity Substation	1991
959DP	388	SE	Electricity Substation	1981
960DT	393	NW	Gas Works	1952
961EV	395	W	Electricity Substation	1970
962EV	395	SW	Electricity Substation	1993
963EV	395	SW	Electricity Substation	1996
964EV	396	W	Electricity Substation	1992
965EV	396	W	Electricity Substation	1990
966EV	396	W	Electricity Substation	1991
967ER	405	S	Wharf Generating Station	1950
968CL	410	NE	Electricity Substations	1987
969EW	439	N	Electricity Generating Station	1991
970EW	439	N	Electricity Generating Station	1991
971EW	439	N	Electricity Generating Station	1989
972ED	450	NW	Generating House	1949
973ED	450	NW	Generating House	1949
974EY	463	S	Wharf Generating Station	1951
975EX	466	W	Electricity Substation	1996
976EX	466	W	Electricity Substation	1992
977EX	466	W	Electricity Substation	1995
978EX	466	W	Electricity Substation	1995
979EX	466	W	Electricity Substation	1991
980EX	466	W	Electricity Substation	1970
981EX	466	W	Electricity Substation	1989
982EX	466	W	Electricity Substation	1991
983EX	466	W	Electricity Substation	1986
984EX	466	W	Electricity Substation	1991
985EX	466	W	Electricity Substation	1990
986EX	466	W	Electricity Substation	1989
987EY	467	S	Wharf Generating Station	1951
988EW	469	N	Electricity Generating Station	1985
989EW	469	N	Electricity Generating Station	1982
990EZ	480	E	Electricity Substation	1970

991EZ	480	E	Electricity Substation	1950
992EZ	480	E	Electricity Substation	1952
993EZ	480	E	Electricity Substation	1950
994DT	491	NW	Gas Works	1949
995FA	493	N	Electricity Substation	1992
996FA	493	N	Electricity Substation	1990
997FA	493	N	Electricity Substation	1991
998FA	493	N	Electricity Substation	1981
999FA	493	N	Electricity Substations	1949
1000EW	497	N	Electricity Generating Station	1987
1001EW	497	N	Electricity Generating Station	1970

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: 15

ID	Distance (m)	Direction	Use	Date
1002DB	176	NW	Car Storage Compound	1992
1003FB	264	W	Garage	1916
1004FC	337	NE	Garage	1985
1005FC	337	NE	Garage	1982
1006FC	339	NE	Garage	1970
1007FD	363	SE	Barge and Tug Repair Yard	1974
1008FD	363	SE	Barge and Tug Repair Yard	1967
1009	377	N	Motor Body Works	1970
1010	439	SE	Ship Repairing Works	1916
1011FE	455	E	Garage	1974
1012FE	455	E	Garage	1967
1013FE	455	E	Garage	1992

1014FE	455	E	Garage	1992
1015FE	455	E	Garage	1981
1016FE	455	E	Garage	1991

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 170

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

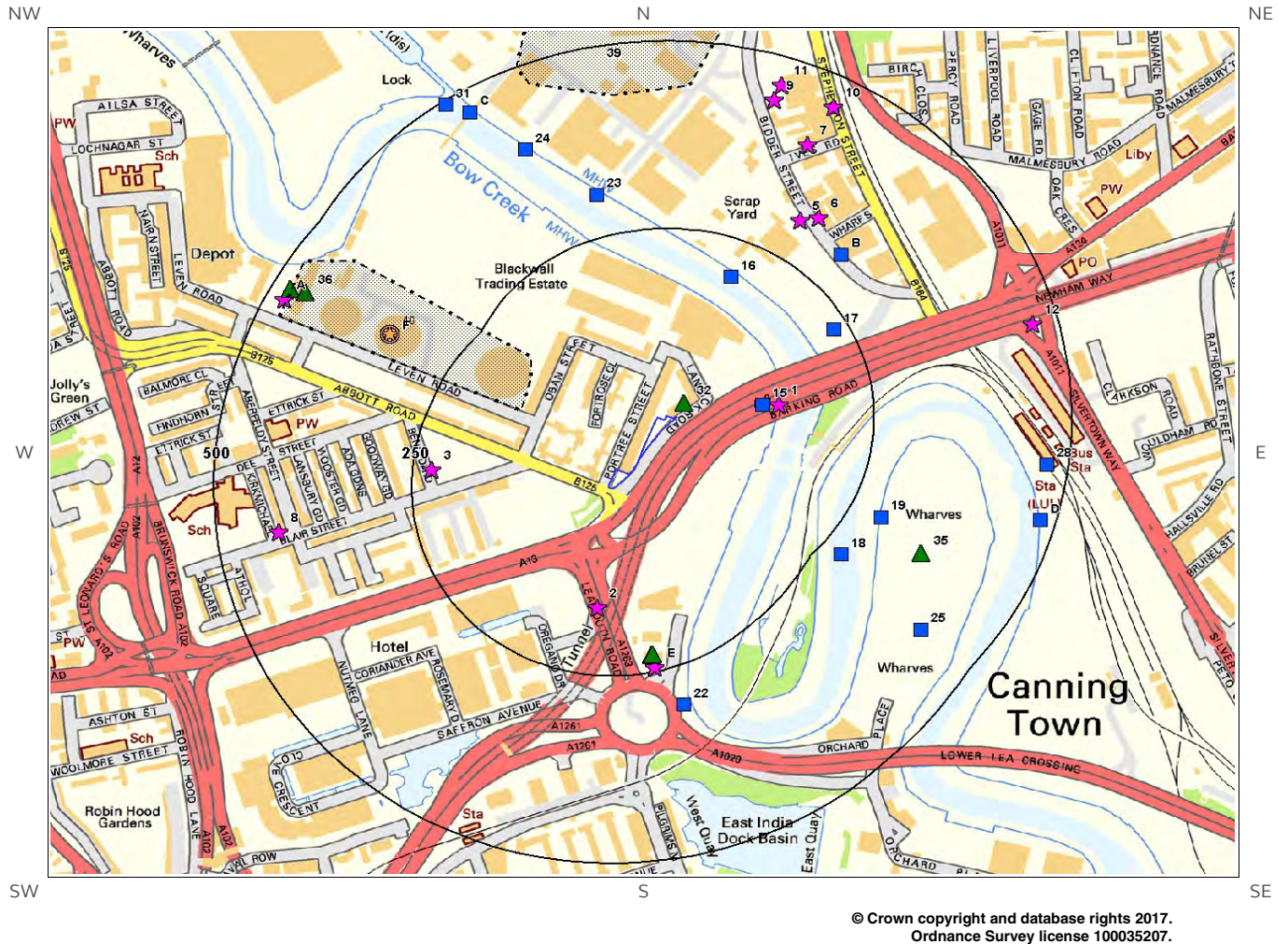
ID	Distance(m)	Direction	Use	Date
1017A	4	SE	Unspecified Heap	1867
1018EF	5	SE	Unspecified Disused Covered Pits	1898
1019O	40	NE	Unspecified Wharves	1894
1020ER	44	S	Docks	1920
1021E	48	SE	Unspecified Wharf	1896
1022O	49	NE	Unspecified Wharves	1896
1023O	50	NE	Unspecified Wharves	1899
1024O	50	NE	Unspecified Wharves	1899
1025E	51	S	Unspecified Wharf	1899
1026E	51	S	Unspecified Wharf	1899
1027E	51	SE	Unspecified Wharf	1894
1028D	52	NE	Unspecified Wharves	1894
1029FF	57	S	Tunnel	1994
1030FG	57	SE	Unspecified Wharf	1949
1031B	59	S	Unspecified Wharf	1920
1032Q	59	SW	Dock	1894
1033Q	61	SW	Dock	1949
1034Q	61	SW	Dock	1955
1035Q	61	SW	Dock	1965
1036FH	64	NE	Unspecified Wharf	1867
1037O	64	NE	Unspecified Wharves	1894
1038L	69	N	Unspecified Wharf	1938
1039F	69	SE	Unspecified Wharf	1867
1040N	71	N	Unspecified Wharf	1965
1041L	77	N	Unspecified Wharf	1949
1042L	81	N	Unspecified Wharf	1920
1043Q	82	SW	Dock	1898
1044R	82	N	Unspecified Wharf	1938
1045F	85	SE	Unspecified Heap	1867
1046N	85	N	Unspecified Wharves	1973
1047O	86	NE	Unspecified Wharf	1867
1048Q	86	SW	Dock	1894
1049L	87	NE	Unspecified Wharves	1994
1050L	87	NE	Unspecified Wharves	1981

1051L	87	NE	Unspecified Wharves	1989
1052Q	89	SW	Dock	1938
1053Q	90	SW	Dock	1867
1054N	91	N	Unspecified Wharf	1949
1055AA	92	SW	Quay	1938
1056N	94	N	Unspecified Wharf	1920
1057FI	95	SW	Dock	1894
1058E	104	SE	Unspecified Wharf	1894
1059T	112	SW	Quay	1938
1060N	117	N	Unspecified Heap	1894
1061U	122	S	Quay	1898
1062V	130	S	Quay	1867
1063Y	133	S	Quay	1949
1064N	135	N	Unspecified Heap	1894
1065V	140	S	Quay	1949
1066N	141	N	Unspecified Heap	1894
1067FJ	141	SE	Unspecified Wharf	1867
1068Y	151	S	Quay	1920
1069Z	152	N	Unspecified Wharf	1867
1070Z	152	N	Unspecified Wharf	1867
1071AA	159	S	Quay	1989
1072AC	162	S	Dock	1989
1073AC	163	S	Dock	1981
1074Y	167	S	Quay	1955
1075FK	171	SE	Unspecified Wharf	1894
1076FL	173	E	Unspecified Wharf	1920
1077AA	174	S	Quay	1973
1078AA	174	S	Quay	1981
1079J	187	SE	Unspecified Heap	1867
1080FM	193	E	Unspecified Wharf	1955
1081AJ	216	NE	Unspecified Wharf	1863
1082AK	224	NE	Unspecified Wharf	1981
1083AK	224	NE	Unspecified Wharf	1973
1084AK	226	NE	Unspecified Wharf	1989
1085AD	231	N	Unspecified Wharf	1863
1086V	246	SW	Quay	1920
1087AO	250	E	Unspecified Wharf	1894
1088AN	269	SW	Quay	1973
1089AP	275	N	Unspecified Wharf	1894
1090AO	275	E	Unspecified Wharf	1894
1091AQ	275	SE	Unspecified Wharf	1938
1092AP	276	N	Unspecified Wharf	1896
1093AQ	276	SE	Mill Ponds	1867
1094AO	277	E	Unspecified Wharf	1894
1095AO	278	E	Unspecified Wharf	1899
1096AO	278	E	Unspecified Wharf	1899

1097AN	279	SW	Quay	1955
1098AO	283	E	Unspecified Wharves	1981
1099AS	284	E	Unspecified Wharf	1949
1100AO	286	E	Unspecified Wharves	1994
1101AQ	286	SE	Unspecified Wharf	1920
1102ES	294	N	Sewage Works	1894
1103AS	295	SE	Unspecified Wharf	1867
1104AZ	295	S	Quay	1949
1105AY	296	NE	Unspecified Wharf	1867
1106CD	297	S	Dock Basin	1973
1107BK	299	S	Dock Basin	1894
1108AV	300	N	Unspecified Wharf	1894
1109AX	301	N	Sewerage Works	1896
1110AV	301	N	Unspecified Wharf	1894
1111AX	302	N	Sewerage Works	1894
1112AZ	302	S	Quay	1981
1113AX	302	N	Sewage Works	1894
1114BH	306	S	Quay	1949
1115FN	307	S	Dock	1898
1116FO	313	S	Quay	1938
1117BC	319	N	Sewage Works	1898
1118FP	324	N	Sewerage Works	1863
1119FQ	325	S	Dock	1894
1120BE	332	SE	Unspecified Wharf	1938
1121BF	333	S	Dock	1898
1122BF	337	S	Dock	1894
1123BE	337	SE	Unspecified Wharf	1949
1124ER	338	S	Dock	1867
1125BV	338	N	Dock	1949
1126BO	339	E	Unspecified Wharves	1965
1127BE	340	SE	Unspecified Wharf	1920
1128BH	341	SW	Quay	1920
1129CG	345	S	Quay	1955
1130BF	350	S	Dock	1938
1131BK	352	S	Dock	1949
1132BK	352	S	Dock	1955
1133BK	354	S	Quay	1938
1134BH	356	SW	Quay	1973
1135BO	357	E	Unspecified Wharves	1989
1136BX	359	N	Dock	1920
1137BY	361	E	Unspecified Wharf	1949
1138BU	363	S	Dock Basin	1981
1139BU	363	S	Dock Basin	1989
1140BV	368	NW	Dock	1938
1141BW	369	N	Dock	1894
1142BH	369	SW	Quay	1955

1143BU	370	S	Dock Basin	1899
1144BU	370	S	Dock Basin	1899
1145BU	370	S	Dock Basin	1867
1146BV	370	NW	Dock	1894
1147FR	372	N	Water Bodies	1894
1148FR	373	N	Ponds	1894
1149BF	375	S	Dock	1949
1150CB	375	S	Quay	1949
1151CF	376	S	Quay	1938
1152CD	378	S	Dock Basin	1994
1153CF	383	S	Quay	1867
1154FS	392	S	Quay	1920
1155BK	394	SE	Quay	1949
1156CB	402	S	Quay	1920
1157CJ	410	SE	Unspecified Wharf	1867
1158CJ	418	SE	Unspecified Wharf	1867
1159CK	422	SE	Unspecified Wharf	1938
1160FO	425	SW	Pond	1994
1161FT	426	E	Unspecified Wharves	1973
1162FU	427	S	Quay	1994
1163CM	428	SE	Unspecified Wharf	1994
1164CM	428	SE	Unspecified Wharf	1989
1165CK	430	SE	Unspecified Wharf	1920
1166AM	430	N	Unspecified Ground Workings	1896
1167CK	431	SE	Unspecified Wharf	1867
1168AX	431	N	Pond	1894
1169AM	436	N	Pond	1894
1170CP	439	S	Quay	1867
1171CO	441	E	Unspecified Heaps	1981
1172CO	441	E	Unspecified Heaps	1994
1173CO	441	E	Unspecified Heaps	1989
1174BJ	446	SE	Unspecified Wharf	1867
1175CT	448	SE	Unspecified Wharf	1867
1176CO	456	E	Unspecified Heap	1973
1177CS	464	NW	Unspecified Wharf	1920
1178CD	464	SE	Quay	1994
1179CD	464	SE	Quay	1973
1180CS	465	NW	Unspecified Wharf	1938
1181CT	465	SE	Unspecified Wharf	1867
1182CS	466	NW	Unspecified Wharf	1949
1183FV	472	E	Iron Workings	1894
1184FW	478	S	Quay	1938
1185FX	484	SW	Quay	1955
1186FY	490	S	Quay	1920

2. Environmental Permits, Incidents and Registers Map



- | | | | | | |
|---|--------------------|---|-------------------------------|---|--|
|  | Site Outline |  | Recorded Pollution Incident |  | RAS 3 & 4 Authorisations |
|  | Search Buffers (m) |  | Dangerous Substances (List 1) |  | Part A(1) Authorised Processes and Historic IPC Authorisations |
|  | |  | Dangerous Substances (List 2) |  | Part A(2) and Part B Authorised Processes |
| | |  | Water Industry Referrals |  | COMAH / NIHHS Sites |
| | |  | Licenced Discharge Consents |  | Sites Determined as Contaminated Land |
| | |  | Red List Discharge Consents |  | Hazardous Substance Consents and Enforcements |

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:

6

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
32	18	NE	539000 181400	Address: Pj Lowe Furniture, Lanrick Rd, E14 Process: timber process Status: Historical Permit Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
33E	229	S	538961 181065	Address: Orchard Wharf Service Station, Leamouth Road, London, E6 5SJ Process: Storage of petrol Status: Historical Permit Permit Type: Part B Enforcement: Data requested, not received. Date of Enforcement: Data requested, not received. Comment: Data requested, not received.
34E	229	S	538959 181064	Address: Orchard Wharf Service Station, Leamouth Road, London, E14 0JG Process: Unloading of Petrol into Storage at Service Stations Status: Surrendered Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
35	359	SE	539300 181200	Address: Pura Foods Ltd, Orchard Place, E14 0JH Process: oils/fat process Status: Historical Permit Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
36	459	NW	538521 181548	Address: London Galvanisers, Leven Road, London, E14 0LP Process: Galvanizing process Status: Historical Permit Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
37A	476	NW	538503 181552	Address: J Ash & Sons, London Galvanisers, Leven Road, London, E14 0LP Process: Hot Dip Galvanising Process Status: Historical Permit Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

17

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

ID	Distance (m)	Direction	NGR	Details
15	110	E	539100 181400	Address: ECOSTATION VISITOR CENTRE, LIMMO PE, ECOSTATION VISITOR CENTRE, LIMMO, PENINSULA, WHARFSIDE ROAD, CANN, ING TOWN,, - Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CNTM.2217 Permit Version: 1 Receiving Water: RIVER LEE (BOW CREEK) Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 29/03/1996 Effective Date: 29-Mar-1996 Revocation Date: 01/10/1996
16	198	N	539060 181570	Address: CROWN WHARF, WHARFSIDE ROAD, CANNIN, CROWN WHARF, WHARFSIDE ROAD, CAN, NING TOWN, LONDON, E16 4TB, -, - Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.0192 Permit Version: 1 Receiving Water: RIVER LEA Status: REVOKED - UNSPECIFIED Issue date: 17/07/1985 Effective Date: 17-Jul-1985 Revocation Date: 04/11/1991
17	230	NE	539190 181500	Address: CROWN WHARF, WHARFSIDE ROAD, CANNIN, CROWN WHARF, WHARFSIDE ROAD, CAN, NING TOWN, LONDON, E16 4TB, -, - Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.0193 Permit Version: 1 Receiving Water: RIVER LEA Status: REVOKED - UNSPECIFIED Issue date: 17/07/1985 Effective Date: 17-Jul-1985 Revocation Date: 04/11/1991
18	278	SE	539200 181200	Address: ORCHARD PLACE, CANNING TOWN, LONDON, ORCHARD PLACE, CANNING TOWN, LON, DON, -, - Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.1396 Permit Version: 1 Receiving Water: RIVER LEA (BOW CREEK) Status: REVOKED - UNSPECIFIED Issue date: 13/01/1987 Effective Date: 13-Jan-1987 Revocation Date: 27/06/1991
19	291	SE	539250 181250	Address: PURA FOODS, ORCHARD PLACE, LONDON, PURA FOODS, ORCHARD PLACE, LONDO, N, -, - Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CNTM.1680 Permit Version: 1 Receiving Water: BOW CREEK Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 19/12/1994 Effective Date: 19-Dec-1994 Revocation Date: 20/09/2005
20B	301	NE	539200 181600	Address: Canning Town, Abbey Mills Grp., Canning Town, Abbey Mills Grp., -, - Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.0598 Permit Version: 1 Receiving Water: BOW CREEK Status: TEMPORARY CONSENTS (WATER ACT 1989, SECTION 113) Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 02/09/2010
21B	301	NE	539200 181600	Address: Canning Town, Abbey Mills Grp., Canning Town, Abbey Mills Grp., -, - Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.0598 Permit Version: 2 Receiving Water: Bow Creek Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03-Sep-2010 Revocation Date: -

ID	Distance (m)	Direction	NGR	Details
22	302	S	539000 181000	Address: DOCKLANDS LIGHT RAILWAY, BECKTON EX, DOCKLANDS LIGHT RAILWAY, BECKTON, EXTENSION, LONDON, -, - Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CNTW.0097 Permit Version: 1 Receiving Water: BOW CREEK, RIVER LEE Status: REVOKED - UNSPECIFIED Issue date: 10/10/1989 Effective Date: 10-Oct-1989 Revocation Date: 08/04/1998
23	306	N	538890 181680	Address: WEST HAM GENERATING STATION, BIDDER, WEST HAM GENERATING STATION, BID, DER STREET, LONDON, -, - Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: CLCR.0160 Permit Version: 1 Receiving Water: BOW CREEK Status: REVOKED - UNSPECIFIED Issue date: 13/11/1964 Effective Date: 13-Nov-1964 Revocation Date: 30/06/1991
24	394	NW	538800 181740	Address: THE ELECTRA PROJECT, BIDDER STREET, WEST HAM, LONDON, E16 4ST Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CANM.0205 Permit Version: 1 Receiving Water: BOW CREEK (RIVER LEE) Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 27/03/2001 Effective Date: 23-Mar-2001 Revocation Date: 05/01/2005
25	419	SE	539300 181100	Address: ORCHARD PLACE, LONDON E14 0JH, ORCHARD PLACE, LONDON E14 0JH, -, - Effluent Type: MISCELLANEOUS DISCHARGES - UNSPECIFIED Permit Number: CTMR.0180 Permit Version: 1 Receiving Water: BOW CREEK (TIDAL THAMES) Status: REVOKED - UNSPECIFIED Issue date: 30/04/1975 Effective Date: 01-Apr-1981 Revocation Date: 18/12/1994
26C	470	NW	538730 181790	Address: WEST HAM SUBSTATION, CODY ROAD, CAN, WEST HAM SUBSTATION, CODY ROAD,, CANNING TOWN, WEST HAM, LONDON, -, - Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CATM.3135 Permit Version: 1 Receiving Water: BOW CREEK Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 06/02/1998 Effective Date: 06-Feb-1998 Revocation Date: -
27C	470	NW	538730 181790	Address: WEST HAM POWER STATION, NEWHAM, LON, WEST HAM POWER STATION, NEWHAM,, LONDON, -, - Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CLCR.0275 Permit Version: 1 Receiving Water: LEE (BOW CREEK) Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 28/07/1980 Effective Date: 28-Jul-1980 Revocation Date: 06/02/1998
28	473	E	539460 181320	Address: ORCHARD PLACE, LONDON E14 0JH, ORCHARD PLACE, LONDON E14 0JH, -, - Effluent Type: MISCELLANEOUS DISCHARGES - UNSPECIFIED Permit Number: CTWC.0617 Permit Version: 1 Receiving Water: RIVER LEE (BOW CREEK) Status: REVOKED - UNSPECIFIED Issue date: 06/02/1986 Effective Date: 06-Feb-1986 Revocation Date: 27/06/1991
29D	480	E	539451 181246	Address: LIMMO CROSSRAIL SHAFT SITE, LIMMO CROSSRAIL SHAFT SITE, LOWER LEA CROSSING, ., LONDON, E16 1DN Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRNP3220XQ Permit Version: 2 Receiving Water: TIDAL STRETCH OF RIVER LEE Status: VARIED UNDER EPR 2010 Issue date: 22/10/2012 Effective Date: 22-Oct-2012 Revocation Date: -

ID	Distance (m)	Direction	NGR	Details
30D	480	E	539451 181246	Address: LIMMO CROSSRAIL SHAFT SITE, LIMMO CROSSRAIL SHAFT SITE, LOWER LEA CROSSING, ., LONDON, E16 1DN Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRNP3220XQ Permit Version: 2 Receiving Water: TIDAL STRETCH OF RIVER LEE Status: VARIED UNDER EPR 2010 Issue date: 22/10/2012 Effective Date: 22-Oct-2012 Revocation Date: -
31	495	NW	538700 181800	Address: CODY ROAD BUSINESS CENTRE, CODY ROAD, CODY ROAD BUSINESS CENTRE, CODY, ROAD, LONDON, E16, -, - Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.0822 Permit Version: 1 Receiving Water: BOW CREEK /RIVER LEE Status: REVOKED - UNSPECIFIED Issue date: 28/04/1986 Effective Date: 28-Apr-1986 Revocation Date: 21/01/1997

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:

1

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

ID	Distance (m)	Direction	Application Reference Number	NGR	Application Status	Application Date	Address	Details	Details of Enforcement Action
41F	339	NW	PA/01/0120 2	538628 181494	Historical Consent	15/08/2001	Transco Plc, Poplar Gas Holder Site, Leven Road, London, E14 0LL	Continuation of Hazardous Substances Consent following a change in control of part of the land.	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

2.2 Dangerous or Hazardous Sites

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

2

The following COMAH & NIHHS Authorisation records provided by the Health and Safety Executive are represented as polygons or buffered points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Company	Address	Operational Status	Tier
38F	143	NW	British Gas	British Gas, Poplar Holder Station, Leven Road, Poplar, E14 0LL	Historical COMAH Site	-
39	433	N	Aw Phillips & Son (Uptonpark) Ltd	Aw Phillips & Son (Uptonpark) Ltd, Plot 1d, Cody Business Centre, Cody Road	Historical NIHHS Site	-

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:

14

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	130	E	539120 181400	Incident Date: 18-Nov-2003 Incident Identification: 202120 Pollutant: Oils and Fuel Pollutant Description: Diesel Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	160	S	538890 181130	Incident Date: 26-Jun-2003 Incident Identification: 168949 Pollutant: Oils and Fuel Pollutant Description: Diesel Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	226	W	538681 181314	Incident Date: 24-Feb-2003 Incident Identification: 139064 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
4E	244	S	538963 181050	Incident Date: 06-Mar-2002 Incident Identification: 62269 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
5	305	NE	539147 181646	Incident Date: 02-Jul-2001 Incident Identification: 12998 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
6	321	NE	539170 181650	Incident Date: 20-Jul-2001 Incident Identification: 17787 Pollutant: Organic Chemicals/Products Pollutant Description: Other Organic Chemical or Product Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
7	399	NE	539156 181747	Incident Date: 05-Apr-2012 Incident Identification: 978629 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 2 (Significant)

ID	Distance (m)	Direction	NGR	Details
8	423	W	538488 181230	Incident Date: 04-Aug-2003 Incident Identification: 179037 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
9	441	N	539114 181807	Incident Date: 27-Jul-2004 Incident Identification: 254455 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Dust Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
10	458	NE	539189 181797	Incident Date: 23-Sep-2001 Incident Identification: 32337 Pollutant: Contaminated Water Pollutant Description: Other Contaminated Water Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
11	461	N	539123 181826	Incident Date: 27-Jul-2004 Incident Identification: 254128 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Dust Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
12	467	E	539441 181508	Incident Date: 25-Mar-2002 Incident Identification: 66616 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
13A	478	NW	538495 181541	Incident Date: 18-Nov-2013 Incident Identification: 1177082 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Food and Drink Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 3 (Minor)
14A	478	NW	538495 181541	Incident Date: 18-Nov-2013 Incident Identification: 1177082 Pollutant: Agricultural Materials and Wastes Pollutant Description: Other Agricultural Material or Waste Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) 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.

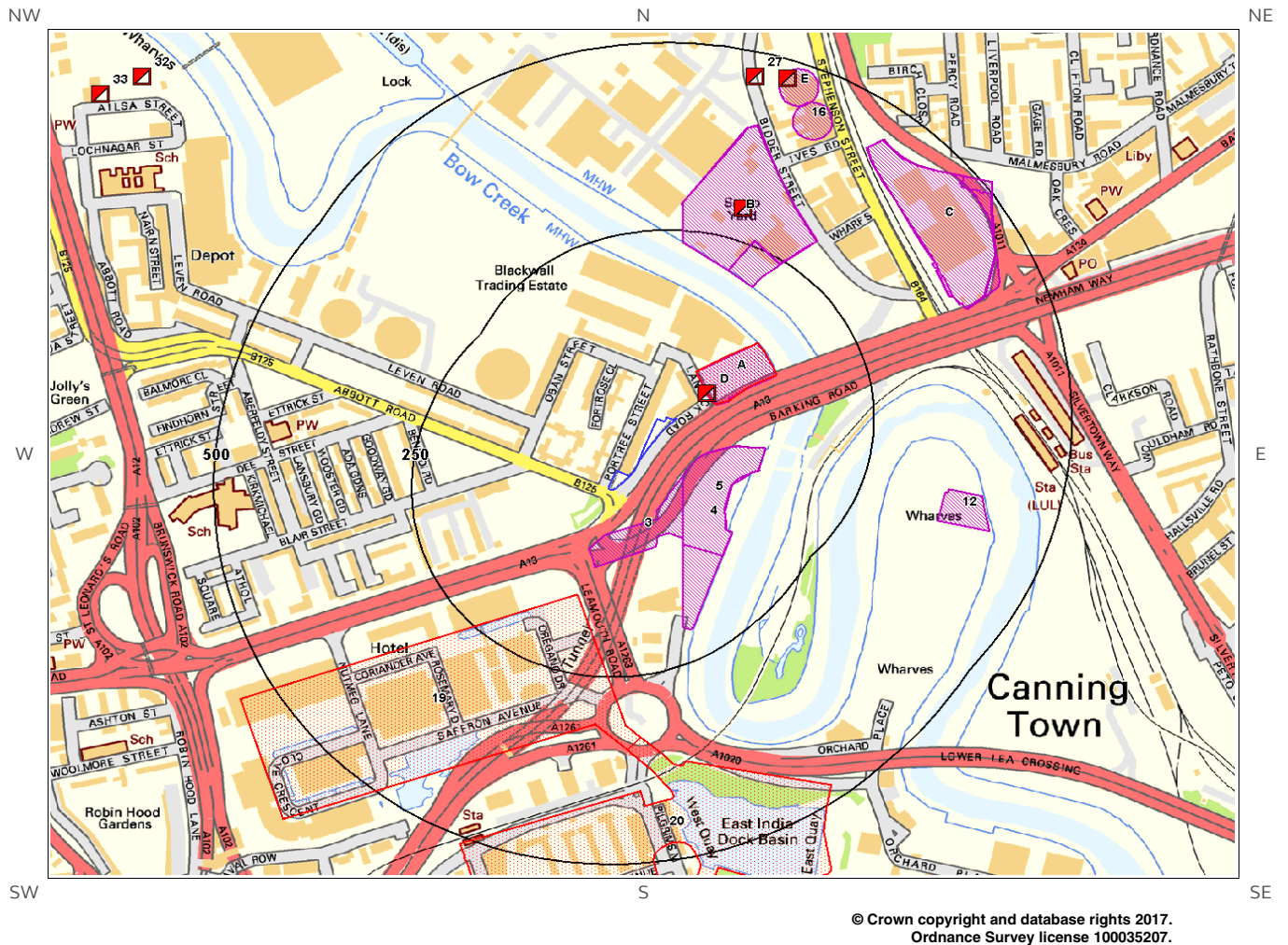
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

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



- | | | | | | |
|---|---------------------------|---|---|---|----------------------------------|
|  | Site Outline |  | EA/NRW Active Landfill |  | Historic and Planned Waste Sites |
|  | EA/NRW Historic Landfill |  | EA/NRW Licensed Waste Site | | |
|  | BGS / DoE Survey Landfill |  | Local Authority/Historical Mapping Landfill Records | | |
|  | 250 | | | | |
|  | 500 | | | | |
| | Search Buffers (m) | | | | |

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:

6

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
18A	51	NE	539000 181400	Site Address: Lanrick Road, London E14 Waste Licence: - Site Reference: SHA046 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
19	146	S	538600 180900	Site Address: Eastern Dock, South Bromley, Tower Hamlets, London Waste Licence: - Site Reference: 8TH002, TOW002 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
20	332	S	538900 180800	Site Address: East India Dock, London E14 Waste Licence: - Site Reference: 8TH005, TOW005 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	947	SW	538200 180400	Site Address: Poplar Dock, Blackwall, Tower Hamlets, London Waste Licence: - Site Reference: 8TH004, TOW004 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -

ID	Distance (m)	Direction	NGR	Details		
Not shown	1210	SE	539900 180400	Site Address: Western Entrance Lock, Canning Town, Newham, London Waste Licence: Yes Site Reference: DL092, 8NE006 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 23-Nov-1981 Licence Surrendered: 31-Dec-1982 Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 24-Nov-1981 Last Recorded: 31-Dec-1982	
Not shown	1427	S	539300 179600	Site Address: East Greenwich Site, Greenwich Waste Licence: Yes Site Reference: DL545 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 12-Apr-1994 Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Port Greenwich Limited First Recorded: 31-Dec-1994 Last Recorded: -	

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:

17

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		
1A	51	NE	539067 181443	Type of Site: Waste Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1992	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
2A	51	NE	539067 181443	Type of Site: Waste Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1994	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
3	54	S	538955 181246	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1969	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

ID	Distance (m)	Direction	NGR	Details		
4	56	SE	539051 181224	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1974	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
5	56	SE	539052 181273	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1981	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
6B	200	NE	539084 181666	Type of Site: Scrap Metal Works Site Address: N/A	Planning Application Reference: N/A Date: 1982	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
7B	208	N	539084 181666	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1989	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
8B	208	N	539084 181666	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1991	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
9B	208	N	539084 181666	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1991	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
10B	208	N	539084 181678	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1987	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
11B	208	N	539084 181678	Type of Site: Scrap Metal Works Site Address: N/A	Planning Application Reference: N/A Date: 1969	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
12	353	E	539354 181261	Type of Site: Scrap Metal Works Site Address: N/A	Planning Application Reference: N/A Date: 1965	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
13C	382	NE	539313 181643	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1982	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
14C	382	NE	539314 181643	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1987	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
15C	387	NE	539317 181643	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1969	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

ID	Distance (m)	Direction	NGR	Details	
16	408	NE	539163 181780	Type of Site: Waste Transfer Station(Extension) Site Address: Stephenson Street, 32 Stephenson Street, Canning Town, LONDON, Central London, E16 4SA Planning Application Reference: 98/486 Date: -	Further Details: Erection of extension to existing buildings to provide waste transfer sheds, drivers accommodation, 25 space on-site car parking spaces. Installation of roller shutter doors. Construction - roller shutter doors. An application (ref: 98/486) forailed Planning permission was submitted to Newham L.B. on 5th April 1998. Data Source: Historic Planning Application Data Type: Point
17E	443	N	539146 181825	Type of Site: Waste Transfer Building Site Address: Stephenson Street, 32 Stephenson Street, Canning Town, LONDON, Central London, E16 4ST Planning Application Reference: 97/1311 Date: -	Further Details: Erection of waste transfer building, rest room & toilets after demolition of existing building. Rest room to be brick with aluminium roof, erection of security fence & 14 HGV vehicle parking spaces. Construction - Steel frame frame; Powder coated aluminium cladding walls; Powder coated aluminium sheeting roofing. An application (ref: 97/1311) for Detailed Planning permission was submitted to Newham L.B. on 12th December 1997. Data Source: Historic Planning Application Data Type: Point

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

30

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	
24D	52	NE	539030 181418	Site Address: Joe Wilkinson, Moody Wharf, Lanrick Road, Canning Town, London, E14 0JF Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ERI001 EPR reference: - Operator: Erith Haulage Company Ltd Waste Management licence No: 80138 Annual Tonnage: 0.0	Issue Date: 18/10/1994 Effective Date: - Modified: 19/03/1999 Surrendered Date: 06/01/2003 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: "Moody Wharf, Canning Town, London" Correspondence Address: Erith Haulage Co Ltd, Riverside House, Darent Ind.Park, Maypole Crescent, Erith, Kent, DA8 2JZ

ID	Distance (m)	Direction	NGR	Details
25D	52	NE	539030 181418	Site Address: Joe Wilkinson, Moody Wharf, Lanrick Road, Canning Town, London, E14 0JF Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ERI001 EPR reference: EA/EPR/BP3991NP/S003 Operator: Erith Haulage Company Limited Waste Management licence No: 80138 Annual Tonnage: 61868.0 Issue Date: 18/10/1994 Effective Date: - Modified: 19/03/1999 Surrendered Date: 06/01/2003 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Moody Wharf, Canning Town, London Correspondence Address: -
26B	293	N	539075 181665	Site Address: John Maynard, Mayer Parry Recycling Ltd, 29, Bidder Street, Canning Town, London, E16 4SZ Type: Metal Recycling Site (mixed MRS's) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MAY001 EPR reference: EA/EPR/QP3796NY/V002 Operator: Mayer Parry Recycling Ltd Waste Management licence No: 80125 Annual Tonnage: 150000.0 Issue Date: 05/11/1996 Effective Date: - Modified: 11/12/2009 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Mayer Parry, Bidder Street Correspondence Address: -
27	467	N	539091 181840	Site Address: Oasis Park, 32, Stephenson Street, Canning Town, London, E16 4ST Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: IOD001 EPR reference: - Operator: IOD Skip Hire Ltd Waste Management licence No: 80515 Annual Tonnage: 74900.0 Issue Date: 11/08/2000 Effective Date: - Modified: 16/10/2001 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: I O D Skip Hire Ltd Correspondence Address: Oasis Park, 32, Stephenson Street, Canning Town, London, E16 4ST
28E	475	N	539132 181838	Site Address: 32, Stephenson Street, Canning Town, London, E16 4SA Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: IOD001 EPR reference: EA/EPR/KP3597NZ/V006 Operator: IOD Skip Hire Ltd Waste Management licence No: 80515 Annual Tonnage: 350000.0 Issue Date: 11/08/2000 Effective Date: - Modified: 11/12/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: I O D Skip Hire Ltd Correspondence Address: -
Not shown	631	N	538844 182003	Site Address: - Type: 75kte HCI Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MCF003 EPR reference: EA/EPR/CB3704CL/A001 Operator: Mcfen Plant Limited Waste Management licence No: 402266 Annual Tonnage: 74999.0 Issue Date: 01/04/2015 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Mcfen Plant Limited Correspondence Address: -
Not shown	735	NW	538595 182018	Site Address: Walter Reid, 9a Cody Business Centre, South Crescent, London, E16 4TL Type: Metal Recycling Site (mixed MRS's) Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: REM001 EPR reference: EA/EPR/QP3396NZ/V003 Operator: The Remet Company Ltd Waste Management licence No: 80115 Annual Tonnage: 74999.0 Issue Date: 13/10/1992 Effective Date: - Modified: 18/05/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Remet Canning Town, Cody Road Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
Not shown	752	E	539724 181213	Site Address: Wakelands Ltd, Unit 5c, Thames Road, Silvertown, London, E16 2EZ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WAK001 EPR reference: EA/EPR/PP3891NC/A001 Operator: Wakelands Ltd Waste Management licence No: 80130 Annual Tonnage: 4412.0	Issue Date: 02/11/1994 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Revoked Site Name: Wakelands Canning Town, Shirley Street Correspondence Address: -
32	796	NW	538316 181841	Site Address: - Type: 75kte HCI Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DRP003 EPR reference: EA/EPR/FB3737WF/V003 Operator: D R Plant Solutions Ltd Waste Management licence No: 104011 Annual Tonnage: 74999.0	Issue Date: 27/03/2012 Effective Date: - Modified: 27/05/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: D R Plant Solutions Correspondence Address: -
33	824	NW	538263 181817	Site Address: Blackwall Marine Diesel Ltd, Unit 2, Ailsa Street, London, E14 0LE Type: 75kte Vehicle Depollution Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BMD002 EPR reference: EA/EPR/FB3738AE/A001 Operator: Blackwall Marine Diesel Limited Waste Management licence No: 104013 Annual Tonnage: 74999.0	Issue Date: 20/04/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Blackwall Marine Diesel Ltd Correspondence Address: -
Not shown	829	N	538885 182209	Site Address: 11a, Cody Road Business Centre, South Crescent, Canning Town, London, E16 4SR Type: 75kte HCI Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: OSS013 EPR reference: EA/EPR/BB3400MJ/A001 Operator: Orion Support Services Limited Waste Management licence No: 401256 Annual Tonnage: 75000.0	Issue Date: 19/03/2014 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Orion Support Services Correspondence Address: -
Not shown	829	N	538885 182209	Site Address: 11a, Cody Road Business Centre, South Crescent, Canning Town, London, E16 4SR Type: 75kte HCI Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: OSS013 EPR reference: EA/EPR/BB3400MJ/A001 Operator: Orion Support Services Limited Waste Management licence No: 401256 Annual Tonnage: 75000.0	Issue Date: 19/03/2014 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Orion Support Services Correspondence Address: -
Not shown	957	NW	538177 181923	Site Address: B Cox, Tunnel Approach Transfer Station, 40, Gillender Street, London, E14 6RH Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CLE006 EPR reference: - Operator: Cleanaway Ltd Waste Management licence No: 80132 Annual Tonnage: 0.0	Issue Date: 02/02/1990 Effective Date: - Modified: 21/04/1997 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: "Cleanaway Limited, Gillender Street" Correspondence Address: Cleanaway Limited, The Drive, Warley, Brentwood, Essex, CM13 3BE

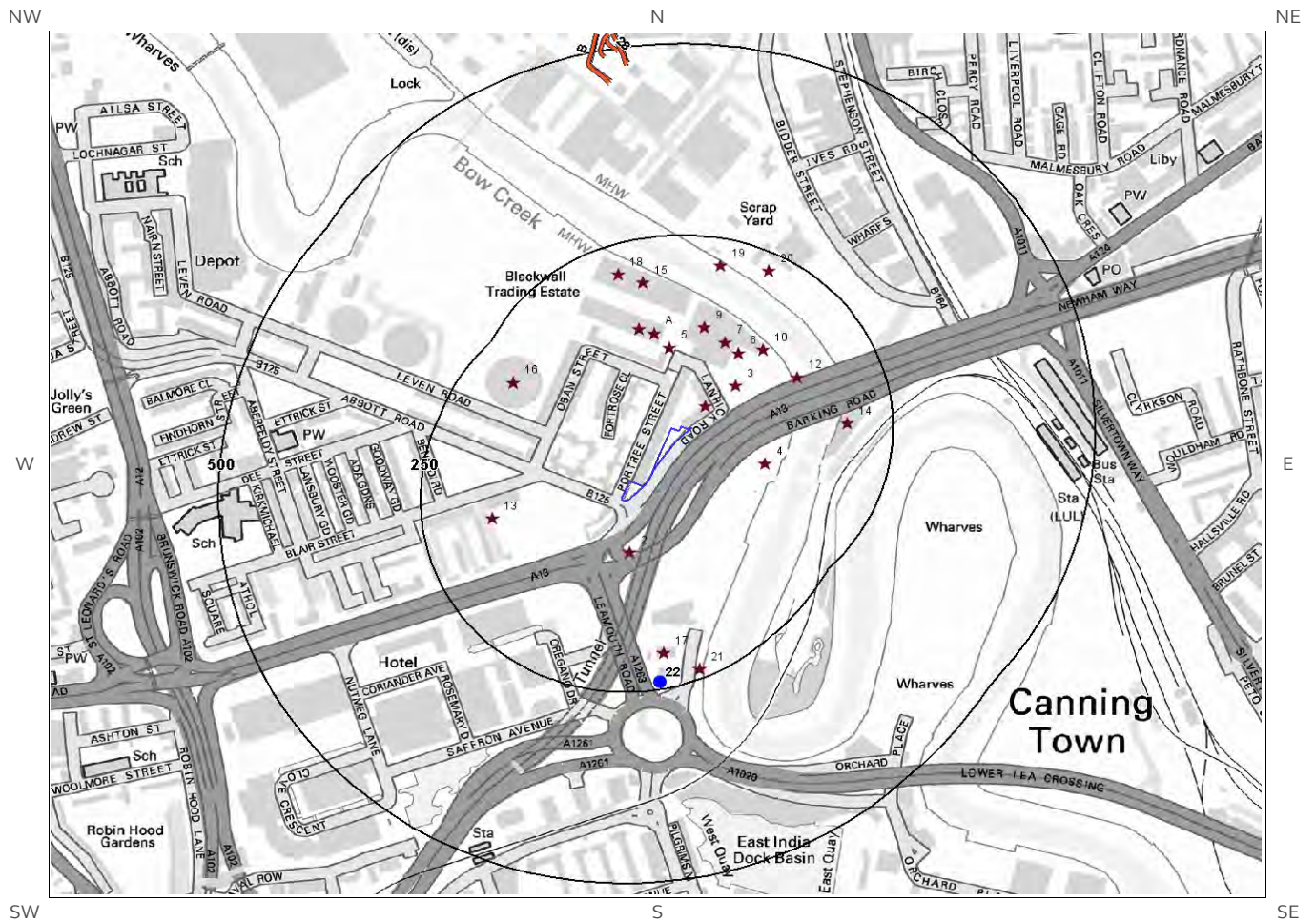
ID	Distance (m)	Direction	NGR	Details
Not shown	957	NW	538177 181923	Site Address: B Cox, Tunnel Approach Transfer Station, 40, Gillender Street, London, E14 6RH Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CLE006 EPR reference: EA/EPR/PP3291NP/S005 Operator: Veolia E S Cleanaway (U K) Ltd Waste Management licence No: 80132 Annual Tonnage: 0.0 Issue Date: 02/02/1990 Effective Date: - Modified: 21/04/1997 Surrendered Date: 06/06/2016 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Gillender Street Correspondence Address: -
Not shown	1029	NW	538416 182253	Site Address: Unit J Prologis Park, Twelvetreces Crescent, Bow, London, E3 3JG Type: Special Waste Transfer Station Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BYW004 EPR reference: EA/EPR/SP3093EA/V004 Operator: Bywaters (Leyton) Ltd Waste Management licence No: 80744 Annual Tonnage: 650000.0 Issue Date: 19/06/2006 Effective Date: - Modified: 10/09/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Bywaters Recycling And Recovery Centre Correspondence Address: -
Not shown	1029	NW	538416 182253	Site Address: Prologis Business Park, Unit J, Twelvetreces Crescent, Bromley By Bow, London, E3 3JH Type: Special Waste Transfer Station Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BYW004 EPR reference: - Operator: Bywaters (Leyton) Limited Waste Management licence No: 80744 Annual Tonnage: 0.0 Issue Date: 19/06/2006 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Bywaters Bromley By Bow Correspondence Address: Gateway Road, Leyton, London, E10 5BY
Not shown	1037	SW	538488 180341	Site Address: Steven Pryor, Northumberland Wharf, Yabsley Street, Poplar, London, E14 9RG Type: Household Waste Amenity Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VEO139 EPR reference: EA/EPR/NP3395VV/T002 Operator: Veolia E S (U K) Limited Waste Management licence No: 80133 Annual Tonnage: 24999.0 Issue Date: 23/09/1994 Effective Date: 29/11/2010 Modified: 01/06/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Northumberland Wharf Transfer Station Correspondence Address: -
Not shown	1040	SW	538461 180350	Site Address: Steven Pryor, Northumberland Wharf, Yabsley Street, Poplar, London, E14 9RG Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CLE007 EPR reference: - Operator: Cleanaway Ltd Waste Management licence No: 80133 Annual Tonnage: 0.0 Issue Date: 23/09/1994 Effective Date: - Modified: 15/11/1999 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: "Cleanaway Limited, Yabsley Street" Correspondence Address: Cleanaway Limited, The Drive, Warley, Brentwood, Essex, CM13 3BE

ID	Distance (m)	Direction	NGR	Details
Not shown	1040	SW	538461 180350	Site Address: Steven Pryor, Northumberland Wharf, Yabsley Street, Poplar, London, E14 9RG Type: Household Waste Amenity Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VEO139 EPR reference: EA/EPR/NP3395VV/T002 Operator: Cory Environmental Ltd Waste Management licence No: 80133 Annual Tonnage: 24999.0 Issue Date: 23/09/1994 Effective Date: 29/11/2010 Modified: 01/06/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Northumberland Wharf Transfer Station Correspondence Address: -
Not shown	1040	SW	538461 180350	Site Address: Steven Pryor, Yabsley Street, Poplar, London, E14 9RG Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VEO139 EPR reference: EA/EPR/NP3395VV/T001 Operator: Veolia Environmental Services (U K) Ltd Waste Management licence No: 80133 Annual Tonnage: 24999.0 Issue Date: 23/09/1994 Effective Date: 29/11/2010 Modified: 15/11/1999 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Northumberland Wharf Transfer Station Correspondence Address: -
Not shown	1040	SW	538461 180350	Site Address: Steven Pryor, Northumberland Wharf, Yabsley Street, Poplar, London, E14 9RG Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CLE007 EPR reference: - Operator: Veolia E S Cleanaway (U K) Ltd Waste Management licence No: 80133 Annual Tonnage: 75000.0 Issue Date: 23/09/1994 Effective Date: - Modified: 15/11/1999 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Yabsley Street Correspondence Address: Cleanaway Ltd, The Drive, Great Warley, Brentwood, Essex, CM13 3BE
Not shown	1056	SE	539699 180580	Site Address: Unit 2 Thames Wharf, Dock Road, Silvertown, London, E16 4AF Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GAB001 EPR reference: EA/EPR/MP3793ES/A001 Operator: G & B Compressor Hire Ltd Waste Management licence No: 80780 Annual Tonnage: 57200.0 Issue Date: 11/06/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: G & B Compressor Hire, Dock Road Correspondence Address: -
Not shown	1091	SW	538459 180294	Site Address: Steven Pryor, Northumberland Wharf, Yabsley Street, Poplar, London, E14 9RG Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: COR149 EPR reference: EA/EPR/GB3332AD/T001 Operator: Cory Environmental Ltd Waste Management licence No: 104101 Annual Tonnage: 19500.0 Issue Date: 01/06/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Tran Part Site Name: Northumberland Wharf Transfer Station Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details
Not shown	1103	SE	539799 180624	Site Address: Mc Gee Bedrocl, Site 1, Thames Wharf, Dock Road, Silvertown, London, E16 1AF Type: Asbestos Waste Transfer Station Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MCG013 EPR reference: EA/EPR/EP3192SA/A001 Operator: McGee Asbestos Removal Limited Waste Management licence No: 101049 Annual Tonnage: 3650.0 Issue Date: 09/10/2009 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Mc Gee Asbestos Removal Correspondence Address: -
Not shown	1115	SE	539735 180531	Site Address: Thames Wharf, Dock Road, Silvertown, London, E16 1AF Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BRE014 EPR reference: EA/EPR/UP3393ES/A001 Operator: Brewsters Waste Management Ltd Waste Management licence No: 80781 Annual Tonnage: 275000.0 Issue Date: 11/07/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Brewsters, Dock Road Correspondence Address: -
Not shown	1135	SE	539699 180469	Site Address: Thames Wharf, Dock Road, Silvertown, London, E16 2AT Type: Inert & excavation Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KEL318 EPR reference: EA/EPR/MB3437RG/T001 Operator: Keltbray Environmental Ltd Waste Management licence No: 100813 Annual Tonnage: 74999.0 Issue Date: 16/02/2009 Effective Date: 03/12/2012 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Thames Wharf Correspondence Address: -
Not shown	1145	SE	539830 180595	Site Address: Unit 1 Thames Wharf, Dock Road, London, E16 1AF Type: Physical Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GEE001 EPR reference: EA/EPR/LB3032AR/A001 Operator: Mc Gee Group Ltd Waste Management licence No: 104693 Annual Tonnage: 209.0 Issue Date: 12/03/2014 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Dock Road Recycling Facility Correspondence Address: -
Not shown	1148	SE	539807 180562	Site Address: Land / Premises At, Dock Road, Silvertown, London, E16 2AT Type: Inert & excavation Waste TS + treatment Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KEL234 EPR reference: EA/EPR/AP3292ES/A001 Operator: Keltbray A W S Ltd Waste Management licence No: 100813 Annual Tonnage: 74999.0 Issue Date: 16/02/2009 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Thames Wharf Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
Not shown	1220	SE	539814 180463	Site Address: Thames Wharf, Dock Road, Silvertown, London, E16 1AF Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DO001 EPR reference: EA/EPR/UP3593EX/A001 Operator: Docklands Waste Recycling Ltd Waste Management licence No: 80784 Annual Tonnage: 93600.0	Issue Date: 11/06/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Docklands Waste Recycling, Dock Road Correspondence Address: -
Not shown	1269	NW	537949 182142	Site Address: T Clifford, Clifford House, Towcester Road, Bow, London, E3 3ND Type: Special Waste Transfer Station Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CLI001 EPR reference: EA/EPR/PP3191NJ/A001 Operator: Clifford Devlin Ltd Waste Management licence No: 80134 Annual Tonnage: 1785.0	Issue Date: 20/12/1994 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Towcester Road Correspondence Address: -

4. Current Land Use Map



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



4. Current Land Uses

4.1 Current Industrial Data

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

21

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	34	NE	M K Recovery Services	539009 181411	M K Recovery Services, 37, Lanrick Road, London, E14 0FE	Vehicle Breakdown and Recovery Services	Personal, Consumer and Other Services
2	68	S	Electricity Sub Station	538915 181221	Electricity Sub Station, E14	Electrical Features	Infrastructure and Facilities
3	78	NE	Waste Transfer Station	539046 181439	Waste Transfer Station, E14	Waste Storage, Processing and Disposal	Infrastructure and Facilities
4	102	SE	Pylon	539082 181337	Pylon, E14	Electrical Features	Infrastructure and Facilities
5	105	N	Electricity Sub Station	538964 181489	Electricity Sub Station, E14	Electrical Features	Infrastructure and Facilities
6	115	NE	Tank	539050 181482	Tank, E14	Tanks (Generic)	Industrial Features
7	120	N	Warehouse	539033 181496	Warehouse, E14	Container and Storage	Transport, Storage and Delivery
8A	126	N	Speedy Hire Plc	538945 181507	Speedy Hire Plc, Unit 1 Blackwall Trading Estate, Lanrick Road, London, E14 0JP	Construction and Tool Hire	Hire Services
9	132	N	Warehouse	539008 181515	Warehouse, E14	Container and Storage	Transport, Storage and Delivery
10	136	NE	Creek Wharf	539080 181486	Creek Wharf, E14	Moorings and Unloading Facilities	Water
11A	136	N	Repsale	538926 181513	Repsale, Unit 2 Blackwall Trading Estate, Lanrick Road, London, E14 0JP	Radar and Telecommunications Equipment	Industrial Products
12	147	NE	Moody Wharf	539122 181450	Moody Wharf, E14	Moorings and Unloading Facilities	Water
13	163	W	Electricity Sub Station	538745 181266	Electricity Sub Station, E14	Electrical Features	Infrastructure and Facilities
14	193	E	Essex Wharf	539184 181390	Essex Wharf, E14	Moorings and Unloading Facilities	Water
15	193	N	R Green Fisheries	538932 181573	R Green Fisheries, Unit 11 Blackwall Trading Estate, Lanrick Road, London, E14 0JP	Fish, Meat and Poultry Products	Foodstuffs
16	194	NW	Gas Holder	538771 181443	Gas Holder, E14	Gas Features	Infrastructure and Facilities

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
17	204	S	Orchard Wharf Otr Service Station	538957 181090	Orchard Wharf Otr Service Station, Leamouth Road, Lower Lea Crossing, Leamouth, London, Greater London, E6 5SJ	Petrol and Fuel Stations	Road and Rail
18	211	N	East London Access	538901 181584	East London Access, Unit 12 Blackwall Trading Estate, Lanrick Road, London, E14 0JP	Construction and Tool Hire	Hire Services
19	215	N	Wharf	539027 181596	Wharf, E16	Moorings and Unloading Facilities	Water
20	226	NE	Worlands Wharf	539087 181589	Worlands Wharf, E16	Moorings and Unloading Facilities	Water
21	237	S	Orchard Wharf	539002 181069	Orchard Wharf, E14	Moorings and Unloading Facilities	Water

4.2 Petrol and Fuel Sites

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

1

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
22	240	S	538952 181052	Esso	Orchard Wharf Service Station, Leamouth Road, Leamouth Road, Lower Lea Crossing, Leamouth, London, Inner London, E14 0JG	Not Applicable	Obsolete

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:

6

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

ID	Distance (m)	Direction	Details
23B	457	N	Cable Set: CITR4 - WHAM4 1 CABLE SECT 44A Cable Route: CITY ROAD - WEST HAM 1 Cable Make: BICC 400KV (PPL) CABLE S/CORE AL SHEATH Cable Type: A/C Operating Voltage (kV): 400 Year of installation: 1998 Cable in tunnel: -

ID	Distance (m)	Direction	Details
24C	460	N	Cable Set: CITY ROAD 1 400KV CABLE Cable Route: WEST HAM 400KV S/S Cable Make: BICC 400KV OIL FILLED AL SHEATH CABLE Cable Type: A/C Operating Voltage (kV): 400 Year of installation: 1998 Cable in tunnel: -
25B	477	N	Cable Set: CITR4 - WHAM4 2 CABLE SECT 44A Cable Route: CITY ROAD - WEST HAM 2 Cable Make: BICC 400KV (PPL) CABLE S/CORE AL SHEATH Cable Type: A/C Operating Voltage (kV): 400 Year of installation: 1998 Cable in tunnel: -
26C	480	N	Cable Set: CITY ROAD 2 400KV CABLE Cable Route: WEST HAM 400KV S/S Cable Make: BICC 400KV OIL FILLED AL SHEATH CABLE Cable Type: A/C Operating Voltage (kV): 400 Year of installation: 1998 Cable in tunnel: -
27C	492	N	Cable Set: BARKING 2 400KV CABLE GROUP 1/2 Cable Route: WEST HAM 400KV S/S Cable Make: BICC 400KV OIL FILLED AL SHEATH CABLE Cable Type: A/C Operating Voltage (kV): 400 Year of installation: 1992 Cable in tunnel: -
28	496	N	Cable Set: BARKING 2 400KV CABLE GROUP 1/2 Cable Route: WEST HAM 400KV S/S Cable Make: - Cable Type: A/C Operating Voltage (kV): 400 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
ALV-XCZSP	ALLUVIUM	CLAY, SILT, SAND AND PEAT

5.3 Bedrock and Solid Geology

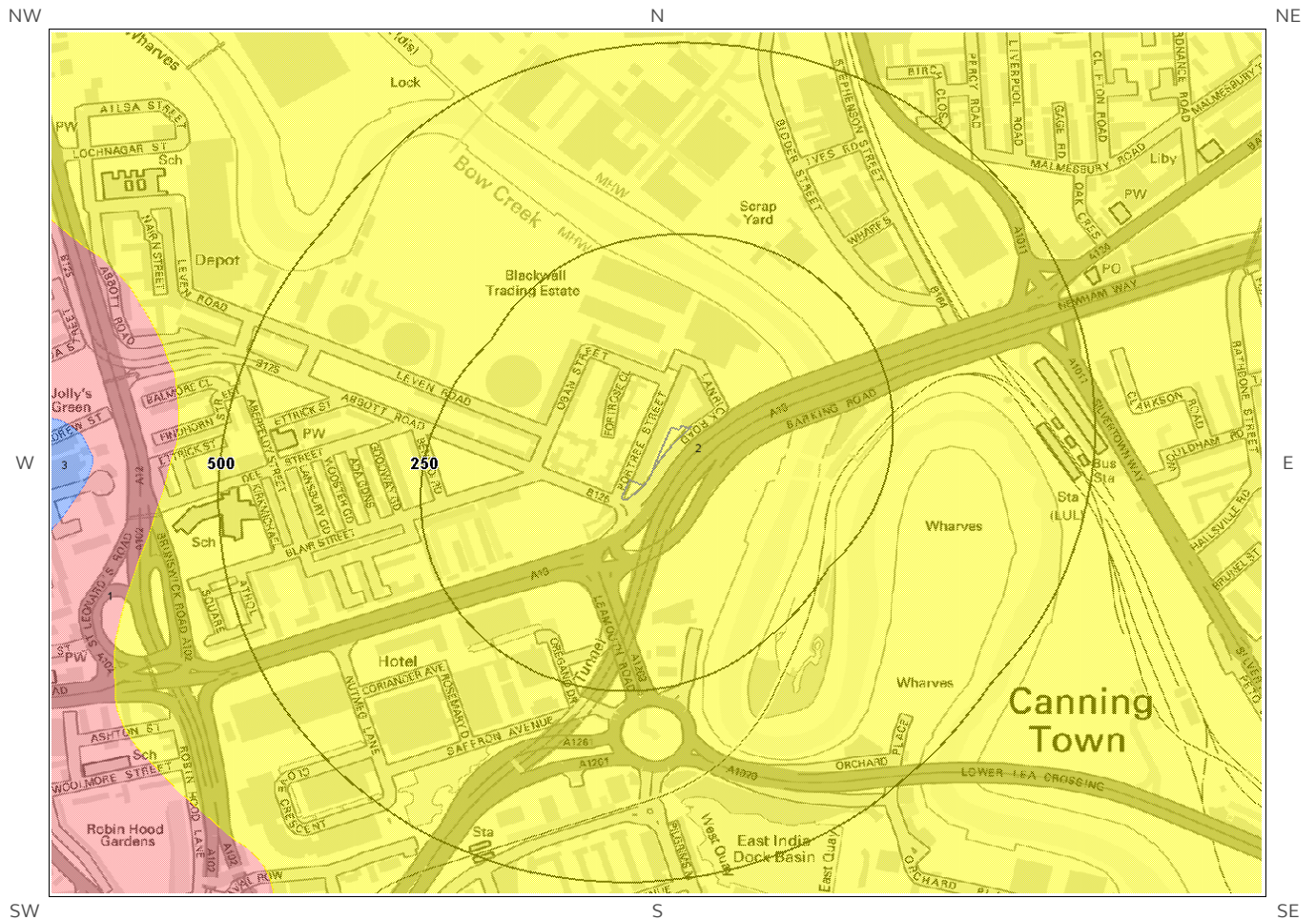
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LC-XCZS	LONDON CLAY FORMATION	CLAY, SILT AND SAND

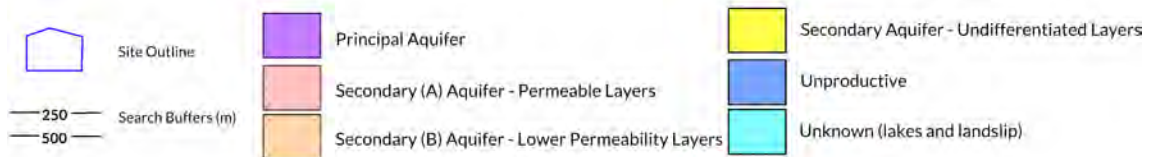
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

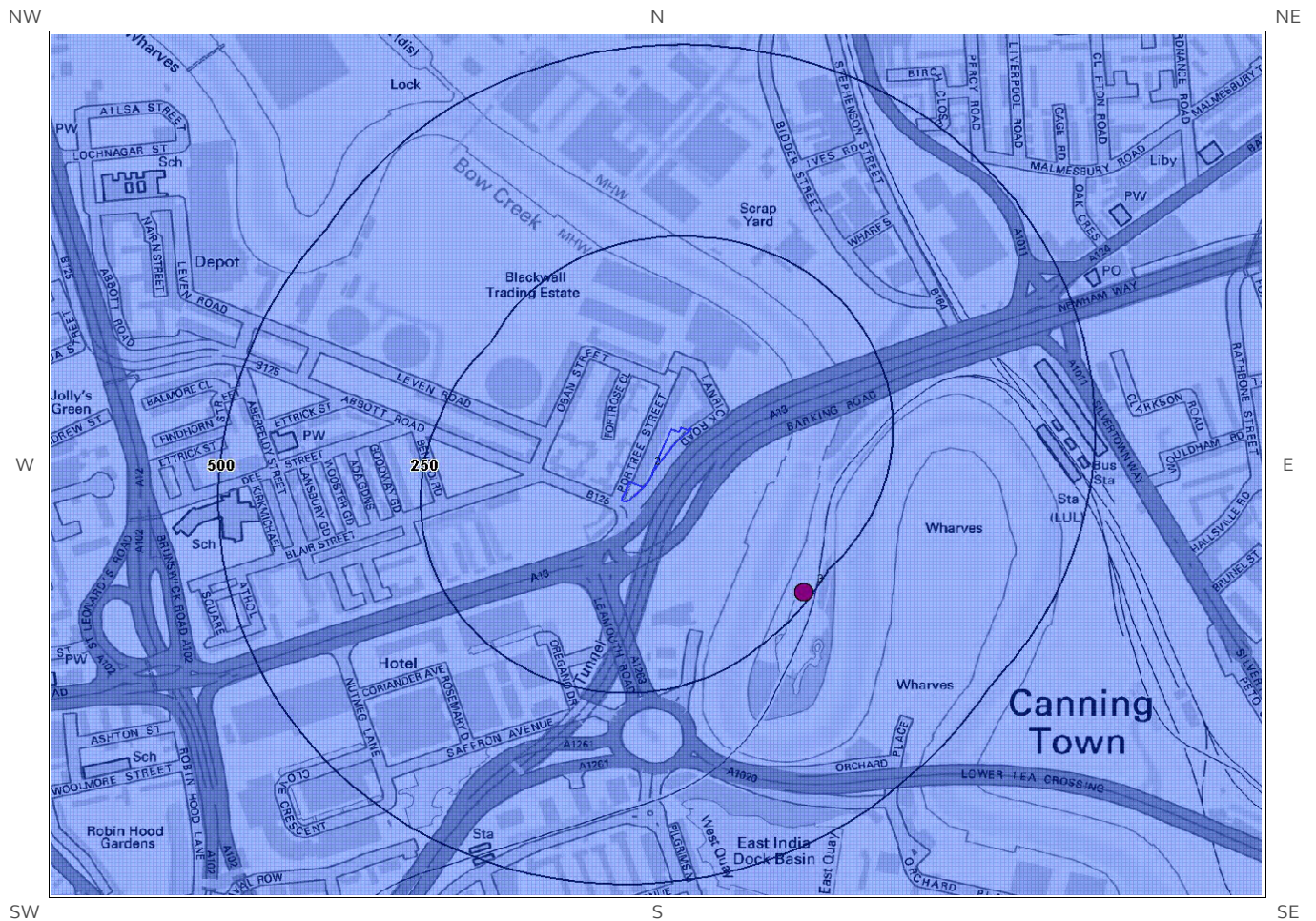
6a. Aquifer Within Superficial Geology



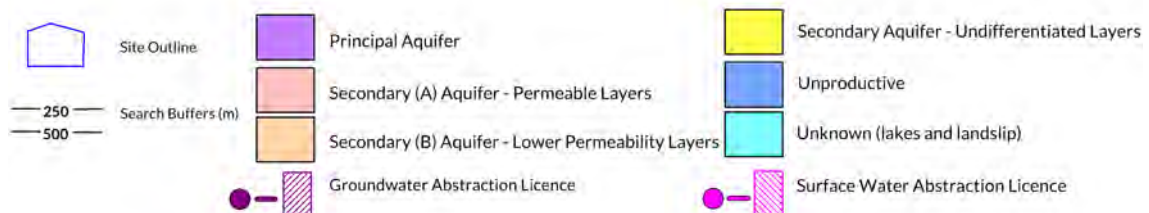
© Crown copyright and database rights 2017
Ordnance Survey license 100035207.



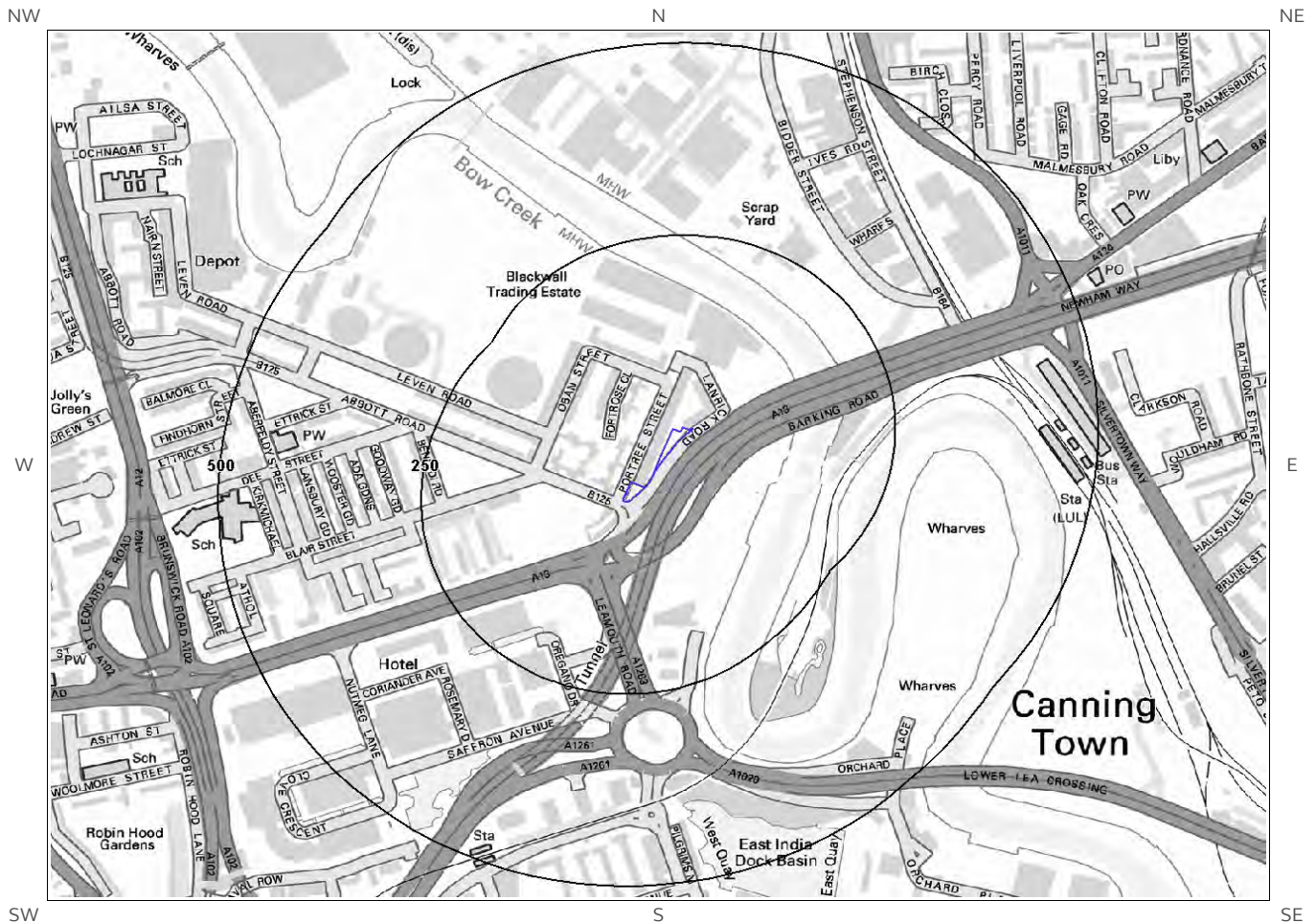
6b. Aquifer Within Bedrock Geology and Abstraction Licenses



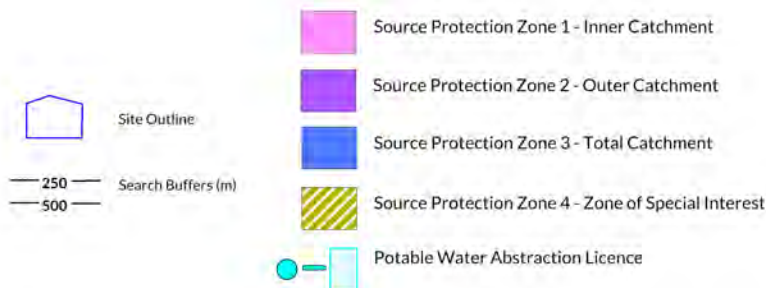
© Crown copyright and database rights 2017
Ordnance Survey license 100035207.



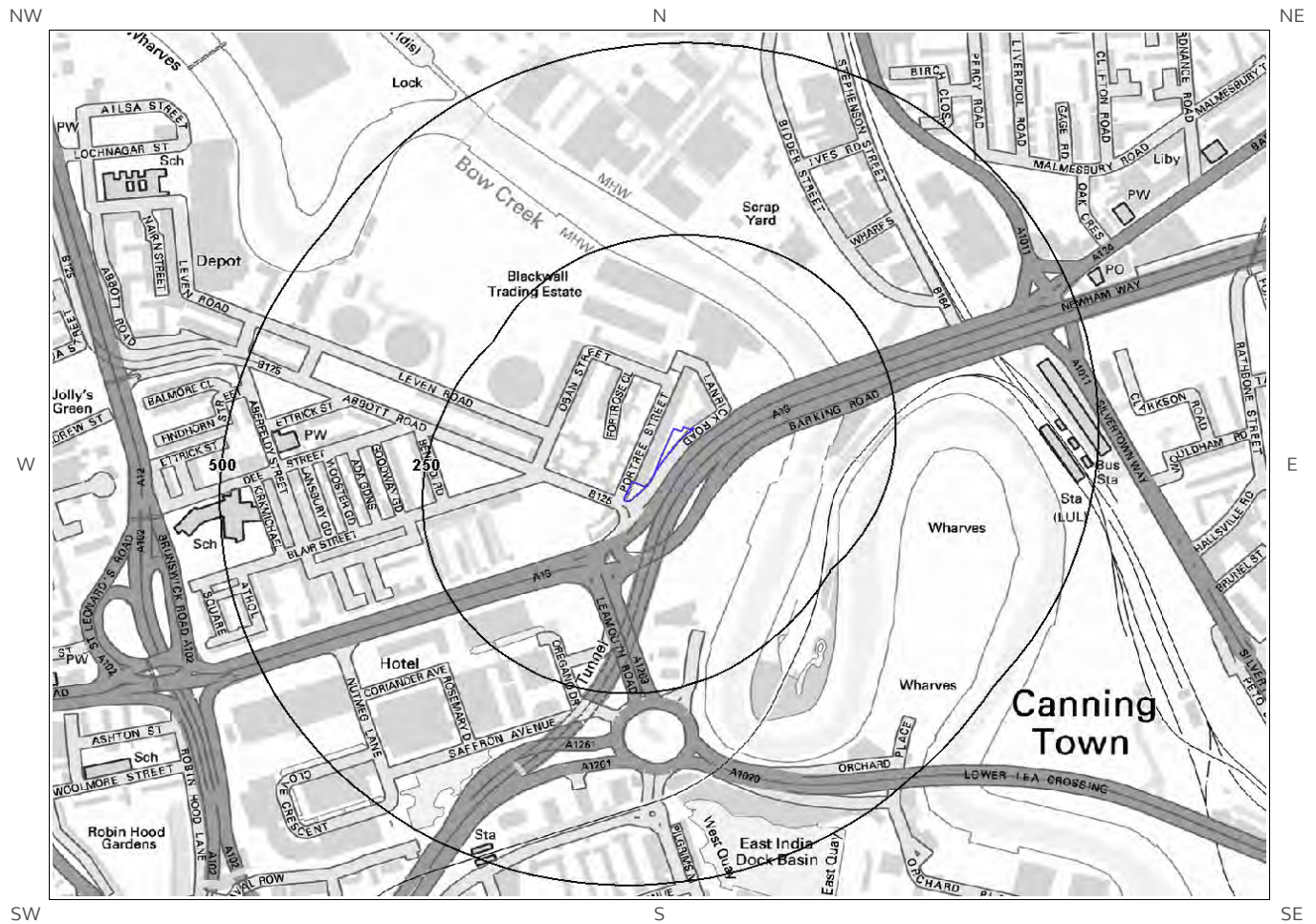
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



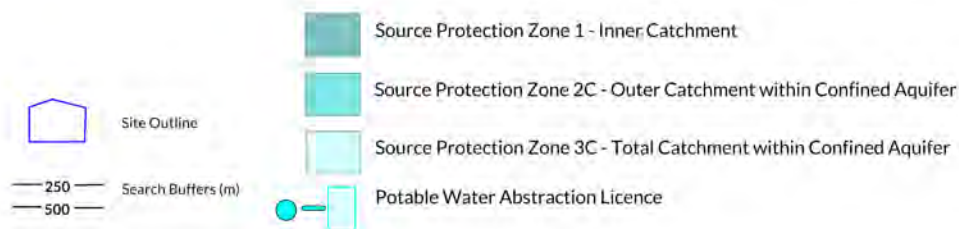
© Crown copyright and database rights 2017
Ordnance Survey license 100035207.



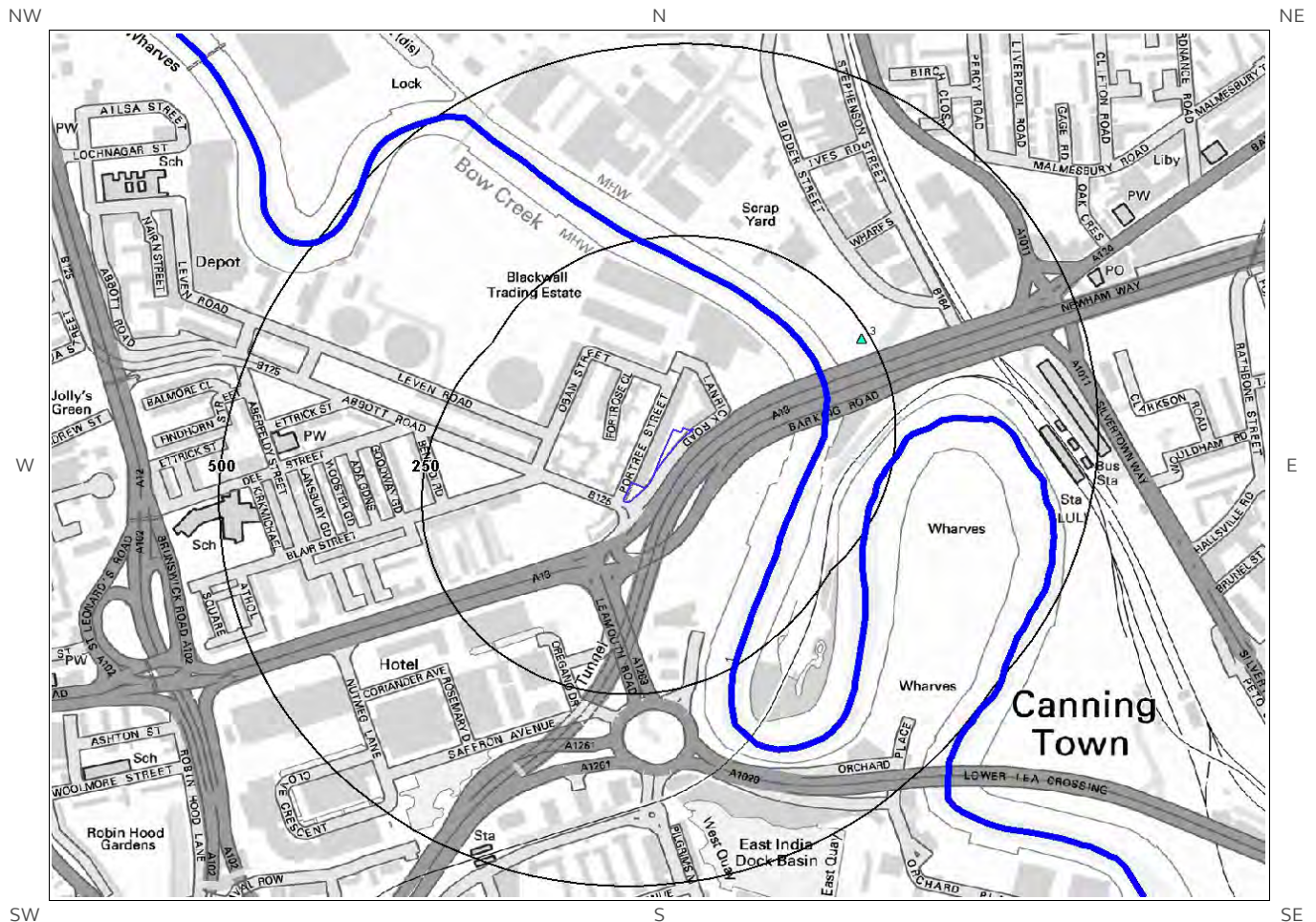
6d. Hydrogeology – Source Protection Zones within confined aquifer



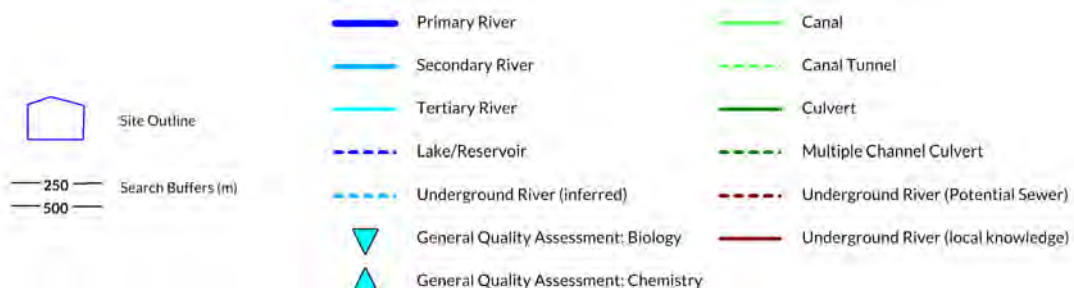
© Crown copyright and database rights 2017
Ordnance Survey license 100035207.



6e. Hydrology – Detailed River Network and River Quality



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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
2	0	On Site	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
2	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
3	239	SE	539130 181170	Status: Active Licence No: 29/38/09/0162 Details: Make-Up Or Top Up Water Direct Source: Thames Groundwater Point: Limmo Peninsula Data Type: Point Name: LEE VALLEY REGIONAL PARK AUTHORITY Annual Volume (m³): 30000 Max Daily Volume (m³): 146.4 Original Application No: - Original Start Date: 28/7/1997 Expiry Date: - Issue No: 101 Version Start Date: 9/8/2001 Version End Date:
Not shown	1238	S	538900 180050	Status: Historical Licence No: 28/39/44/0042 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Thames Groundwater Point: The Millennium Dome Borehole Data Type: Point Name: ENGLISH PARTNERSHIPS Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 30/11/1999 Expiry Date: 31/12/2004 Issue No: 2 Version Start Date: 1/7/2001 Version End Date:
Not shown	1388	S	538900 179900	Status: Historical Licence No: 28/39/44/0025 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Thames Groundwater Point: 303 Tunnel Avenue, Greenwich, - Borehole 'a' Data Type: Point Name: PIONEER WILLMENT CONCRETE LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: G Original Start Date: 14/6/1991 Expiry Date: 31/12/2001 Issue No: 100 Version Start Date: 14/6/1991 Version End Date:
Not shown	1411	SE	540248 180741	Status: Active Licence No: TH/037/0054/014 Details: Heat Pump Direct Source: Thames Groundwater Point: 18 Western Gateway, Royal Victoria Dock, London Data Type: Point Name: Oxygen Property Management Limited Annual Volume (m³): 61600 Max Daily Volume (m³): 308 Original Application No: NPS/WR/018206 Original Start Date: 20/5/2013 Expiry Date: 31/3/2019 Issue No: 2 Version Start Date: 19/1/2015 Version End Date:
Not shown	1440	SE	540280 180740	Status: Historical Licence No: TH/037/0054/001 Details: Heat Pump Direct Source: Thames Groundwater Point: 18 Western Gateway, Royal Victoria Dock, London Data Type: Point Name: Meadowshire Ltd Annual Volume (m³): 61600 Max Daily Volume (m³): 308 Original Application No: NPSWR000026 Original Start Date: 7/5/2009 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 7/5/2009 Version End Date:
Not shown	1454	S	539311 179891	Status: Historical Licence No: 28/39/44/0051 Details: Heat Pump Direct Source: Thames Groundwater Point: Abstraction Point 'b' - Chalk, Green Place, Greenwich Data Type: Point Name: GREENWICH PENINSULA N0204 BLOCK A NOMINEE 1 & 2 LIMITED Annual Volume (m³): 1261440 Max Daily Volume (m³): 3456 Original Application No: SE/WA/44/51 Original Start Date: 6/4/2009 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 6/4/2009 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1454	S	539311 179891	Status: Active Licence No: TH/039/0044/013 Details: Heat Pump Direct Source: Thames Groundwater Point: Borehole B - Greenwich Data Type: Point Name: WestInvest Gesellschaft fur Investmentfonds mbH Annual Volume (m³): 1261440 Max Daily Volume (m³): 3456 Original Application No: NPS/WR/013024 Original Start Date: 11/9/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: 11/9/2013 Version End Date:
Not shown	1458	S	538900 179830	Status: Historical Licence No: 28/39/44/0024 Details: Mineral Washing Direct Source: Thames Groundwater Point: 303 Tunnel Avenue, Greenwich. Data Type: Point Name: BLACKWALL AGGREGATES LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 7/11/1988 Expiry Date: - Issue No: 101 Version Start Date: 11/1/2000 Version End Date:
Not shown	1458	S	538900 179830	Status: Historical Licence No: 28/39/44/0046 Details: Process water Direct Source: Thames Groundwater Point: 303 Tunnel Avenue, Greenwich. Data Type: Point Name: HANSON QUARRY PROD EUROPE LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WRA/S/1108 Original Start Date: 1/1/2002 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 1/1/2002 Version End Date:
Not shown	1461	S	538830 179830	Status: Historical Licence No: 28/39/44/0024 Details: Mineral Washing Direct Source: Thames Groundwater Point: 303 Tunnel Avenue, Greenwich, - Borehole 'a' Data Type: Point Name: BLACKWALL AGGREGATES LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 7/11/1988 Expiry Date: - Issue No: 101 Version Start Date: 11/1/2000 Version End Date:
Not shown	1483	S	539329 179866	Status: Historical Licence No: 28/39/44/0051 Details: Heat Pump Direct Source: Thames Groundwater Point: Abstraction Point 'a' - Chalk, Green Place, Greenwich Data Type: Point Name: GREENWICH PENINSULA N0204 BLOCK A NOMINEE 1 & 2 LIMITED Annual Volume (m³): 1261440 Max Daily Volume (m³): 3456 Original Application No: SE/WA/44/51 Original Start Date: 6/4/2009 Expiry Date: 31/3/2013 Issue No: 1 Version Start Date: 6/4/2009 Version End Date:
Not shown	1483	S	539329 179866	Status: Active Licence No: TH/039/0044/013 Details: Heat Pump Direct Source: Thames Groundwater Point: Borehole A - Greenwich Data Type: Point Name: WestInvest Gesellschaft fur Investmentfonds mbH Annual Volume (m³): 1261440 Max Daily Volume (m³): 3456 Original Application No: NPS/WR/013024 Original Start Date: 11/9/2013 Expiry Date: 31/3/2025 Issue No: 1 Version Start Date: 11/9/2013 Version End Date:
Not shown	1617	N	538900 183000	Status: Active Licence No: 29/38/09/0149 Details: Non-Evaporative Cooling Direct Source: Thames Groundwater Point: Canning Road - Borehole A Data Type: Point Name: ANJUMAN-E-ISCAHUL-MUSLIMEEN OF UK Annual Volume (m³): 107000 Max Daily Volume (m³): 1963.6 Original Application No: - Original Start Date: 1/11/1985 Expiry Date: - Issue No: 100 Version Start Date: 5/11/1996 Version End Date:
Not shown	1619	N	539100 183000	Status: Active Licence No: 29/38/09/0149 Details: Non-Evaporative Cooling Direct Source: Thames Groundwater Point: Canning Road - Borehole B Data Type: Point Name: ANJUMAN-E-ISCAHUL-MUSLIMEEN OF UK Annual Volume (m³): 107000 Max Daily Volume (m³): 1963.6 Original Application No: - Original Start Date: 1/11/1985 Expiry Date: - Issue No: 100 Version Start Date: 5/11/1996 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1931	S	538997 179359	Status: Active Licence No: 28/39/44/0047/R01 Details: Process Water Direct Source: Thames Groundwater Point: Victoria Deep Water Terminal Greenwich Se10- Borehole Data Type: Point Name: HANSON QUARRY PRODUCTS EUROPE LTD Annual Volume (m³): 50000 Max Daily Volume (m³): 720 Original Application No: NPS/WR/011609 Original Start Date: 2/9/2004 Expiry Date: 31/3/2028 Issue No: 1 Version Start Date: 25/4/2016 Version End Date:
Not shown	1940	S	539000 179350	Status: Historical Licence No: 28/39/44/0047 Details: Process Water Direct Source: Thames Groundwater Point: Victoria Deep Water Terminal Greenwich Se10- Borehole Data Type: Point Name: HANSON QUARRY PRODUCTS EUROPE LTD Annual Volume (m³): 50000 Max Daily Volume (m³): 720 Original Application No: NPS/WR/011609 Original Start Date: 2/9/2004 Expiry Date: 31/3/2016 Issue No: 2 Version Start Date: 10/7/2014 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.

6.9 River Quality

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

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAH). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Chemical Quality Grade				
					2005	2006	2007	2008	2009
3	239	NE	539200 181500	River Name: Lee Reach: Carpenters Road - Thames End/Start of Stretch: Sample Point NGR	D	E	E	D	C
Not shown	931	SE	539540 180600	River Name: Lee Reach: Carpenters Road - Thames End/Start of Stretch: End of Stretch NGR	D	E	E	D	C
Not shown	1101	NW	538300 182260	River Name: Lee (navigation 'a') Reach: Lea Bridge Weir - Bow End/Start of Stretch: End of Stretch NGR	E	D	D	D	C

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	152	SE	River Name: - Welsh River Name: - Alternative Name: - River Type: Primary River Main River Status: Currently Undefined

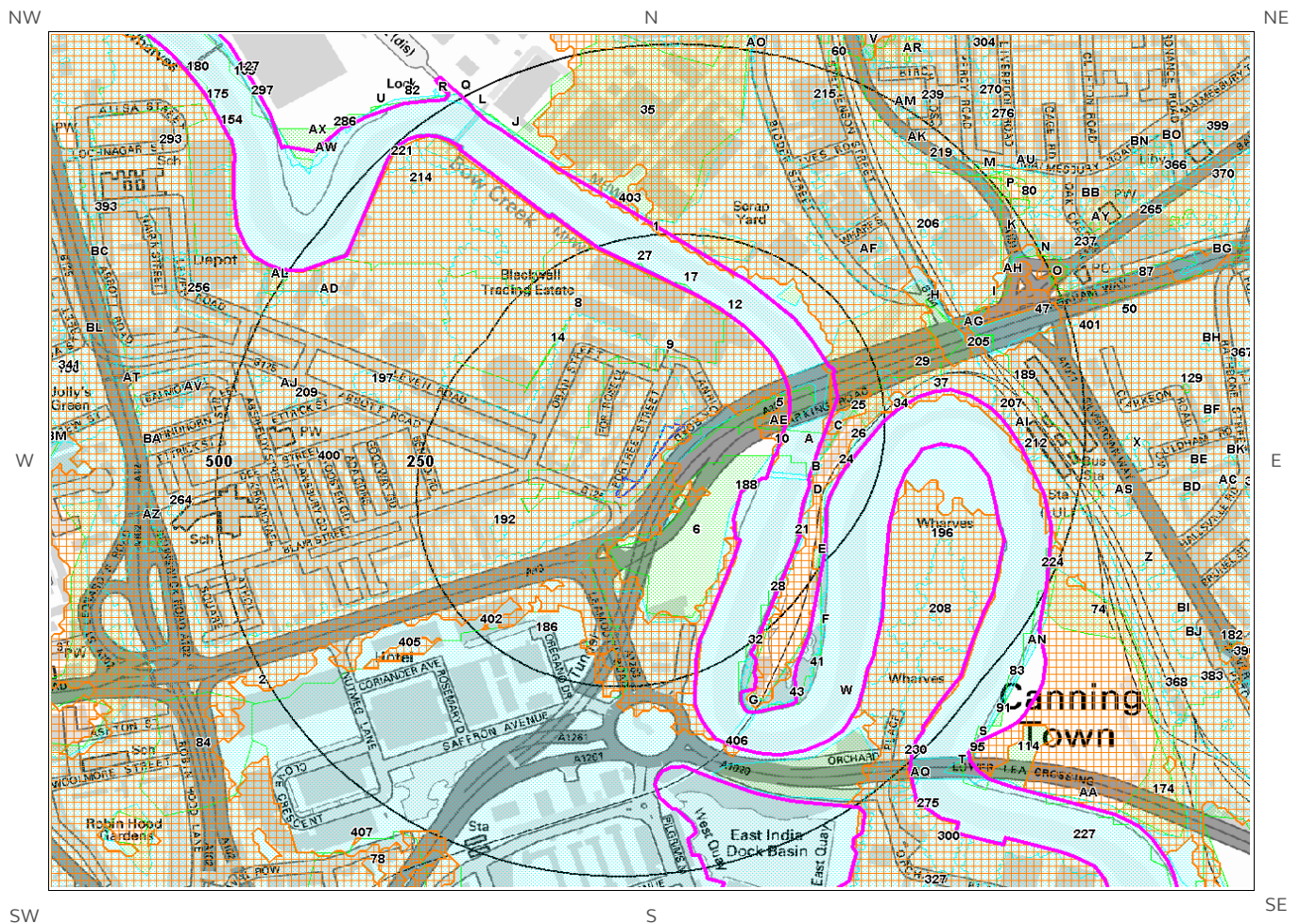
6.11 Surface Water Features

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
121	SE
139	E
140	NE
205	SE
237	SE

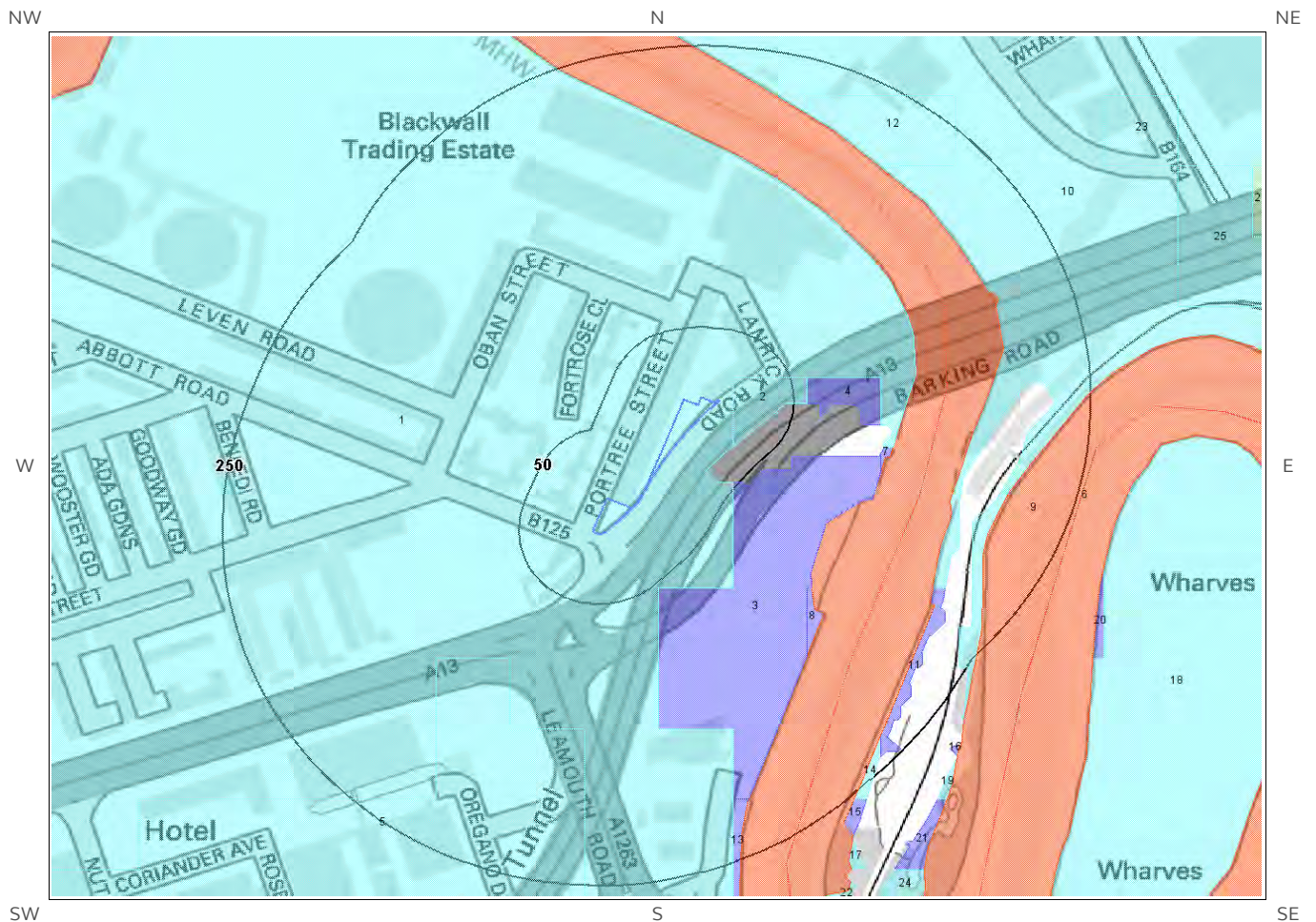
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



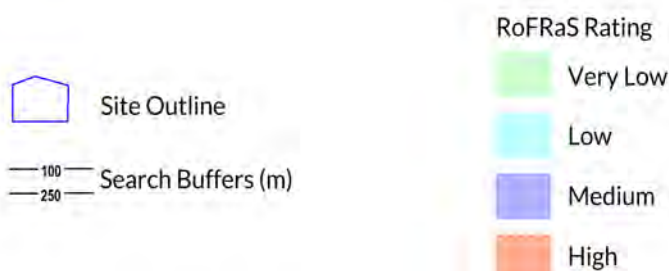
© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
2	7	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
3AJ	14	SW	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
4W	45	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
5	45	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
6	48	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
7AE	77	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
8	86	N	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
9	90	N	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
10	114	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
11A	120	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
12	156	N	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
13B	165	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
14	167	NW	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
15A	170	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
16B	173	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
17	174	N	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
18C	174	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
19D	177	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)

20C	180	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
21	188	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
22	189	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
23D	191	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
24	199	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
25	204	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
26	207	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
27	209	N	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
28	211	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
29	217	E	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
30E	228	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
31E	228	SE	19-Jun-2017	Zone 2 - (Fluvial /Tidal Models)
32	249	SE	19-Jun-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	19-Jun-2017	Zone 3 - (Fluvial Models)
2	0	On Site	19-Jun-2017	Zone 3 - (Fluvial Models)
3AJ	110	SE	19-Jun-2017	Zone 3 - (Fluvial Models)
4W	112	SE	19-Jun-2017	Zone 3 - (Fluvial Models)
5	113	SE	19-Jun-2017	Zone 3 - (Fluvial Models)
6	118	E	19-Jun-2017	Zone 3 - (Fluvial Models)
7AE	123	E	19-Jun-2017	Zone 3 - (Fluvial Models)
8	141	W	19-Jun-2017	Zone 3 - (Fluvial Models)

9	170	E	19-Jun-2017	Zone 3 - (Fluvial Models)
10	173	E	19-Jun-2017	Zone 3 - (Fluvial Models)
11A	178	E	19-Jun-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
2	9.0	E	Low
3	46.0	SE	Medium

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
409	112	SE	16-Jun-2017
410	169	E	16-Jun-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? No

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?

Not Prone

The area is not considered to be prone to groundwater flooding based on rock type.

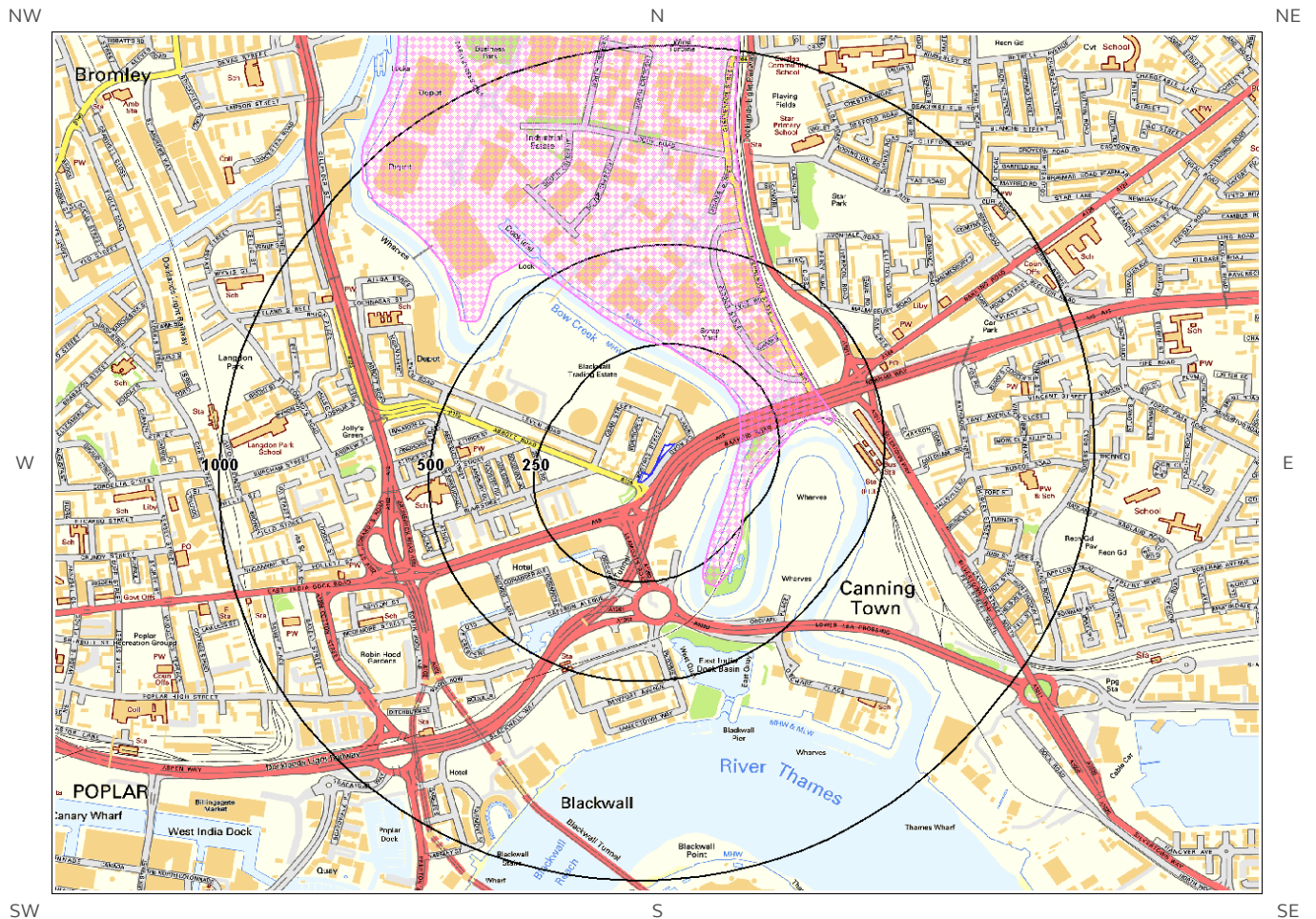
7.8 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? Not Applicable

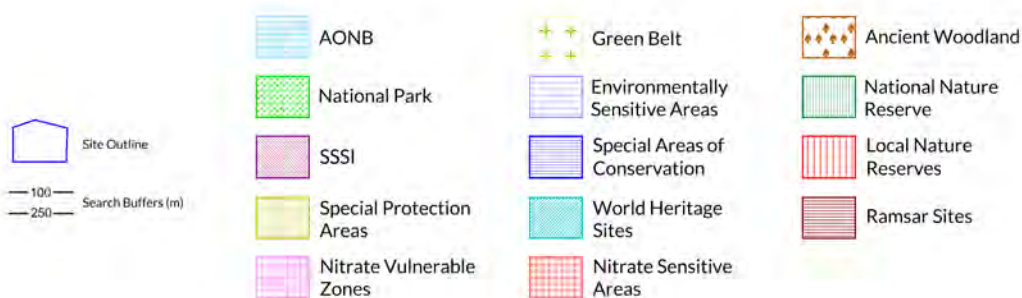
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

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 Map



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



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:

0

Database searched and no data found.

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:

0

Database searched and no data found.

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
1	151	E	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? Low

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

Hazard
Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

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? Moderate

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

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

9.1.5 Collapsible Rocks

What is the maximum Collapsible 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
No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. 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
Telephone: 08444 159 000
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 Tower Hamlets
Phone: 020 7364 5000
Web: <http://www.towerhamlets.gov.uk/>
Address: Town Hall, Mulberry Place, London, E14 2BG

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England who retain the Copyright and Intellectual Property Rights for the data.

PointX © Database Right/Copyright, Thomson Directories Limited © Copyright Link Interchange Network Limited © Database Right/Copyright and Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028].

This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
<https://www.groundsure.com/terms-and-conditions-sept-2016>

APPENDIX C

Zetica UXO Maps

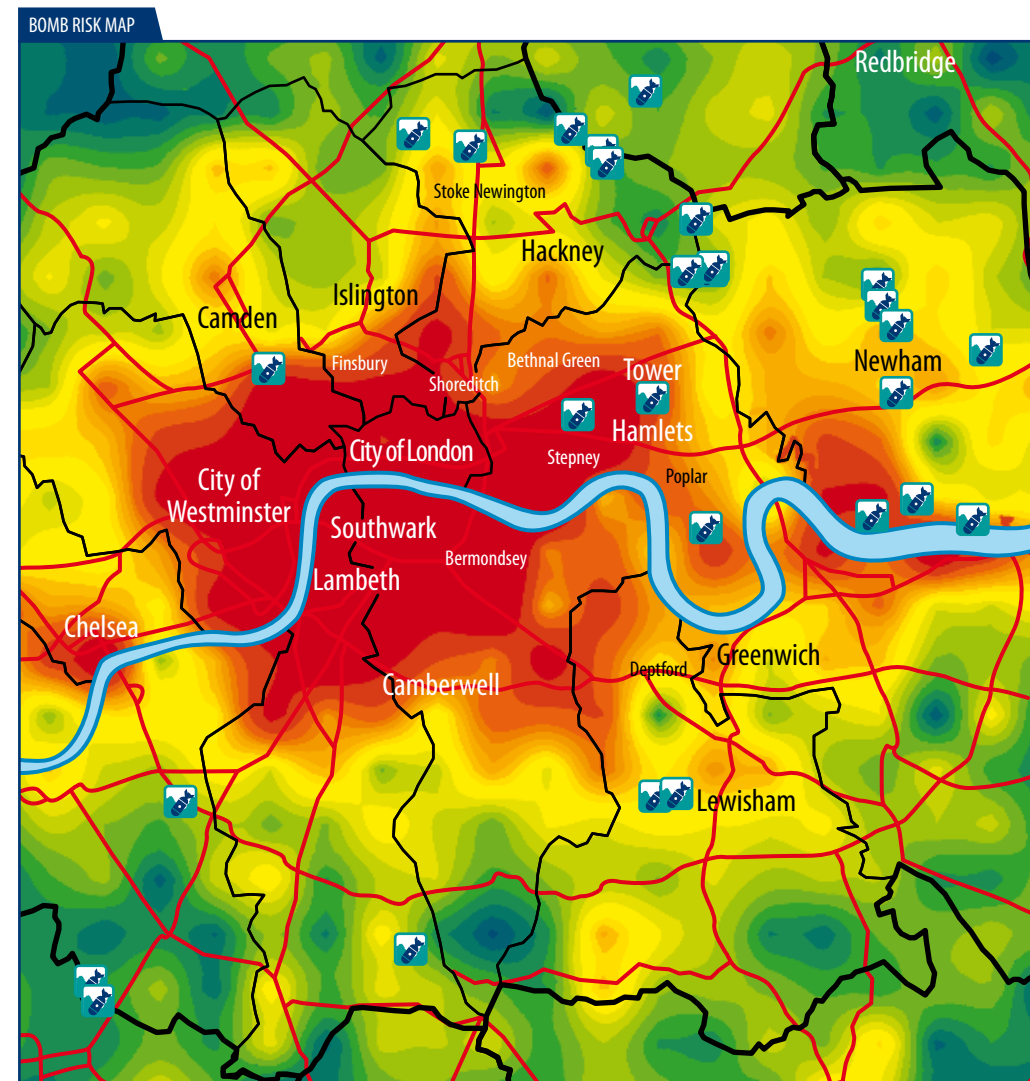
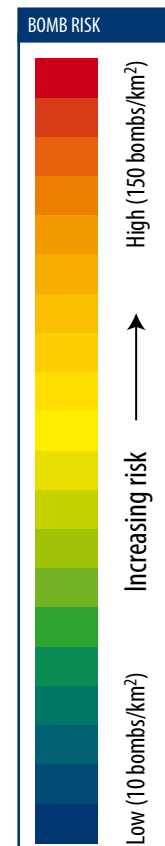
LONDON – East Central

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.



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.



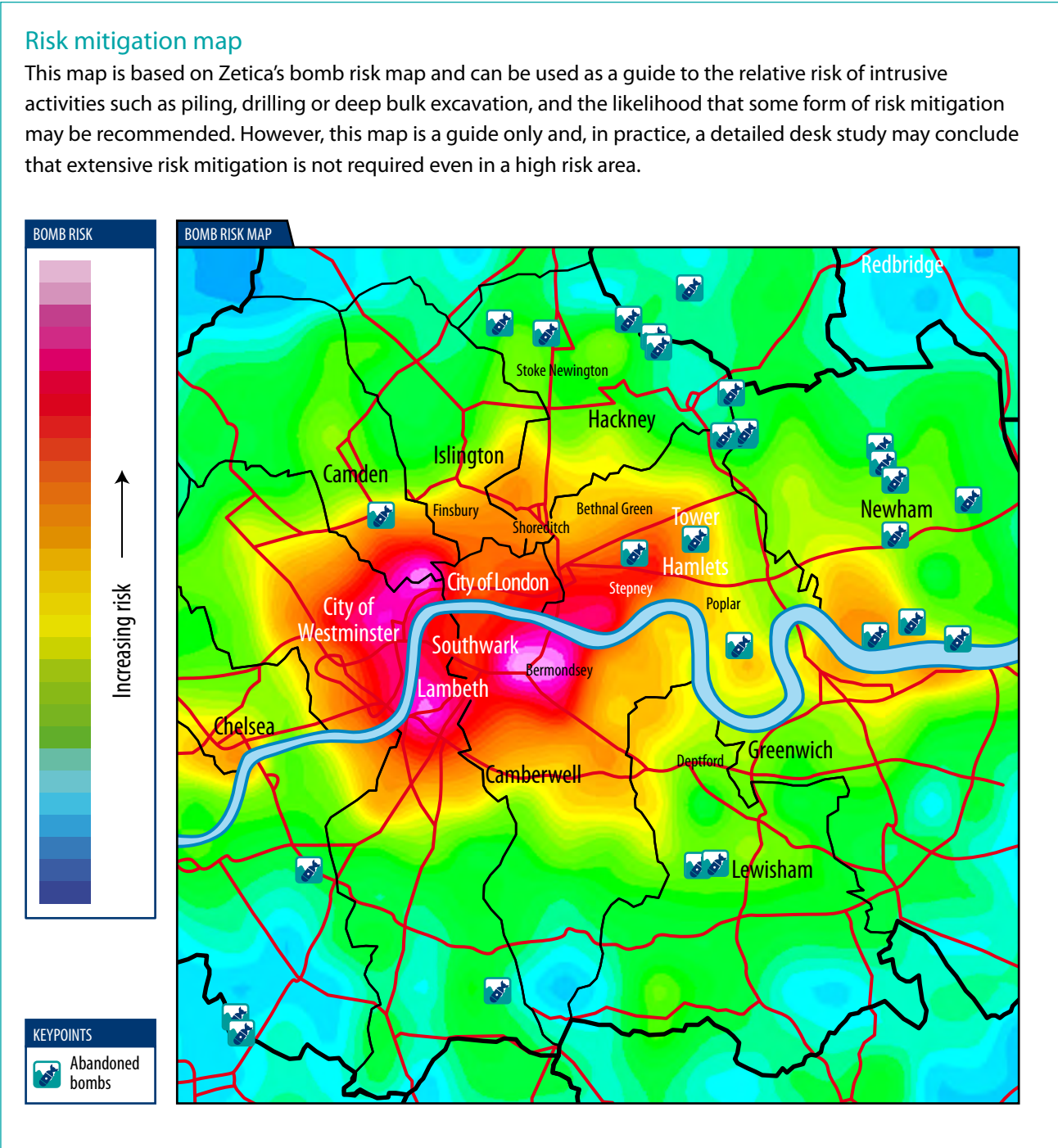
Detected UXBs can be dealt with by our EOC engineers and a Clearance Certificate issued for the site.

zetica

For more details on this and related services, telephone: +44 (0) 1993 886682 or visit our website: www.zetica.com

RISK MITIGATION AND INVESTIGATION

LONDON – East Central



Investigation options

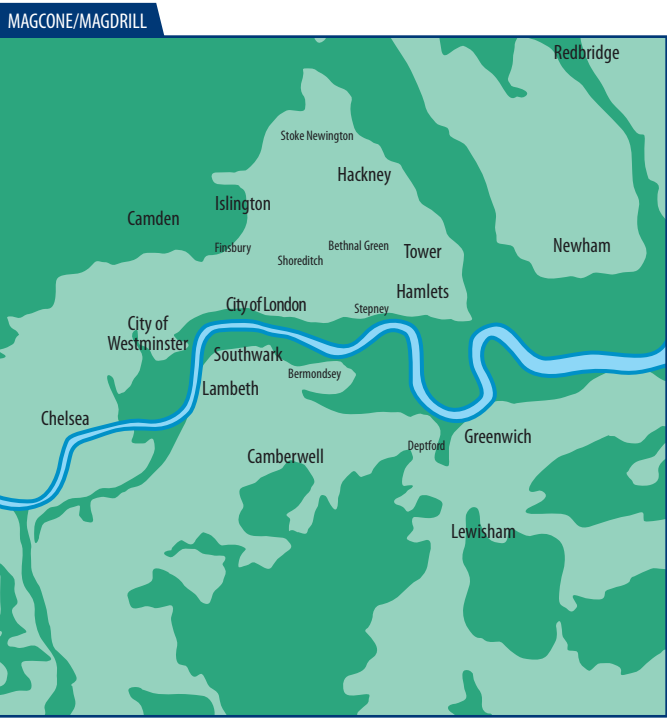
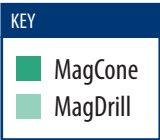
The unexploded bomb (UXB) risk for intrusive site works, such as drilling or piling that usually extend to depths greater than can be mapped from surface, can be effectively managed by clearing borehole or pile locations using MagCone or MagDrill techniques.

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

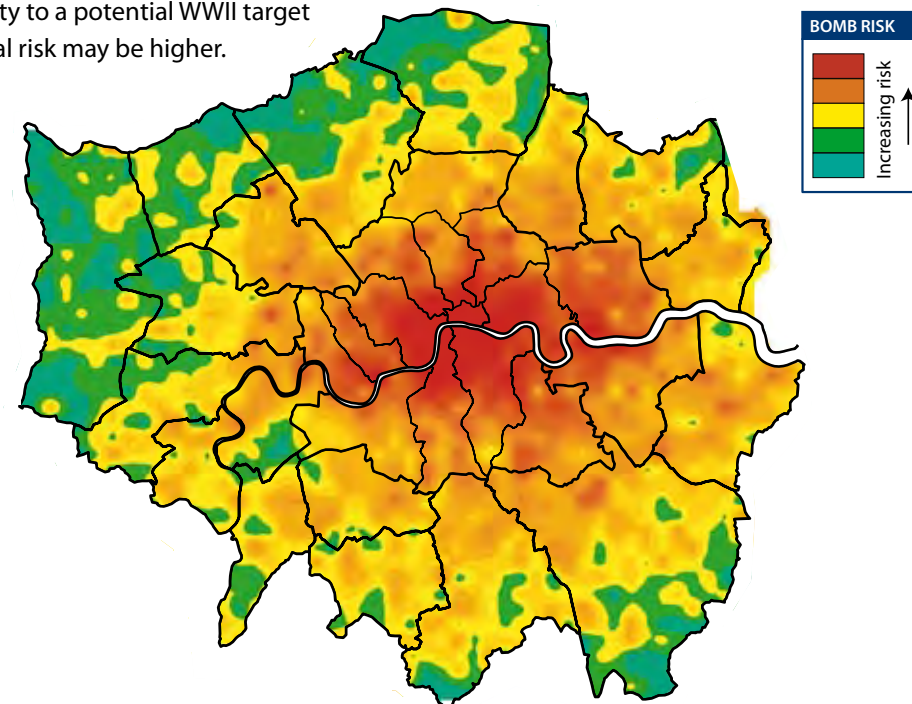
The relative risk for the London area is established by plotting the recorded bombing densities. These are represented as counts of high explosive bombs in km² area.

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.

Arcadis Consulting (UK) Limited

Arcadis House
34 York Way
London
N1 9AB
United Kingdom
T: +44 (0)20 7812 2071

[arcadis.com](https://www.arcadis.com)

