enzygo
geo environmental

Phase I Environmental Report

Riverside House, Woolwich High Street, Woolwich, SE18 6BU

For

Marson Properties Ltd

'Experience and expertise working in union'

enzygo.com

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Phase I Environmental Report

Project:	Riverside House, Woolwich High Street, Woolwich, SE18 6BU
For:	Marson Properties Ltd
Ref:	CRM.1293.010.GE.R.001.A
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Author:	Steve Rhodes - **Director**
Reviewer:	Matt Ward – **Principal Consultant**

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1.0 INTRODUCTION

Background

1.1 Enzygo Geoenvironmental Limited has been commissioned to prepare a Phase I Geo-Environmental Report for a site at Riverside House, Woolwich High Street, Woolwich, SE18 6BU.

Proposed Development

1.2 The proposed scheme involves conversion of an existing office to residential use under permitted development rights. No new external development is proposed. Plans showing the proposed development are included in the Drawing Section of this report.

Objectives

1.3 The objectives of the study are to:

- Obtain desk study information, which is included in Appendix A;
- Review an existing desk study and site walkover;
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and
- Provide a factual and interpretative report relating to the desk study.
- Provide preliminary recommendations in relation to environmental risk.

Risk Classification

1.4 Enzygo Geoenvironmental has utilised the available information, together with our experience to assess the likely risks to development from land quality issues. Definitions of the risk terms used are provided on the following table.

Risk	Description
Negligible	No contamination risk has been identified which is likely to affect development.
Low	No significant contaminated land risks have been encountered affecting development and a low risk that remediation will be required.
Low-Moderate	There are unlikely to be significant contaminated land issue associated with the site which will adversely affect its re-development. However, minor or localised contamination may be present requiring remediation. Remediation should be possible under a discovery strategy and with a call out service.
Moderate	Some potential contaminated land risks have been encountered or identified which may affect re- development. The risks identified are unlikely to affect the entire site or preclude development. Remediation is considered feasible as part of the development process and no further investigation is considered necessary.
Moderate-High	Some potentially significant contaminated land risks have been identified at the property that requires remediation. It is recommended that a separate remedial methodology is prepared supported by a site-specific risk assessment
High	Significant potential contaminated land risks have been identified and remediation is required supported by further intrusive ground investigation, risk assessment and remedial design.

1.5 Where adverse risks from ground instability are identified these are discussed within the report.

2.0 SITE SETTING

Site Description

Item	Description
Site Address	Riverside House, Woolwich High Street, Woolwich, SE18 6BU
National Grid Reference	543483 179176

Current Site Description

2.1 A site walk over was undertaken by Ensafe Consultants Ltd during May 2021. Site photographs are included in Appendix B.

2.2 The site was occupied by a 14 storey building comprising a former office block and secure car parking. Part of the former office block was in use as an arts studio. Rubbish was noted in site the building.

2.3 The site was predominantly covered in hard standing but an area of rough shrub was noted in the north east of the site. This appears to be growing through the hard standing.

2.4 The basement to the building was noted to contain a workshop, substations, pump station and telephone room.

2.5 A fenced off area of concrete was present in the north west corner of the site which it is understood was previously occupied by a fuel powered generator. Concrete was noted to be in a good state of repair. Slight staining of the slab was noted.

Surrounding Area

2.6 Land uses surrounding the site are summarised as follows:

Direction	Land Use
South	Leisure facility.
East	A206 with park beyond.
North	A206 with offices beyond.
West	Offices and retail use.

2.7 No significant risks are identified from adjacent land uses.

3.0 SITE HISTORY

3.1 A review of historical Ordnance Survey map pertinent to the site and within a 250m radius is summarised below:

Potentially Contaminative Historical Land Use		
Map Edition	**Site**	**Surrounding Area**
1869	Unspecified building.	Residential development 0m N, S,E & W. Gas works 150m W. Works 50m N.
1896	Smithy shown in W. Remainder of buildings appear to be residential.	No significant change.
1916	No significant change.	Gas works is now just a gas holder.
1938	No significant change.	No significant change.
1956	NW area of site undeveloped	No significant change.
1970	Riverside House shown in N and polytechnic in S.	Works now power station. Factory & warehouse 20m E. Garage 150m SW & 100m SE. Depot 120m SE.
1986	No significant change.	Power station now car park. Commercial & retail development 50m W. Leisure centre 90m NW.
1991	No significant change.	No significant change.
2001	No significant change.	No significant change.
2003	No significant change.	Gas holder no longer shown.
2010	No significant change.	No significant change.
2020	No significant change.	No significant change.

3.2 The works, gas work and factories are not considered a significant risk due to distance from the site.

3.3 No significant risks are identified.

4.0 ENVIRONMENTAL SETTING

Ground Conditions

4.1 The British Geological Survey (BGS) indicates that the site is underlain by the following geological sequence:

Geological Unit	Type	Description	Aquifer Classification
Drift.	Head	Diamicton.	Secondary undifferentiated.
Solid.	Thanet Sand Formation.	Sand.	Secondary A.

4.2 Made Ground is identified 30m north of the site which is likely to be associated with land reclamation from the River Thames. No Made Ground is identified on site.

4.3 BGS borehole records near to the site show 1m of Made Ground over sand and gravel.

4.4 There are no records of background soil chemistry.

Groundwater

4.5 The permeability of the drift geology is recorded as being high to very low. Based on borehole records it is likely that this material will be a high permeability gravel. The permeability of the solid geology is recorded as being high consistent with sand.

4.6 The GroundSure Report shows the site is not within a Source Protection Zone.

4.7 There are no groundwater abstraction licenses within 500m of the site.

4.8 The site is identified as having a low risk of groundwater flooding.

Coal Mining

4.9 No historical or current coal mining extraction has been identified within 500m of the site.

Non Coal Mining and Natural Cavities

4.10 There are no non-coal mining activities or natural cavities within 500m of the site.

Ground Workings

4.11 Wharfs are shown 110m north of the site which are not considered a significant risk.

Hydrology

4.12 There are no surface water courses on the site. Nearest is the River Thames 137m north.

4.13 There are no surface water abstractions within 500m of the site.

4.14 Environment Agency records show that the site is not located within a Food Zone.

Radon Risk Potential

4.15 The Groundsure GeoInsight Report indicates that the site is not within a Radon Affected Area therefore no radon protective measures are necessary in the construction of new dwellings.

Natural Hazards Finding

4.16 BGS information presented within the Groundsure Geoinsight report identifies the following ground conditions:

Hazard	Risk Designation (Groundsure)
Coal Mining	None.
Collapsible Ground	Very low.
Compressible Ground	Negligible.
Ground Dissolution	Negligible.
Landslide	Very Low.
Running Sand	Very Low.
Swelling / Shrinking Clay	Very Low.

4.17 No significant ground stability risks have been identified.

Sensitive Land Uses

4.18 The site is currently an office and is of low sensitivity.

4.19 No ecologically sensitive designations are identified on the site.

Historical and Archaeological Features

4.20 English Heritage does not identify any Scheduled Ancient Monuments on the site.

Environmental Sensitivity

4.21 Overall the site is currently considered to be of **low** environmental sensitivity due to the following:

- The underlying stratum is classified as an Secondary Undifferentiated Aquifer;
- No surface water courses near to the site;
- No Licensed groundwater abstractions within 500m of the site;
- Site is not within a Source Protection Zone; and
- No sensitive ecology noted on site.

4.22 The proposed end use of the site is for residential apartments and as such future sensitivity will be moderate for end users.

Industrial Land Uses

4.23 Current industrial uses within 250m of the site are limited to sub-stations and commercial uses.

4.24 No new risks are identified from the register of industrial land uses.

4.25 The Groundsure EnviroInsight Report indicates that there is one fuel station entry, which is 123m west of the site. The risk is dismissed based on distance from the site.

4.26 There are no high-pressure oil/gas pipelines located within 250m of the site.

4.27 No new risks are identified from the register of industrial uses.

5.0 CONSULTATIONS

Regulatory Database

5.1 The following information has been obtained from a commercially available environmental database.

Environmental Permits, Incidents and Registers	0 -250m	250-500m	Details
Site determined as contaminated land	0	0	Not applicable
Authorised industrial processes	0	0	Not applicable
Enforcements, prohibitions or prosecutions	0	0	Not applicable.
Pollution Incidents	0	1	Nearest is Category 3 (Minor) impact to water from oil 369m W. Not considered a risk to the site.
Consents issued under the Planning (Hazardous Substances) Act 1990	0	0	Not applicable.
Control of Major Accident Hazard (COMAH)/ Notification of Installations Handling Hazardous Substances (NIHHS) sites	0	0	Not applicable.
Records of Licensed Discharge Consents	1	0	Miscellaneous discharge to surface water 174m NW. Not considered a significant risk.

5.2 No significant risks are identified from the regulatory data base.

Landfill Sites and Waste Treatment Sites

5.3 There are no historic landfill sites within 250m of the site.

5.4 No significant risks are identified from waste activities.

Planning Information

5.5 A review of information held on Royal Borough 0f Greenwich's planning portal does not provide any additional pertinent information.

5.7 An information request to the Contaminated Land Officer was made by Ensafe as part of their desk study assessment but no response was received.

6.0 PRELIMINARY CONCEPTUAL MODEL

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
Human Health					
Hydrocarbons.	Historic Generator	Ingestion dermal and inhalation.	Construction Workers.	Dismissed	Addressed through normal management and PPE procedures.
			Site users.	Dismissed	Generator removed and no significant contaminated noted.
Asbestos, hydrocarbons and metals.	Potential Made Ground	Ingestion dermal and inhalation.	Construction Workers.	Dismissed	Addressed through normal management and PPE procedures.
			Site users.	Dismissed	Hardstanding will break pollutant linkage.
Asbestos, hydrocarbons and metals.	Smithy and former buildings.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed	Addressed through normal management and PPE procedures.
			Site users.	Dismissed	Hardstanding will break pollutant linkage.
Asbestos, hydrocarbons and metals.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant risk identified and normal PPE will address any residual risk.
			Site Users.	Negligible.	Discovery Strategy proposed should any external works be undertaken.
Hydrocarbon and metals.	Migration from off-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant source identified from desk study information.
			Site users.		
Ground Gas.	Historic Landfills.	Inhalation & Explosive.	Construction Workers.	Dismissed.	No significant source identified.
			Site users.		
Groundwater					
Hydrocarbon and metals.	Potential spillage on site.	Vertical Migration.	Groundwater.	Dismissed.	No source identified on site. No new potential pathways proposed.
Surface Water					
Hydrocarbon and metals.	Potential spillage on site.	Horizontal Migration.	River Network.	Dismissed.	No receptor.
Environmental Receptors					
On site contaminants		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No sensitive ecology designation.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	None present.
		Phytotoxic.	Woodland.	Dismissed.	No receptor.
		Phytotoxic.	Crops.	Dismissed.	No receptor.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	No source identified.
Building Services					
On site contaminants		Direct.	Historic Buildings.	Dismissed.	No receptors
		Direct.	Proposed Buildings.	Dismissed.	No source identified.
		Permeate into pipework.	Water Pipes.	Dismissed.	No new services proposed.

7.0 DISCUSSIONS AND RECOMMENDATIONS

Proposed Development

7.1 The proposed development is to convert existing office accommodation to residential apartments with car parking. No soft landscaping is proposed.

7.2 No new external development is proposed. landscaping. Based on the general poor condition of the hardstanding it is expected that this is re-surfaced.

Discussion

7.2 No significant contamination source has been identified.

7.3 The use of hardstanding across the site will also break the potential pollutant linkage with potential Made Ground and historic contaminant sources which could be present.

7.4 No significant ground engineering risks are identified.

Recommendations

7.5 It is considered that no further investigation works are necessary.

7.6 If during resurfacing works unforeseen contamination is encountered an Environmental consultant will be available on a 'call out' basis to undertake an assessment of risk. If 'unforeseen contamination' is encountered such as hydrocarbon contamination or solvent odours the discovery strategy will be to remove the source as it is likely to be very limited in extent or encapsulate it on site as appropriate and the Local Planning Authority advised.

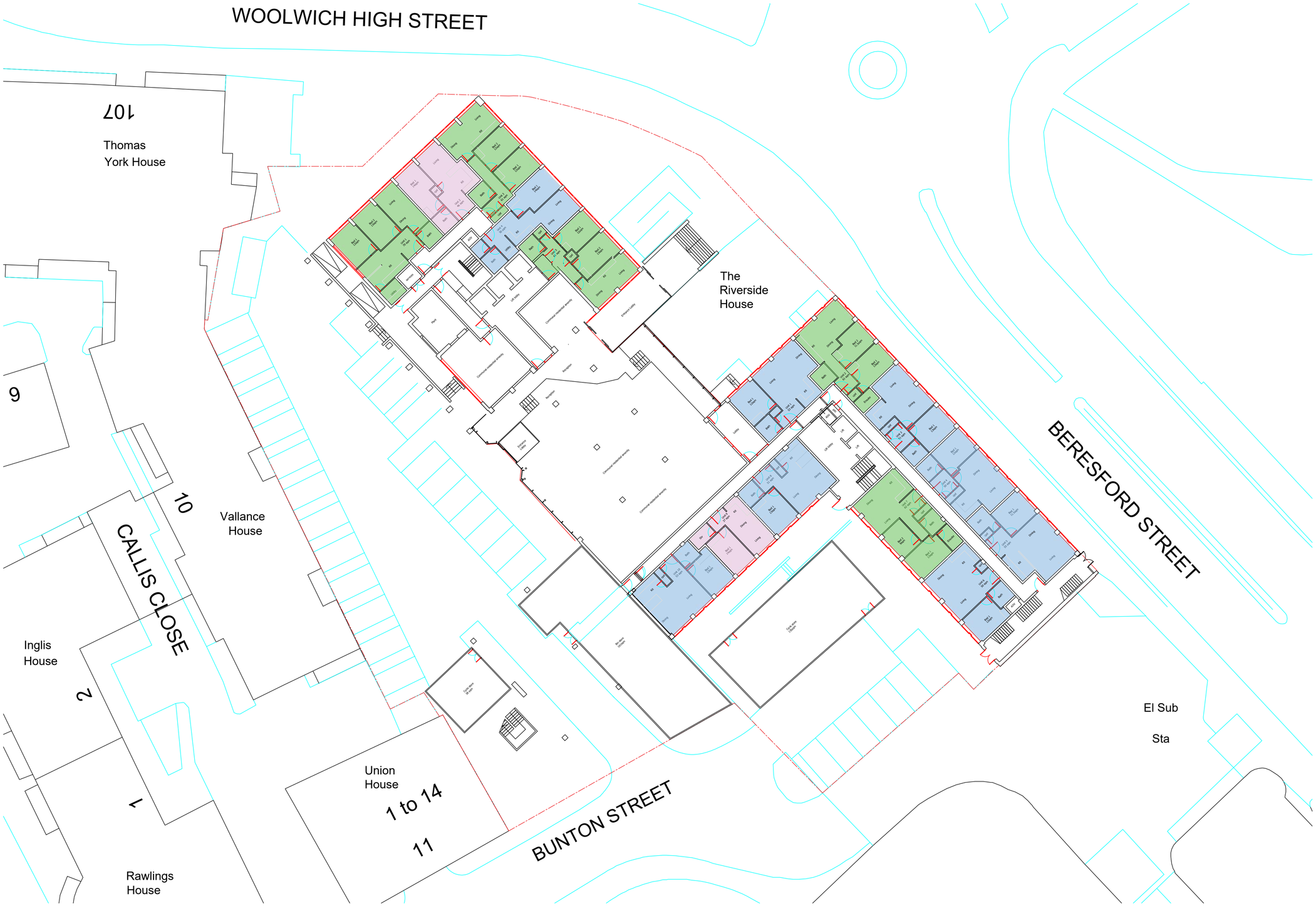
SCALE 1:200
SCALE 1:1

0m 5m 10m 15m 20m
0m 10mm 20mm 40mm 60mm 80mm 100mm

N

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK OF ANY KIND.
NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.

REV.	DATE	REVISION
A	12.07.21	Daylight / sunlight amendments
B	15.07.21	Daylight / sunlight amendments



key

- 1B1P
- 1B2P
- 2B4P

Unit schedule

Block A
3 x 2 bedroom / 3 person
1 x 1 bedroom / 2 person
1 x 1 bedroom / 1 person
Sub-total = 5 units

Block B
2 x 2 bedroom / 3 person
7 x 1 bedroom / 2 person
1 x 1 bedroom / 1 person
Sub-total = 10 units
Total = 16 units

PLANNING

0 Ground Floor Plan

Scale 1:200

Osel architecture

PROJECT:
RIVERSIDE HOUSE,
BERESFORD ST, WOOLWICH
LONDON SE18 6BU

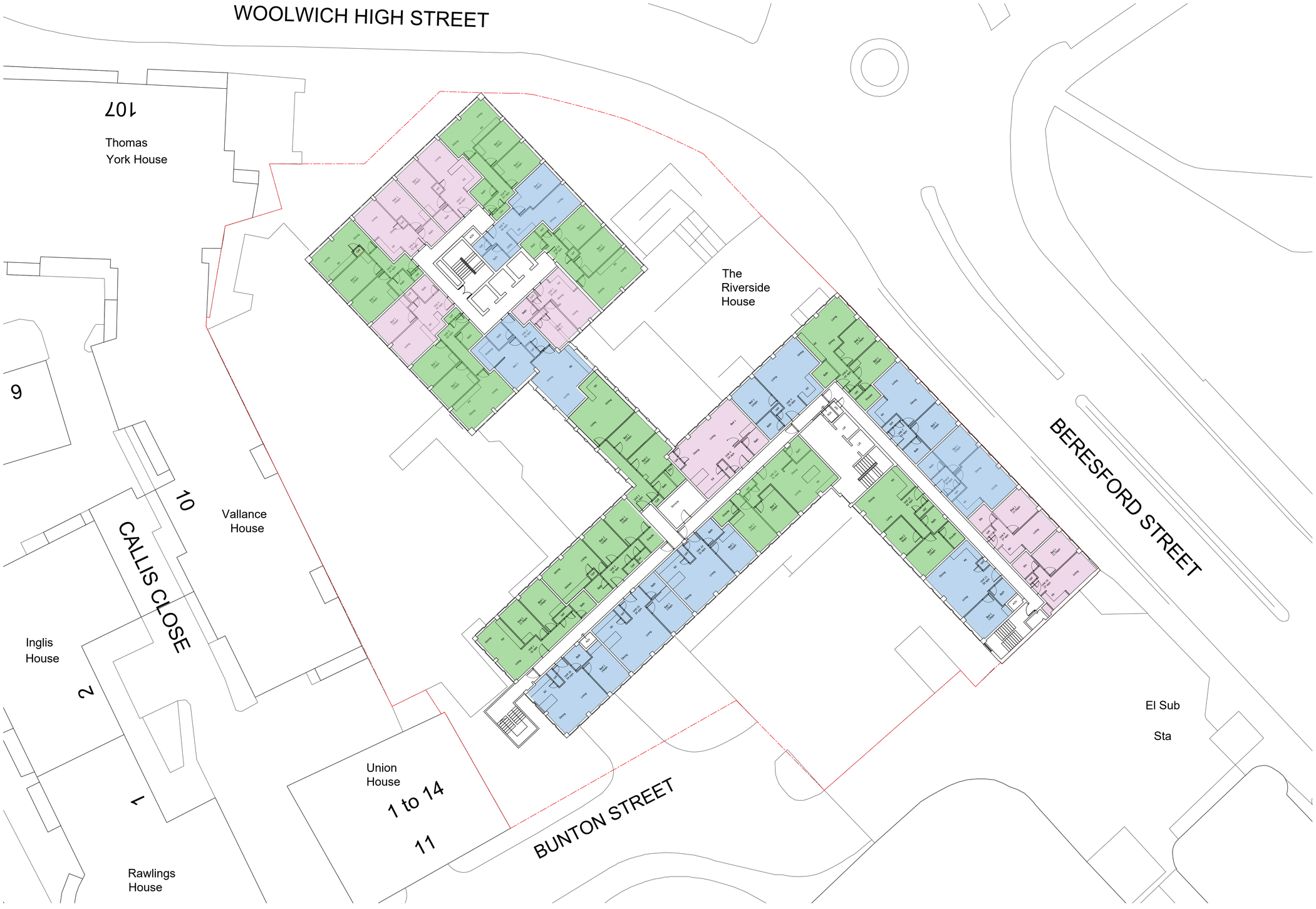
CLIENT:
MDPL (Woolwich)
LIMITED

DRAWING:
PERMITTED DEVELOPMENT
GROUND FLOOR
PLAN

DRAWING No.: E21-027-PD000
REV: P3

SCALE: 1:200@A1
DRAWN: WTM DATE: 18.06.21
CHECKED: - DATE: -

G.04 | The Record Hall | 16-16A Baldwin's Gardens | London | EC1N 7RJ
Tel: 020 7224 2447
E-mail: admin@oselarch.co.uk Web: www.oselarchitecture.co.uk



01 First Floor Plan
Scale 1:200

SCALE 1:200
SCALE 1:1

0m 5m 10m 15m 20m
0m 10mm 20mm 40mm 60mm 80mm 100mm

N

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK OF ANY KIND.
NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.

REV.	DATE	REVISION
P1	12.07.21	Daylight / sunlight amendments
P2	14.07.21	Daylight / sunlight amendments
P3	14.07.21	Daylight / sunlight amendments
P4	15.07.21	Daylight / sunlight amendments

key

- 1B1P
- 1B2P
- 2B4P

Unit schedule

Block A
4 x 2 bedroom / 3 person
2 x 1 bedroom / 2 person
4 x 1 bedroom / 1 person
Sub-total = 10 units

Block B
6 x 2 bedroom / 3 person
7 x 1 bedroom / 2 person
3 x 1 bedroom / 1 person
Sub-total = 16 units

Total = 26 units

PLANNING

Osel architecture

PROJECT:
RIVERSIDE HOUSE,
BERESFORD ST, WOOLWICH
LONDON SE18 6BU

CLIENT:
MDPL (Woolwich)
LIMITED

DRAWING:
PERMITTED DEVELOPMENT
FIRST FLOOR
PLAN

DRAWING No.: E21-027-PD001
REV: P4

SCALE: 1:200@A1
DRAWN: WTM DATE: 18.06.21
CHECKED: - DATE: -

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Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Riverside House, Woolwich High Street, Woolwich,SE18 6BU

Order Details

Date: 21/07/2021

Your ref: EMS_710318_928363

Our Ref: EMS-710318_928363

Client: emapsite

Site Details

Location: 543483 179176

Area: 0.44 ha

Authority: Royal Borough of Greenwich

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	Historical industrial land uses	2	4	30	66	-
18	1.2	Historical tanks	0	0	15	16	-
20	1.3	Historical energy features	0	3	12	16	-
21	1.4	Historical petrol stations	0	0	0	0	-
22	1.5	Historical garages	0	0	5	1	-
22	1.6	Historical military land	0	0	1	1	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
23	2.1	Historical industrial land uses	2	6	39	94	-
29	2.2	Historical tanks	0	0	19	21	-
30	2.3	Historical energy features	0	6	18	53	-
33	2.4	Historical petrol stations	0	0	0	0	-
34	2.5	Historical garages	0	0	7	2	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
35	3.1	Active or recent landfill	0	0	0	0	-
35	3.2	Historical landfill (BGS records)	0	0	0	0	-
36	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
36	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
36	3.5	Historical waste sites	0	0	0	1	-
36	3.6	Licensed waste sites	0	0	1	0	-
37	3.7	Waste exemptions	0	0	2	9	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
39	4.1	Recent industrial land uses	0	1	17	-	-
41	4.2	Current or recent petrol stations	0	0	1	0	-
41	4.3	Electricity cables	0	0	0	0	-
41	4.4	Gas pipelines	0	0	0	0	-
41	4.5	Sites determined as Contaminated Land	0	0	0	0	-

41	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
42	4.7	Regulated explosive sites	0	0	0	0	-
42	4.8	Hazardous substance storage/usage	0	0	0	0	-
42	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
42	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
42	**4.11**	**Licensed pollutant release (Part A(2)/B)**	0	0	1	1	-
43	**4.12**	**Radioactive Substance Authorisations**	0	0	0	3	-
44	**4.13**	**Licensed Discharges to controlled waters**	0	0	1	0	-
44	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
44	**4.15**	**Pollutant release to public sewer**	0	0	0	1	-
45	4.16	List 1 Dangerous Substances	0	0	0	0	-
45	4.17	List 2 Dangerous Substances	0	0	0	0	-
45	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	0	1	-
45	4.19	Pollution inventory substances	0	0	0	0	-
46	4.20	Pollution inventory waste transfers	0	0	0	0	-
46	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
47	**5.1**	**Superficial aquifer**	Identified (within 500m)				
49	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
51	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
52	**5.4**	**Groundwater vulnerability- soluble rock risk**	Identified (within 0m)				
52	**5.5**	**Groundwater vulnerability- local information**	Identified (within 0m)				
53	**5.6**	**Groundwater abstractions**	0	0	0	0	1
54	5.7	Surface water abstractions	0	0	0	0	0
54	**5.8**	**Potable abstractions**	0	0	0	0	1
55	5.9	Source Protection Zones	0	0	0	0	-
55	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
56	6.1	Water Network (OS MasterMap)	0	0	0	-	-

56	6.2	Surface water features	0	0	0	-	-
57	6.3	WFD Surface water body catchments	1	-	-	-	-
57	6.4	WFD Surface water bodies	0	0	1	-	-
58	6.5	WFD Groundwater bodies	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
59	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	Very Low (within 50m)				
60	7.2	Historical Flood Events	0	0	0	-	-
60	7.3	Flood Defences	0	0	1	-	-
60	7.4	Areas Benefiting from Flood Defences	0	1	2	-	-
61	7.5	Flood Storage Areas	0	0	0	-	-
62	7.6	Flood Zone 2	Identified (within 50m)				
63	7.7	Flood Zone 3	Identified (within 50m)				
Page	Section	Surface water flooding					
64	8.1	Surface water flooding	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
66	9.1	Groundwater flooding	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
67	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	1
68	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
68	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
68	10.4	Special Protection Areas (SPA)	0	0	0	0	0
68	10.5	National Nature Reserves (NNR)	0	0	0	0	0
69	10.6	Local Nature Reserves (LNR)	0	0	0	0	2
69	10.7	Designated Ancient Woodland	0	0	0	0	0
69	10.8	Biosphere Reserves	0	0	0	0	0
69	10.9	Forest Parks	0	0	0	0	0
70	10.10	Marine Conservation Zones	0	0	0	0	0
70	10.11	Green Belt	0	0	0	0	0
70	10.12	Proposed Ramsar sites	0	0	0	0	0

70	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
70	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
71	10.15	Nitrate Sensitive Areas	0	0	0	0	0
71	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
72	**10.17**	**SSSI Impact Risk Zones**	2	-	-	-	-
73	**10.18**	**SSSI Units**	0	0	0	0	1
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
75	11.1	World Heritage Sites	0	0	0	-	-
76	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
76	11.3	National Parks	0	0	0	-	-
76	**11.4**	**Listed Buildings**	0	0	9	-	-
77	**11.5**	**Conservation Areas**	0	0	1	-	-
77	11.6	Scheduled Ancient Monuments	0	0	0	-	-
78	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
79	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
80	12.2	Open Access Land	0	0	0	-	-
80	12.3	Tree Felling Licences	0	0	0	-	-
80	12.4	Environmental Stewardship Schemes	0	0	0	-	-
80	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
81	**13.1**	**Priority Habitat Inventory**	0	0	5	-	-
82	13.2	Habitat Networks	0	0	0	-	-
82	13.3	Open Mosaic Habitat	0	0	0	-	-
82	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
83	**14.1**	**10k Availability**	Identified (within 500m)				
84	**14.2**	**Artificial and made ground (10k)**	0	1	0	1	-
85	**14.3**	**Superficial geology (10k)**	1	0	3	0	-

86	14.4	Landslip (10k)	0	0	0	0	-
87	**14.5**	**Bedrock geology (10k)**	1	0	1	2	-
88	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
89	**15.1**	**50k Availability**	Identified (within 500m)				
90	**15.2**	**Artificial and made ground (50k)**	0	0	1	1	-
91	15.3	Artificial ground permeability (50k)	0	0	-	-	-
92	**15.4**	**Superficial geology (50k)**	1	0	3	0	-
93	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
93	15.6	Landslip (50k)	0	0	0	0	-
93	15.7	Landslip permeability (50k)	None (within 50m)				
94	**15.8**	**Bedrock geology (50k)**	1	0	1	2	-
95	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
95	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
96	**16.1**	**BGS Boreholes**	0	1	47	-	-
Page	Section	Natural ground subsidence					
99	**17.1**	**Shrink swell clays**	Very low (within 50m)				
100	**17.2**	**Running sands**	Very low (within 50m)				
101	**17.3**	**Compressible deposits**	Negligible (within 50m)				
102	**17.4**	**Collapsible deposits**	Very low (within 50m)				
103	**17.5**	**Landslides**	Very low (within 50m)				
104	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
106	18.1	Natural cavities	0	0	0	0	-
107	18.2	BritPits	0	0	0	0	-
107	**18.3**	**Surface ground workings**	0	0	3	-	-
107	**18.4**	**Underground workings**	0	0	8	6	8
108	18.5	Historical Mineral Planning Areas	0	0	0	0	-

108	**18.6**	**Non-coal mining**	1	0	2	3	0
109	**18.7**	**Mining cavities**	0	0	0	0	1
110	18.8	JPB mining areas	None (within 0m)				
110	18.9	Coal mining	None (within 0m)				
110	18.10	Brine areas	None (within 0m)				
110	18.11	Gypsum areas	None (within 0m)				
110	18.12	Tin mining	None (within 0m)				
111	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
112	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
113	**20.1**	**BGS Estimated Background Soil Chemistry**	2	0	-	-	-
113	**20.2**	**BGS Estimated Urban Soil Chemistry**	4	4	-	-	-
114	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
115	21.1	Underground railways (London)	0	0	0	-	-
115	21.2	Underground railways (Non-London)	0	0	0	-	-
116	**21.3**	**Railway tunnels**	0	0	2	-	-
116	**21.4**	**Historical railway and tunnel features**	0	0	42	-	-
118	21.5	Royal Mail tunnels	0	0	0	-	-
118	21.6	Historical railways	0	0	0	-	-
118	**21.7**	**Railways**	0	0	11	-	-
119	**21.8**	**Crossrail 1**	0	1	1	0	-
119	21.9	Crossrail 2	0	0	0	0	-
119	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 29/06/2019

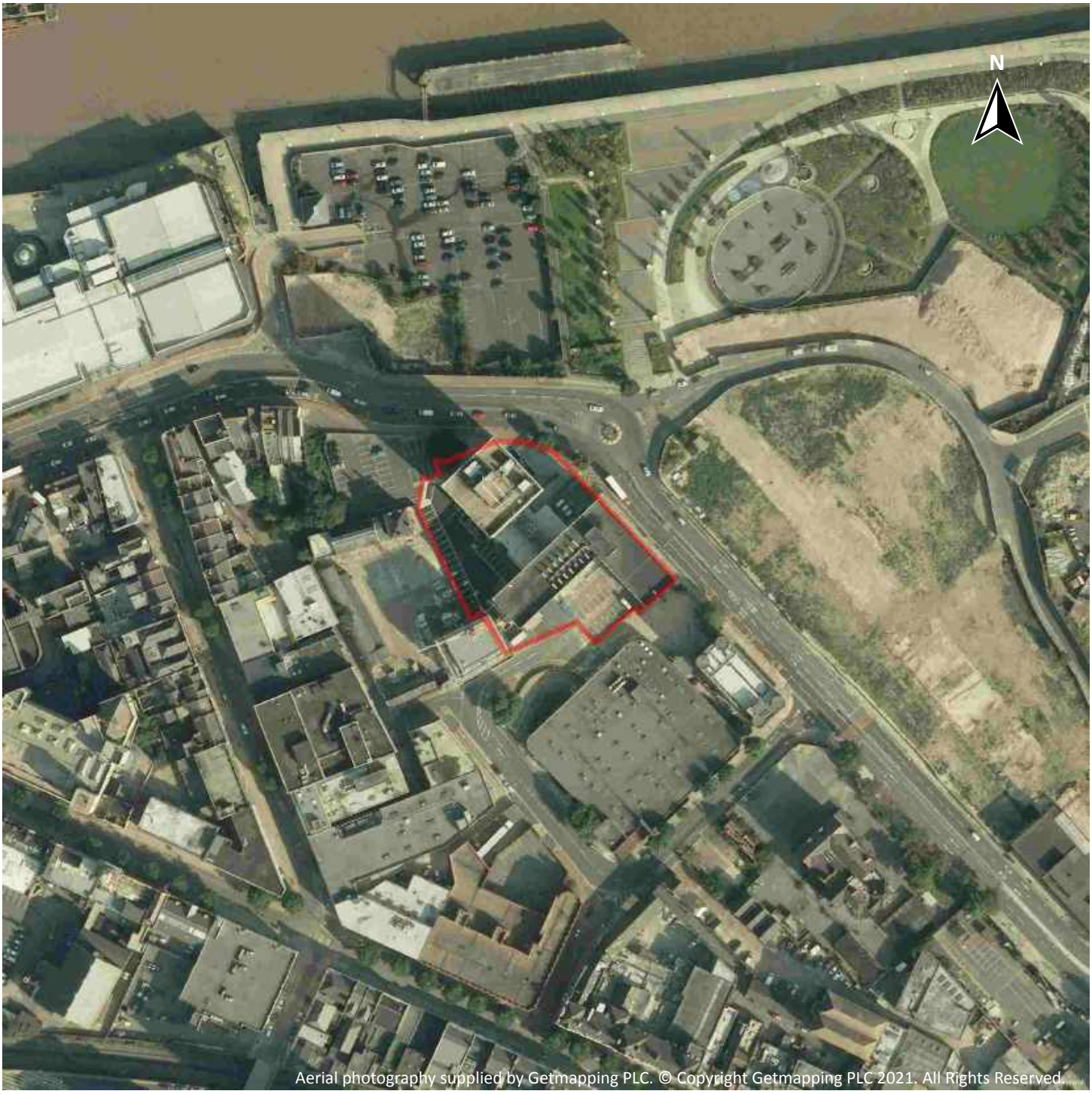
Site Area: 0.44ha

Recent site history - 2018 aerial photograph

Capture Date: 01/09/2018

Site Area: 0.44ha

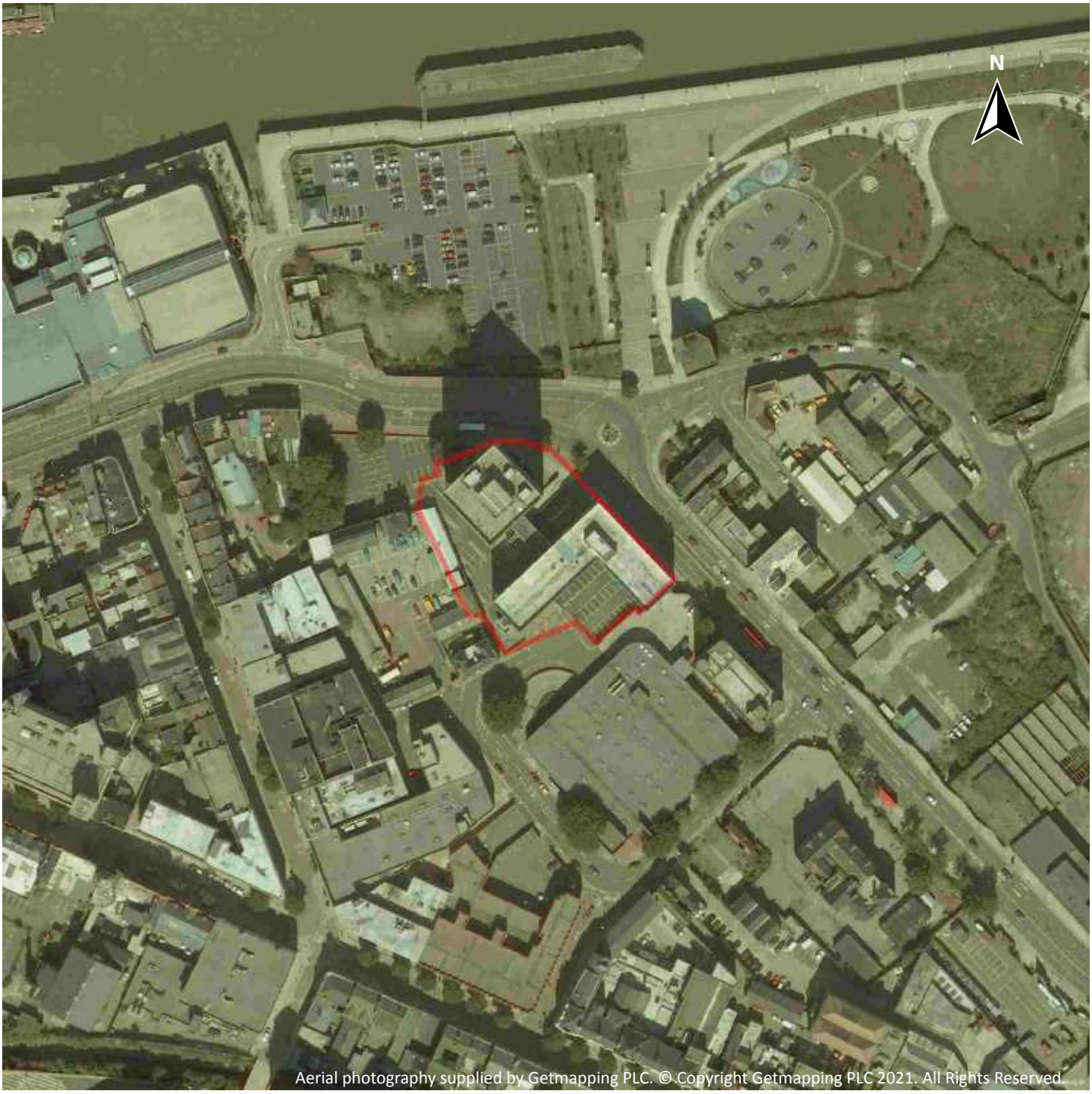
Recent site history - 2008 aerial photograph



Capture Date: 21/09/2008

Site Area: 0.44ha

Recent site history - 2005 aerial photograph



Capture Date: 29/08/2005

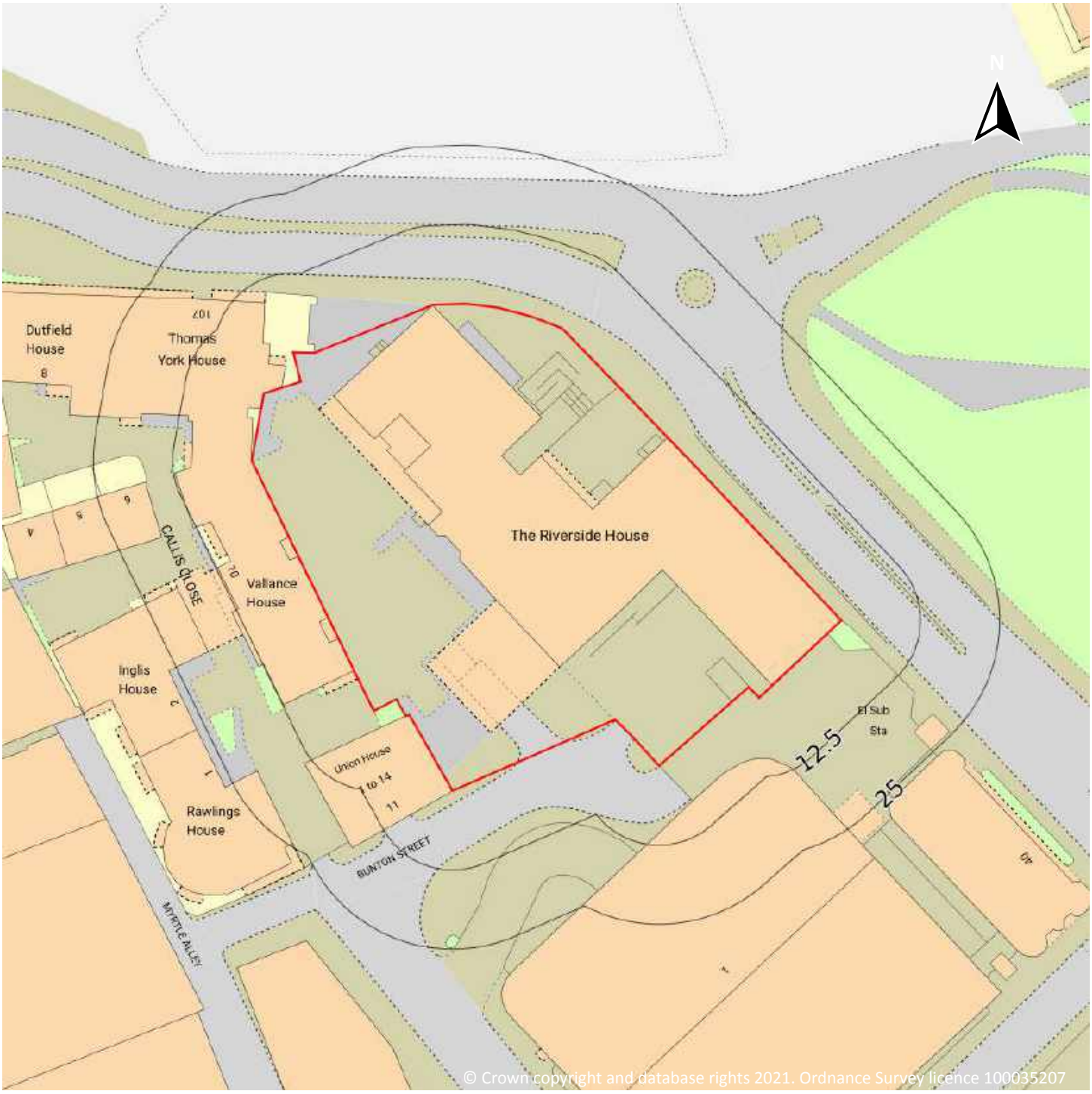
Site Area: 0.44ha

Recent site history - 1999 aerial photograph

Capture Date: 04/09/1999

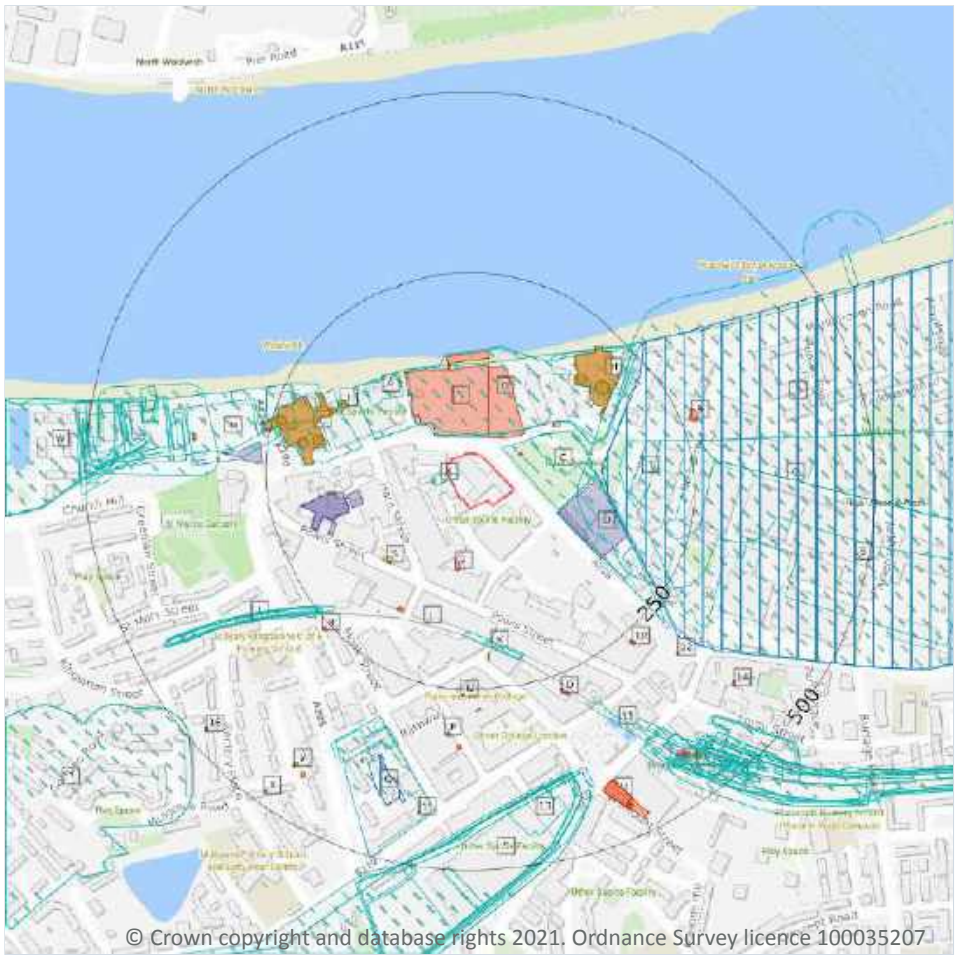
Site Area: 0.44ha

OS MasterMap site plan



Site Area: 0.44ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

Historical military land

1.1 Historical industrial land uses

Records within 500m	102

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Smithy**	**1914**	**2253278**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Smithy**	**1938**	**2274113**
B	24m N	Power Station	1974	2151637
B	24m N	Unspecified Works	1962	2159892
B	26m N	Unspecified Commercial/Industrial	1981 - 1988	2257492
C	27m NE	Unspecified Works	1981 - 1988	2244589
C	61m NE	Unspecified Works	1995	2260385
D	68m SE	Garage	1981 - 1988	2219634
D	88m E	Garage	1995	2207220
3	88m E	Railway Sidings	1866	2175779
4	110m NW	Unspecified Wharf	1981 - 1988	2248171
E	120m W	Unspecified Commercial/Industrial	1866	2131106
G	125m E	Military Stores	1866	2151467
6	148m E	Unspecified Commercial/Industrial	1882	2131107
H	151m NE	Unspecified Commercial/Industrial	1866	2233324
I	159m NW	Unspecified Tank	1981 - 1995	2196745
7	162m E	Railway Sidings	1882	2218112
I	162m NW	Unspecified Tank	1962 - 1974	2264148
E	163m W	Ambulance Station	1981	2181289
H	166m NE	Unspecified Tank	1866	2155096
K	169m S	Tunnel	1981 - 1995	2226603
H	176m NE	Unspecified Tank	1866	2155097
E	177m W	Unspecified Tank	1866	2155100
K	183m S	Tunnel	1974	2190228
E	188m W	Unspecified Wharf	1962	2157294
E	194m W	Ambulance Station	1988 - 1995	2226912
E	198m W	Unspecified Tank	1866	2155101
H	198m NE	Railway Sidings	1888	2239319
G	217m E	Railway Sidings	1882	2222376

ID	Location	Land use	Dates present	Group ID
E	220m W	Unspecified Tank	1866	2155102
L	228m SW	Tunnel	1882	2227086
E	235m W	Unspecified Tank	1866	2155103
M	238m W	Unspecified Industrial/Commercial	1888	2164928
L	243m SW	Tunnel	1974	2264795
L	243m SW	Tunnel	1981 - 1988	2196857
L	246m SW	Tunnel	1962	2186270
L	251m SW	Tunnel	1866	2176261
G	265m E	Timber Fields	1882	2201334
M	266m W	Unspecified Commercial/Industrial	1962	2187811
11	304m SE	Tunnel	1962 - 1995	2169765
Q	313m SW	Unspecified Works	1962 - 1974	2280162
M	316m W	Unspecified Wharves	1948	2212459
Q	321m S	Police Station	1974 - 1995	2228838
Q	323m S	Police Station	1962	2235157
M	334m W	Smithy	1888	2167400
M	336m W	Smithy	1898	2218243
R	358m SE	Railway Sidings	1882	2174234
M	359m W	Smithy	1894	2197556
M	361m W	Smithy	1899	2288776
M	362m W	Smithy	1894	2219847
M	381m W	Unspecified Wharves	1894	2256232
S	383m S	Engineers Barracks	1882	2217559
M	383m W	Unspecified Wharves	1888 - 1894	2280271
T	383m SE	Railway Station	1962	2285219
S	384m S	Barracks	1898	2225320
S	384m S	Barracks	1894	2177381
M	384m W	Unspecified Wharves	1898	2222011

ID	Location	Land use	Dates present	Group ID
T	385m SE	Railway Station	1938 - 1995	2192432
S	385m S	Barracks	1948	2233804
S	386m S	Barracks	1962	2249052
S	387m S	Barracks	1894	2293219
S	388m S	Artillery Barracks	1938	2181067
S	388m S	Artillery Barracks	1914	2209298
R	389m SE	Railway Sidings	1894	2215945
S	391m S	Barracks	1894	2263794
13	395m S	Engineers Barracks	1866	2218555
T	402m SE	Railway Building	1894	2150123
R	402m SE	Railway Sidings	1914	2216578
R	402m SE	Railway Sidings	1938	2251402
T	402m SE	Railway Station	1914	2199585
M	403m W	Unspecified Wharves	1962 - 1988	2239050
M	408m W	Railway Sidings	1894	2187080
M	409m W	Unspecified Wharves	1899	2214303
M	410m W	Railway Sidings	1888 - 1894	2240345
M	412m W	Unspecified Wharves	1894	2231691
M	416m W	Railway Sidings	1898	2258957
T	416m SE	Telecomm Exchange	1962 - 1974	2255133
M	418m W	Railway Sidings	1899	2280445
T	418m SE	Telephone Exchange	1988 - 1995	2186886
T	418m SE	Telecomm Exchange	1981	2236544
R	420m SE	Railway Sidings	1894	2195508
T	420m SE	Railway Station	1894	2224090
T	423m SE	Railway Buildings	1894	2163701
T	428m SE	Railway Station	1898	2213932
T	429m SE	Railway Building	1894	2150122

ID	Location	Land use	Dates present	Group ID
T	431m SE	Railway Station	1894	2264888
R	433m SE	Railway Sidings	1962	2218303
R	436m SE	Railway Sidings	1888 - 1894	2177670
T	436m SE	Railway Station	1894	2213974
R	441m SE	Railway Station	1948	2211017
R	444m SE	Railway Sidings	1898	2247179
R	454m SE	Railway Sidings	1866	2240778
W	459m W	Dock Yard	1974	2243548
W	460m W	Unspecified Depot	1981 - 1988	2255464
T	466m SE	Railway Station	1882	2240570
T	471m SE	Railway Building	1894	2173317
M	481m W	Unspecified Wharves	1899	2243576
T	488m SE	Railway Station	1866	2264082
Y	492m SW	Barracks	1894	2231972
Y	492m SW	Barracks	1899	2278746
S	495m S	Depot Barracks	1914	2211843
S	495m S	Depot Barracks	1938	2237114

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**31**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
5	123m SW	Unspecified Tank	1956 - 1958	406811

ID	Location	Land use	Dates present	Group ID
H	160m NE	Gas Works	1869	380462
I	160m NW	Unspecified Tank	1956 - 1988	390933
I	160m NW	Unspecified Tank	1958	408077
J	166m S	Unspecified Tank	1869	366560
H	166m NE	Gasometer	1869	374052
E	169m NW	Gas Works	1869	380470
E	175m W	Gasometer	1869	374054
H	176m NE	Gasometer	1869	374055
J	189m SW	Unspecified Tank	1869	366559
E	194m W	Gasometer	1869	374053
K	201m S	Unspecified Tank	1971	409172
E	215m W	Gasometer	1869	374044
E	232m W	Gasometer	1869	374045
H	238m NE	Unspecified Tank	1896	366688
N	256m S	Unspecified Tank	1869	366567
N	276m S	Unspecified Tank	1896	366564
N	278m S	Unspecified Tank	1869	366566
P	309m S	Tanks	1956 - 1958	404955
P	314m S	Tanks	1956 - 1958	394951
12	319m SE	Unspecified Tank	1896	366561
M	349m W	Tanks	1970 - 1988	402084
M	349m W	Tanks	1970	376837
M	350m W	Unspecified Tank	1988	366686
M	376m W	Unspecified Tank	1970	366687
Q	377m SW	Unspecified Tank	1869	366569
V	423m SW	Unspecified Tank	1896	366568
15	425m S	Unspecified Tank	1869	366575
V	429m SW	Unspecified Tank	1869	366574

ID	Location	Land use	Dates present	Group ID
X	479m SW	Unspecified Tank	1896	366573
X	483m SW	Unspecified Tank	1869	366570

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**31**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
1	23m N	Power Station	1970	251984
B	28m N	Power Station	1970	251983
C	39m NE	Electricity Substation	1970 - 1996	267352
2	73m S	Electricity Substation	1988	247113
C	100m NE	Electricity Substation	1987 - 1996	282811
H	160m NE	Gas Works	1869	250255
J	164m SW	Electricity Substation	1970 - 1991	278356
J	166m SW	Electricity Substation	1988	273470
H	166m NE	Gasometer	1869	251534
E	169m NW	Gas Works	1869	250263
E	175m W	Gasometer	1869	251536
H	176m NE	Gasometer	1869	251537
E	194m W	Gasometer	1869	251535
E	215m W	Gasometer	1869	251526
E	232m W	Gasometer	1869	251527
8	256m SW	Electricity Substation	1971 - 1991	275859

ID	Location	Land use	Dates present	Group ID
9	261m E	Electricity Substation	1996	247112
10	263m SE	Electricity Substation	1982 - 1997	261388
O	269m S	Electricity Substation	1987 - 1997	286997
O	276m S	Electricity Substation	1982 - 1987	288964
P	327m S	Electricity Substation	1956 - 1991	273426
M	340m W	Electricity Substation	1970 - 1988	291610
14	402m SE	Electricity Substation	1956 - 1958	268264
U	412m SE	Electricity Substation	1958	254683
U	413m SE	Electricity Substation	1956	265166
U	413m SE	Electricity Substation	1971	252071
V	431m SW	Electricity Substation	1971 - 1991	258304
U	447m SE	Electricity Substation	1971 - 1987	289567
U	452m SE	Electricity Substation	1958 - 1997	285833
U	453m SE	Electricity Substation	1956	253802
16	471m SW	Electricity Substation	1956 - 1991	288978

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	6

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
D	68m SE	Garage	1987 - 1991	81758
D	69m SE	Garage	1970	77991
F	124m W	Garage	1988	78973
F	144m W	Garage	1958	78369
F	145m W	Garage	1956 - 1970	83614
M	255m W	Garage	1956 - 1958	81539

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m	2

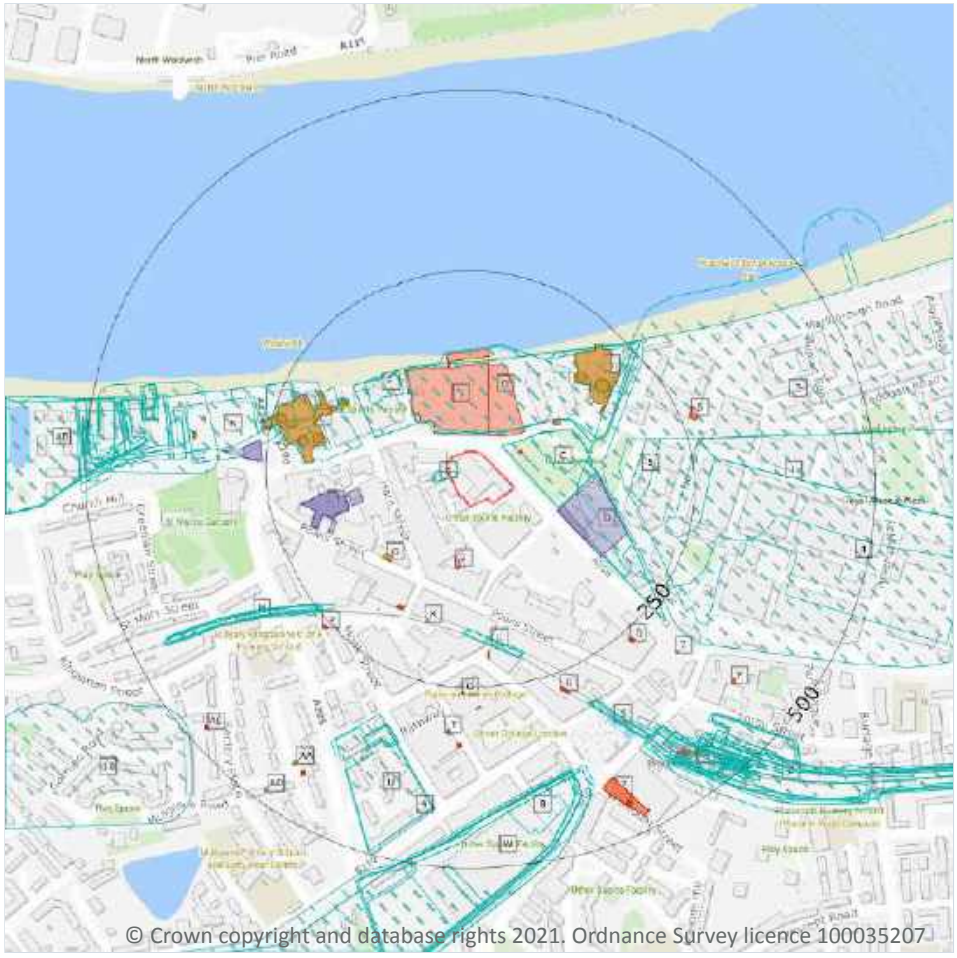
Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

Features are displayed on the Past land use map on **page 14**

ID	Location	Site Name	Date of Operation	Activities
G	124m E	The Royal Arsenal London / Woolwich Warren	c.1671 - 1994	Armaments manufacture, ammunition proofing, explosives research for British armed forces; Shell Filling factories/explosive factories on site/gas works and chemical works
Q	361m S	Woolwich	circa WWI	National Gauge Factory; Gauges

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	141

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 23**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Smithy**	**1938**	**2274113**
A	**On site**	**Smithy**	**1914**	**2253278**
B	24m N	Power Station	1974	2151637

ID	Location	Land Use	Date	Group ID
B	24m N	Unspecified Works	1962	2159892
B	26m N	Unspecified Commercial/Industrial	1988	2257492
B	26m N	Unspecified Commercial/Industrial	1981	2257492
C	27m NE	Unspecified Works	1988	2244589
C	27m NE	Unspecified Works	1981	2244589
C	61m NE	Unspecified Works	1995	2260385
D	68m SE	Garage	1988	2219634
D	68m SE	Garage	1981	2219634
D	88m E	Garage	1995	2207220
3	88m E	Railway Sidings	1866	2175779
E	110m NW	Unspecified Wharf	1988	2248171
E	110m NW	Unspecified Wharf	1981	2248171
F	120m W	Unspecified Commercial/Industrial	1866	2131106
I	125m E	Military Stores	1866	2151467
4	148m E	Unspecified Commercial/Industrial	1882	2131107
J	151m NE	Unspecified Commercial/Industrial	1866	2233324
F	159m NW	Unspecified Tank	1988	2196745
F	159m NW	Unspecified Tank	1981	2196745
F	159m NW	Unspecified Tank	1995	2196745
5	162m E	Railway Sidings	1882	2218112
F	162m NW	Unspecified Tank	1974	2264148
F	162m NW	Unspecified Tank	1962	2264148
F	163m W	Ambulance Station	1981	2181289
J	166m NE	Unspecified Tank	1866	2155096
L	169m S	Tunnel	1988	2226603
L	169m S	Tunnel	1981	2226603
L	169m S	Tunnel	1995	2226603
J	176m NE	Unspecified Tank	1866	2155097

ID	Location	Land Use	Date	Group ID
F	177m W	Unspecified Tank	1866	2155100
L	183m S	Tunnel	1974	2190228
F	188m W	Unspecified Wharf	1962	2157294
F	194m W	Ambulance Station	1988	2226912
F	194m W	Ambulance Station	1995	2226912
F	198m W	Unspecified Tank	1866	2155101
J	198m NE	Railway Sidings	1888	2239319
I	217m E	Railway Sidings	1882	2222376
F	220m W	Unspecified Tank	1866	2155102
M	228m SW	Tunnel	1882	2227086
F	235m W	Unspecified Tank	1866	2155103
N	238m W	Unspecified Industrial/Commercial	1888	2164928
M	243m SW	Tunnel	1974	2264795
M	243m SW	Tunnel	1988	2196857
M	243m SW	Tunnel	1981	2196857
M	246m SW	Tunnel	1962	2186270
M	251m SW	Tunnel	1866	2176261
I	265m E	Timber Fields	1882	2201334
N	266m W	Unspecified Commercial/Industrial	1962	2187811
S	304m SE	Tunnel	1962	2169765
S	307m SE	Tunnel	1988	2169765
S	307m SE	Tunnel	1981	2169765
S	307m SE	Tunnel	1974	2169765
S	307m SE	Tunnel	1995	2169765
U	313m SW	Unspecified Works	1974	2280162
N	316m W	Unspecified Wharves	1948	2212459
U	321m S	Police Station	1988	2228838
U	321m S	Police Station	1981	2228838

ID	Location	Land Use	Date	Group ID
U	321m S	Police Station	1974	2228838
U	321m S	Police Station	1995	2228838
U	323m S	Police Station	1962	2235157
N	334m W	Smithy	1888	2167400
N	336m W	Smithy	1898	2218243
N	336m W	Smithy	1898	2218243
U	341m S	Unspecified Works	1962	2280162
V	358m SE	Railway Sidings	1882	2174234
N	359m W	Smithy	1894	2197556
N	361m W	Smithy	1899	2288776
N	362m W	Smithy	1894	2219847
N	381m W	Unspecified Wharves	1894	2256232
W	383m S	Engineers Barracks	1882	2217559
N	383m W	Unspecified Wharves	1888	2280271
X	383m SE	Railway Station	1962	2285219
W	384m S	Barracks	1898	2225320
W	384m S	Barracks	1898	2225320
W	384m S	Barracks	1894	2177381
N	384m W	Unspecified Wharves	1898	2222011
N	384m W	Unspecified Wharves	1898	2222011
X	385m SE	Railway Station	1988	2192432
X	385m SE	Railway Station	1981	2192432
X	385m SE	Railway Station	1995	2192432
W	385m S	Barracks	1948	2233804
X	386m SE	Railway Station	1974	2192432
W	386m S	Barracks	1962	2249052
W	387m S	Barracks	1894	2293219
W	388m S	Artillery Barracks	1938	2181067

ID	Location	Land Use	Date	Group ID
W	388m S	Artillery Barracks	1914	2209298
V	389m SE	Railway Sidings	1894	2215945
X	390m SE	Railway Station	1948	2192432
W	391m S	Barracks	1894	2263794
8	395m S	Engineers Barracks	1866	2218555
X	402m SE	Railway Building	1894	2150123
V	402m SE	Railway Sidings	1938	2251402
V	402m SE	Railway Sidings	1914	2216578
X	402m SE	Railway Station	1938	2192432
X	402m SE	Railway Station	1914	2199585
N	403m W	Unspecified Wharves	1988	2239050
N	403m W	Unspecified Wharves	1981	2239050
N	403m W	Unspecified Wharves	1974	2239050
N	408m W	Railway Sidings	1894	2187080
N	409m W	Unspecified Wharves	1899	2214303
N	410m W	Railway Sidings	1894	2240345
N	412m W	Unspecified Wharves	1894	2231691
N	412m W	Unspecified Wharves	1962	2239050
N	414m W	Railway Sidings	1888	2240345
N	416m W	Railway Sidings	1898	2258957
N	416m W	Railway Sidings	1898	2258957
X	416m SE	Telecomm Exchange	1974	2255133
X	416m SE	Telecomm Exchange	1962	2255133
N	418m W	Railway Sidings	1899	2280445
X	418m SE	Telephone Exchange	1988	2186886
X	418m SE	Telecomm Exchange	1981	2236544
X	418m SE	Telephone Exchange	1995	2186886
V	420m SE	Railway Sidings	1894	2195508

ID	Location	Land Use	Date	Group ID
X	420m SE	Railway Station	1894	2224090
X	423m SE	Railway Buildings	1894	2163701
X	428m SE	Railway Station	1898	2213932
X	428m SE	Railway Station	1898	2213932
X	429m SE	Railway Building	1894	2150122
X	431m SE	Railway Station	1894	2264888
V	433m SE	Railway Sidings	1962	2218303
V	436m SE	Railway Sidings	1894	2177670
X	436m SE	Railway Station	1894	2213974
V	441m SE	Railway Station	1948	2211017
V	444m SE	Railway Sidings	1898	2247179
V	444m SE	Railway Sidings	1898	2247179
X	451m SE	Railway Sidings	1888	2177670
V	454m SE	Railway Sidings	1866	2240778
AB	459m W	Dock Yard	1974	2243548
AB	460m W	Unspecified Depot	1988	2255464
AB	460m W	Unspecified Depot	1981	2255464
X	466m SE	Railway Station	1882	2240570
X	471m SE	Railway Building	1894	2173317
X	480m SE	Railway Building	1894	2173317
N	481m W	Unspecified Wharves	1899	2243576
N	482m W	Unspecified Wharves	1894	2280271
X	488m SE	Railway Station	1866	2264082
10	492m SW	Barracks	1899	2278746
W	495m S	Depot Barracks	1938	2237114
W	495m S	Depot Barracks	1914	2211843

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**40**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 23**

ID	Location	Land Use	Date	Group ID
G	123m SW	Unspecified Tank	1958	406811
G	123m SW	Unspecified Tank	1956	406811
J	160m NE	Gas Works	1869	380462
F	160m NW	Unspecified Tank	1958	408077
F	160m NW	Unspecified Tank	1970	390933
F	160m NW	Unspecified Tank	1956	390933
F	160m NW	Unspecified Tank	1988	390933
K	166m S	Unspecified Tank	1869	366560
J	166m NE	Gasometer	1869	374052
F	169m NW	Gas Works	1869	380470
F	175m W	Gasometer	1869	374054
J	176m NE	Gasometer	1869	374055
K	189m SW	Unspecified Tank	1869	366559
F	194m W	Gasometer	1869	374053
L	201m S	Unspecified Tank	1971	409172
L	201m S	Unspecified Tank	1971	409172
F	215m W	Gasometer	1869	374044
F	232m W	Gasometer	1869	374045
J	238m NE	Unspecified Tank	1896	366688
O	256m S	Unspecified Tank	1869	366567
O	276m S	Unspecified Tank	1896	366564
O	278m S	Unspecified Tank	1869	366566
T	309m S	Tanks	1958	404955

ID	Location	Land Use	Date	Group ID
T	309m S	Tanks	1956	404955
T	309m S	Tanks	1956	404955
T	314m S	Tanks	1956	394951
T	314m S	Tanks	1956	394951
T	314m S	Tanks	1958	394951
7	319m SE	Unspecified Tank	1896	366561
N	349m W	Tanks	1970	402084
N	349m W	Tanks	1970	376837
N	349m W	Tanks	1988	402084
N	350m W	Unspecified Tank	1988	366686
N	376m W	Unspecified Tank	1970	366687
U	377m SW	Unspecified Tank	1869	366569
AA	423m SW	Unspecified Tank	1896	366568
9	425m S	Unspecified Tank	1869	366575
AA	429m SW	Unspecified Tank	1869	366574
AD	479m SW	Unspecified Tank	1896	366573
AD	483m SW	Unspecified Tank	1869	366570

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**77**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 23**

ID	Location	Land Use	Date	Group ID
1	23m N	Power Station	1970	251984
B	28m N	Power Station	1970	251983
C	39m NE	Electricity Substation	1970	267352

ID	Location	Land Use	Date	Group ID
C	39m NE	Electricity Substation	1996	267352
C	39m NE	Electricity Substation	1987	267352
C	39m NE	Electricity Substation	1991	267352
2	73m S	Electricity Substation	1988	247113
C	100m NE	Electricity Substation	1987	282811
C	101m NE	Electricity Substation	1996	282811
C	101m NE	Electricity Substation	1991	282811
J	160m NE	Gas Works	1869	250255
K	164m SW	Electricity Substation	1971	278356
K	164m SW	Electricity Substation	1971	278356
K	165m SW	Electricity Substation	1986	278356
K	165m SW	Electricity Substation	1991	278356
K	166m SW	Electricity Substation	1970	278356
K	166m SW	Electricity Substation	1988	273470
J	166m NE	Gasometer	1869	251534
F	169m NW	Gas Works	1869	250263
F	175m W	Gasometer	1869	251536
J	176m NE	Gasometer	1869	251537
F	194m W	Gasometer	1869	251535
F	215m W	Gasometer	1869	251526
F	232m W	Gasometer	1869	251527
P	256m SW	Electricity Substation	1971	275859
P	256m SW	Electricity Substation	1971	275859
P	256m SW	Electricity Substation	1991	275859
P	256m SW	Electricity Substation	1986	275859
6	261m E	Electricity Substation	1996	247112
Q	263m SE	Electricity Substation	1997	261388
Q	263m SE	Electricity Substation	1992	261388

ID	Location	Land Use	Date	Group ID
Q	263m SE	Electricity Substation	1991	261388
Q	263m SE	Electricity Substation	1992	261388
Q	263m SE	Electricity Substation	1987	261388
Q	264m SE	Electricity Substation	1982	261388
Q	264m SE	Electricity Substation	1987	261388
R	269m S	Electricity Substation	1987	286997
R	269m S	Electricity Substation	1997	286997
R	269m S	Electricity Substation	1992	286997
R	269m S	Electricity Substation	1991	286997
R	269m S	Electricity Substation	1992	286997
R	276m S	Electricity Substation	1982	288964
R	276m S	Electricity Substation	1987	288964
T	327m S	Electricity Substation	1991	273426
T	327m S	Electricity Substation	1956	273426
T	327m S	Electricity Substation	1971	273426
T	327m S	Electricity Substation	1971	273426
T	327m S	Electricity Substation	1956	273426
T	327m S	Electricity Substation	1958	273426
N	340m W	Electricity Substation	1988	291610
N	341m W	Electricity Substation	1970	291610
Y	402m SE	Electricity Substation	1958	268264
Y	403m SE	Electricity Substation	1956	268264
Z	412m SE	Electricity Substation	1958	254683
Z	413m SE	Electricity Substation	1956	265166
Z	413m SE	Electricity Substation	1971	252071
AA	431m SW	Electricity Substation	1991	258304
AA	432m SW	Electricity Substation	1971	258304
AA	432m SW	Electricity Substation	1971	258304

ID	Location	Land Use	Date	Group ID
AA	432m SW	Electricity Substation	1986	258304
Z	447m SE	Electricity Substation	1971	289567
Z	447m SE	Electricity Substation	1987	289567
Z	452m SE	Electricity Substation	1997	285833
Z	452m SE	Electricity Substation	1992	285833
Z	452m SE	Electricity Substation	1991	285833
Z	452m SE	Electricity Substation	1992	285833
Z	453m SE	Electricity Substation	1982	285833
Z	453m SE	Electricity Substation	1987	285833
Z	453m SE	Electricity Substation	1956	253802
Z	453m SE	Electricity Substation	1958	285833
AC	471m SW	Electricity Substation	1958	288978
AC	471m SW	Electricity Substation	1991	288978
AC	471m SW	Electricity Substation	1956	288978
AC	471m SW	Electricity Substation	1971	288978
AC	471m SW	Electricity Substation	1971	288978
AC	471m SW	Electricity Substation	1956	288978
AC	472m SW	Electricity Substation	1986	288978

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	**9**

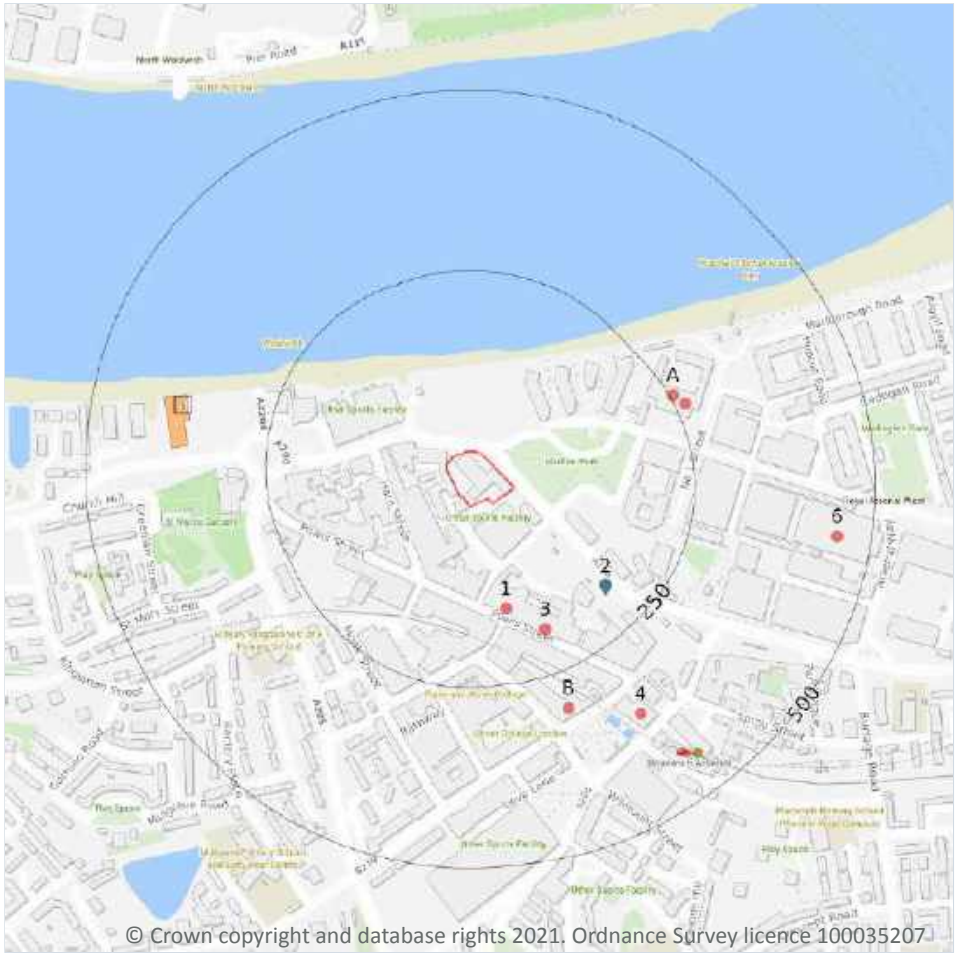
Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 23**

ID	Location	Land Use	Date	Group ID
D	68m SE	Garage	1987	81758
D	69m SE	Garage	1991	81758
D	69m SE	Garage	1970	77991
H	124m W	Garage	1988	78973
H	144m W	Garage	1958	78369
H	145m W	Garage	1970	83614
H	145m W	Garage	1956	83614
N	255m W	Garage	1956	81539
N	255m W	Garage	1958	81539

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Historical waste sites

Licensed waste sites

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	1

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 35**

ID	Location	Address	Further Details	Date
5	359m W	Site Address: N/A	Type of Site: Refuse Destructor Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1916

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	1

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 35**

ID	Location	Details		
2	187m SE	Site Name: Market Traders Comp'd, Bereford St, Se18 Site Address: London Borough of Greenwich, Market Traders Compound, 6-14, Beresford Street, Woolwich, London, SE18 6BE Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GRE008 EPR reference: EA/EPR/DP3297LJ/S006 Operator: Greenwich London Borough Council Waste Management licence No: 83241 Annual Tonnage: 0	Issue Date: 16/04/1992 Effective Date: - Modified: 04/09/1995 Surrendered Date: Feb 28 2009 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m **11**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

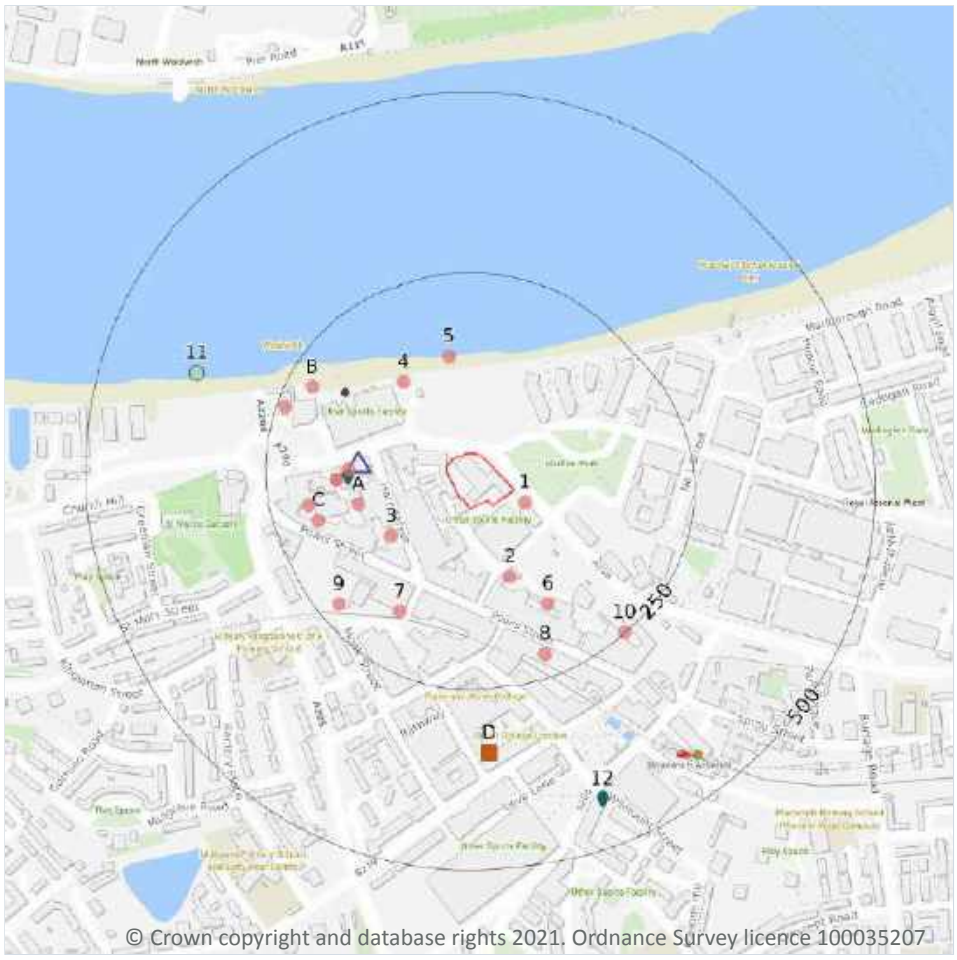
Features are displayed on the Waste and landfill map on **page 35**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	147m S	St James Pharmacy, 52 Powis Street, Woolwich, London, SE18 6LQ	WEX151301	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
3	188m SE	52 Powis Street London Greenwich SE18 6LQ	EPR/WF0402ZW/A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
A	254m NE	ARTILLERY SQUARE, LONDON, SE18 4DX	WEX079015	Using waste exemption	Not on a farm	Use of waste in the construction of entertainment or educational installations etc
A	263m NE	Greenwich Heritage Centre Artillery Square Royal Arsenal London SE18 4DX	EPR/SE5083AW/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in the construction of entertainment or educational installations etc
B	301m S	7, GREEN'S END, LONDON, SE18 6HX	WEX091964	Storing waste exemption	Not on a farm	Storage of waste in secure containers
B	301m S	7, GREENS END, LONDON, SE18 6HX	WEX095612	Storing waste exemption	Not on a farm	Storage of waste in a secure place

ID	Location	Site	Reference	Category	Sub-Category	Description
B	301m S	7, GREENS END, LONDON, SE18 6HX	WEX095612	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	301m S	7, GREENS END, LONDON, SE18 6HX	WEX095612	Storing waste exemption	Not on a farm	Storage of waste in secure containers
B	301m S	7, GREEN'S END, LONDON, SE18 6HX	WEX091964	Storing waste exemption	Not on a farm	Storage of waste in a secure place
4	355m SE	-	WEX265001	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
6	452m E	23, ARSENAL WAY, LONDON, SE18 6TE	WEX248100	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline

Search buffers in metres (m)

Recent industrial land uses

Current or recent petrol stations

Licensed pollutant release (Part A(2)/B)

Radioactive Substance Authorisations

Licensed Discharges to controlled waters

Pollutant release to public sewer

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	18

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Company	Address	Activity	Category
1	23m SE	Electricity Sub Station	Greater London, SE18	Electrical Features	Infrastructure and Facilities
2	100m S	Electricity Sub Station	Greater London, SE18	Electrical Features	Infrastructure and Facilities
3	108m SW	The Better Beds Store	15-21, Hare Street, Thamesmead West, London, Greater London, SE18 6NE	Beds and Bedding	Consumer Products

ID	Location	Company	Address	Activity	Category
4	125m NW	Slipway	Greater London, SE18	Moorings and Unloading Facilities	Water
A	130m W	Finesse Colour Ltd	5, Mortgramit Square, London, Greater London, SE18 6DR	Published Goods	Industrial Products
A	135m W	MOT Test Centre	124-129, Woolwich High Street, Thamesmead West, London, Greater London, SE18 6DS	Vehicle Repair, Testing and Servicing	Repair and Servicing
5	137m N	Slipway	Greater London, SE18	Moorings and Unloading Facilities	Water
A	153m W	Hand Car Wash	125-129, Woolwich High Street, London, Greater London, SE18 6DS	Vehicle Cleaning Services	Personal, Consumer and Other Services
A	153m W	A R Payne Autos Ltd	125-129, Woolwich High Street, London, Greater London, SE18 6DS	Vehicle Repair, Testing and Servicing	Repair and Servicing
6	155m SE	Electricity Sub Station	Greater London, SE18	Electrical Features	Infrastructure and Facilities
7	172m SW	Electricity Sub Station	Greater London, SE18	Electrical Features	Infrastructure and Facilities
C	189m W	Furlongs	160, Powis Street, London, Greater London, SE18 6NL	Vehicle Repair, Testing and Servicing	Repair and Servicing
C	196m W	Chimney	Greater London, SE18	Chimneys	Industrial Features
B	215m NW	Mooring Posts	Greater London, SE18	Moorings and Unloading Facilities	Water
8	217m S	Specsavers Hearcare	43-45, Powis Street, London, Greater London, SE18 6HZ	Disability and Mobility Equipment	Consumer Products
9	222m SW	Electricity Sub Station	Greater London, SE18	Electrical Features	Infrastructure and Facilities
B	239m W	Woolwich Ambulance Station	Woolwich Ambulance Station, New Ferry Approach, London, Greater London, SE18 6DX	Ambulance and Medical Transportation Services	Health Support Services
10	249m SE	Electricity Sub Station	Greater London, SE18	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Company	Address	LPG	Status
A	123m W	SHELL	125-129, Woolwich High Street, Woolwich, London, Outer London, SE18 6DS	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	2

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Address	Details	
A	137m W	Shell Woolwich, Woolwich High St, Woolwich, SE18 6DS	Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
12	432m S	Clean Finish Ltd, Woolwich Express, 59 Woolwich New Road, Woolwich, London, SE18 6ED	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m **3**

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Address	Details	
D	338m S	University Of Greenwich, Woolwich Campus, Wellington Street, Woolwich, London, SE18 6PF	Operator: University Of Greenwich Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD6935 Date of approval: 31/03/1991	Effective from: 31/03/1991 Last date of update: 01/01/2015 Status: Superseded By Variation
D	338m S	University Of Greenwich, Woolwich Campus, Wellington Street, Woolwich, London, SE18 6PF	Operator: University Of Greenwich Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD6935 Date of approval: 25/05/1995	Effective from: 22/06/1995 Last date of update: 01/01/2015 Status: Superseded By Variation
D	338m S	University Of Greenwich, Woolwich Campus, Wellington Street, Woolwich, London, SE18 6PF	Operator: University Of Greenwich Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD6935 Date of approval: 01/12/2003	Effective from: 01/01/2004 Last date of update: 01/01/2015 Status: Revoked/cancelled

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	1

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Address	Details	
B	174m NW	WOOLWICH LEISURE CENTRE & CARPARK, WOOLWICH LEISURE CENTRE & CARPAR, K WOOLWICH LONDON	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.1156 Permit Version: 1 Receiving Water: RIVER THAMES	Status: REVOKED - UNSPECIFIED Issue date: 21/08/1986 Effective Date: 21/08/1986 Revocation Date: 04/10/1995

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	1

Discharges of Special Category Effluents to the public sewer.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Address	Details	
D	338m S	THAMES POLYTECHNIC, WELLINGTON STREET, WELLINGTON STREET, WOOLWICH, LONDON, SE18 4BG	Permission reference: AF0512 Local Authority: LONDON BOROUGH OF GREENWICH First received date: 01/06/2001	Last received date: 01/01/2018 Status: DEAD (APPLICATION)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	1

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Details	
11	369m W	Incident Date: 17/12/2001 Incident Identification: 48435 Pollutant: Oils and Fuel Pollutant Description: Mixed/Waste Oils	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

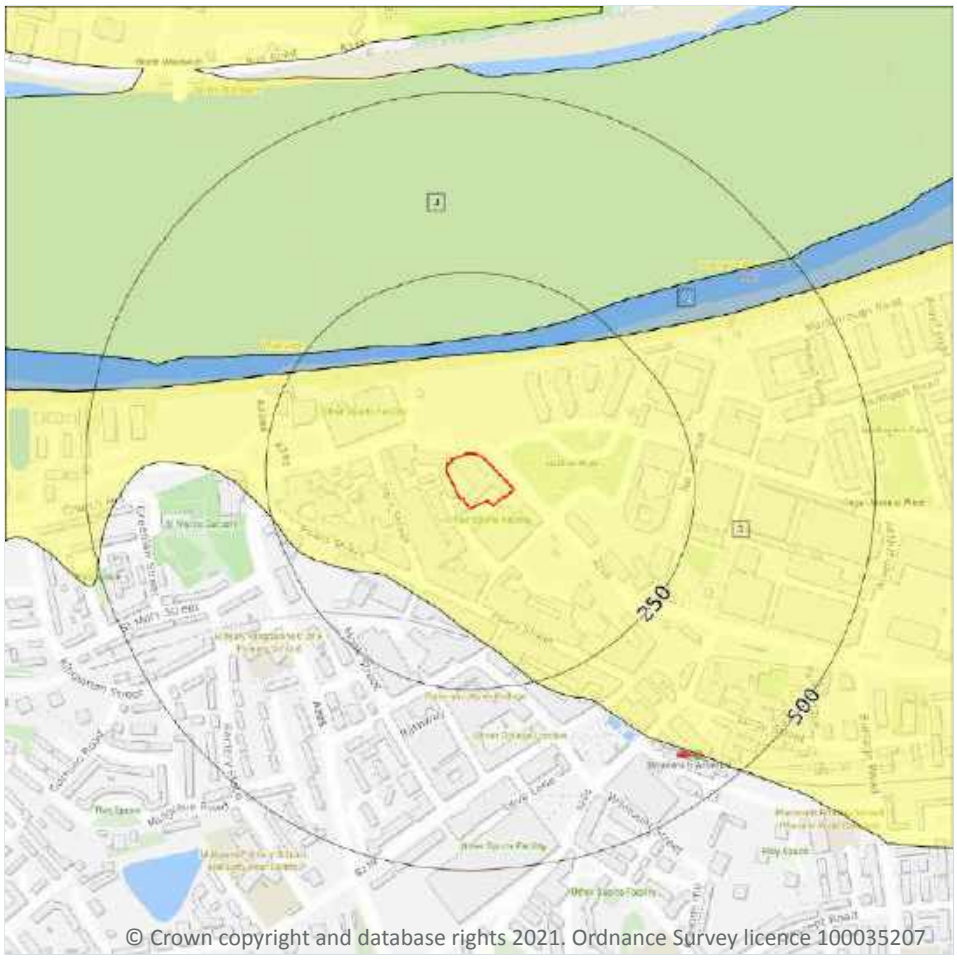
4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	3

Aquifer status of groundwater held within superficial geology.

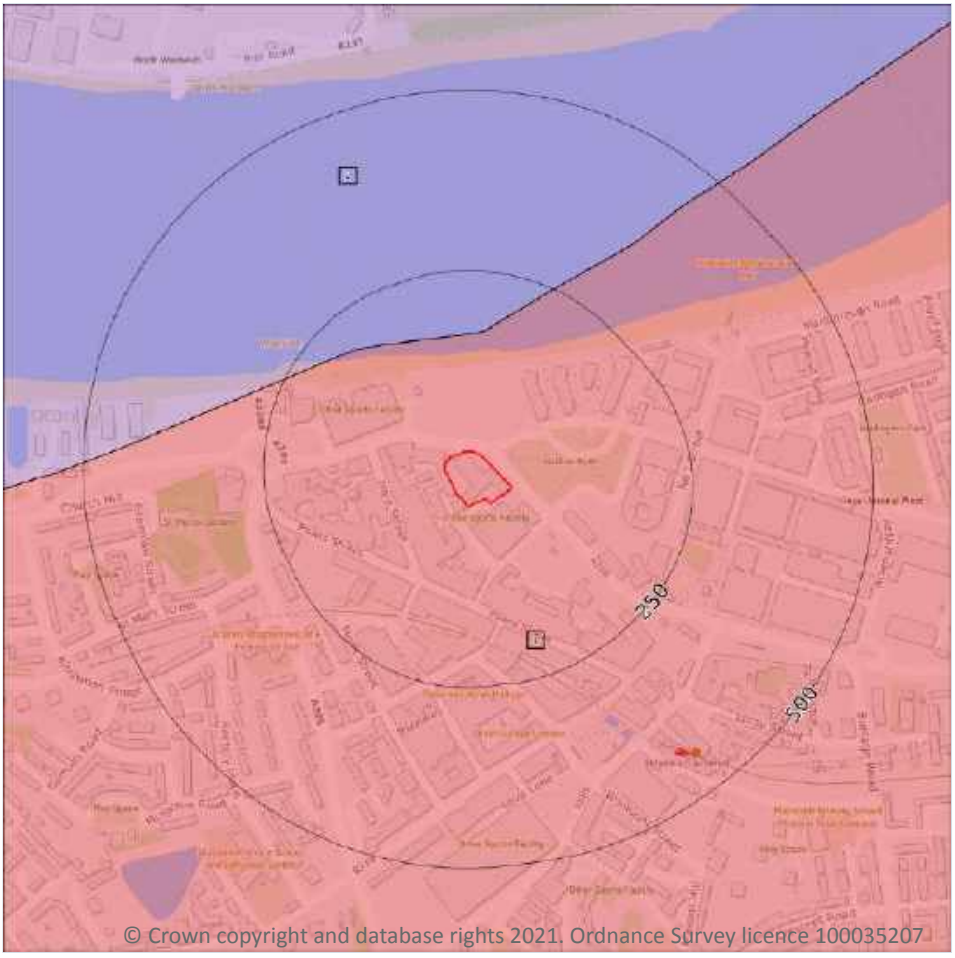
Features are displayed on the Hydrogeology map on **page 47**

ID	Location	Designation	Description
1	**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**
2	137m N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

ID	Location	Designation	Description
3	157m N	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

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	2

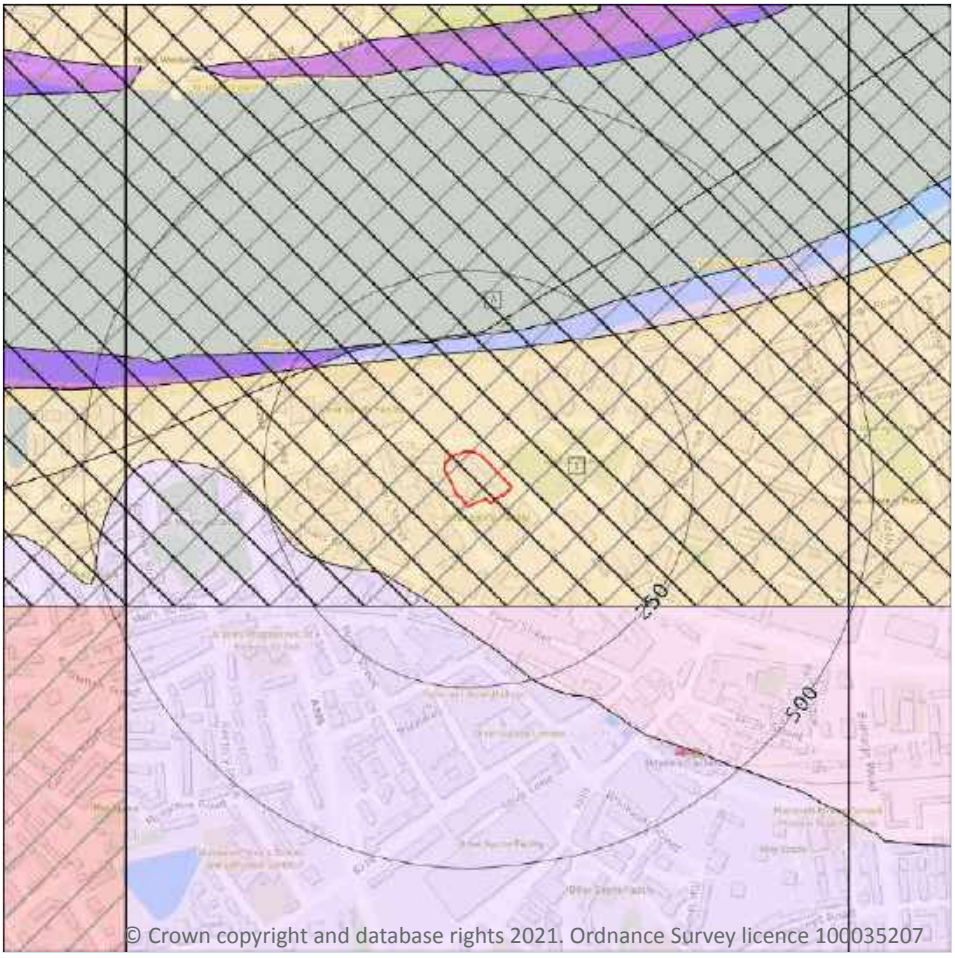
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 49**

ID	Location	Designation	Description
1	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
2	160m N	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	1

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 51**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: <300mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: No Data**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	**1**

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
A	**Significant soluble rocks are likely to be present. Problems unlikely except with considerable surface or subsurface water flow.**	**28.000000000000004%**

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	**1**

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

ID	Summary	Additional information
A	**Potentially increased vulnerability of the bedrock aquifer due to limited cover by superficial deposits**	**Removal of, or limited cover of, superficial deposits within the River Thames**

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones

Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	1

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 53**

ID	Location	Details	
-	1776m E	Status: Active Licence No: TH/039/0044/022 Details: Water Bottling Direct Source: THAMES GROUNDWATER Point: 67-69 NATHAN WAY, LONDON Data Type: Point Name: Pressure Coolers Limited Easting: 545310 Northing: 179140	Annual Volume (m^3): 40,000 Max Daily Volume (m^3): 200 Original Application No: - Original Start Date: 21/11/2019 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 21/11/2019 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**0**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	**1**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 53**

ID	Location	Details	
-	1776m E	Status: Active Licence No: TH/039/0044/022 Details: Water Bottling Direct Source: THAMES GROUNDWATER Point: 67-69 NATHAN WAY, LONDON Data Type: Point Name: Pressure Coolers Limited Easting: 545310 Northing: 179140	Annual Volume (m^3): 40,000 Max Daily Volume (m^3): 200 Original Application No: - Original Start Date: 21/11/2019 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 21/11/2019 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

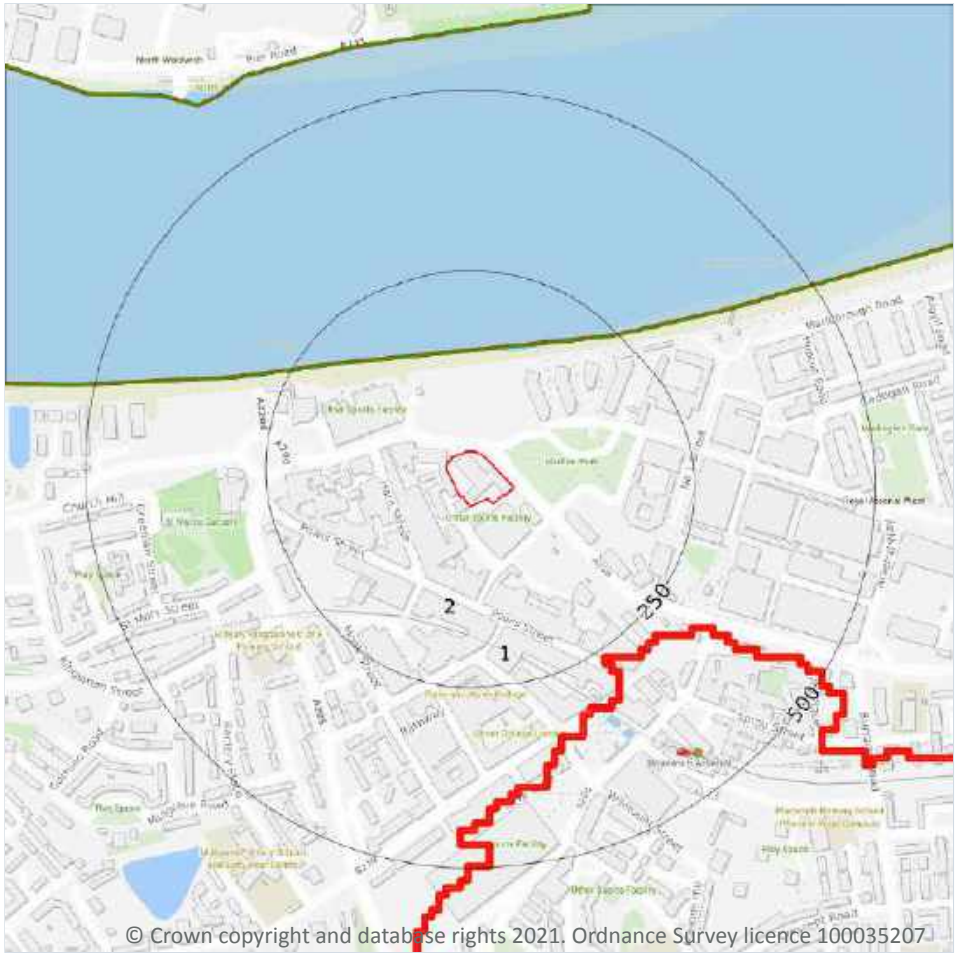
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	0

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	0

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 56**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	**On site**	**Coastal Catchment**	**Not part of a river WB catchment**	**128**	**Land area part of London Management Catchment draining to the Tidal Thames**	**London**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 56**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
A	137m N	Transitional	Thames Middle	GB530603911402	Moderate	Fail	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	1

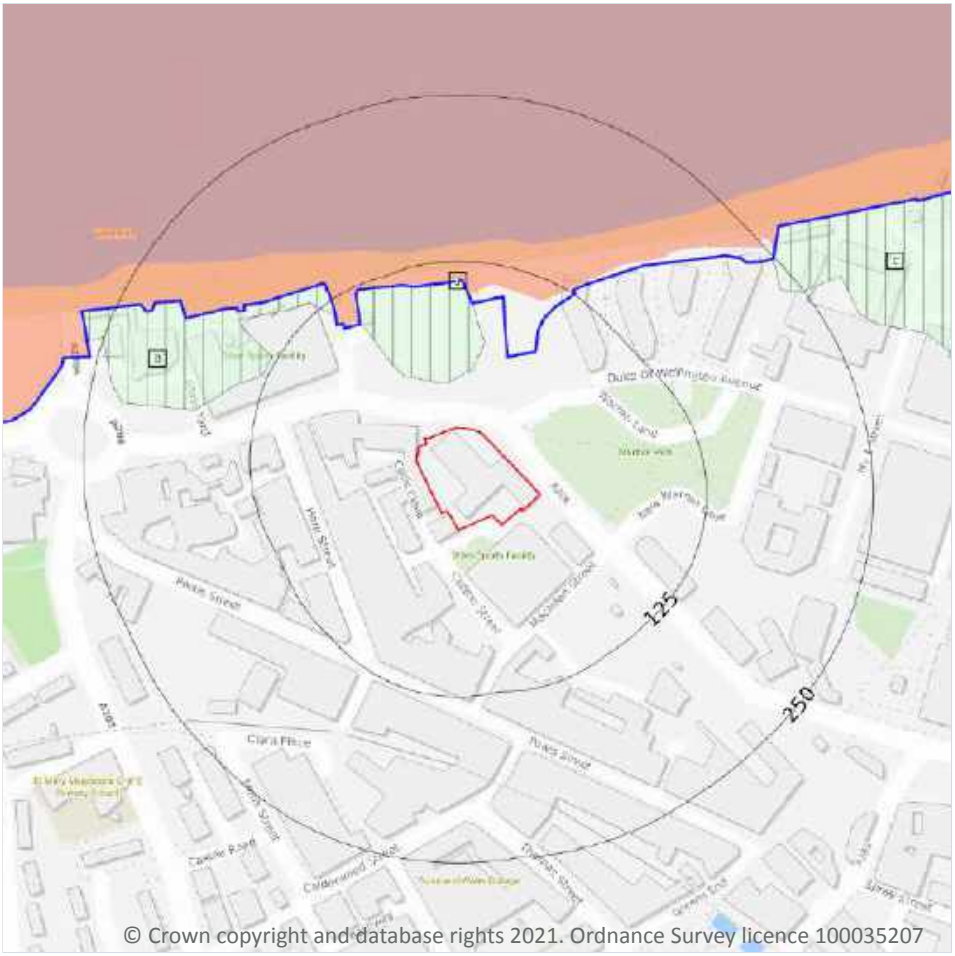
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 56**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	**On site**	**Greenwich Tertiaries and Chalk**	**GB40602G602500**	**Poor**	**Poor**	**Poor**	**2015**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

Environment Agency river and coastal flooding:

- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	1

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on **page 59**

Distance	RoFRaS flood risk
On site	**N/A**
0 - 50m	Very Low

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	1

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

Features are displayed on the River and coastal flooding map on **page 59**

ID	Location	Update
1	60m N	25/05/2021

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	3

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 59**

ID	Location	
A	34m N	Area benefiting from flood defences
B	114m NW	Area benefiting from flood defences
C	237m NE	Area benefiting from flood defences

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

Features are displayed on the River and coastal flooding map on **page 59**

Location	Type
34m N	Zone 2 - (Fluvial /Tidal Models)

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	**1**

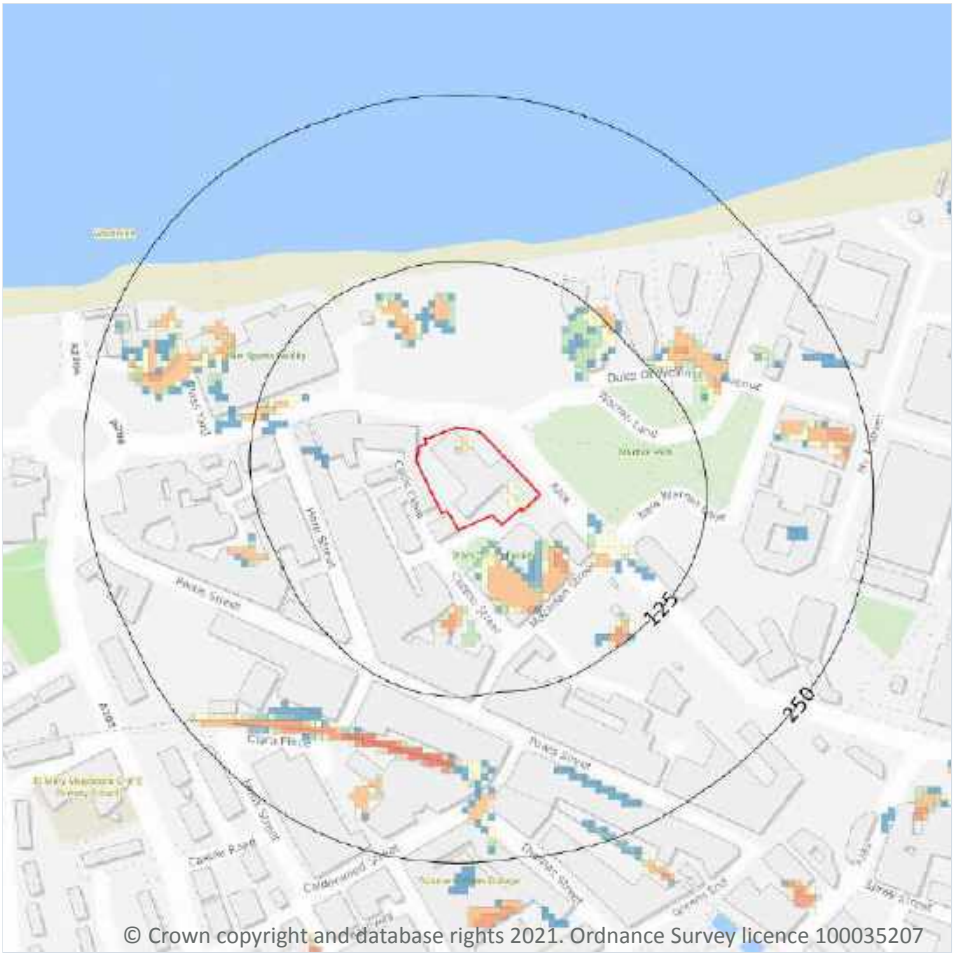
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 59**

Location	Type
50m N	Zone 3 - (Fluvial Models)

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 100 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 64**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding

9.1 Groundwater flooding

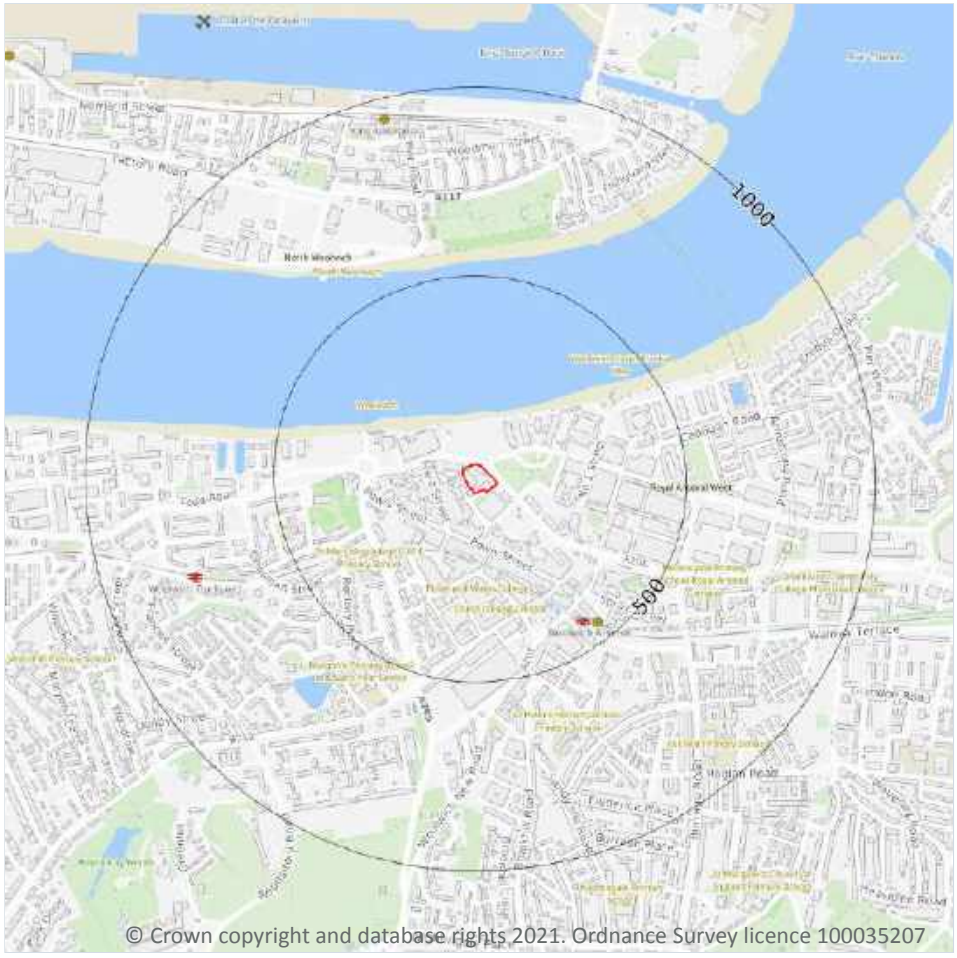
Highest risk on site	**Low**
Highest risk within 50m	**Low**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 66**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Local Nature Reserves (LNR)

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	1

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 67**

ID	Location	Name	Data source
-	1563m SW	Gilbert's Pit (Charlton)	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	2

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 67**

ID	Location	Name	Data source
-	1559m SW	Maryon Wilson Park & Gilbert's Pit	Natural England
-	1562m SW	Maryon Wilson Park & Gilbert's Pit	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or ‘classified’) under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units

Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

Not recorded

Favourable

Unfavourable - Recovering

Unfavourable - No change

Unfavourable - Declining

Partially destroyed

Destroyed

10.17 SSSI Impact Risk Zones

Records on site	2

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 72**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500t. Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location)**
2	On site	**All applications - All Planning Applications (Except Householder) Outside Or Extending Outside Existing Settlements/urban Areas Affecting Greenspace, Farmland, Semi Natural Habitats Or Landscape Features Such As Trees, Hedges, Streams, Rural Buildings/structures Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha Residential - Residential development of 10 units or more. Rural residential - Any residential developments outside of existing settlements/urban areas with a total net gain in residential units Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500t. Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location)**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	1

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

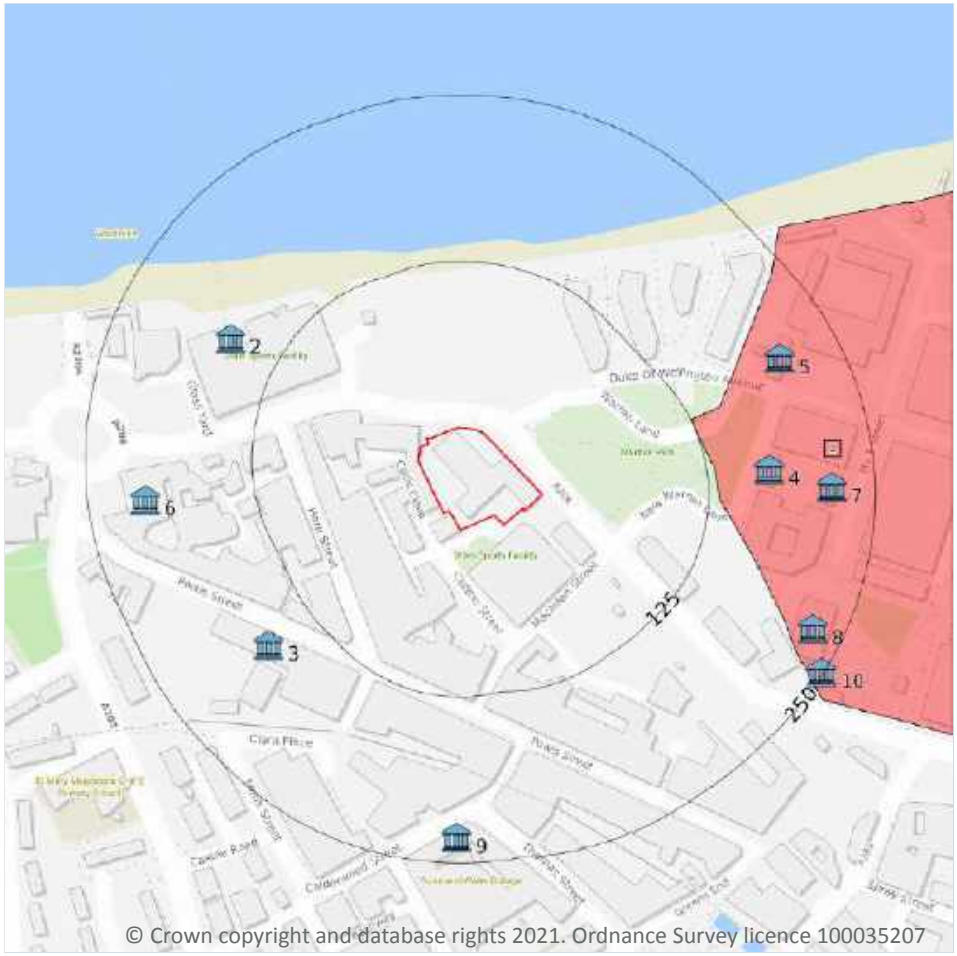
Features are displayed on the SSSI Impact Zones and Units map on **page 72**

ID: -
Location: 1563m SW
SSSI name: Gilbert's Pit (Charlton)
Unit name: Pit
Broad habitat: Earth Heritage
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
ED - Palaeogene	Favourable	26/04/2016

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	9

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 75**

ID	Location	Name	Grade	Reference Number	Listed date
2	164m NW	South Entrance Rotunda Woolwich Foot Tunnel, Woolwich Riverside, Greenwich, London, SE18	II	1213552	06/09/1989
3	164m SW	Royal Arsenal Cooperative Society Headquarters Building, Woolwich Riverside, Greenwich, London, SE18	II	1289022	01/02/1989
4	172m E	Royal Arsenal, Royal Laboratory West Pavilion, Woolwich Riverside, Greenwich, London, SE18	II	1245208	08/06/1973

ID	Location	Name	Grade	Reference Number	Listed date
5	205m NE	Royal Arsenal The Board Room, Woolwich Riverside, Greenwich, London, SE18	II*	1359015	08/06/1973
6	207m W	Granada Cinema, Woolwich Riverside, Greenwich, London, SE18	II*	1212651	31/12/1973
7	217m E	Royal Arsenal Royal Laboratory East Pavilion, Woolwich Riverside, Greenwich, London, SE18	II	1211082	08/06/1973
8	227m SE	Royal Arsenal Brass Foundry Royal Foundry, Woolwich Riverside, Greenwich, London, SE18	I	1078956	08/06/1973
9	231m S	University Of Greenwich, Woolwich Campus: Original Building, Gymnasium To Rear And Corner Entrance Range With Attached Railings, Woolwich Riverside, Greenwich, London, SE18	II	1390637	25/09/2003
10	249m SE	Royal Arsenal Main Guardroom, Woolwich Riverside, Greenwich, London, SE18	II	1210926	08/06/1973

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	**1**

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 75**

ID	Location	Name	District	Date of designation
1	125m NE	Royal Arsenal, Woolwich, Greenwich	Greenwich	09/1981

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	**0**

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such

as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations

Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	2

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 79**

ID	Location	Classification	Description
1	**On site**	**Urban**	**-**
2	72m E	Urban	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks

Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	5

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 81**

ID	Location	Main Habitat	Other habitats
1	117m NW	Mudflats	Main habitat: MUDFL (INV > 50%)
A	118m N	Mudflats	Main habitat: MUDFL (INV > 50%)
A	141m N	Mudflats	Main habitat: MUDFL (INV > 50%)
B	221m NW	Mudflats	Main habitat: MUDFL (INV > 50%)

ID	Location	Main Habitat	Other habitats
B	227m NW	Mudflats	Main habitat: MUDFL (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

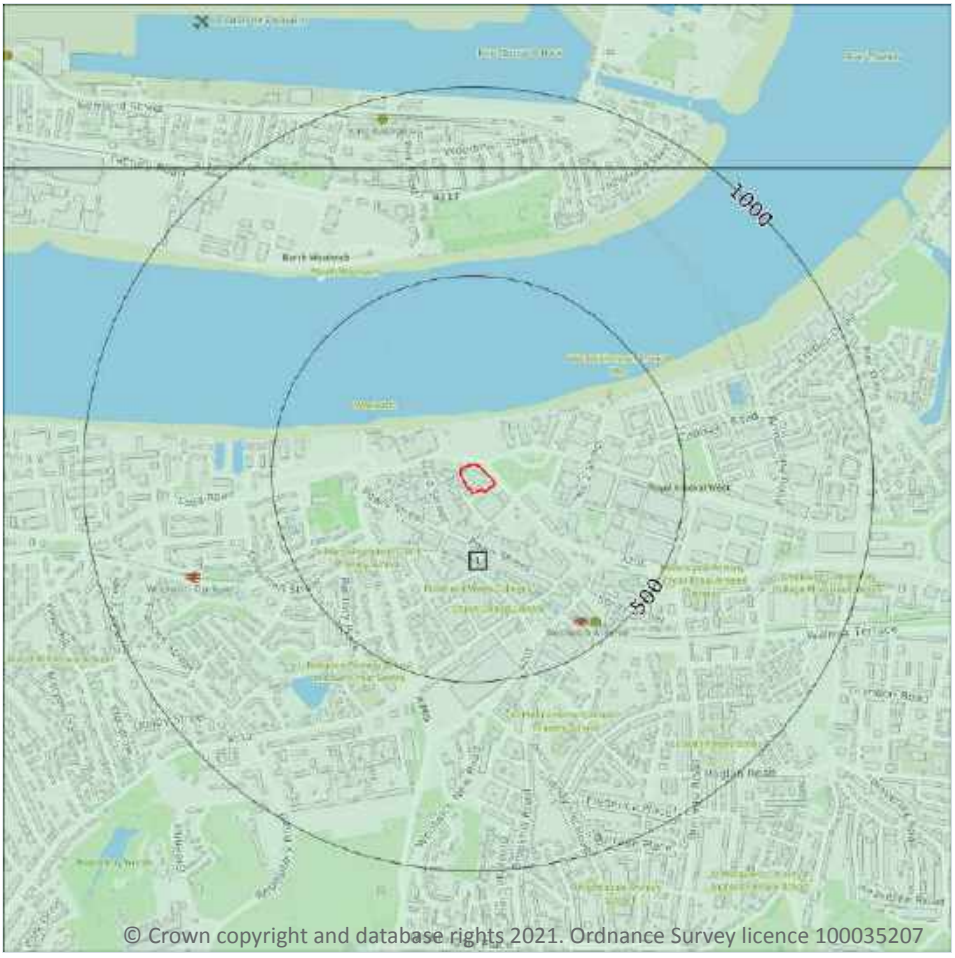
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

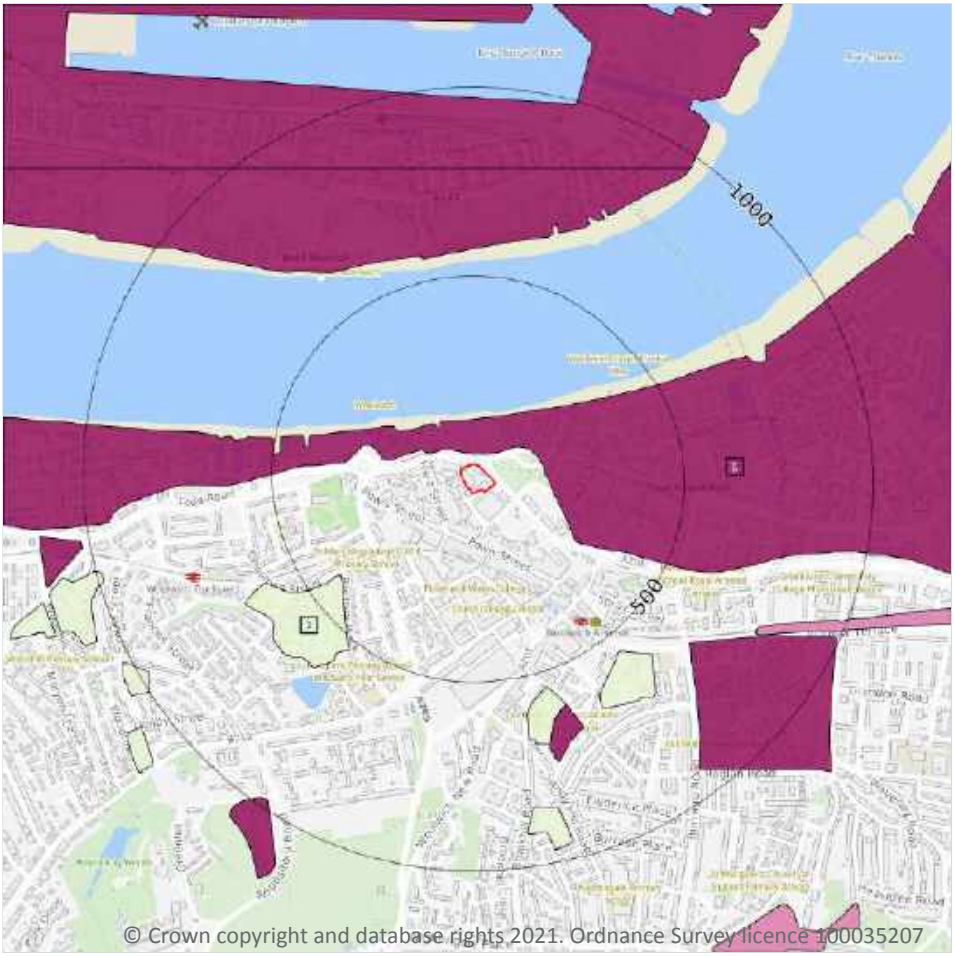
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 83**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**TQ47NW**

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m **2**

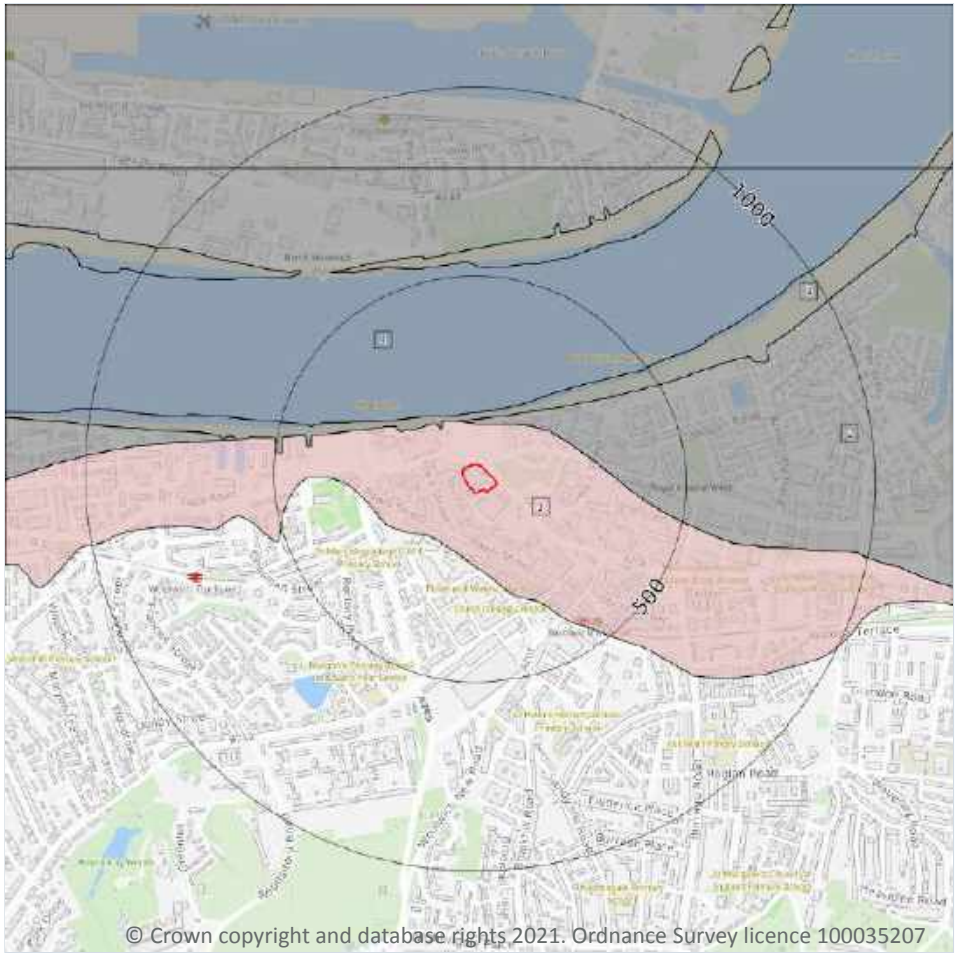
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 84**

ID	Location	LEX Code	Description	Rock description
1	30m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	408m SW	WMGR-ARTDP	Infilled Ground	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m **4**

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 85**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**HEAD-DMTN**	**Head - Diamicton**	**Diamicton**
2	107m N	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt
3	119m N	TRD-Z	Tidal River Or Creek Deposits - Silt	Silt

ID	Location	LEX Code	Description	Rock description
4	136m N	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt

This data is sourced from the British Geological Survey.

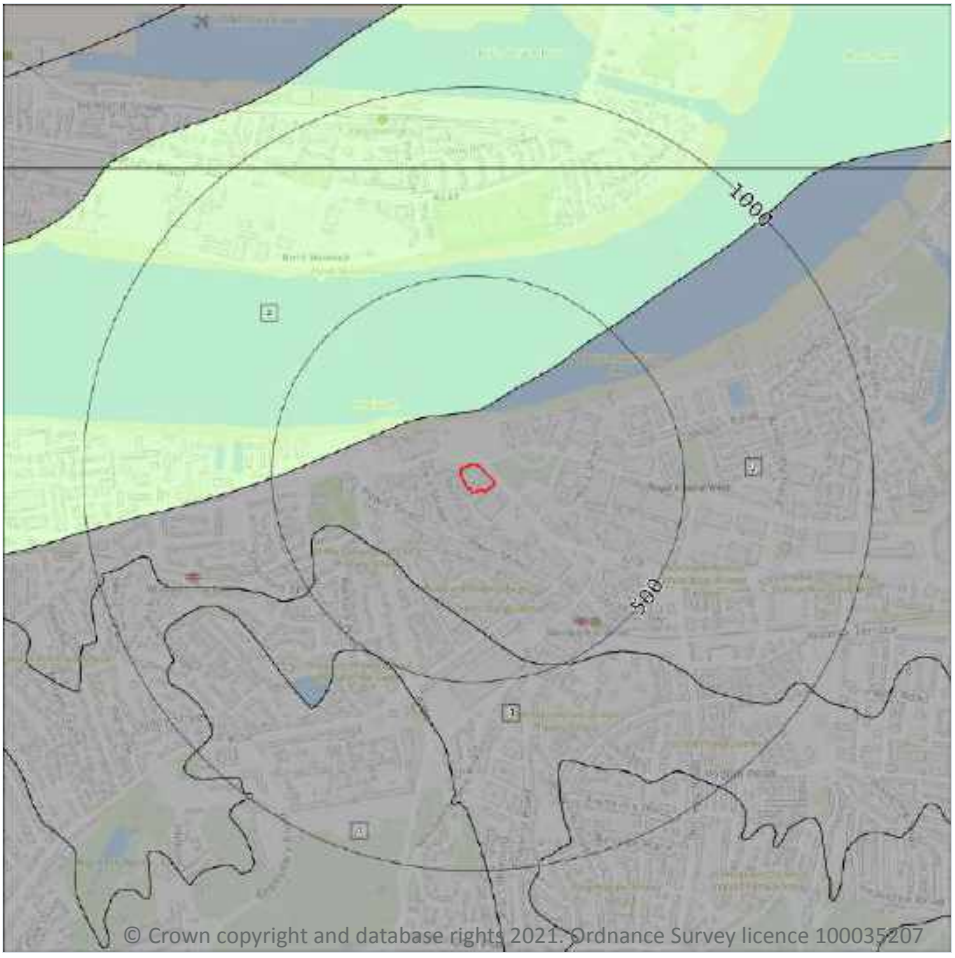
14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m **4**

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 87**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**TAB-SANDU**	**Thanet Sand Formation - Sand**	**Thanetian Age**
2	139m N	SECK-CHLK	Seaford Chalk Formation - Chalk	Santonian Age - Coniacian Age
3	273m SW	LMBE-SANCL	Lambeth Group - Sand And Clay	Paleocene Epoch

ID	Location	LEX Code	Description	Rock age
4	499m SW	HWH-SAGR	Harwich Formation - Sand And Gravel	Eocene Epoch - Paleocene Epoch

This data is sourced from the British Geological Survey.

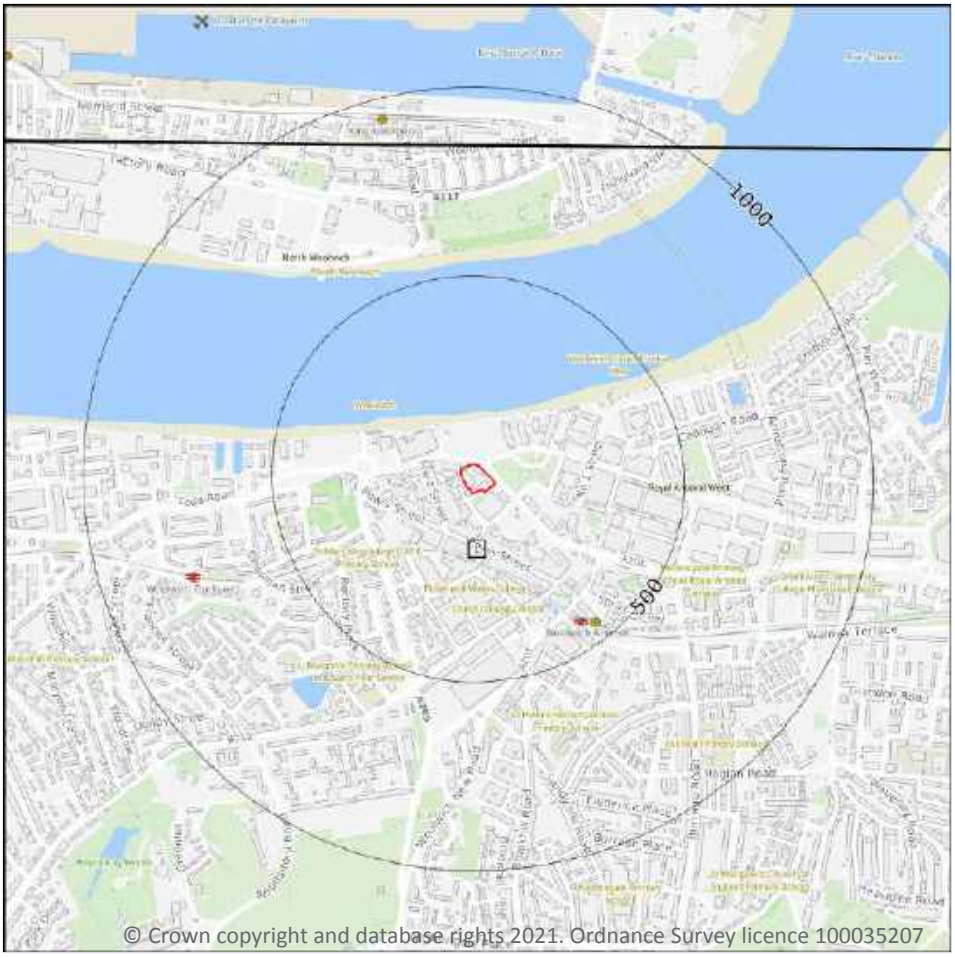
14.6 Bedrock faults and other linear features (10k)

Records within 500m	**0**

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

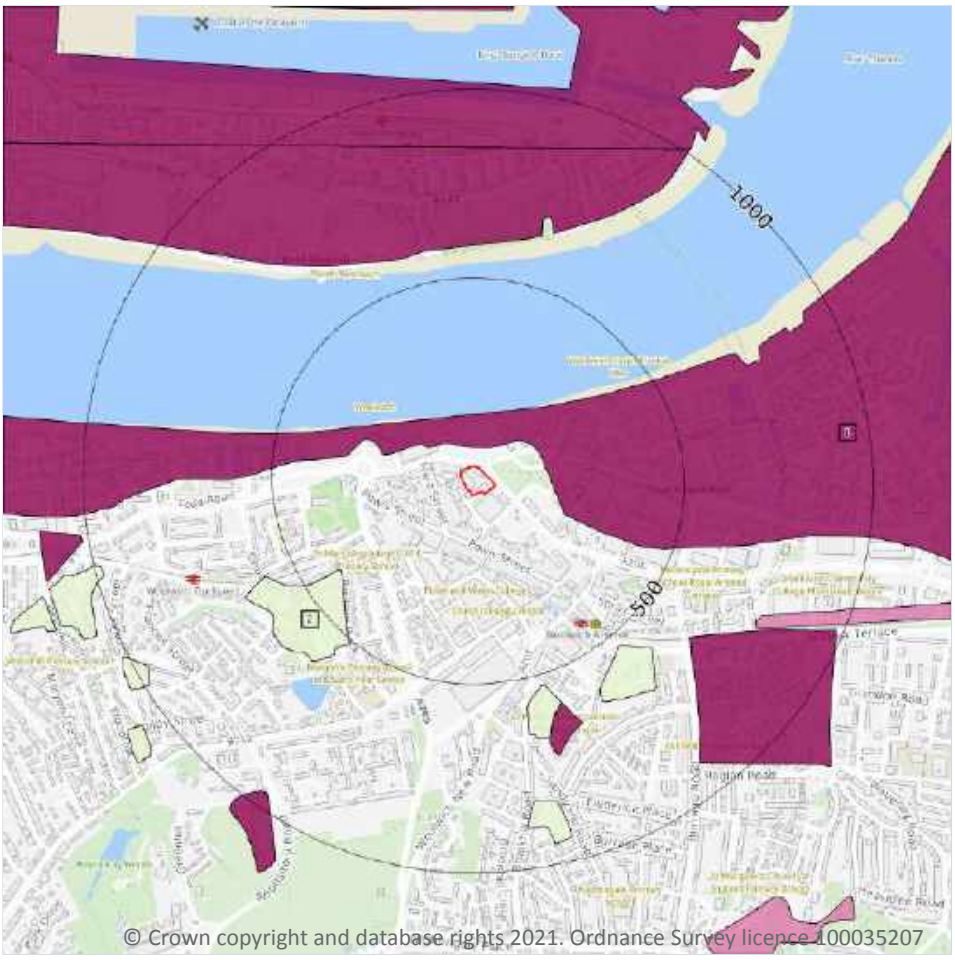
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 89**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW271_dartford_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m	2

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 90**

ID	Location	LEX Code	Description	Rock description
1	51m N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	396m SW	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

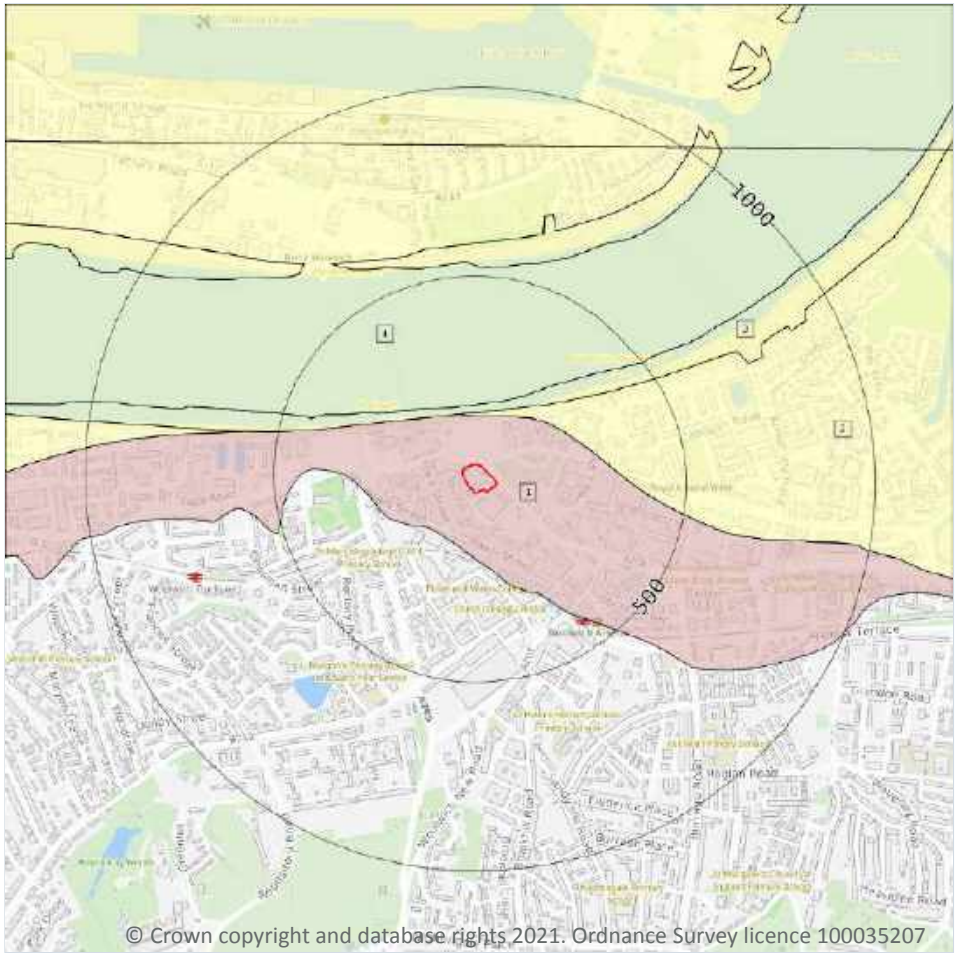
15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m **4**

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 92**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**HEAD-XCZSV**	**HEAD**	**CLAY, SILT, SAND AND GRAVEL**
2	128m N	ALV-XCZSP	ALLUVIUM	CLAY, SILT, SAND AND PEAT
3	137m N	TRD-XCZ	TIDAL RIVER OR CREEK DEPOSITS	CLAY AND SILT

ID	Location	LEX Code	Description	Rock description
4	157m N	ALV-XCZSP	ALLUVIUM	CLAY, SILT, SAND AND PEAT

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**High**	**Very Low**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	**0**

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

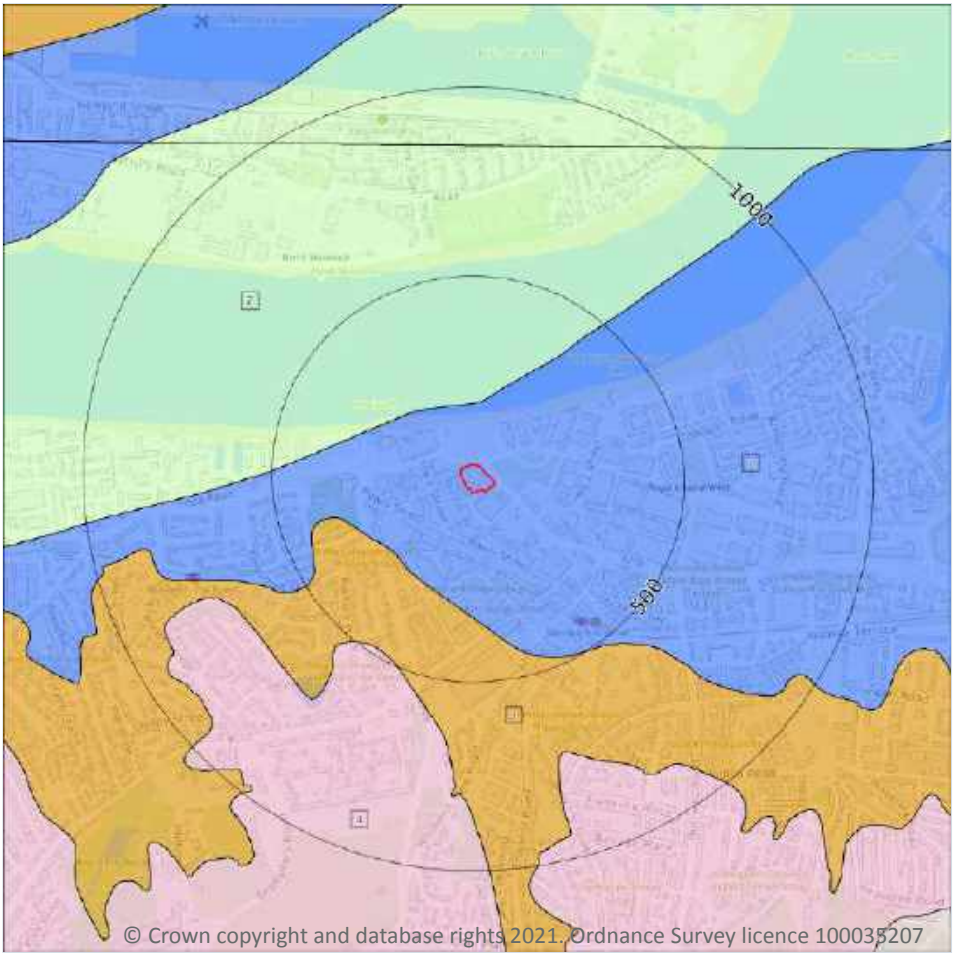
15.7 Landslip permeability (50k)

Records within 50m	**0**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m **4**

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 94**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**TAB-S**	**THANET FORMATION - SAND**	**THANETIAN**
2	160m N	LSNCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	TURONIAN
3	258m SW	LMBE-XSZC	LAMBETH GROUP - SAND, SILT AND CLAY	THANETIAN

ID	Location	LEX Code	Description	Rock age
4	482m SW	HWH-XSV	HARWICH FORMATION - SAND AND GRAVEL	YPRESIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**High**	**High**

This data is sourced from the British Geological Survey.

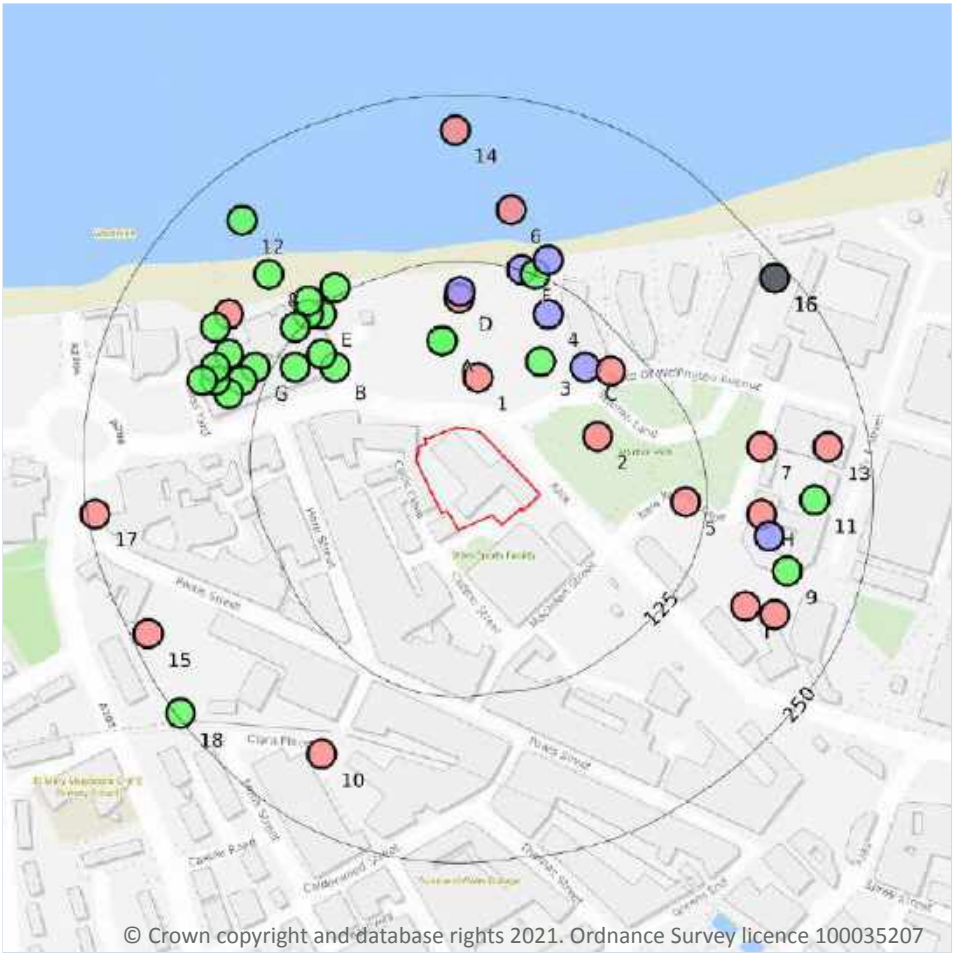
15.10 Bedrock faults and other linear features (50k)

Records within 500m	**0**

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	48

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 96**

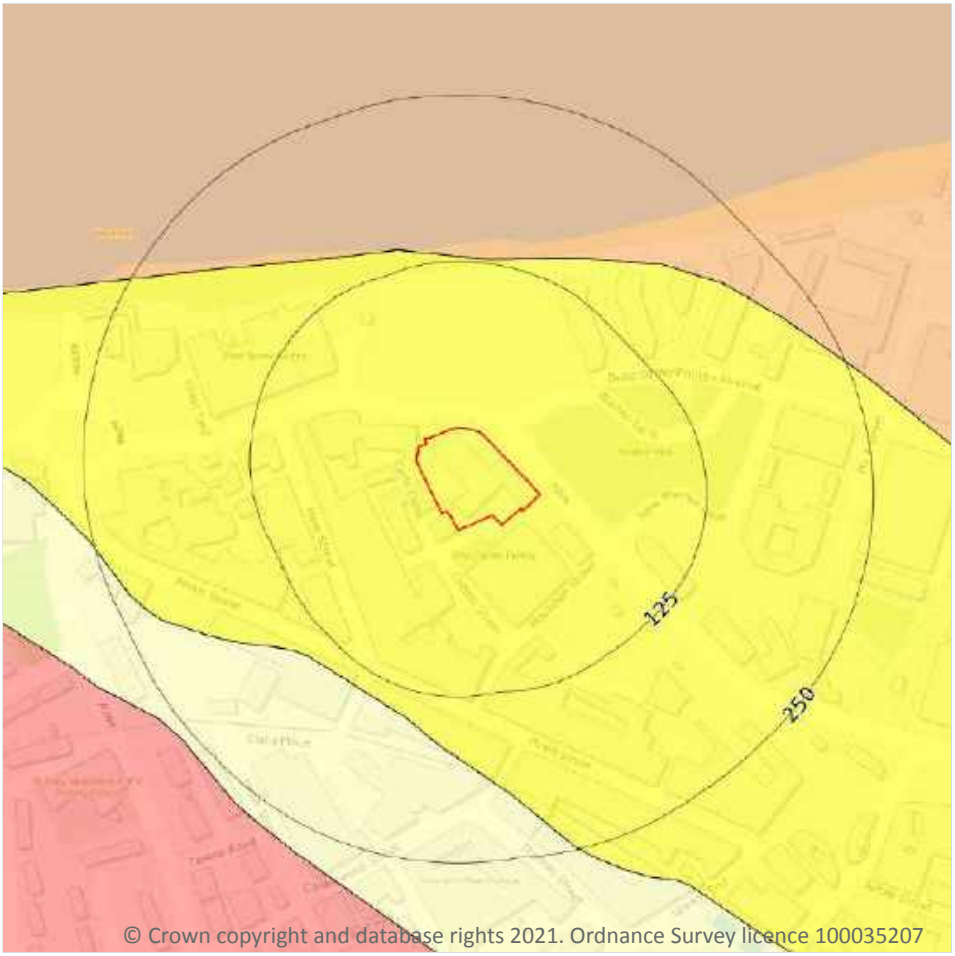
ID	Location	Grid reference	Name	Length	Confidential	Web link
1	39m N	543487 179252	CROSSRAIL BH WP17P	59.0	N	19411757
2	61m NE	543577 179208	Crossrail WP113R	65.5	N	20654747
A	66m N	543460 179280	WOOLWICH APPROACH 2	20.0	N	928886

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	66m N	543460 179280	WOOLWICH APPROACH 4	20.0	N	928887
3	69m NE	543534 179264	Crossrail WP112	30.0	N	20654746
B	86m NW	543380 179260	WOOLWICH APPROACH 1	20.0	N	928885
C	91m NE	543568 179260	Crossrail TP668	3.8	N	20655019
D	98m N	543473 179312	CROSSRAIL BH WP1R	57.0	N	19411755
B	100m NW	543370 179270	FERRY APPROACH WOOLWICH 6	28.0	N	15622605
C	102m NE	543587 179257	CROSSRAIL BH WP2R	62.5	N	19411758
D	103m N	543474 179317	Crossrail WP34	4.5	N	20654477
4	103m NE	543540 179300	C E G B, WOOLWICH	-2.0	N	929522
5	109m E	543643 179159	CROSSRAIL BH WP3R	49.0	N	19411759
B	110m NW	543350 179260	WOOLWICH FERRY APPROACH 6	28.0	N	929334
E	121m NW	543370 179300	WOOLWICH FERRY APPROACH 5	28.0	N	929333
F	126m N	543520 179333	Crossrail WP118R	1.8	N	20672224
F	126m N	543530 179330	WOOLWICH GENERATION STATION BH2	12.04	N	928684
E	128m NW	543360 179300	FERRY APPROACH WOOLWICH 4	28.0	N	15622599
E	128m NW	543350 179290	WOOLWICH FERRY APPROACH 4	28.0	N	929332
E	132m NW	543380 179320	FERRY APPROACH WOOLWICH 5	28.0	N	15622602
E	135m NW	543360 179310	WOOLWICH APPROACH 3	20.0	N	928888
G	137m NW	543320 179260	FERRY APPROACH WOOLWICH 3	15.0	N	15622596
F	139m N	543540 179340	WOOLWICH GENERATION STATION BH1	4.26	N	928683
G	142m W	543310 179250	WOOLWICH FERRY APPROACH 3	15.0	N	929331
G	148m W	543300 179240	WOOLWICH APPROACH 5	20.0	N	928890
G	159m NW	543300 179270	FERRY APPROACH WOOLWICH 1	15.0	N	15622583
G	161m W	543290 179250	FERRY APPROACH WOOLWICH 2	15.0	N	15622593
G	164m W	543290 179260	WOOLWICH FERRY APPROACH 1	15.0	N	929329
H	167m E	543700 179150	WOOLWICH BOROUGH	94.0	N	928386
6	167m N	543512 179378	CROSSRAIL BH TRC5	39.25	N	19411771
7	170m E	543700 179200	C E G B, WOOLWICH, B1	41.15	N	929507

ID	Location	Grid reference	Name	Length	Confidential	Web link
8	170m NW	543330 179330	WOOLWICH FOOYWAY TUNNEL (M109)	15.24	N	928338
G	170m W	543280 179250	WOOLWICH FERRY APPROACH 2	15.0	N	929330
G	174m NW	543300 179300	A W MELLISH LTD NILE STREET WOOLWICH	42.67	N	928401
H	175m E	543706 179133	ROYAL ARSENAL WOOLWICH	7.1	N	19958570
I	175m SE	543688 179081	Crossrail WP99	35.0	N	20654679
G	177m NW	543290 179290	WOOLWICH APPROACH 6A	20.0	N	928889
9	194m E	543719 179107	Crossrail WP89R	26.9	N	20654666
10	196m SW	543370 178970	JUBILEE LINE STAGES 3 & 4 BH61	37.0	N	928703
I	198m SE	543710 179074	CROSSRAIL BH WP4R	48.5	N	19411760
11	206m E	543740 179160	WOOLWICH ROYAL ARSENAL NEW H.Q.	22.2	N	928743
12	213m NW	543310 179370	SOUTH PONTOON WOOLWICH FREE FERRY	15.24	N	928658
13	219m E	543750 179200	WOOLWICH	48.77	N	928559
14	224m N	543470 179438	Crossrail TRC4	37.5	N	20654208
15	237m SW	543240 179060	JUBILEE LINE STAGES 3 & 4 BH60	38.0	N	928702
16	240m NE	543710 179327	THAMES GATEWAY BRIDGE SITE INVESTIGATION - LOCATION 3 (ROYAL ARSENAL) BH309	-	Y	N/A
17	244m W	543200 179150	JUBILEE LINE STAGES 3 & 4 BH59	38.0	N	928701
18	247m SW	543264 179000	L.C.C. SEWERS (M44) WOOLWICH	18.14	N	928256

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

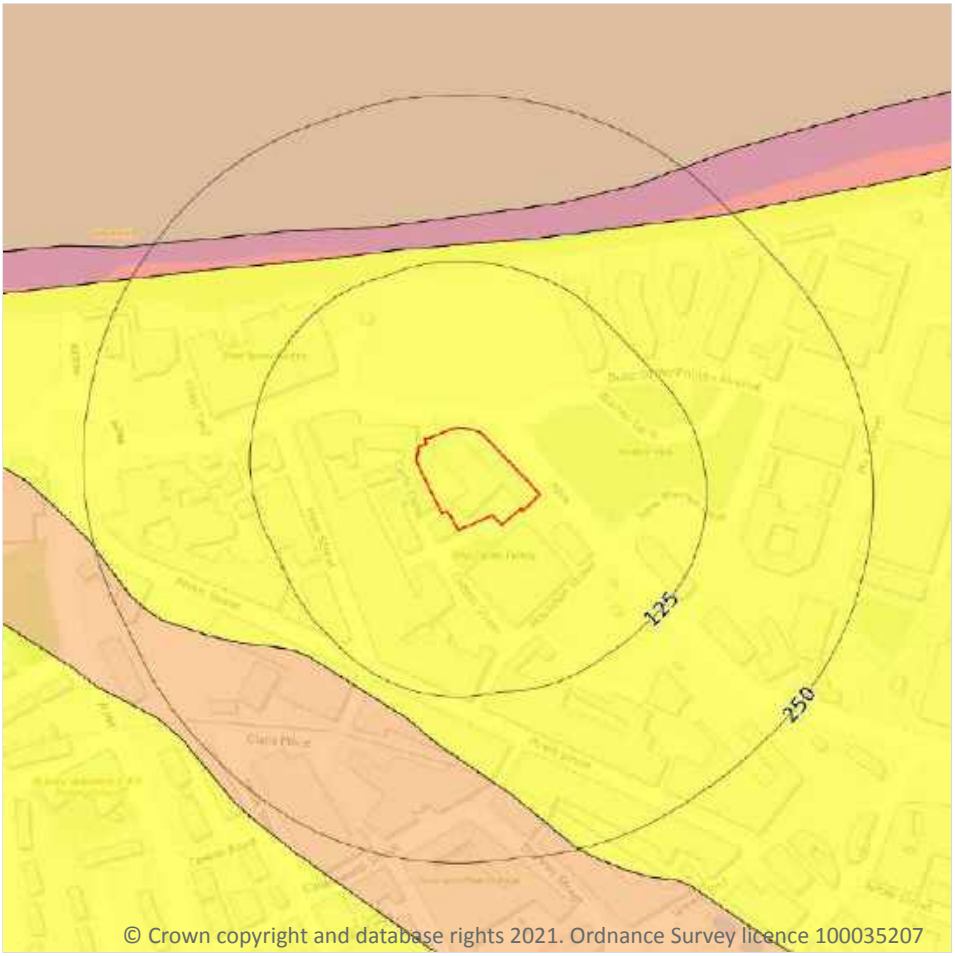
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 99**

Location	Hazard rating	Details
On site	**Very low**	**Ground conditions predominantly low plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	1

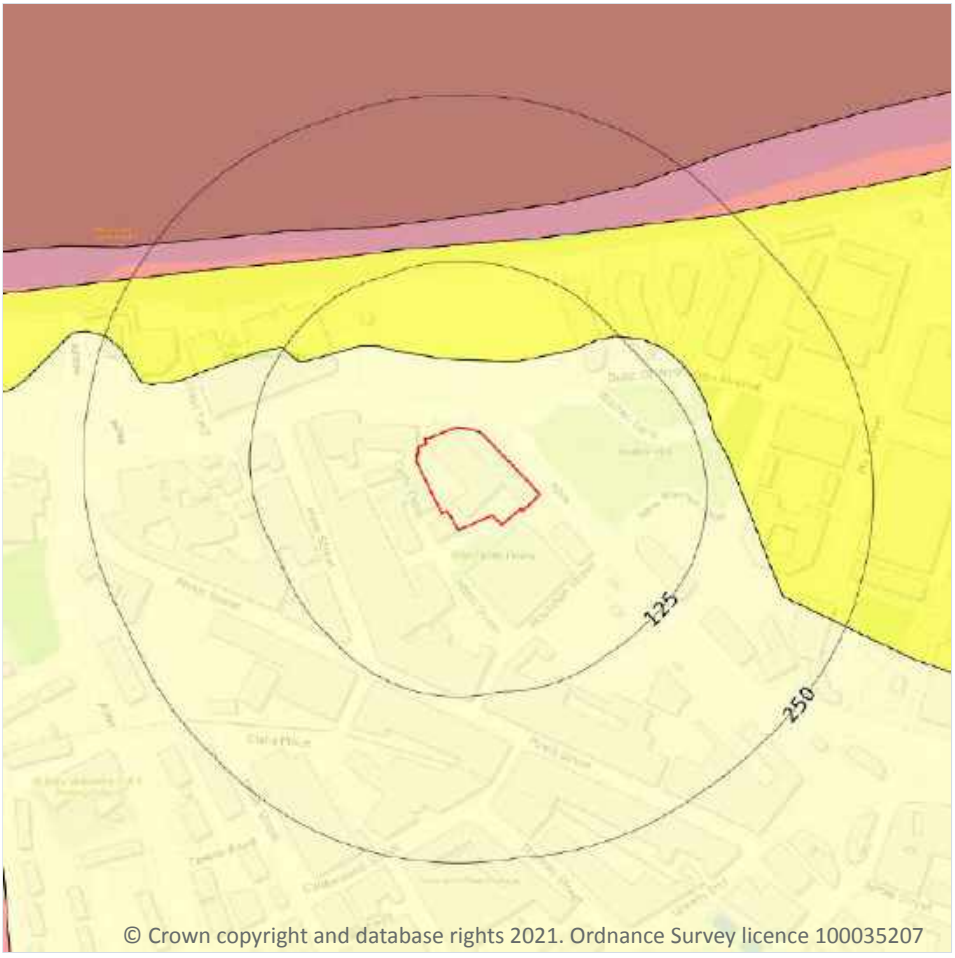
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 100**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

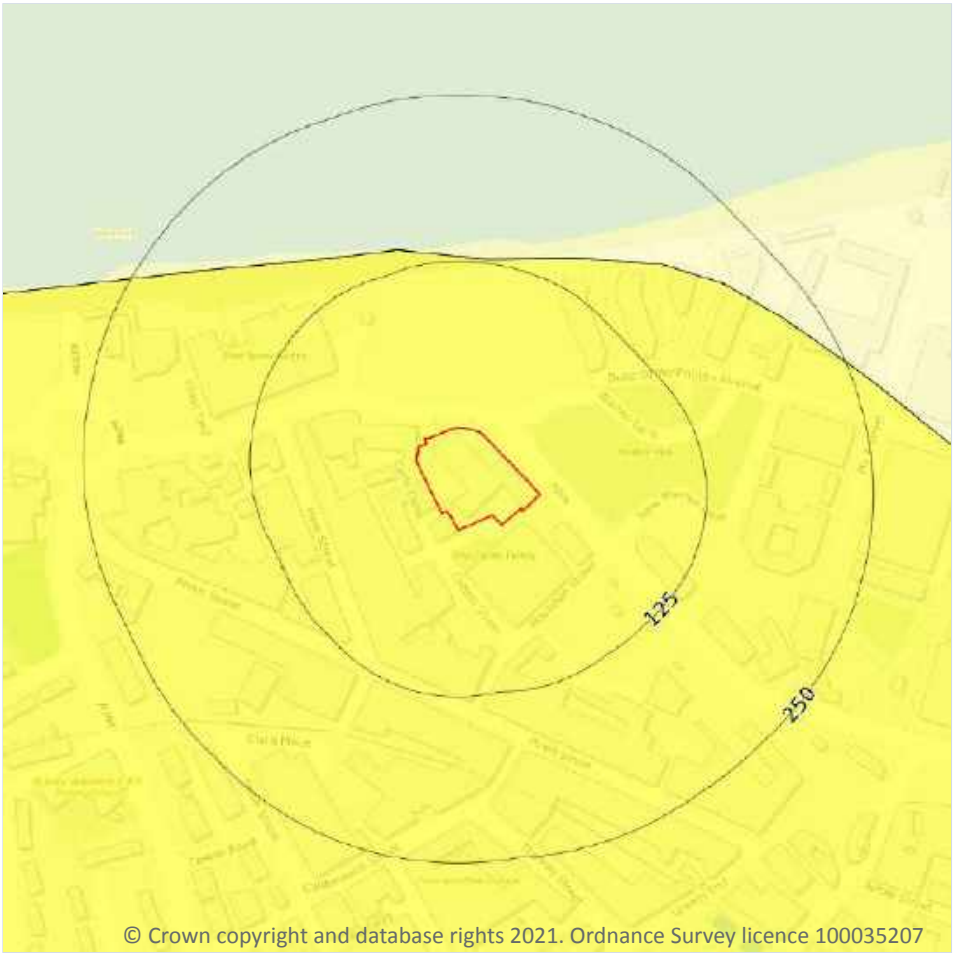
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 101**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

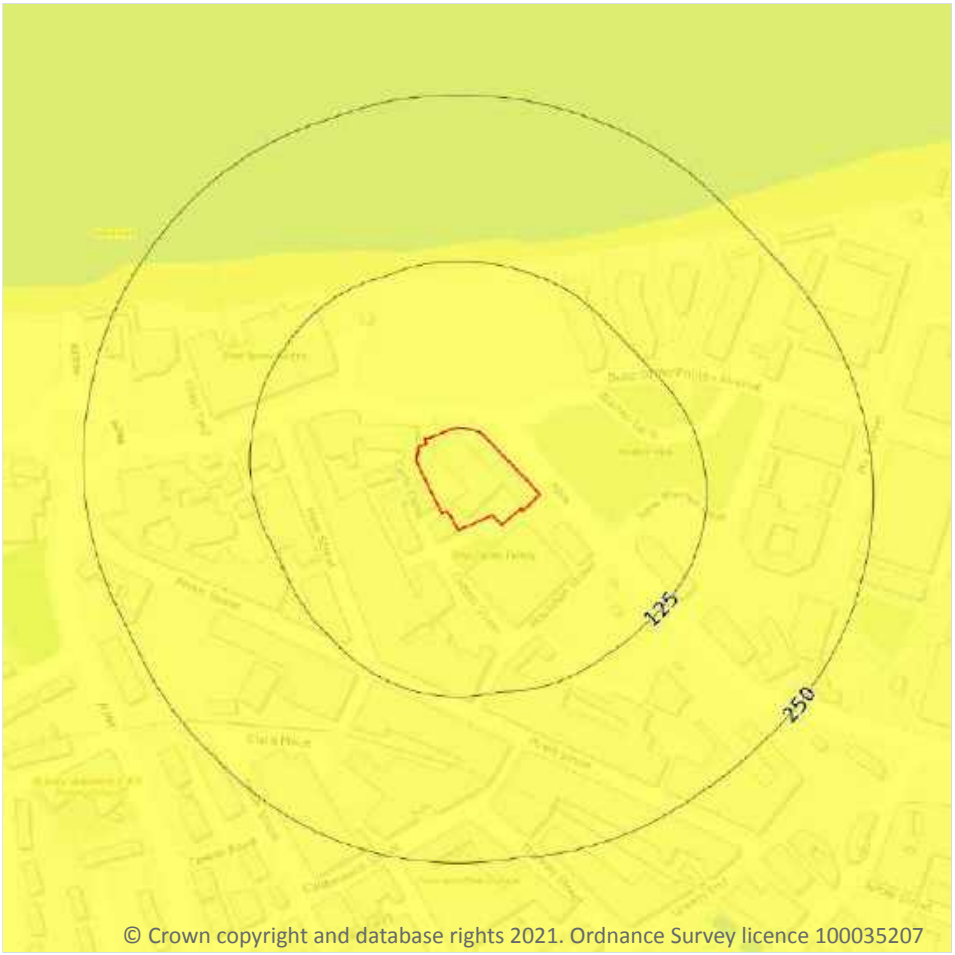
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 102**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

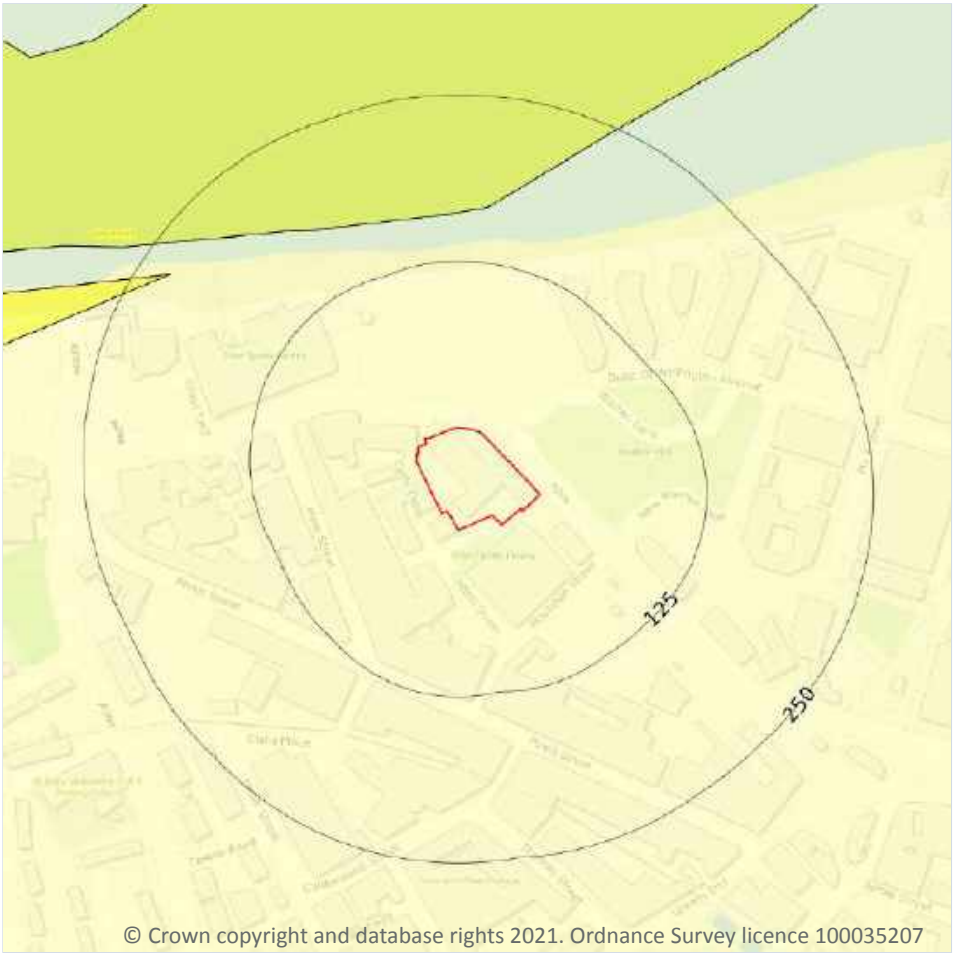
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 103**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

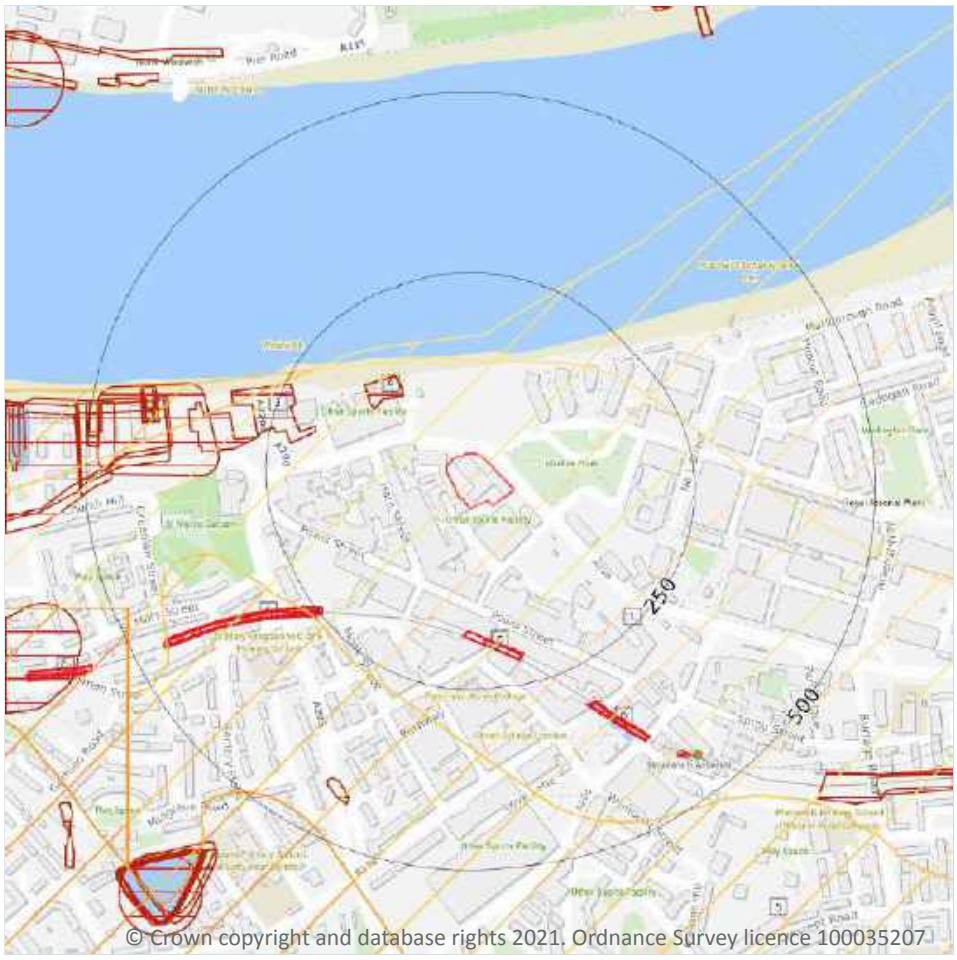
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 104**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	3

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 106**

ID	Location	Land Use	Year of mapping	Mapping scale
A	110m NW	Unspecified Wharf	1988	1:10000
A	110m NW	Unspecified Wharf	1981	1:10000
3	188m W	Unspecified Wharf	1962	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	22

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining, ground workings and natural cavities map on **page 106**

ID	Location	Land Use	Year of mapping	Mapping scale
B	169m S	Tunnel	1988	1:10000
B	169m S	Tunnel	1981	1:10000
B	169m S	Tunnel	1995	1:10000
B	183m S	Tunnel	1974	1:10000
C	243m SW	Tunnel	1974	1:10000
C	243m SW	Tunnel	1988	1:10000

ID	Location	Land Use	Year of mapping	Mapping scale
C	243m SW	Tunnel	1981	1:10000
C	246m SW	Tunnel	1962	1:10560
C	251m SW	Tunnel	1866	1:10560
D	304m SE	Tunnel	1962	1:10560
D	307m SE	Tunnel	1988	1:10000
D	307m SE	Tunnel	1981	1:10000
D	307m SE	Tunnel	1974	1:10000
D	307m SE	Tunnel	1995	1:10000
G	559m SW	Tunnel	1988	1:10000
G	559m SW	Tunnel	1981	1:10000
G	560m SW	Tunnel	1974	1:10000
G	569m SW	Tunnel	1866	1:10560
-	830m W	Tunnel	1974	1:10000
-	832m W	Tunnel	1988	1:10000
-	832m W	Tunnel	1981	1:10000
-	840m W	Tunnel	1866	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**0**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	**6**

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites

and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining, ground workings and natural cavities map on **page 106**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Chalk**	**A**	**Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered**
2	128m N	Not available	Sand	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
4	227m NW	Not available	Chalk	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
5	258m SW	Not available	Chalk	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
8	480m SW	Not available	Chalk	C	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
9	482m SW	Not available	Chalk	C	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	**1**

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

Features are displayed on the Mining, ground workings and natural cavities map on **page 106**

ID	Location	Mine Address	Mineral	Data source	Publisher
-	873m SE	Plumstead	Chalk	-	-

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site	0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

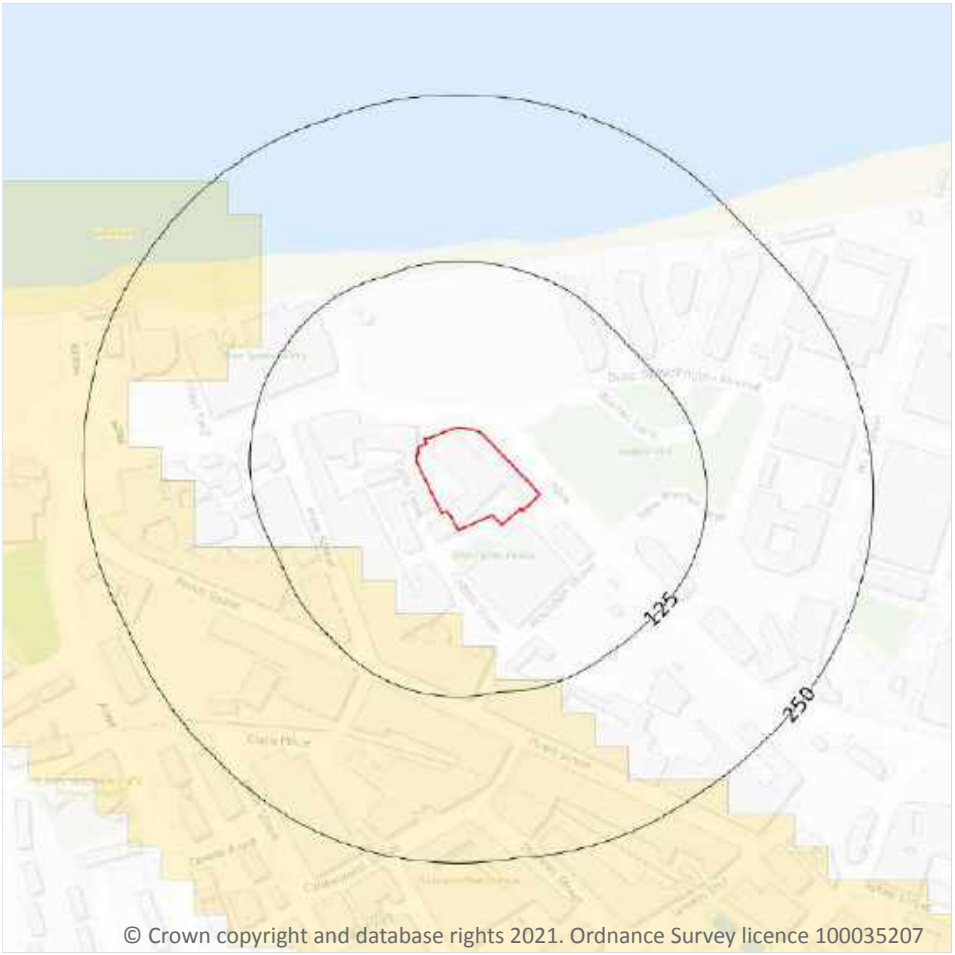
18.13 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 112**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None****

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	2

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	8

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
On site	**15**	**2.6**	**213**	**146**	**1.2**	**73**	**104**	**24**	**15**
On site	**15**	**2.6**	**194**	**133**	**1**	**69**	**98**	**23**	**14**
On site	**16**	**2.8**	**174**	**120**	**1.2**	**76**	**190**	**28**	**12**
On site	**16**	**2.8**	**149**	**102**	**1**	**70**	**194**	**26**	**10**
38m S	16	2.8	263	181	1.6	82	119	28	17
41m W	14	2.5	216	148	1	66	62	20	16
41m SE	18	3.2	247	170	2	92	182	33	17

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
42m NW	14	2.5	208	143	0.9	64	58	19	16

This data is sourced from the British Geological Survey.

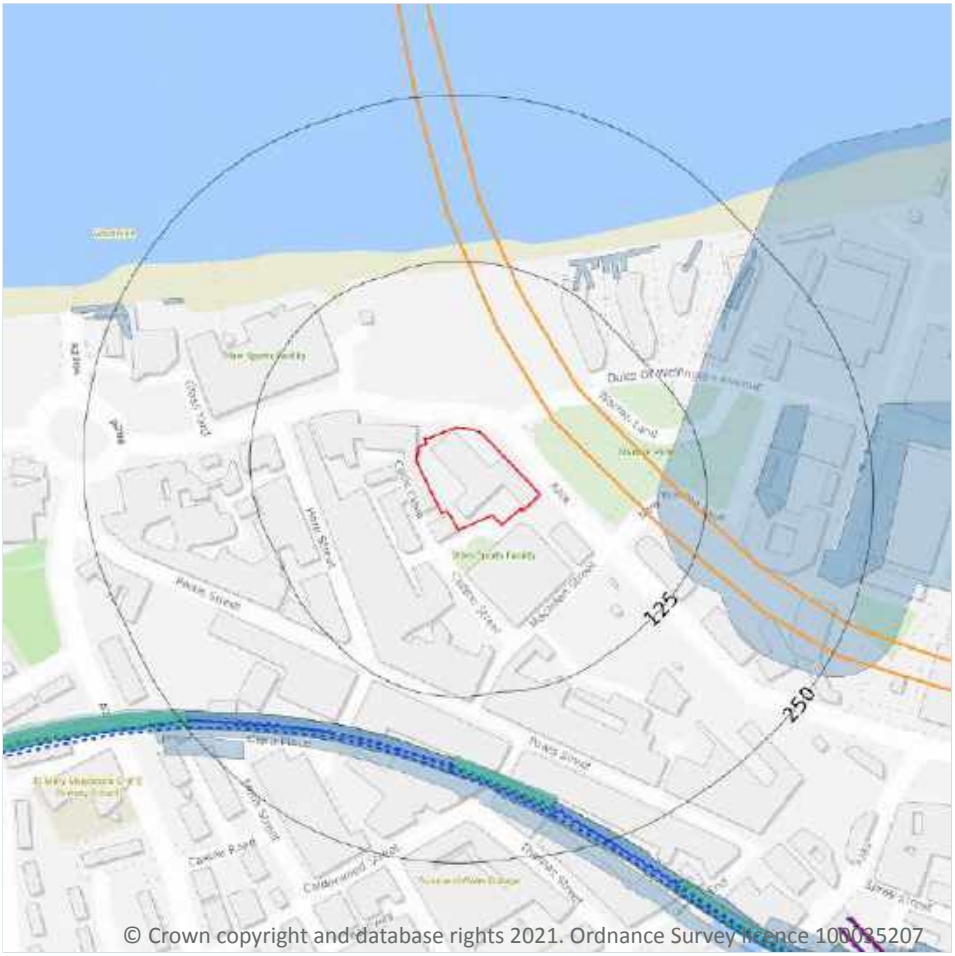
20.3 BGS Measured Urban Soil Chemistry

Records within 50m	**0**

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



Site Outline
Search buffers in metres (m)
Crossrail 1 Stations
Crossrail 1 Route
Crossrail 1 Worksites
Crossrail 2 Stations
Crossrail 2 Route
Crossrail 2 Worksites
Crossrail 2 Safeguarding
Crossrail 2 Headhouses
Railway stations
Active railways
Active tunnels
Abandoned railways
Historic railways
Historic tunnels
Underground stations
Underground Lines
Royal Mail tunnels
HS2 optimised route
HS2 Stations
HS2 Depots
HS2 Surface Safeguarding
HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	2

Railway tunnels taken from contemporary Ordnance Survey mapping.

Features are displayed on the Railway infrastructure and projects map on **page 115**

Location	Type
176m S	Railway Tunnel
245m SW	Railway Tunnel

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	42

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 115**

Location	Land Use	Year of mapping	Mapping scale
88m E	Railway Sidings	1866	10560
128m NE	Railway Sidings	1896	2500
162m E	Railway Sidings	1882	10560
163m S	Railway	1897	-
163m S	Railway	1869	-
163m S	Railway	1916	-
169m S	Tunnel	1995	10000
169m S	Tunnel	1988	10000
169m S	Tunnel	1981	10000
173m S	Tunnel	1986	1250
173m S	Railway	1916	-
173m S	Tunnel	1991	1250

Location	Land Use	Year of mapping	Mapping scale
183m S	Tunnel	1974	10000
183m NE	Railway Sidings	1896	2500
185m S	Tunnel	1958	2500
186m S	Tunnel	1971	1250
186m S	Tunnel	1992	1250
186m S	Tunnel	1997	1250
186m S	Tunnel	1991	1250
187m S	Tunnel	1987	1250
187m S	Tunnel	1982	1250
187m S	Tunnel	1956	1250
187m S	Tunnel	1971	1250
187m S	Tunnel	1987	1250
193m NE	Railway Sidings	1896	2500
198m NE	Railway Sidings	1888	10560
207m NW	Railway Sidings	1896	2500
217m E	Railway Sidings	1882	10560
226m SW	Railway	1930	-
228m SW	Tunnel	1882	10560
229m W	Railway Sidings	1896	2500
243m SW	Tunnel	1974	10000
243m SW	Tunnel	1988	10000
243m SW	Tunnel	1981	10000
243m SW	Tunnel	1958	2500
244m SW	Tunnel	1956	1250
244m SW	Tunnel	1971	1250
244m SW	Tunnel	1991	1250
244m SW	Tunnel	1986	1250
245m SW	Railway Tunnel	1871	-

Location	Land Use	Year of mapping	Mapping scale
246m SW	Tunnel	1962	10560
249m SW	Tunnel	1869	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	11

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 115**

Location	Name	Type
170m S	North Kent Line - Woolwich Branch	rail
171m S	Not given	Multi Track
174m S	North Kent Line - Woolwich Branch	rail
178m SW	Not given	Multi Track
180m S	North Kent Line - Woolwich Branch	rail
182m S	North Kent Line - Woolwich Branch	rail
215m S	Not given	Multi Track

Location	Name	Type
219m S	North Kent Line - Woolwich Branch	rail
221m S	North Kent Line - Woolwich Branch	rail
245m SW	North Kent Line - Woolwich Branch	rail
248m SW	North Kent Line - Woolwich Branch	rail

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	**2**

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

Features are displayed on the Railway infrastructure and projects map on **page 115**

Location	Route Type
46m NE	Tunnel Alignment
76m NE	Tunnel Alignment

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	**0**

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	**0**

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

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