JOMAS ENGINEERING ENVIRONMENTAL LAND REMEDIATION

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STAGE 1 & 2 BASEMENT IMPACT ASSESSMENT (SCREENING & SCOPING) REPORT

26 AMYAND PARK ROAD
TWICKENHAM
TW1 3HE

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Report Title: **Stage 1 & 2 Basement Impact Assessment (Screening & Scoping) for 26 Amyand Park Road, Twickenham, TW1 3HE**

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EXECUTIVE SUMMARY

05 Group Ltd ("The Client") has commissioned Jomas Associates Ltd ('Jomas'), to prepare a Basement Impact Assessment for a site referred to as 26 Amyand Park Road, Twickenham, TW1 3HE .

The aim of this report is to assess whether the ground conditions within the local area represent an impediment to the proposed development.

It should be noted that the table below is an executive summary of the findings of this report and is for briefing purposes only. Reference should be made to the main report for detailed information and analysis.

Desk Study	
Current Site Use	The site is occupied by a vacant residential building currently undergoing refurbishment.
Proposed Site Use	The proposed development for this site is understood to comprise the creation of a basement beneath the entire building footprint and extending partially beneath the front garden.
Site History	On the earliest available map (1865), the site is shown as largely vacant except for a small building shown to be extending into the site from the northwest. By the map dated 1912, the site is shown to be situated within a row of terraced housing. No observational changes then occur to the site until the most recent map dated 2024. Historically, the surrounding area has comprised mainly residential properties, with the only significant land use identified as a railway 80m north of site and the River Crane beyond at ~176m from site.
Site Setting	The British Geological Survey indicates that the site is directly underlain by superficial deposits of the Langley Silt Member. Superficial deposits of the Kempton Park Gravel Member are anticipated to underlie the Langley Silt Member. These superficial deposits overlie solid deposits of the London Clay Formation. The underlying Langley Silt Member and the London Clay Formation are identified as Unproductive. The Kempton Park Gravel Member is reported (off-site) as a Principal Aquifer. A review of the EnviroInsight Report indicates that there are no Environment Agency Zone 2 or Zone 3 flood zones within 250m of the site. The River Crane is reported 176m north-west. Groundsure states the highest risk of surface water flooding on site is "negligible". Groundsure states the highest risk of groundwater flooding on site is "moderate".
Potential Geological Hazards	The Groundsure data identifies only "negligible" to "very low" risks for the potential hazards assessed. The potential impacts of shallow groundwater should be considered during preliminary foundation design. The presence of Made Ground and London Clay Formation may be a source of elevated sulphate. If such levels are noted then sulphate resistant concrete may be required.

Desk Study	
	It is recommended that a geotechnical ground investigation is undertaken to inform foundation design.

Screening and Scoping (Basement Impact Assessment)	
Subterranean Characteristics	A ground investigation is recommended to confirm the ground conditions and groundwater levels (if any) beneath the site. This can then confirm the relative depths of the basement to the groundwater levels.
Land Stability	The site, as with the surrounding area, is generally flat. The Groundsure report has noted that there is a "very low" risk of land instability issues for the site. The investigation should also determine the possibility of encountering groundwater and the possibility of Made Ground and/or clay. Atterberg Limits of the underlying clay should be determined by the ground investigation to confirm very low risk of shrink/swell potential of the soils .
Flood Risk and Drainage	The entire site is currently covered by hardstanding. Proposed plans show that a small section of the proposed basement will underlie newly proposed soft cover.

Basement Impact Assessment Summary	
Basement Impact Assessment	The overall assessment of the site is that the creation of a basement for the existing development will not adversely impact the site or its immediate environs, providing measures are taken to protect surrounding land and properties during construction. The proposed basement excavation will be within 5m of a public pavement. It is also laterally within 5m of neighbouring properties. Unavoidable lateral ground movements associated with the basement excavations must be controlled during temporary and permanent works so as not to impact adversely on the stability of the surrounding ground and any associated services. During the construction phase careful and regular monitoring will need to be undertaken to ensure that the property above, is not adversely affected. This may mean that the property needs to be suitably propped and supported. The proposed development is not expected to cause significant problems to the subterranean drainage. It would be prudent to confirm this by a ground investigation and subsequently updated Basement Impact Assessment.

Recommended Further Work	
Works	An intrusive ground investigation is recommended to confirm the ground conditions and groundwater levels (if any) beneath the site, as well as to inform foundation design.

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 05 Group Ltd ("The Client") has commissioned Jomas Associates Ltd ('Jomas'), to prepare a Stage 1 & 2 Basement Impact Assessment (Screening & Scoping) at a site referred to as 26 Amyand Park Road, Twickenham, TW1 3HE .

1.1.2 Jomas' work has been undertaken in accordance with the email proposal dated 5th April 2024.

1.2 Proposed Development

1.2.1 The proposed development for this site is understood to comprise the creation of a basement beneath the entire building footprint and extending partially beneath the front garden.

1.2.2 Plans of the proposed development are included in Appendix 1.

1.2.3 For the purpose of geotechnical assessment, it is considered that the project could be classified as a Geotechnical Category (GC) 2 site in accordance with BS EN 1997 Part 1.

1.2.4 This will be reviewed at each stage of the project.

1.3 Objectives

1.3.1 The objectives of Jomas' investigation were as follows:

- To present a description of the present site status, based upon the published geology, hydrogeology and hydrology of the site and surrounding area;
- To review readily available historical information (i.e., Ordnance Survey maps and database search information) for the site and surrounding areas;
- To assess the potential impacts that the proposal may have on ground stability, the hydrogeology and hydrology on the site and its environs.

1.4 Scope of Works

1.4.1 The following tasks were undertaken to achieve the objectives listed above:

- A walkover survey of the site;
- A desk study, which included the review of a database search report (GeoInsight Report, attached in Appendix 2) and historical Ordnance Survey maps (attached in Appendix 3);
- A Basement Impact Assessment (BIA);

- The compilation of this report, which collects and discusses the above data, and presents an assessment of the site conditions, conclusions and recommendations.

1.5 Scope of Basement Impact Assessment

1.5.1 The site lies within the remit of the London Borough of Richmond upon Thames. The council has published a document "Planning Advice Note: Good Practice Guide on Basement Developments" (2015) and "Basement Assessment User Guide" (2021). These documents provide detail on the issues relevant to basements within London Borough of Richmond upon Thames and describes how these issues should be assessed.

1.5.2 Jomas has also used the guidance given in the London Borough of Camden document "Camden Planning Guidance Basements" (CPGB) (January 2021) as document is generally accepted as the best available guidance on the practicalities regarding how to undertake a BIA.

1.5.3 Jomas' BIA covers most items required under CPGB, with the exception of;

- Plans and sections to show foundation details of adjacent structures – no access to adjacent properties was possible.
- Programme for enabling works, construction and restoration.
- Evidence of consultation with neighbours.
- Ground Movement Assessment (GMA), to include assessment of significant adverse impacts and specific mitigation measures required, as well as confirmatory and reasoned statement identifying likely damage to nearby properties according to the Burland Scale.
- Construction Sequence Methodology.
- Proposals for monitoring during construction.
- Drainage assessment.

1.5.4 This Jomas BIA also takes into account the Campbell Reith pro forma BIA produced on behalf of and published by the London Borough of Camden as guidance for applicants to ensure that all of the required information is provided.

1.5.5 A number of the requirements set out in the London Borough of Camden document CPGB will need to be addressed in a construction management plan, this stage is not within the scope of work that Jomas Associates have been commissioned to undertake.

1.6 Supplied Documentation

1.6.1 Jomas Associates have not been supplied with any previously produced reports at the time of writing this report.

1.7 Limitations

1.7.1 Jomas Associates Ltd has prepared this report for the sole use of 05 Group Ltd in accordance with the generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon by any other party without the explicit written agreement of Jomas. No other third party warranty, expressed or implied, is made as to the professional advice included in this report. This report must be used in its entirety.

1.7.2 The records search was limited to information available from public sources; this information is changing continually and frequently incomplete. Unless Jomas has actual knowledge to the contrary, information obtained from public sources or provided to Jomas by site personnel and other information sources, have been assumed to be correct. Jomas does not assume any liability for the misinterpretation of information or for items not visible, accessible or present on the subject property at the time of this study.

1.7.3 Whilst every effort has been made to ensure the accuracy of the data supplied, and any analysis derived from it, there may be conditions at the site that have not been disclosed by the investigation, and could not therefore be taken into account. As with any site, there may be differences in soil conditions between exploratory hole positions. Furthermore, it should be noted that groundwater conditions may vary due to seasonal and other effects and may at times be significantly different from those measured by the investigation. No liability can be accepted for any such variations in these conditions.

1.7.4 ***This report is not an engineering design and the figures and calculations contained in the report should be used by the Structural Engineer, taking note that variations may apply, depending on variations in design loading, in techniques used, and in site conditions. Our recommendations should therefore not supersede the Engineer's design.***

2 SITE SETTING & HISTORICAL INFORMATION

2.1 Site Information

2.1.1 The site location plan is appended to this report in Appendix 1.

Table 2.1: Site Information

Name of Site	-
Address of Site	26 Amyand Park Road Twickenham, Richmond Upon Thames, TW1 3HE
Approx. National Grid Ref.	516307 173599
Site Area (Approx)	0.01 hectares
Site Occupation	Residential
Local Authority	London Borough of Richmond upon Thames
Proposed Site Use	Rear-side extension and creation of basement beneath existing/proposed footprint.

2.2 Walkover Survey

2.2.1 The site was visited by a Jomas Engineer on 4th June 2024. The following information was noted while on site.

Table 2.2: Site Description

Area	Item	Details
On-site:	**Current Uses:**	Site consists of a two-storey brick terraced residential property with rear courtyard garden currently undergoing refurbishment.
	Evidence of historic uses:	No evidence of historic uses observed on site.
	Surfaces:	The entire site is currently covered by building footprint or hard cover in the form of paving.
	Vegetation:	Limited vegetation present on site. Only small plants in the garden along the side of the house and a bush in the front garden hanging over a fence from the neighbouring property.
	Topography/Slope Stability:	The site is observed to be level.
	Drainage:	Site appears to be connected to normal drainage facilities with no issues noted.
	Services:	Site appears to be connected to usual domestic services.
	Controlled waters:	No controlled waters were observed on site.

Area	Item	Details
	Tanks:	No tanks were observed on site.
Neighbouring land:	**North:**	Residential and Amyand Park Road
	East:	Residential.
	South:	Residential and a cemetery.
	West:	Residential and a primary school

2.2.2 Photos taken during the site walkover are provided in Appendix 1.

2.3 Historical Mapping Information

2.3.1 The historical development of the site and its surrounding areas was evaluated following the review of Ordnance Survey historic maps, procured from Groundsure, and these are provided in Appendix 3 of this report.

2.3.2 A summary produced from the review of the historical maps is given in Table 2.3 below. Distances are taken from the site boundary.

Table 2.3: Historical Development

Dates and Scale of Map	Relevant Historical Information	
	On Site	Off Site
1840 1:2,500	Incomplete mapping	Incomplete mapping
1865 - 1868 1:2,500 1:10,560	Other than a small section of a building extending into the site from the northwestern corner, the site is undeveloped and appears to be landscaped gardens.	Old River Crane is reported approximately 200m north-west of the site, flowing in a north-easterly direction. Railway present approximately 150m north-west of the site. River Thames is reported approximately 400m south of the site. The surrounding area comprises predominantly agricultural use with residential areas presents to the south.
1894 - 1898 1:1,056 1:2,500 1:10,560	No significant changes.	No significant changes.
1912 - 1915 1:2,500 1:10,560	The site lies within a row of terraced housing.	Immediate surroundings developed with terraced residential properties. Old River Crane has been artificially re-routed 250m north of site.

Dates and Scale of Map	Relevant Historical Information	
	On Site	Off Site
1933 - 1938 1:2,500 1:10,560	No significant changes.	The surrounding area is now predominantly residential. Large ground working feature, possibly gravel pit or lake shown from 750m south-east of site.
1948 - 1959 1:1,250 1:10,560	No significant changes.	Further predominantly residential development in surrounding area. Railway expanded 150m north-west and Twickenham Station shown.
1960 - 1966 1:1,250 1:2,500 1:10,560	No significant changes.	Large ground working feature/lake 750m south-east is shown as two new distinct ground working features/lakes.
1972 - 1982 1:1,250 1:10,000	No significant changes.	One of the ground working features 750m south-east no longer shown and area partially developed.
1991 - 2001 1:1,250 1:10,000	No significant changes.	No significant changes.
2003 – 2010 1:1,250 1:10,000	No significant changes.	No significant changes.
2024 1:10,000	No significant changes.	No significant changes.

2.3.4 Aerial photographs supplied as part of the Groundsure Enviro+GeoInsight report range from 1999 to 2022. These show the site lies within a row of terraced housing with a road adjacent to the north.

2.4 Previous Site Investigations

2.4.1 No previous site investigation reports were provided at the time of writing.

2.5 Planning Information

2.5.1 A review of the local authority's planning portal was undertaken on 18th June 2024 at https://www2.richmond.gov.uk/lbrplanning/Planning_Search.

2.5.2 Various planning applications were observed under a postal code search. However, none were found to contain information relating to ground conditions.

2.6 Sensitive Land Uses

2.6.1 The site is located within a SSSI Impact Risk Zone. However, the planning application is unlikely to require a consultation.

2.6.2 Amyand Park Road situated adjacent to the north is reported as a conservation area.

2.6.3 The nearest listed building is located 66m northeast of the site.

2.6.4 The nearest registered park and garden is reported 212m southeast of site.

2.6.5 The nearest Local Nature Reserve (LNR) reported is reported 578m southeast of the site.

2.6.6 No sensitive land use was identified within 1km of the site.

2.7 Radon

2.7.1 As reported, the site is not within a radon affected area, as less than 1% of properties are above the action level.

2.7.2 Consequently, no radon protective measures are necessary in the construction of new dwellings or extensions as described in publication BR211 (BRE, 2023).

2.7.3 It should be noted however that a growing number of London Boroughs are adopting Public Health England guidance as outlined in their 'UK National Radon Action Plan' (PHE, 2018), which states that radon measurements should be made in regularly occupied basements of properties irrespective of their geographical location. Therefore, such an assessment, or radon protection measures may be required by the London Borough of Richmond upon Thames .

3 GEOLOGICAL SETTING & HAZARD REVIEW

3.1.1 The following section summarises the principal geological resources of the site and its surroundings. The data discussed herein is generally based on the information given within the Groundsure Report (in Appendix 2).

3.2 Superficial and Solid Geology

3.2.1 Information provided by the British Geological Survey (BGS) indicates that the site is directly underlain by superficial deposits of the Langley Silt Member. The deposits are described as:

> *"Varies from silt to clay, commonly yellow-brown and massively bedded ."*

3.2.2 Superficial deposits of the Kempton Park Gravel Member are assumed to underlie the Langley Silt Member given their reported proximity to site and known geological sequence. These deposits are described as:

> *"Sand and gravel, with possible lenses of silt, clay or peat."*

3.2.3 These superficial deposits overlie solid deposits of the London Clay Formation. An extract of the BGS description is provided below:

> *"…bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions ('cementstone nodules') and disseminated pyrite."*

3.2.4 Artificial deposits are not reported within the site. However, given the identified site history a thickness of Made Ground should be expected.

3.2.5 BS5930:2015 defines Made Ground as anthropogenic ground in which the material has been placed without engineering control and/or manufactured in some way, such as through crushing or washing, or arising from an industrial process. Great variations in material type, thickness and degree of compaction invariably occur.

3.2.6 No bedrock faults or other linear features are reported within 500m at 1:50,000 scale.

3.3 British Geological Survey (BGS) Borehole Data

3.3.1 As part of the assessment, publicly available BGS borehole records were obtained and reviewed from the surrounding area. The local records obtained are presented in Appendix 4.

3.3.2 The nearest such record was located approximately 132m southeast of the site, from December 1980.

3.3.3 This showed the underlying ground conditions to comprise 'Made Ground' to a depth of 1.8mbgl, overlying 'dark brown silty sandy CLAY' to 2.6mbgl (likely representing the Langley Silt Member), overlying 'Brown slightly clayey, silty SAND and GRAVEL' (likely representing the Kempton Park Gravel Member) to the base of the borehole, at approximately 7.5mbgl.

3.3.4 During the drilling of the borehole groundwater was first struck at 5.2mbgl within the Kempton Park Gravel Member. The borehole is reported to have collapsed at 4.80mbgl.

3.3.5 All depths and measurements should be viewed as approximate, due to the age of the borehole.

3.4 Geological Hazards

3.4.1 The following are brief findings extracted from the Groundsure Enviro+GeoInsight Report, that relate to factors that may have a potential impact upon the engineering of the proposed development.

Table 3.1: Geological Hazards

Potential Hazard	Site check Hazard Rating	Details	Further Action Required?
Shrink swell clays	Very low	Ground conditions predominantly low plasticity.	No
Running sands	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.	No
Compressible deposits	Negligible	Compressible strata are not thought to occur.	No
Collapsible Deposits	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.	No
Landslides	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.	No
Ground dissolution soluble rocks	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.	No
Coal mining	None	The study site is not located within the specified search distance of an identified coal mining area.	No
Non-coal mining	None	The study site is not located within the specified search distance of an identified non-coal mining area.	No

3.4.2 In addition, the Enviro+GeoInsight report notes the following:

- 13No historical surface ground working features within 250m of the site. The nearest is reported on site as a “Grave Yard”. Most other entries are associated with the cemetery 22-34m south-east of site.
- No other features relating to mining, ground workings, natural cavities or sinkholes are reported within 250m of the site.

3.4.3 Foundations should not be formed within Made Ground due to the unacceptable risk of total and differential settlement.

3.4.4 The BGS notes disseminated pyrite within the London Clay Formation and as such may be a source of elevated sulphate. If such levels are noted, sulphate resistant concrete may be required.

3.4.5 The potential impacts of shallow groundwater should be considered during preliminary foundation design. The effects that this may have include (but are not limited to):

- Permanent excavations – i.e. for items such as basements and drainage. This is likely to need waterproofing / tanking and may have flotation issues.
- Temporary excavations – likely to affect side stability especially where the excavations are formed in granular materials.
- Soakaways – likely to affect the permeability and therefore the effective use of soakaway drainage.
- Concrete classification on the site (in accordance with BRE SD-1) due to the potential for a mobile groundwater table.
- May require dewatering or groundwater exclusion techniques to be used.
- Foundation design – likely to reduce the allowable bearing capacity that could be achieved in the superficial deposits.

3.4.6 It is recommended that a geotechnical ground investigation is undertaken to inform design.

4 HYDROGEOLOGY, HYDROLOGY AND FLOOD RISK REVIEW

4.1 Hydrogeology & Hydrology

4.1.1 General information about the hydrogeology of the site was obtained from the MAGIC website and Groundsure report.

Groundwater Vulnerability

4.1.2 Since 1 April 2010, the EA's Groundwater Protection Policy uses aquifer designations that are consistent with the Water Framework Directive. This comprises;

- **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;
- **Secondary B** - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
- **Secondary Undifferentiated** - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
- **Principal Aquifer** – this is a formation with a high primary permeability, supplying large quantities of water for public supply abstraction.
- **Unproductive Strata** - These are rock layers or superficial deposits with low permeability that have negligible significance for water supply or river base flow.

Hydrogeology

4.1.3 The baseline hydrogeology of the site is based on available hydrogeological mapping, including the BGS online mapping, and generic information obtained from the Groundsure report.

4.1.4 The available data indicates that superficial deposits of the Kempton Park Gravel Member are likely to be present on site underlying the Langley Silt Member. Hence it would be expected that a groundwater table would be encountered above or at the interface between this stratum and the underlying London Clay Formation.

Hydrology

4.1.5 The hydrology of the site and the area covers water abstractions, rivers, streams, other water bodies and flooding.

4.1.6 The Environment Agency defines a floodplain as the area that would naturally be affected by flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas.

4.1.7 There are two different kinds of area shown on the Flood Map for Planning. They can be described as follows:

Areas that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:

- from the sea by a flood that has a 0.5 per cent (1 in 200) or greater chance of happening each year;
- or from a river by a flood that has a 1 per cent (1 in 100) or greater chance of happening each year.

(For planning and development purposes, this is the same as Flood Zone 3, in England only.)

- The additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1 per cent (1 in 1000) chance of occurring each year.

(For planning and development purposes, this is the same as Flood Zone 2, in England only.)

4.1.8 These two areas show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements.

4.1.9 Outside of these areas flooding from rivers and the sea is very unlikely. There is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year. The majority of England and Wales falls within this area. (For planning and development purposes, this is the same as Flood Zone 1, in England only.)

4.1.10 Some areas benefit from flood defences and these are detailed on Environment Agency mapping.

4.1.11 Flood defences do not completely remove the chance of flooding, however, and can be overtopped or fail in extreme weather conditions.

Table 4.1: Summary of Hydrogeological & Hydrology

Feature		On Site	Off Site
Aquifer	**Superficial:**	Unproductive (Langley Silt Member) Principal (Kempton Park Gravel Member, assuming present)	Principal Aquifer, 128m NW Secondary Undifferentiated, 349m SE

Feature		On Site	Off Site
	Solid:	Unproductive	Unproductive
Surface Water Features		None	1No surface water feature reported within 250m of site. 1No "Inland river not influenced by normal tidal action" reported 176m NW (River Crane). River Thames shown 400m SE.
Flood Risk	**EA Flood Zone 2**	No	No records within 50m
	EA Flood Zone 3	No	No records within 50m
	RoFRaS	N/A	No records within 50m
	Historical Flood Events	None reported within 250m of site.	
	Flood Defences	There are 2No flood defences located 171m and 182m NW.	
	Surface Water Flooding	Highest risk on site is 'Negligible'.	Highest risk within 50m '1 in 100yr, 0.1m-0.3m'.
	Groundwater Flooding	High risk on site is 'Moderate'.	High risk within 50m is 'High'.

4.2 Flood Risk Review

4.2.1 In accordance with the NPPF Guidance, below is a review of flood risks posed to and from the development and recommendations for appropriate design mitigation where necessary. Specific areas considered are based on the requirements laid out in the "Camden Guidance for Subterranean Development" as this document is generally considered to be the most comprehensive Local Authority Guidance in the London area.

Table 4.2: Flood Risk Review

Flood Sources	Site Status	Comment on flood risk posed to / from the development
Fluvial / Tidal	Site is within an Environment Agency Flood Zone 1. Risk of flooding from rivers and the sea (RoFRaS) rating N/A.	Proposed basement development will be formed on a similar building footprint to the existing/proposed structure. Low risk.
Groundwater	Groundsure considers the area to be at a moderate risk of groundwater flooding.	As SUDS will be required by NPPF, PPG and LLFA policy requirements, this will ensure that the proposed development will not increase the potential risk of groundwater flooding.

		Basement will be fully waterproofed as appropriate to industry standard. Low risk.
Artificial Sources	No artificial sources identified.	Low risk.
Surface Water / Sewer Flooding	River Crane is reported 176m NW. Condition, depth and location of surrounding infrastructure uncertain.	As SUDS will be required by NPPF, PPG and LLFA policy requirements, this will ensure that the proposed development will not increase the potential risk of risk of surface and sewer flooding to the site and surrounding properties. Basement will be fully waterproofed as appropriate to industry standard. Low risk.
Climate Change	Included in the flood modelling extents. Site not within climate change flood extent area	Development will not significantly increase the peak flow and volume of discharge from the site. Low risk.

4.2.2 Information about the risk to the study site from flooding has been obtained from the following documents produced for London Borough of Richmond upon Thames: Surface Water Management Plan (Metis Consultants Ltd, December 2021); Strategic Flood Risk Assessment - Level 1 (Metis Consultants Ltd, March 2021); Preliminary Flood Risk Assessment (Capita Symonds, 2011); as well as the interactive online SFRA map available on the London Borough of Richmond upon Thames website. Potential impacts to the site are discussed below.

Flooding from Fluvial/Tidal Sources

4.2.3 The site is located within an EA Flood Zone 1.

4.2.4 There are no records of risk of flooding from rivers and the sea (RoFRaS) within 50m of the site.

4.2.5 Figure 1 of the PFRA reports the nearest fluvial flooding incident approximately 350m northeast of the site.

4.2.6 River Crane is located 176m northwest of the site.

Groundwater Flooding

4.2.7 Groundwater flooding occurs when water levels in the ground rise above surface levels or into subterranean property such as basements. Rises in groundwater level close to or above ground level can result in interference to property and infrastructure.

4.2.8 The Groundsure reports a “moderate” risk of groundwater flooding on site. The risk of groundwater flooding within 50m is reported as “high”.

4.2.9 Figure 2-6 of the SWMP identifies the site is within an area with a susceptibility to groundwater flooding of <25%.

4.2.10 Figure 2 of the PFRA shows the site is not located within an area where there is increased potential for elevated groundwater due to permeable superficial deposits. The figure also shows the nearest groundwater flooding incident (EA records) is approximately 1km north-east of the site.

4.2.11 The interactive online SFRA map shows the site is within a current ‘Throughflow Catchment Area’.

4.2.12 Local Authority map exerts are provided in Appendix 5.

Surface Water Flooding

4.2.13 Surface water flooding occurs when rainwater does not drain away through drainage systems or soak into the ground, but lies on or flows over the ground instead. This happens following prolonged rainfall resulting in saturated ground and sewers/drainage being at full capacity, or, following a ‘flash flood’, rainwater may not have time to flow into sewers or soak into the ground due to the intensity of the rainfall. Water can re-emerge from surface water flow routes when connected pipes or watercourses experience high levels causing water to flow in the other direction and back onto the surface.

4.2.14 According to the Groundsure report the surface water risk on site is ‘negligible’ and the highest risk within 50m is ‘1 in 100 year, 0.1m-0.3m’.

4.2.15 Figure 1 of the PFRA reports no surface water flooding incidents within 1km of the site.

4.2.16 Figure 5 of the PFRA shows surface water depth (m) for a 1 in 200 chance of rainfall event occurring in any given year (0.5% AEP). The site lies within a <0.75 caution (very low hazard) risk modelled extent.

4.2.17 The site lies within an EA Flood Zone 1.

4.2.18 The risk of surface water flooding is therefore considered to be low.

Sewer/Artificial Flooding

4.2.19 The site is located within the postcode TW1 3HE.

4.2.20 Figure 3 of the PFRA reports 1-5 sewer flood records within the TW1 3 area.

4.2.21 Table 2-2 of the SWMP states that there is 1No Thames Water Sewer Flood Record for the postcode TW1 3.

4.2.22 Figure 2-8 of the SWMP shows the site is not within an area at risk of flooding from reservoirs.

4.2.23 The risk of sewer/artficial flooding is considered to be “low”.

4.2.24 Local Authority map exerts are provided in Appendix 5.

Critical Drainage Areas (CDAs)

4.2.25 The London Borough of Richmond Upon Thames Surface Water Management Plan (Metis, 2021) uses a basin and catchment-based approach rather than establishing Critical Drainage Areas (CDAs). Hydrological analysis of the borough and surrounding areas was undertaken using a digital terrain model (DTM) and watercourse information to define surface water basins. These basins were split into smaller catchments using the existing sewer infrastructure, watercourses and overland features such as railway tracks.

4.2.26 7No. catchments are located within the borough; the site is located within Catchment H10 – Hanworth & South Twickenham as shown in Figure 3-2 of the SWMP.

4.2.27 Figure 12-2 shows properties at risk of flooding from surface water (1 in 100yr), but the site is not one of these. The figure also shows the nearest hotspot is approximately 300m north-east of the site at Amyand Park Road/Victoria Road.

Sustainable Drainage Systems (SuDS)

4.2.28 Although the entire site is currently covered by hardstanding, it is understood that a section of the proposed basement will be under proposed soft-cover. However, the overall change in impermeable area will not significantly differ post-development.

4.2.29 In accordance with the NPPF, PPG and LLFA policy requirements, sustainable drainage systems (SuDS) should be incorporated wherever possible to reduce positive surface water run-off and flood risk to other areas.

4.2.30 Given the expected underlying ground and hydrogeological conditions it is considered that infiltration drainage may be possible; however, it is likely that the use of conventional soakaways would be restricted by the small size of the site and proximity to buildings and boundary walls. An alternative solution such as on-site attenuation prior to discharge to storm sewers might be suitable.

Conclusion

4.2.31 Based on the available data, the site is considered to be at low risk from identified potential sources of flooding. The basement can be constructed and operated safely

in flood risk terms without increasing flood risk elsewhere and is therefore considered NPPF compliant.

4.2.32 Map extracts from the sources referenced in Section 4.2.2 area are included as part of Appendix 5.

4.3 Sequential and Exception Tests

4.3.1 The Sequential Test aims to ensure that development does not take place in areas at high risk of flooding when appropriate areas of lower risk are reasonably available.

Sequential Test: within FZ1 and no additional dwelling hence pass by default.

4.3.2 Paragraph 19 of PPS25 recognizes the fact that wider sustainable development criteria may require the development of some land that cannot be delivered through the sequential test. In these circumstances, the Exception Test can be applied to some developments depending on their vulnerability classification (Table D.2 of PPS25). The Exception Test provides a method of managing flood risk while still allowing necessary development to occur.

Exception Test: FZ1 hence pass by default and low risk posed to and from other sources.

4.4 Flood Resilience

4.4.1 In accordance with general basement flood policy and basement design, the proposed development will utilize the flood resilient techniques recommended in the NPPF Technical Guidance where appropriate and also the recommendations that have previously been issued by various councils.

4.4.2 These include:

- Basement to be fully waterproofed (tanked) and waterproofing to be tied in to the ground floor slab as appropriate: to reduce the turnaround time for returning the property to full operation after a flood event.
- Plasterboards will be installed in horizontal sheets rather than conventional vertical installation methods to minimise the amount of plasterboard that could be damaged in a flood event.
- Wall sockets will be raised to as high as is feasible and practicable in order to minimise damage if flood waters inundate the property.
- Any wood fixings on basement / ground floor will be robust and/or protected by suitable coatings in order to minimise damage during a flood event.
- The basement waterproofing where feasible will be extended to an appropriate level above existing ground levels.
- The concrete sub floor as standard will likely be laid to fall to drains or gullies which will remove any build-up of ground water to a sump pump where it

will be pumped into the mains sewer. This pump will be fitted with a non-return valve to prevent water backing up into the property should the mains sewer become full.

- Insulation to the external walls will be specified as rigid board which has impermeable foil facings that are resistant to the passage of water vapour and double the thermal resistance of the cavity.

5 SCREENING AND SCOPING ASSESSMENT

5.1 Screening Assessment

5.1.1 Screening is the process of determining whether or not there are areas of concern which require a BIA for a particular project. This was undertaken in previous sections by the site characterisation. Scoping is the process of producing a statement which defines further matters of concern identified in the screening stage. This defining is in terms of ground processes in order that a site-specific BIA can be designed and executed by deciding what aspects identified in the screening stage require further investigation by desk research or intrusive drilling and monitoring or other work.

5.1.2 The scoping stage highlights areas of concern where further investigation, intrusive soil and water testing and groundwater monitoring may be required.

5.1.3 Table 5.1 below has been produced in line with the "Basement Assessment User Guide" published by London Borough of Richmond upon Thames in 2021 as guidance for applicants to ensure that all of the required information is provided.

5.1.4 Each question posed in the tables is completed by answering "Yes", "No" or "Unknown". Any question answered with "Yes" or "Unknown" is then subsequently carried forward to the scoping phase of the assessment.

5.1.5 The results of the screening process for the site are provided in Table 5.1 below. Where further discussion is required the items have been carried forward to scoping.

5.1.6 A ground investigation is undertaken where necessary to establish base conditions and the impact assessment determines the impact of the proposed basement on the baseline conditions, taking into account any mitigating measures proposed.

Table 5.1: Screening Assessment

Query	Y / N	Comment
Subterranean Characteristics (see London Borough of Richmond upon Thames Basement Assessment User Guide – Section 4)		
1) Does the recorded water table extend above the base of the proposed subsurface structure?	Unknown	The available data indicates that superficial deposits of the Kempton Park Gravel Member are present on site (underlying the Langley Silt Member). Hence it would be expected that a groundwater table would be encountered above or at the interface between this stratum and the underlying London Clay Formation.
2) Is the proposed subsurface development structure within 100m of a watercourse or spring line?	No	Nearest such feature is the River Crane 176m NW.
3) Are infiltration methods proposed as part of the site's drainage strategy?	Unknown	The proposed drainage strategy is unknown at this time.
4) Does the proposed excavation during the construction phase extend below the local water table level or spring line (if applicable)?	Unknown	The available data indicates that superficial deposits of the Kempton Park Gravel Member are present on site (underlying the Langley Silt Member). Hence it would be expected that a groundwater table would be encountered above or at the interface between this stratum and the underlying London Clay Formation.
5) Is the most shallow geological strata at the site London Clay?	No	The site is reportedly directly underlain by superficial deposits of the Langley Silt Member anticipated to be further underlain by Kempton Park Gravel Member deposits.
6) Is the site underlain by an aquifer and/or permeable geology?	Yes	The site is anticipated to be underlain by superficial deposits of the Kempton Park Gravel Member, identified as a Principal Aquifer.
Land Stability (see London Borough of Richmond upon Thames Basement Assessment User Guide – Section 4)		
1) Does the site, or neighbouring area, topography include slopes that are greater than 7 degrees?	No	The site appears flat and level.
2) Will changes to the site's topography result in slopes that are greater than 7 degrees?	No	The proposed development is not anticipated to have slopes greater than 7 degrees.
3) Will the proposed subsurface structure extend significantly deeper underground compared to the foundations of the neighbouring properties?	Unknown	Type and depth of neighbouring foundations is not known.

Query	Y / N	Comment
4) Will the implementation of the proposed subsurface structure require any trees to be felled or uprooted?	No	No trees were observed on site during the walkover.
5) Has the ground at the site been previously worked?	No	According to the Groundsure report, the nearest artificial/made ground is reported 381m east of the site. Ground workings associated with a grave yard were reported onsite however this is shown on historic maps to be located to the south-east and is not anticipated to have extended on site.
6) Will any trees be felled as part of the proposed development and/or are any works proposed within any tree protection zones where trees are to be retained?	No	No trees were observed on site during the walkover.
7) Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	Unknown	The risk for shrink swell clays beneath the site is “very low”.
8) Is the site within the vicinity of any tunnels or railway lines?	No	The nearest railway siding is reported 79m north of the site. The nearest railway is reported 80m north of the site. Presence of this railway is not considered likely to impact on the proposed basement development.
Flood Risk and Drainage (see London Borough of Richmond upon Thames Basement Assessment User Guide - Section 4)		
1) Will the proposed subsurface development result in a change in impermeable area coverage on the site?	No	The entire site is currently covered by hardstanding. Plans indicate a section of the new basement will underlie soft cover, rendering it effectively not permeable. The sub-surface development will not change the proportion of impermeable area coverage.
2) Will the proposed subsurface development impact the flow profile of throughflow, surface water or groundwater to downstream areas?	Unknown	Depth/presence of groundwater unknown. Flow profiles are unlikely to significantly change.
3) Will the proposed subsurface development increase throughflow or groundwater flood risk to neighbouring properties?	No	The groundwater flood risk is “moderate”. The proposed development is unlikely to increase this further. SUDS should be implemented and focus on reducing the risk of flooding.

5.2 Scoping

5.2.1 Scoping is the activity of defining in further detail the matters to be investigated as part of the BIA process. Scoping comprises of the definition of the required investigation needed in order to determine in detail the nature and significance of the potential impacts identified during screening.

5.2.2 The potential impacts for each of the matters highlighted in Table 5.1 above are discussed in further detail below together with the requirements for further investigations. Detailed assessment of the potential impacts and recommendations are provided where possible.

Subterranean Characteristics

5.2.3 A ground investigation is recommended to confirm the ground conditions and groundwater levels (if any) beneath the site. This can then be used to confirm the relative depths of the basement to the groundwater levels.

Land Stability

5.2.4 The site, as with the surrounding area, is generally flat. The Groundsure report has noted that there is a “very low” risk of land instability issues for the site.

5.2.5 The recommended ground investigation should also determine the possibility of encountering groundwater and the possibility of Made Ground and/or clay. Atterberg Limits of the underlying clay should be determined by the ground investigation to confirm very low risk of shrink/swell potential of the soils.

5.2.6 It is noted that the London Borough of Camden’s guidance documents require a Ground Movement Assessment to be undertaken as part of the Basement Impact Assessment. Such an assessment uses a ground model based on a zone of influence equivalent of four times the proposed depth of excavation. Consequently, such a study is considered prudent, though may not be a specific requirement of London Borough of Richmond upon Thames.

Flood Risk and Drainage

5.2.7 The entire site is currently covered by hardstanding. Proposed plans show that a small section of the proposed basement will underlie newly proposed soft cover. A drainage strategy should be produced to demonstrate how surface waters will be managed.

6 PRELIMINARY BASEMENT IMPACT ASSESSMENT

6.1 Proposed Changes to Areas of External Hardstanding

6.1.1 The site predominantly comprises of hardstanding cover which include the existing building on site, a driveway area and a rear external patio. Gravel and small plants are present adjacent to the building. The proposed plans shows that there will be a reduction in hardstanding area to the front of the building through provision of a new garden area, though the majority of this will be underlain by the basement.

6.1.2 As a result, there is unlikely to be an increase in the proportion of hardstanding areas and it is not considered necessary to undertake further assessment in relation to the proposed changes to areas of external hardstanding.

6.2 Past Flooding

6.2.1 The National Planning Policy Framework sets strict tests to protect people and property from flooding which all local planning authorities are expected to follow.

6.2.2 When assessing the site-specific flood risk and the potential for historic flooding to reoccur the above guidance recommends that, historic flooding records and any other relevant and available information including flood datasets (e.g. flood levels, depths and/or velocities) and any other relevant data, which can be acquired are assessed.

6.2.3 No EA recorded flood outlines or EA historic flooding events are shown within 250m of site.

6.2.4 Figure 1 of the PFRA reports the nearest fluvial flooding incident approximately 350m northeast of the site.

6.2.5 Figure 1 of the PFRA reports no surface water flooding incidents within 1km of the site.

6.2.6 Figure 2 of the PFRA reports the nearest groundwater flooding incidents was 1km north-east of the site.

6.2.7 Figure 3 of the PFRA reports 1-5 sewer flood records within the TW1 3 area. Table 2-2 of the SWMP states that there is 1No Thames Water Sewer Flood Record for the postcode TW1 3.

6.2.8 Figure 2-8 of the SWMP shows the site is not within an area at risk of flooding from reservoirs.

6.2.9 The site is therefore considered to be at low risk of flooding based on historic flooding.

6.3 Geological Impact

6.3.1 The published geological maps indicate that the site is directly underlain by superficial deposits of the Langley Silt Member and the Kempton Park gravel Member. These superficial deposits are underlain by solid deposits of the London Clay Formation. This should be confirmed by an intrusive investigation. Geotechnical laboratory testing of soils should also be undertaken to establish their shrink/swell properties.

6.4 Hydrology and Hydrogeology Impact

6.4.1 Based on the information available at the time of writing, the risk of flooding from groundwater is considered to be “low-moderate”. Figure 2 of the PFRA shows the site is not located within an area where there is increased potential for elevated groundwater due to permeable superficial deposits. Figure 2-6 of the SWMP identifies the site is within an area with a susceptibility to groundwater flooding of <25%.

6.4.2 The groundwater level should be determined as part of an intrusive investigation.

6.4.3 Appropriate water proofing measures should be included within the whole of the proposed basement wall/floor design.

6.4.4 The proposed development will lie outside of flood risk zones and is therefore assessed as being at a low probability of fluvial flooding.

6.4.5 The River Crane is reported 176m northwest of the site.

6.4.6 7No. Catchments are located within the borough; the site is located within Catchment H10 – Hanworth & South Twickenham as shown in Figure 3-2 of the SWMP . The information available suggests that the site lies in an area that is at low risk of surface water flooding.

6.4.7 The proposed basement construction is unlikely to result in an increase in impermeable areas in the post development scenario.

6.4.8 No risk of flooding to the site from artificial sources has been identified.

6.5 Impacts of Basement on Adjacent Properties and Pavement

6.5.1 The proposed basement excavation will be within 5m of a public pavement. It is also within 5m of neighbouring properties.

6.5.2 Unavoidable lateral ground movements associated with the basement excavations must be controlled during temporary and permanent works so as not to impact adversely on the stability of the surrounding ground, any associated services and structures.

6.5.3 It is recommended that the site is supported by suitably designed temporary support with a basement box construction. This will ensure that the adjacent land is

adequately supported in the temporary and permanent construction. Alternatively, the excavation should proceed in a manner that maintains the integrity of the ground on all sides.

6.5.4 Careful and regular monitoring of the structure will need to be undertaken during the construction phase to ensure that vertical movements do not adversely affect the above property and neighbouring structures. If necessary, the works may have to be carried out in stages with the above structure suitably propped and supported.

6.5.5 It will be necessary to ensure that the basements are designed in accordance with the NHBC Standards and take due cognisance of the potential impacts highlighted above. This may be achieved by ensuring best practice engineering and design of the proposed scheme by competent persons and in full accordance with the Construction (Design and Management) Regulations. This will include:

- Establishment of the likely ground movements arising from the temporary and permanent works and the mitigation of excessive movements;
- Assessment of the impact on any adjacent structures (including adjacent properties and the adjacent pavement with potential services);
- Determination of the most appropriate methods of construction of the proposed basements;
- Undertake pre-condition surveys of adjacent structures;
- Monitor any movements and pre-existing cracks during construction;
- Establishment of contingencies to deal with adverse performance;
- Ensuring quality of workmanship by competent persons.

6.5.6 Full details of the suitable engineering design of the scheme in addition to an appropriate construction method statement should be submitted by the Developer to the London Borough of Richmond upon Thames .

6.6 Cumulative Impacts

6.6.1 The above individual effects could potentially interact to form a greater issue.

6.6.2 The site has been identified as being directly underlain by Langley Silt Member which is expected to have a poor drainage characteristics; however, Kempton Park Gravel Member deposits are anticipated beneath the Langley Silt Member which is anticipated to have good drainage characteristics.

6.6.3 The presence of Langley Silt Member deposits at shallow depth may prevent the movement of groundwater and the ingress of surface water into the ground.

6.6.4 The depths of these strata and groundwater levels should be established via ground investigation.

6.7 Ground Movement

6.7.1 CIRIA C580 Table 2.5 uses information on the damage to walls of buildings based on Burland et al (1977), Boscardin and Cording (1989) and Burland (2001) to categorise damage into 5 categories. A summary of Table 2.5 from CIRIA C580 is provided below.

6.7.2 It would be generally good practise to ensure that the design and construction should aim to limit damage to all buildings to a maximum of Category 2 (Slight) as set out in CIRIA Report 580.

Table 6.1: Summary of CIRIA C580 Table 2.5 (after Burland et al (1977), Boscardin and Cording (1989) and Burland (2001))

Category of damage		Description of Typical Damage	Approximate crack width (mm)	Limiting tensile strain (%)
0	Negligible	Hairline cracks of less than about 0.1mm are classes as negligible.	< 0.1	0.0-0.05
1	Very Slight	Fine cracks that can easily be treated during normal decoration. Perhaps isolated slight fracture in building. Cracks in external brickwork visible on inspection.	<1	0.05-0.075
2	Slight	Cracks easily filled. Redecoration probably required. Several slight fractures showing inside of building. Cracks are visible externally and some repointing may be required externally to ensure weather tightness. Doors and windows may stick slightly	<5	0.075-0.15
3	Moderate	The cracks require some opening up and can be patched by a mason. Recurrent cracks can be masked by suitable linings. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture. Weather-tightness often impaired.	5-15 or a number of cracks >3	0.15 – 0.3
4	Severe	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Windows and frames distorted, floors sloping noticeably. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted.	15-25 but also depends on number of cracks	>0.3
5	Very Severe	This requires a major repair involving partial or complete rebuilding. Beams lose bearings, walls lean badly and require shoring. Windows broken with distortion. Danger of instability.	Usually >25 but depends on number of cracks	

6.7.3 The first three categories (namely “Negligible”, “Very Slight” and “Slight” categories) are generally regarded as acceptable for buildings where no structural damage is permissible.

6.7.4 Assuming cantilever retaining walls are formed in short sections, it is considered that in the short-term maintaining the category of damage to Category 1 could be relatively easily achieved. It would be recommended that a full inspection of the neighbouring properties should be undertaken prior to starting work and a watching brief of the structure, the excavations and the adjacent properties is maintained during the works.

6.7.5 In the long term a suitably designed and constructed retaining wall should provide sufficient support to ensure that post construction movement is minimal and the damage classification post construction of any cracks caused in the short term should not get worse. It is considered unlikely that new cracks would occur post construction.

6.7.6 This advice is provided based on the limited data currently available and is not a full Ground Movement Assessment.

6.8 Conclusion

6.8.1 The overall assessment of the site is that the creation of a basement for the existing development will not adversely impact the site or its immediate environs, providing measures are taken to protect surrounding land and properties during construction.

6.8.2 The geological and hydrogeological conditions beneath the site should be confirmed by a ground investigation.

6.8.3 The proposed development is not expected to cause significant problems to the subterranean drainage. It would be prudent to confirm this by a ground investigation and subsequently updated Basement Impact Assessment.

7 REFERENCES

Groundsure Enviro+GeoInsight Report Ref GS-TV8-XR9-OR9-9OX May 2024

Ministry of Housing, Communities & Local Government: *National Planning Policy Framework*. February 2019

BRE Report BR211; Radon: Guidance on protective measures for new buildings, 2023

British Standards Institution (2015) BS 5930:2015 *Code of practice for ground investigations*. Milton Keynes: BSI

CIRIA C580, Embedded retaining walls – guidance for economic design

London Borough of Camden (January 2021) *"Camden Planning Guidance Basements"*

Campbell Reith (March 2018) *"Pro Forma Basement Impact Assessment*", London Borough of Camden

Planning Advice Note: Good Practice Guide on Basement Developments, London Borough of Richmond upon Thames (May 2015)

Preliminary Flood Risk Assessment - London Borough of Richmond upon Thames, Capita Symonds (May 2011)

Strategic Flood Risk Assessment Level 1 - London Borough of Richmond upon Thames, Metis Consultants (March 2021)

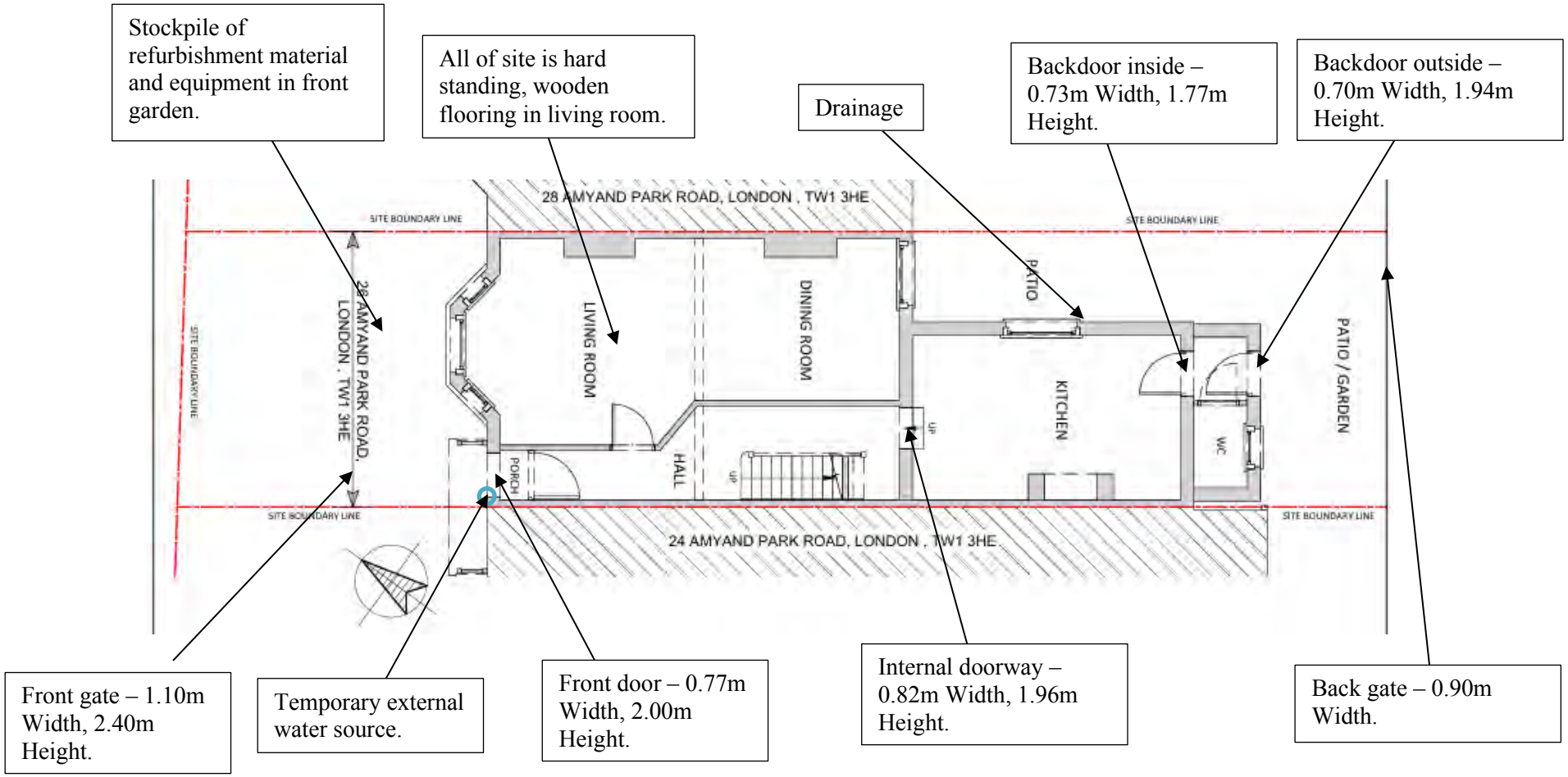
Surface Water Management Plan - London Borough of Richmond upon Thames, Metis Consultants Ltd (December 2021)

APPENDICES

APPENDIX 1 – FIGURES

PROJECT NAME	26 Amyand Park Road, TW1 3HE	**CLIENT**	05 Group Ltd
TITLE	Site Location Plan	**PROJECT NO.**	P5802J3027
DATE	June 2024	**FIGURE NO.**	1

PROJECT NAME	26 Amyand Park Road, TW1 3HE	**CLIENT**	05 Group Ltd
TITLE	Constraints Plan	**PROJECT NO.**	P5802J3027
DATE	June 2024	**FIGURE NO.**	2



PROJECT NAME	26 Amyand Park Rd, TW1 3HE	**CLIENT**	05 Group Ltd
TITLE	Walkover Photo Plan	**FIGURE**	3

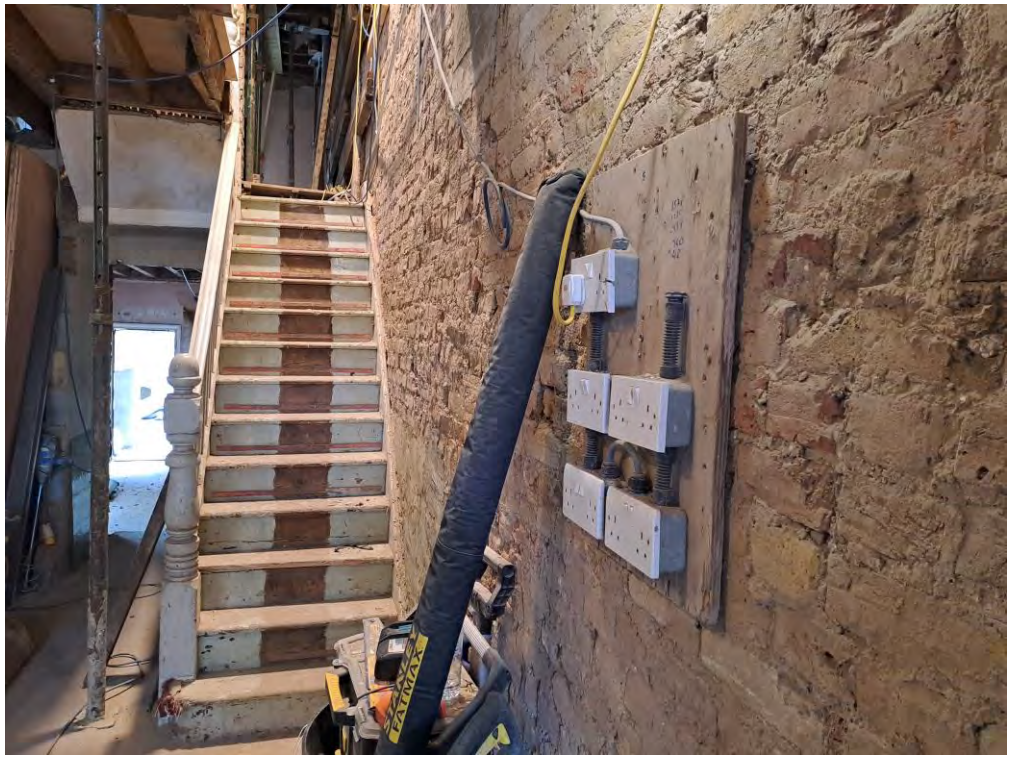
Photo 1: Overview of front of site.

Photo 2: Overview of front garden of site.

PROJECT NAME	26 Amyand Park Rd, TW1 3HE	**CLIENT**	05 Group Ltd
TITLE	Walkover Photo Plan	**FIGURE**	3

Photo 3: Main living room of site.

Photo 4: Site is connected to electrics.



PROJECT NAME	26 Amyand Park Rd, TW1 3HE	**CLIENT**	05 Group Ltd
TITLE	Walkover Photo Plan	**FIGURE**	3

Photo 5: Internal doorway leading to kitchen area of site.

Photo 6: Back doors of site.

PROJECT NAME	26 Amyand Park Rd, TW1 3HE	**CLIENT**	05 Group Ltd
TITLE	Walkover Photo Plan	**FIGURE**	3

Photo 7: Toilet of site.

Photo 8: Back garden of site from the doorway.

PROJECT NAME	26 Amyand Park Rd, TW1 3HE	**CLIENT**	05 Group Ltd
TITLE	Walkover Photo Plan	**FIGURE**	3

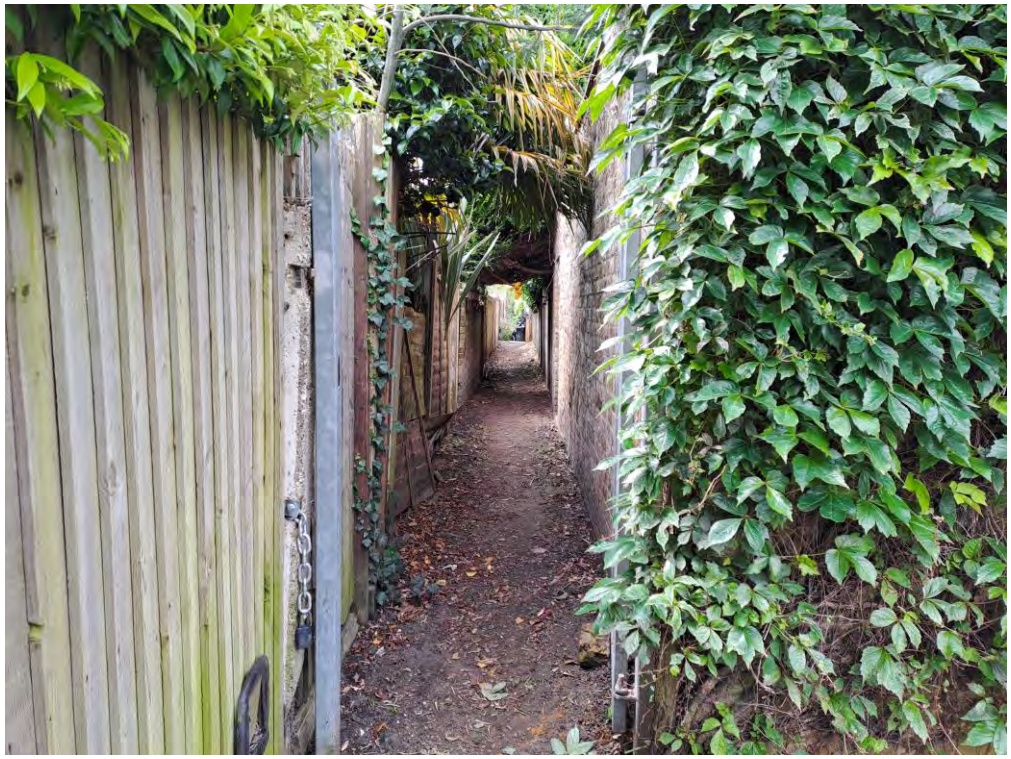
Photo 9: Back garden of site from gate.

Photo 10: External water supply by front door.

PROJECT NAME	26 Amyand Park Rd, TW1 3HE	**CLIENT**	05 Group Ltd
TITLE	Walkover Photo Plan	**FIGURE**	3

Photo 11: Drainage in back garden.

Photo 12: Alleyway leading to back gate.

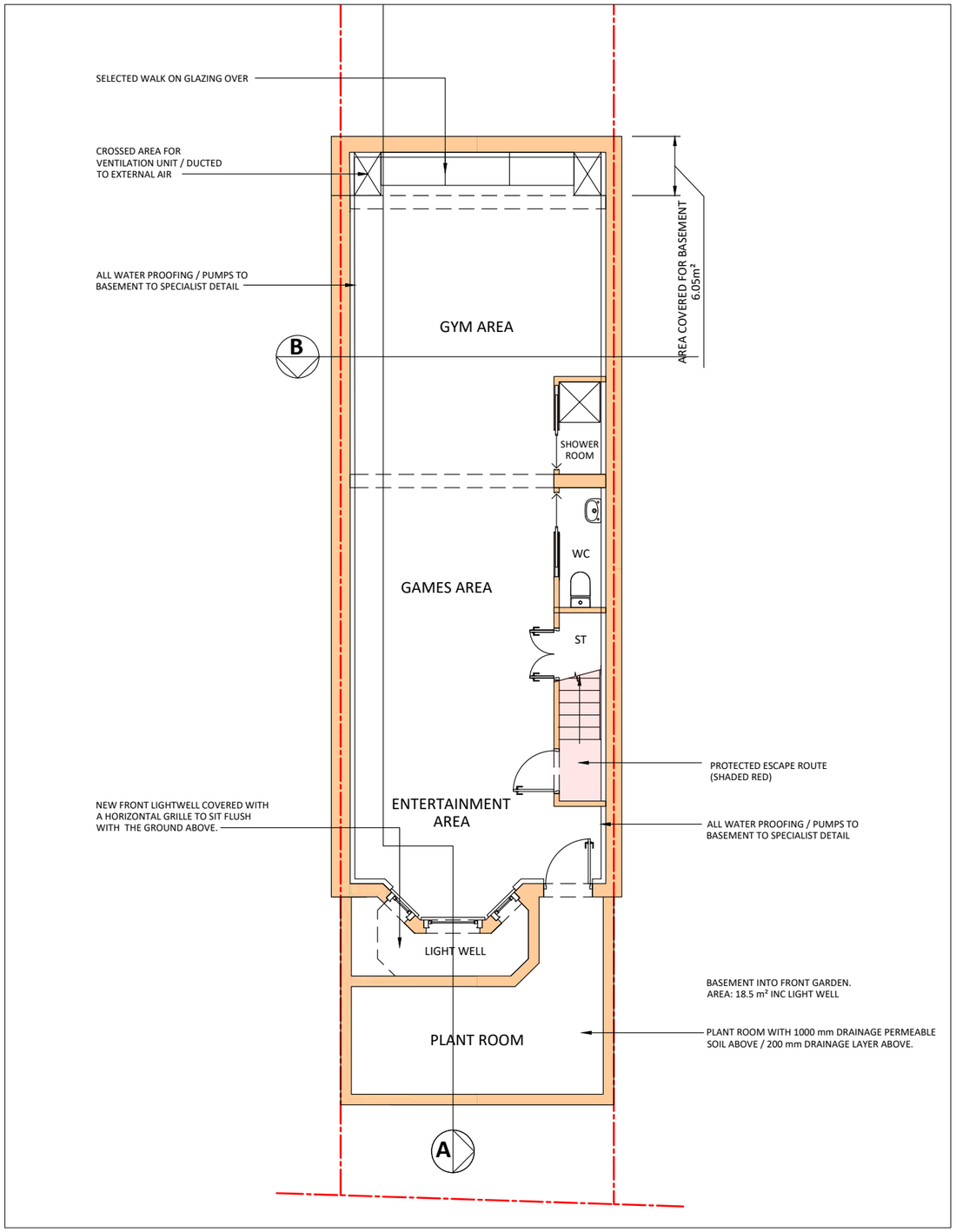


PROJECT NAME	26 Amyand Park Rd, TW1 3HE	**CLIENT**	05 Group Ltd
TITLE	Walkover Photo Plan	**FIGURE**	3

Photo 13: Back gate of site from alleyway.

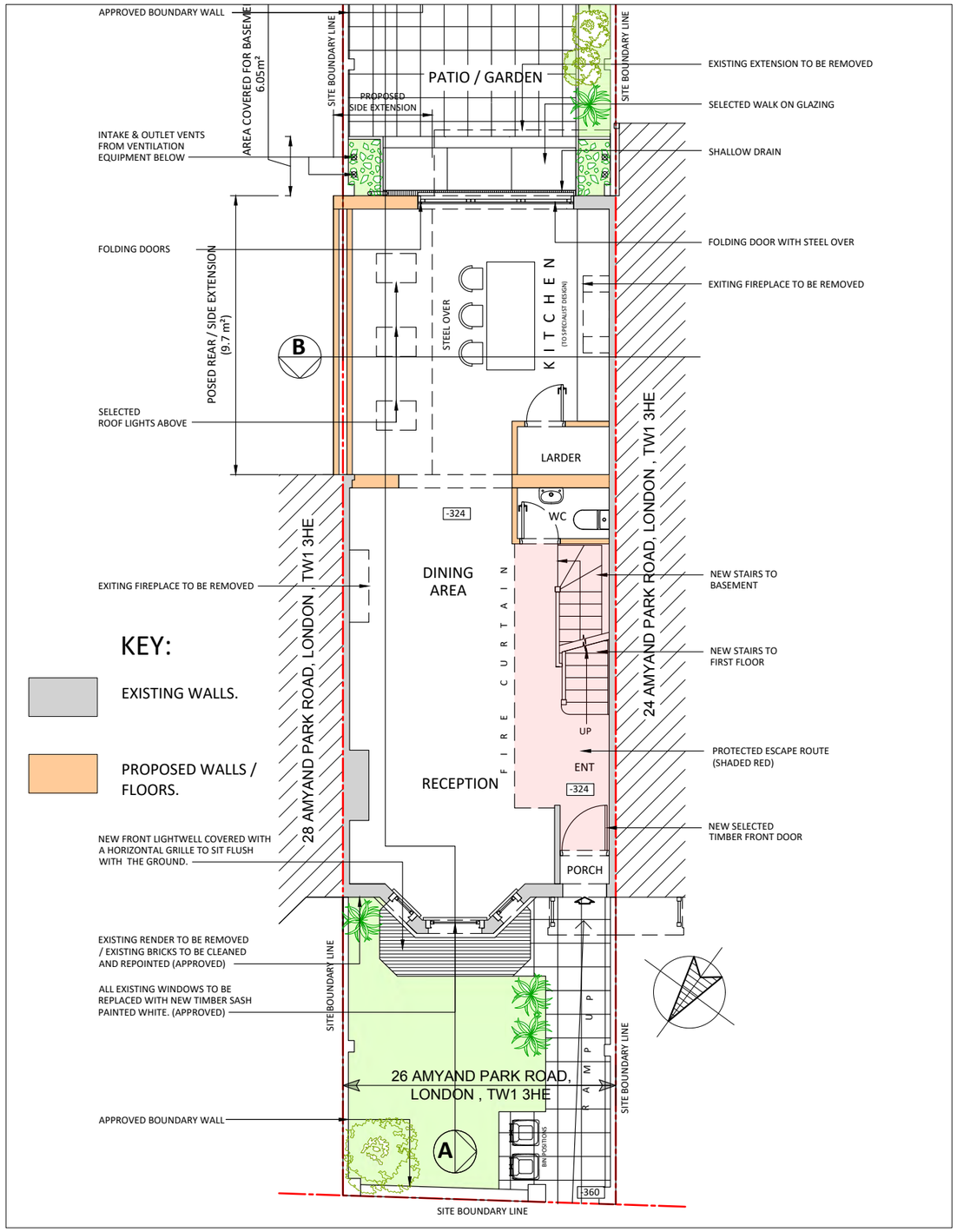
Photo 14:

Figure 4a: Proposed Basement and Ground Floor.



PROPOSED BASEMENT FLOOR

SCALE 1:100 @ A3



PROPOSDED GROUND FLOOR PLAN

SCALE 1:100 @ A3

NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE.
2. THIS DRAWING HAS BEEN DRAWN TO SCALE, AS SHOWN, FOR THE PURPOSE OF OBTAINING LOCAL AUTHORITY APPROVAL.

BAR SCALE:

1:100 @ A3

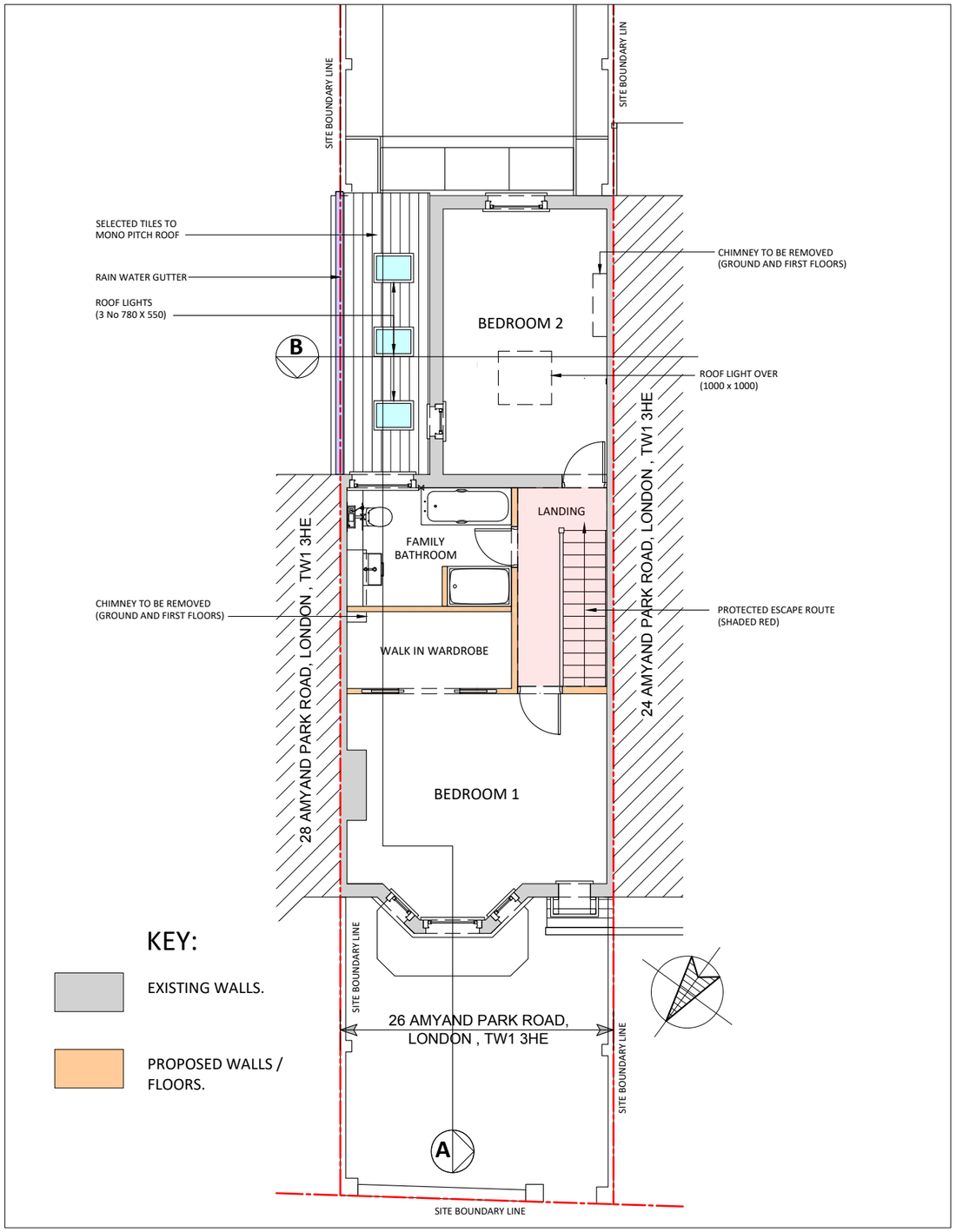
1 CM 0 1 CM 2 CM 3 CM 4 CM

1.0M 0 1.0M 2.0M 3.0M 4.0M

REVISIONS:

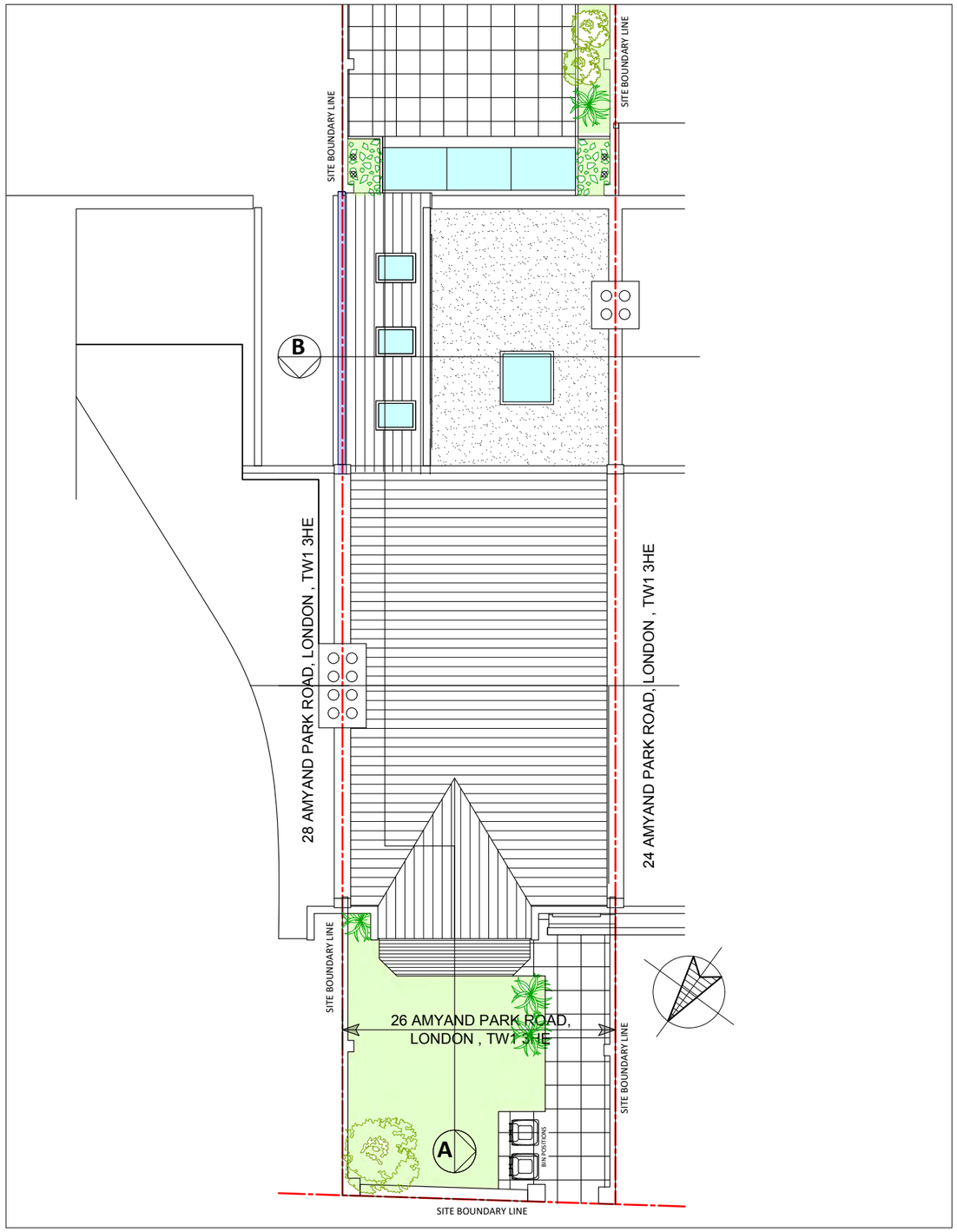
Drawing Title:	PROPOSED BASEMENT & GROUND FLOOR PLANS.
Property Address:	26 AMYAND PARK ROAD, LONDON, TW1 3HE.
Date:	MAY 2024
Scale @ A3:	1:100
Drawing Number:	SC 23111 / AP / BA01

Figure 4b: Proposed first floor and roof.



PROPOSED FIRST FLOOR PLAN

SCALE 1:100 @ A3



PROPOSED ROOF PLAN

SCALE 1:100 @ A3

NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE.
2. THIS DRAWING HAS BEEN DRAWN TO SCALE, AS SHOWN, FOR THE PURPOSE OF OBTAINING LOCAL AUTHORITY APPROVAL.

BAR SCALE: 1:100 @ A3

1 CM 0 1 CM 2 CM 3 CM 4 CM

1.0M 0 1.0M 2.0M 3.0M 4.0M

REVISIONS:

Drawing Title:	PROPOSED FIRST & ROOF PLANS.
Property Address:	26 AMYAND PARK ROAD, LONDON, TW1 3HE.
Date:	MAY 2024
Scale @ A3:	1:100
Drawing Number:	SC 23111 / AP / BA02

APPENDIX 2 – GROUNDSURE REPORTS

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

26, AMYAND PARK ROAD, TWICKENHAM, RICHMOND UPON THAMES, TW1 3HE

Order Details

Date: 31/05/2024

Your ref: P5802J3027 .1 26 Amyand Park

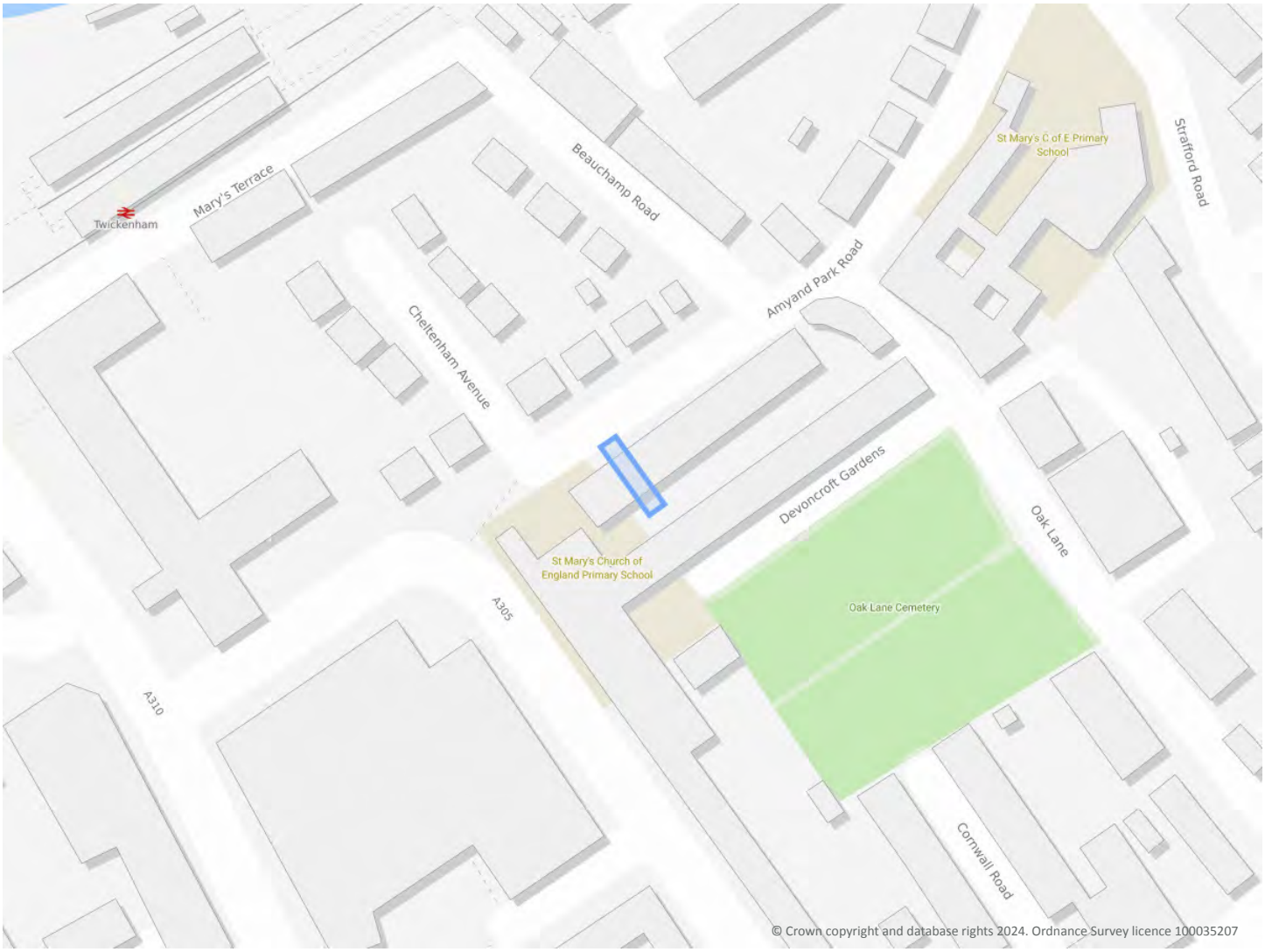
Our Ref: GS-TV8-XR9-OR9-9OX

Site Details

Location: 516307 173599

Area: 0.01 ha

Authority: London Borough of Richmond upon Thames ↗



Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	1	9	52	81	-
21 >	1.2 >	Historical tanks >	0	1	3	19	-
22 >	1.3 >	Historical energy features >	0	0	3	14	-
23 >	1.4 >	Historical petrol stations >	0	0	1	0	-
23 >	1.5 >	Historical garages >	0	0	4	7	-
24	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
25 >	2.1 >	Historical industrial land uses >	1	11	72	122	-
33 >	2.2 >	Historical tanks >	0	1	4	23	-
34 >	2.3 >	Historical energy features >	0	0	4	21	-
35 >	2.4 >	Historical petrol stations >	0	0	1	0	-
36 >	2.5 >	Historical garages >	0	0	7	15	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
38	3.1	Active or recent landfill	0	0	0	0	-
38	3.2	Historical landfill (BGS records)	0	0	0	0	-
39	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
39	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
39	3.5	Historical waste sites	0	0	0	0	-
39	3.6	Licensed waste sites	0	0	0	0	-
39 >	3.7 >	Waste exemptions >	0	0	12	5	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
42 >	4.1 >	Recent industrial land uses >	0	1	26	-	-
44 >	4.2 >	Current or recent petrol stations >	0	0	1	0	-
44	4.3	Electricity cables	0	0	0	0	-
45	4.4	Gas pipelines	0	0	0	0	-
45	4.5	Sites determined as Contaminated Land	0	0	0	0	-

45	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
45	4.7	Regulated explosive sites	0	0	0	0	-
45	4.8	Hazardous substance storage/usage	0	0	0	0	-
46	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
46 >	4.10 >	Licensed industrial activities (Part A(1)) >	0	0	0	2	-
46 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	2	2	-
47	4.12	Radioactive Substance Authorisations	0	0	0	0	-
47 >	4.13 >	Licensed Discharges to controlled waters >	0	0	1	4	-
48	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
48	4.15	Pollutant release to public sewer	0	0	0	0	-
49	4.16	List 1 Dangerous Substances	0	0	0	0	-
49	4.17	List 2 Dangerous Substances	0	0	0	0	-
49 >	4.18 >	Pollution Incidents (EA/NRW) >	0	0	1	2	-
50	4.19	Pollution inventory substances	0	0	0	0	-
50	4.20	Pollution inventory waste transfers	0	0	0	0	-
50	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
51 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
53 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
54 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
55	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
55 >	5.5 >	Groundwater vulnerability- local information >	Identified (within 0m)				
56 >	5.6 >	Groundwater abstractions >	0	0	0	0	12
60 >	5.7 >	Surface water abstractions >	0	0	0	0	6
61	5.8	Potable abstractions	0	0	0	0	0
62	5.9	Source Protection Zones	0	0	0	0	-
62	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
63 >	6.1 >	Water Network (OS MasterMap) >	0	0	1	-	-

64 >	6.2 >	Surface water features >	0	0	1	-	-
64 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
64 >	6.4 >	WFD Surface water bodies >	0	0	1	-	-
65 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	**River and coastal flooding >**	On site	0-50m	50-250m	250-500m	500-2000m
66	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
67	7.2	Historical Flood Events	0	0	0	-	-
67 >	7.3 >	Flood Defences >	0	0	2	-	-
67	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
67	7.5	Flood Storage Areas	0	0	0	-	-
68	7.6	Flood Zone 2	None (within 50m)				
68	7.7	Flood Zone 3	None (within 50m)				
Page	Section	**Surface water flooding >**					
69 >	8.1 >	Surface water flooding >	1 in 100 year, 0.1m - 0.3m (within 50m)				
Page	Section	**Groundwater flooding >**					
71 >	9.1 >	Groundwater flooding >	High (within 50m)				
Page	Section	**Environmental designations >**	On site	0-50m	50-250m	250-500m	500-2000m
72 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
73	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
73 >	10.3 >	Special Areas of Conservation (SAC) >	0	0	0	0	1
73	10.4	Special Protection Areas (SPA)	0	0	0	0	0
74 >	10.5 >	National Nature Reserves (NNR) >	0	0	0	0	1
74 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	0	3
74	10.7	Designated Ancient Woodland	0	0	0	0	0
75	10.8	Biosphere Reserves	0	0	0	0	0
75	10.9	Forest Parks	0	0	0	0	0
75	10.10	Marine Conservation Zones	0	0	0	0	0
75	10.11	Green Belt	0	0	0	0	0
75	10.12	Proposed Ramsar sites	0	0	0	0	0

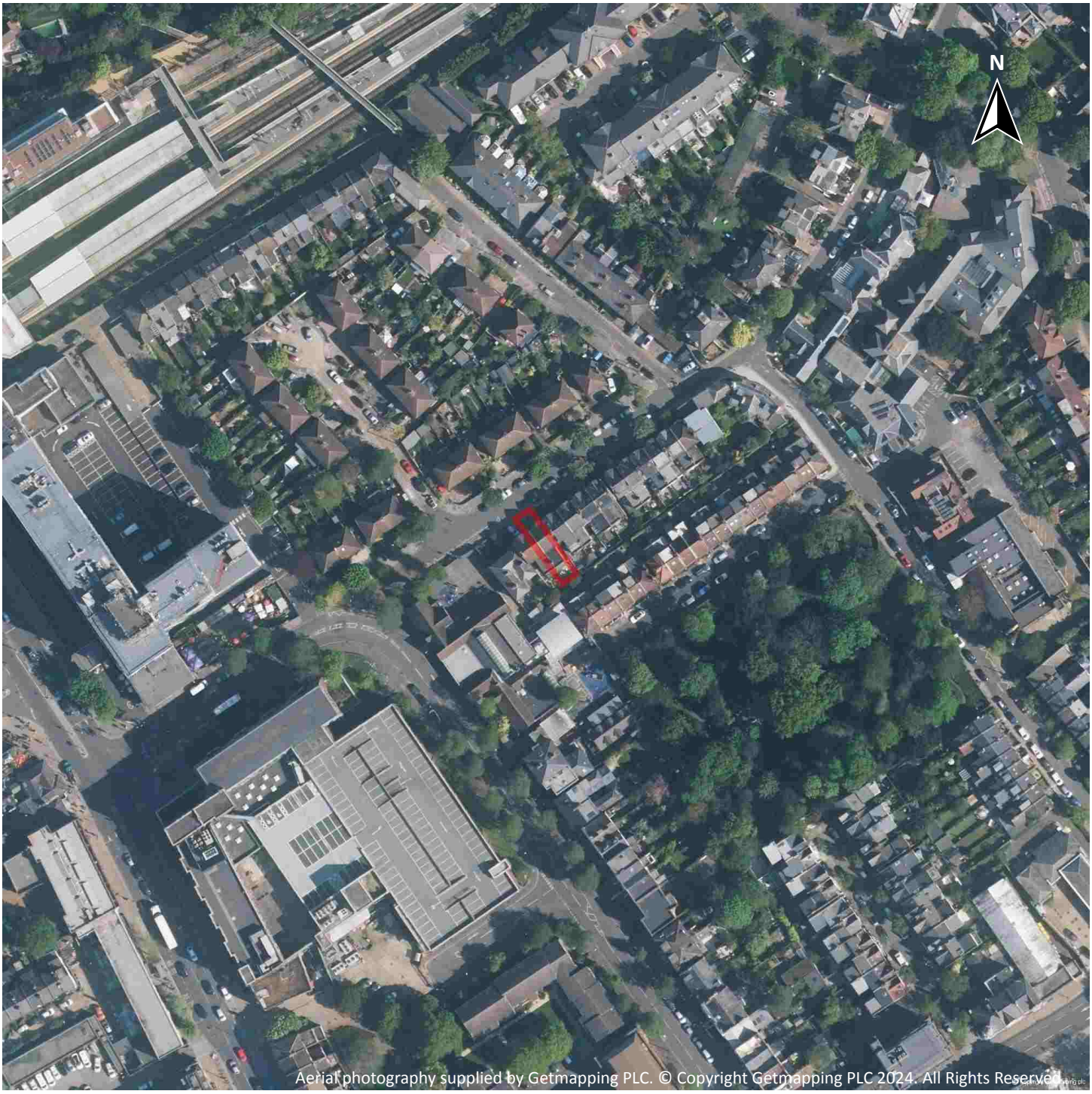
76	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
76	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
76	10.15	Nitrate Sensitive Areas	0	0	0	0	0
76	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
77 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
78 >	10.18 >	SSSI Units >	0	0	0	0	1
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
80	11.1	World Heritage Sites	0	0	0	-	-
81	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
81	11.3	National Parks	0	0	0	-	-
81 >	11.4 >	Listed Buildings >	0	0	4	-	-
82 >	11.5 >	Conservation Areas >	1	0	2	-	-
82	11.6	Scheduled Ancient Monuments	0	0	0	-	-
82 >	11.7 >	Registered Parks and Gardens >	0	0	1	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
84 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
85	12.2	Open Access Land	0	0	0	-	-
85	12.3	Tree Felling Licences	0	0	0	-	-
85	12.4	Environmental Stewardship Schemes	0	0	0	-	-
85	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
86	13.1	Priority Habitat Inventory	0	0	0	-	-
86	13.2	Habitat Networks	0	0	0	-	-
86	13.3	Open Mosaic Habitat	0	0	0	-	-
86	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
87 >	14.1 >	10k Availability >	Identified (within 500m)				
88 >	14.2 >	Artificial and made ground (10k) >	0	0	0	2	-
89 >	14.3 >	Superficial geology (10k) >	1	0	1	1	-

90	14.4	Landslip (10k)	0	0	0	0	-
91 >	14.5 >	Bedrock geology (10k) >	1	0	0	0	-
92	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
93 >	15.1 >	50k Availability >	Identified (within 500m)				
94 >	15.2 >	Artificial and made ground (50k) >	0	0	0	2	-
95	15.3	Artificial ground permeability (50k)	0	0	-	-	-
96 >	15.4 >	Superficial geology (50k) >	1	0	1	1	-
97 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
97	15.6	Landslip (50k)	0	0	0	0	-
97	15.7	Landslip permeability (50k)	None (within 50m)				
98 >	15.8 >	Bedrock geology (50k) >	1	0	0	0	-
99 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
99	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
100 >	16.1 >	BGS Boreholes >	0	0	14	-	-
Page	Section	Natural ground subsidence >					
102 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
103 >	17.2 >	Running sands >	Negligible (within 50m)				
104 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
105 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
106 >	17.5 >	Landslides >	Very low (within 50m)				
107 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
109	18.1	BritPits	0	0	0	0	-
110 >	18.2 >	Surface ground workings >	1	11	1	-	-
110	18.3	Underground workings	0	0	0	0	0
111	18.4	Underground mining extents	0	0	0	0	-
111	18.5	Historical Mineral Planning Areas	0	0	0	0	-

111	18.6	Non-coal mining	0	0	0	0	0
111	18.7	JPB mining areas	None (within 0m)				
111	18.8	The Coal Authority non-coal mining	0	0	0	0	-
112	18.9	Researched mining	0	0	0	0	-
112	18.10	Mining record office plans	0	0	0	0	-
112	18.11	BGS mine plans	0	0	0	0	-
112	18.12	Coal mining	None (within 0m)				
113	18.13	Brine areas	None (within 0m)				
113	18.14	Gypsum areas	None (within 0m)				
113	18.15	Tin mining	None (within 0m)				
113	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
114	19.1	Natural cavities	0	0	0	0	-
114	19.2	Mining cavities	0	0	0	0	0
114	19.3	Reported recent incidents	0	0	0	0	-
114	19.4	Historical incidents	0	0	0	0	-
115	19.5	National karst database	0	0	0	0	-
Page	Section	**Radon >**					
116 >	**20.1 >**	**Radon >**	Less than 1% (within 0m)				
Page	Section	**Soil chemistry >**	On site	0-50m	50-250m	250-500m	500-2000m
118 >	**21.1 >**	**BGS Estimated Background Soil Chemistry >**	1	0	-	-	-
118 >	**21.2 >**	**BGS Estimated Urban Soil Chemistry >**	3	1	-	-	-
119	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	**Railway infrastructure and projects >**	On site	0-50m	50-250m	250-500m	500-2000m
120	22.1	Underground railways (London)	0	0	0	-	-
120	22.2	Underground railways (Non-London)	0	0	0	-	-
121	22.3	Railway tunnels	0	0	0	-	-
121 >	**22.4 >**	**Historical railway and tunnel features >**	0	0	54	-	-
123	22.5	Royal Mail tunnels	0	0	0	-	-

123	22.6	Historical railways	0	0	0	-	-
123 >	**22.7 >**	**Railways >**	0	0	31	-	-
125	22.8	Crossrail 1	0	0	0	0	-
125	22.9	Crossrail 2	0	0	0	0	-
125	22.10	HS2	0	0	0	0	-

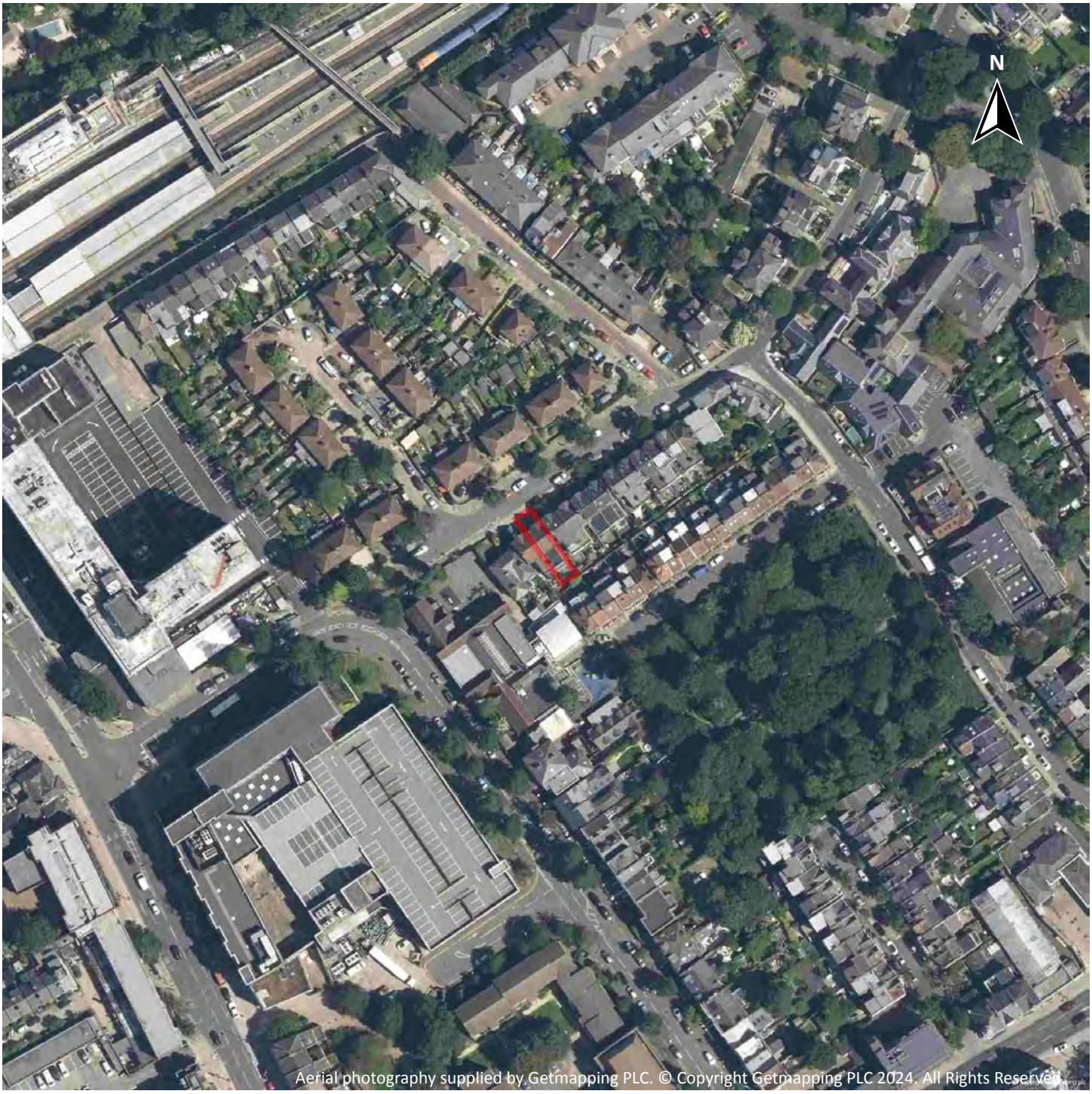
Recent aerial photograph



Capture Date: 30/04/2022

Site Area: 0.01ha

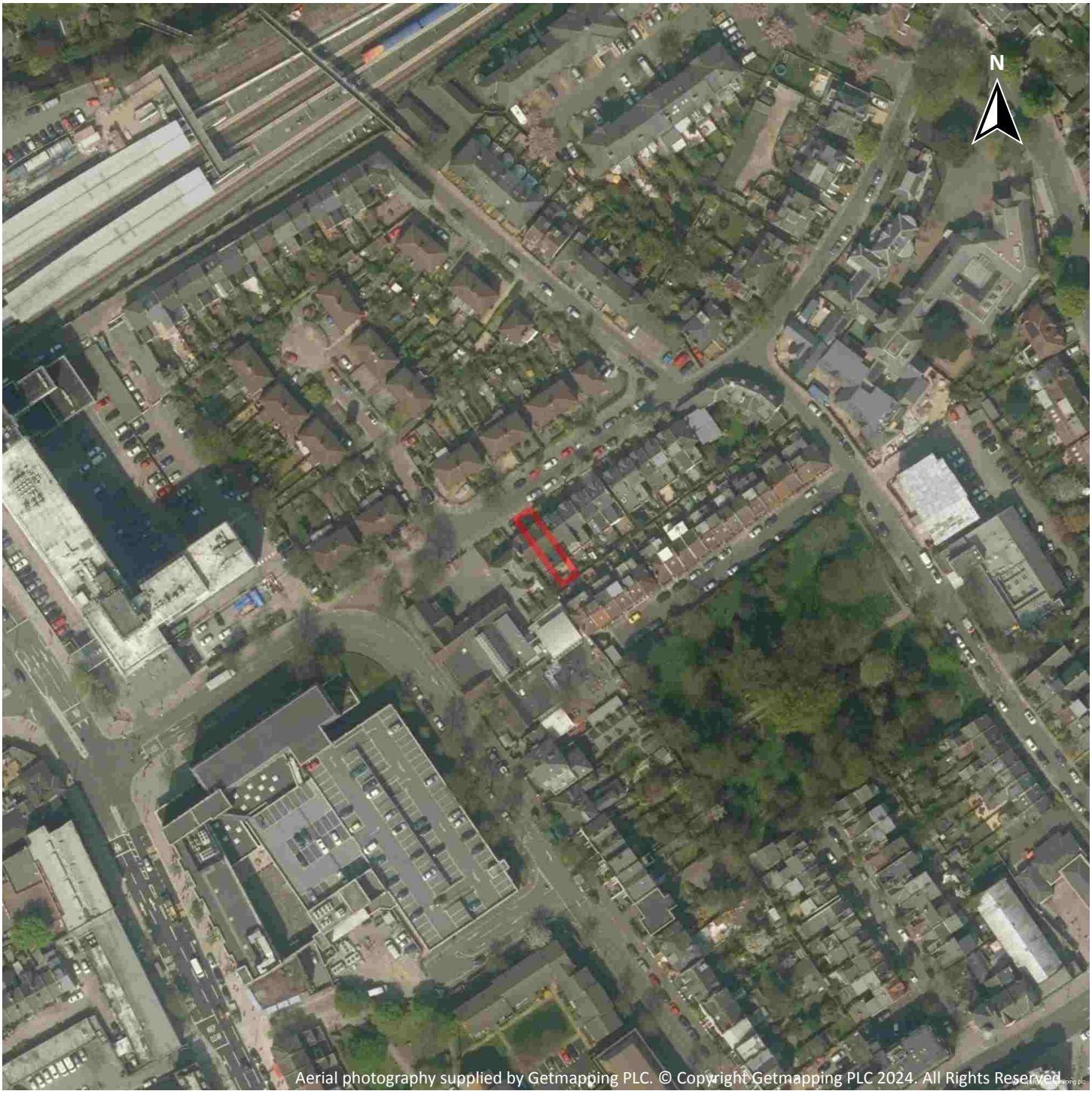
Recent site history - 2021 aerial photograph



Capture Date: 13/06/2021

Site Area: 0.01ha

Recent site history - 2015 aerial photograph



Capture Date: 20/04/2015

Site Area: 0.01ha

Recent site history - 2011 aerial photograph

Capture Date: 30/09/2011

Site Area: 0.01ha

Recent site history - 1999 aerial photograph

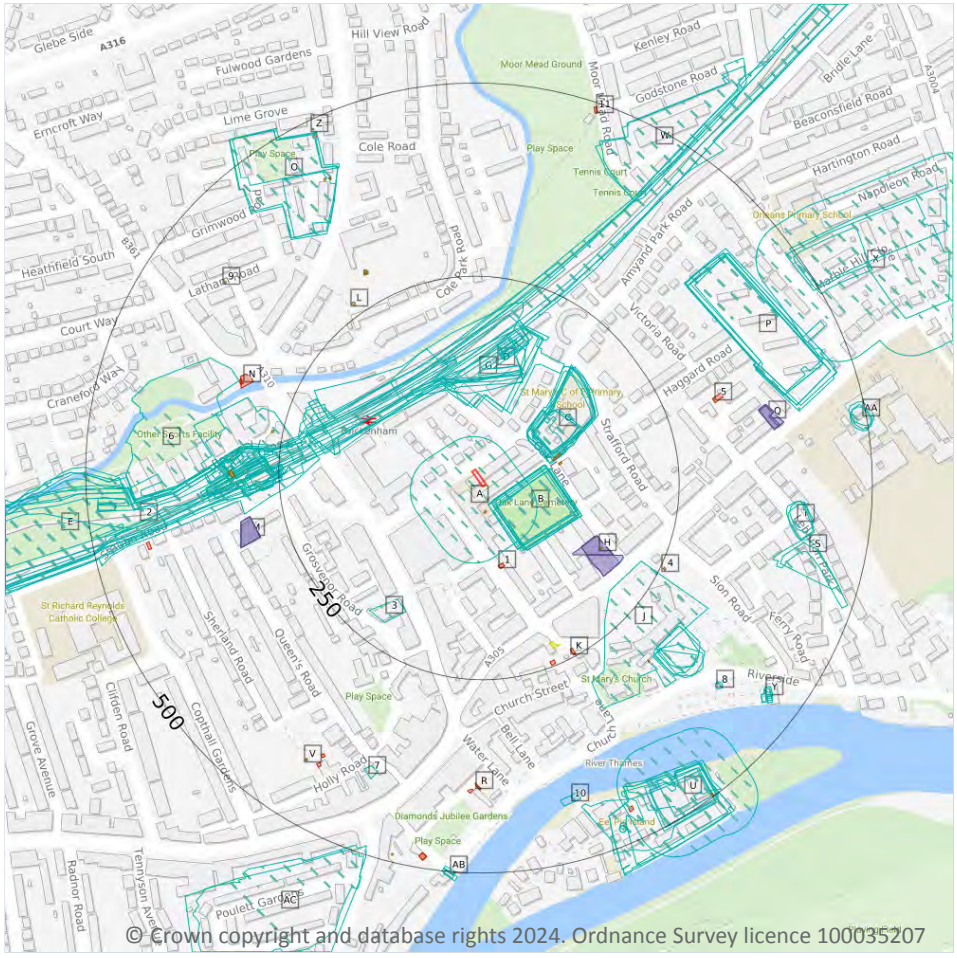
Capture Date: 29/08/1999

Site Area: 0.01ha

OS MasterMap site plan

Site Area: 0.01ha

1 Past land use



1.1 Historical industrial land uses

Records within 500m	143

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 15 >**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Grave Yard**	**1865**	**2145668**

ID	Location	Land use	Dates present	Group ID
B	22m SE	Disused Cemetery	1933	2177065
B	23m SE	Disused Cemetery	1912	2262747
B	23m SE	Disused Cemetery	1938	2285991
B	24m SE	Disused Cemetery	1912	2210104
B	26m SE	Cemetery	1973 - 1991	2285532
B	29m SE	Cemetery	1935	2290844
B	31m SE	Cemetery	1966	2201005
B	31m SE	Disused Cemetery	1948	2223904
B	34m SE	Disused Cemetery	1912	2265796
C	78m NE	Hospital	1898	2180958
C	78m NE	Hospital	1894	2284044
D	79m N	Railway Sidings	1948 - 1973	2172363
C	80m NE	Hospital	1894 - 1896	2193405
E	80m N	Railway Sidings	1894	2233041
C	81m NE	Hospital	1912	2193939
F	82m N	Railway Sidings	1912	2221623
C	83m NE	Hospital	1912	2287414
C	85m NE	Hospital	1935	2270098
C	86m NE	Hospital	1966 - 1991	2197377
C	86m NE	Hospital	1938	2292816
C	88m NE	Hospital	1938	2175309
C	89m NE	Hospital	1948	2185396
C	89m NE	Hospital	1933	2280668
F	99m N	Railway Sidings	1912	2277753
G	108m N	Railway Sidings	1894	2227216
D	111m NW	Railway Sidings	1938	2181622
F	113m N	Railway Sidings	1898	2204455
E	113m N	Railway Sidings	1933	2172710

ID	Location	Land use	Dates present	Group ID
F	115m N	Railway Sidings	1912	2261690
G	115m N	Railway Sidings	1938	2193026
G	117m N	Railway Sidings	1935	2246469
F	119m N	Railway Sidings	1896	2197463
G	121m NW	Railway Sidings	1991	2269743
2	129m NW	Railway Sidings	1898	2169629
G	132m NW	Railway Station	1966 - 1991	2196027
G	134m NW	Railway Sidings	1896	2238847
G	145m NW	Railway Building	1894	2258544
F	147m N	Railway Building	1912	2287779
F	148m N	Railway Building	1948 - 1966	2181810
F	149m N	Railway Building	1935	2266340
F	153m N	Railway Building	1973	2285490
F	154m N	Railway Building	1933	2193421
F	156m N	Railway Building	1938	2173298
3	183m SW	Police Station	1966 - 1991	2219100
I	198m W	Railway Sidings	1948 - 1991	2233622
E	202m W	Railway Sidings	1865	2206087
G	205m NW	Unspecified Ground Workings	1896	2133345
J	212m SE	Unspecified Workhouse	1966 - 1991	2222021
I	219m W	Railway Sidings	1938	2183073
I	219m W	Railway Sidings	1912	2215838
I	221m W	Railway Sidings	1896 - 1912	2295005
E	235m W	Brewery	1865	2152453
E	240m W	Railway Building	1948	2195763
E	243m W	Junction Station	1894	2266521
E	243m W	Railway Buildings	1935	2163414
E	244m W	Railway Station	1933	2270329

ID	Location	Land use	Dates present	Group ID
E	246m W	Railway Station	1912	2189300
E	246m W	Railway Station	1896 - 1898	2170771
E	246m W	Railway Station	1912	2272427
E	246m W	Railway Station	1938	2285032
E	246m W	Railway Station	1894	2270014
E	250m W	Junction Station	1938	2212079
E	250m W	Junction Station	1912	2259696
E	254m W	Railway Station	1865	2239694
E	259m W	Railway Building	1865	2148379
E	270m W	Railway Building	1865 - 1991	2202925
E	277m W	Railway Building	1894	2239938
E	278m W	Railway Building	1896	2183939
E	287m W	Railway Building	1912	2172724
E	287m W	Railway Building	1938	2240900
E	296m W	Railway Building	1948	2279073
E	301m W	Railway Buildings	1912	2276146
E	301m W	Railway Buildings	1938	2282089
J	305m SE	Unspecified Pit	1912	2269703
J	306m SE	Unspecified Pit	1912	2189614
J	306m SE	Unspecified Pit	1935 - 1948	2210475
J	306m SE	Unspecified Pit	1933	2213885
E	308m W	Railway Building	1933	2221644
E	310m W	Railway Building	1912	2274814
J	310m SE	Unspecified Pits	1912	2141690
I	312m W	Railway Land	1898	2141000
E	315m W	Railway Building	1948 - 1991	2292179
E	317m W	Railway Building	1935	2215319
E	323m W	Railway Building	1894	2280079

ID	Location	Land use	Dates present	Group ID
6	324m W	Nursery	1966 - 1973	2231848
O	361m NW	Nursery	1894	2270035
P	362m NE	Nursery	1896 - 1935	2186232
P	362m NE	Nursery	1912	2183536
P	362m NE	Nursery	1938	2259428
P	363m NE	Nursery	1894	2186233
P	363m NE	Nursery	1912 - 1938	2238392
O	364m NW	Nursery	1896 - 1898	2238972
P	367m NE	Nursery	1894	2221930
O	370m NW	Nursery	1966	2280775
P	371m NE	Nursery	1948	2262394
S	384m E	Unspecified Ground Workings	1896 - 1898	2208981
7	389m S	Filter Station	1966	2158228
T	390m E	Unspecified Pit	1894 - 1896	2262079
T	393m E	Unspecified Pit	1898	2257942
8	394m SE	Unspecified Tank	1933	2154364
S	395m E	Unspecified Pit	1894	2125217
T	395m E	Unspecified Pit	1894	2232328
U	395m SE	Electric and Steam Works	1948	2165218
I	400m W	Railway Sidings	1894	2180022
W	403m NE	Poultry Appliance Works	1912	2267571
W	406m NE	Poultry Appliance Works	1912 - 1933	2248007
10	414m S	Boat House	1865	2146195
U	427m SE	Electricity and Steam Launch Works	1933	2274981
U	428m SE	Electricity and Steam Launch Works	1912	2195088
U	428m SE	Electricity and Steam Launch Works	1938	2292891
O	429m NW	Nursery	1894	2263300
U	431m S	Electricity and Steam Launch Works	1894	2179203

ID	Location	Land use	Dates present	Group ID
U	434m SE	Electricity and Steam Launch Works	1912	2247124
U	434m SE	Unspecified Works	1966 - 1991	2279220
U	442m SE	Electric and Steam Work	1935	2163116
U	443m SE	Electric and Steam Launch Works	1896 - 1898	2292737
X	444m NE	Nursery	1865	2182811
I	446m W	Railway Building	1894 - 1896	2173677
Y	447m SE	Boat House	1933 - 1935	2171297
Y	447m SE	Boat House	1912	2178594
Y	447m SE	Boat House	1938	2292416
U	449m SE	Electricity and Steam Launch Works	1894	2249627
Y	450m SE	Boat House	1948 - 1991	2196168
Y	453m SE	Boat House	1912	2189627
I	457m W	Railway Building	1894	2148368
I	463m W	Railway Building	1894	2195644
I	464m W	Railway Building	1898	2192995
I	470m W	Railway Building	1966 - 1991	2279718
U	471m SE	Unspecified Tank	1933	2198309
U	474m S	Unspecified Tank	1912	2202431
U	474m S	Unspecified Tank	1938	2232476
AA	479m E	Unspecified Heap	1894 - 1896	2253009
AA	479m E	Unspecified Heap	1898	2261728
AA	480m E	Unspecified Heap	1894	2257767
X	488m NE	Nursery	1898 - 1912	2199893
AC	489m S	Nursery	1898 - 1933	2294229
X	492m NE	Nursery	1912	2201931
AB	493m S	Boat House	1933	2196946
AB	496m S	Boat House	1912	2268518
X	497m NE	Nursery	1912	2186555

ID	Location	Land use	Dates present	Group ID
AB	498m S	Boat House	1935	2277445
AC	499m S	Nursery	1896 - 1912	2285087

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**23**

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 15 >**

ID	Location	Land use	Dates present	Group ID
A	31m S	Unspecified Tank	1967	362090
C	92m E	Unspecified Tank	1991	362089
C	98m E	Unspecified Tank	1980 - 1988	391530
H	169m SE	Unspecified Tank	1967	362088
4	254m SE	Unspecified Tank	1914	362085
E	261m W	Unspecified Tank	1959	362092
L	264m NW	Unspecified Tank	1935	362093
L	289m NW	Unspecified Tank	1996	407490
L	289m NW	Unspecified Tank	1980 - 1988	403744
L	289m NW	Unspecified Tank	1991	382817
L	290m NW	Unspecified Tank	1996	396325
E	307m W	Unspecified Tank	1961	395518
E	307m W	Unspecified Tank	1960	397139
J	310m SE	Unspecified Tank	1914 - 1934	381771
9	401m NW	Unspecified Tank	1865	362094
V	419m SW	Unspecified Tank	1972 - 1982	402143

ID	Location	Land use	Dates present	Group ID
O	419m NW	Unspecified Tank	1959	407194
O	419m NW	Unspecified Tank	1959	381590
O	419m NW	Unspecified Tank	1959	403599
O	421m NW	Unspecified Tank	1935	363159
Z	487m NW	Unspecified Tank	1865	363158
AB	489m S	Unspecified Tank	1898	362107
U	495m SE	Unspecified Tank	1914	362086

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**17**

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 15 >**

ID	Location	Land use	Dates present	Group ID
1	102m S	Electricity Substation	1972 - 1982	276932
K	239m SE	Electricity Substation	1982	242970
K	243m S	Electricity Substation	1990	242971
N	306m NW	Electricity Substation	1980 - 1996	284327
5	313m E	Electricity Substation	1979 - 1992	284155
N	317m W	Electricity Substation	1991	256448
N	320m W	Electricity Substation	1974	255054
R	384m S	Electricity Substation	1982 - 1990	283843
R	392m S	Electricity Substation	1972	242968
V	402m SW	Electricity Substation	1972	242967
V	414m SW	Electricity Substation	1982 - 1990	268980

ID	Location	Land use	Dates present	Group ID
I	426m W	Electricity Substation	1974	242964
U	456m SE	Electricity Substation	1980	242969
Z	476m NW	Electricity Substation	1973	242966
AB	480m S	Electricity Substation	1972	276337
AB	481m S	Electricity Substation	1982 - 1990	266246
11	486m N	Electricity Substation	1973	242972

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	1

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'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
K	220m SE	Filling Station	1972	4140

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	11

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 15 >**

ID	Location	Land use	Dates present	Group ID
H	144m SE	Garage	1967 - 1972	85263

ID	Location	Land use	Dates present	Group ID
H	148m SE	Garage	1980 - 1988	84544
H	148m SE	Garage	1991	74934
H	159m SE	Garage	1982 - 1990	84046
M	286m W	Garage	1959 - 1967	84948
M	286m W	Garage	1980 - 1988	82589
M	287m W	Garage	1991	79655
M	287m W	Garage	1996	85578
Q	366m E	Garage	1959 - 1967	83300
Q	366m E	Garage	1959 - 1979	81606
Q	366m E	Garage	1992	75694

This data is sourced from Ordnance Survey / Groundsure.

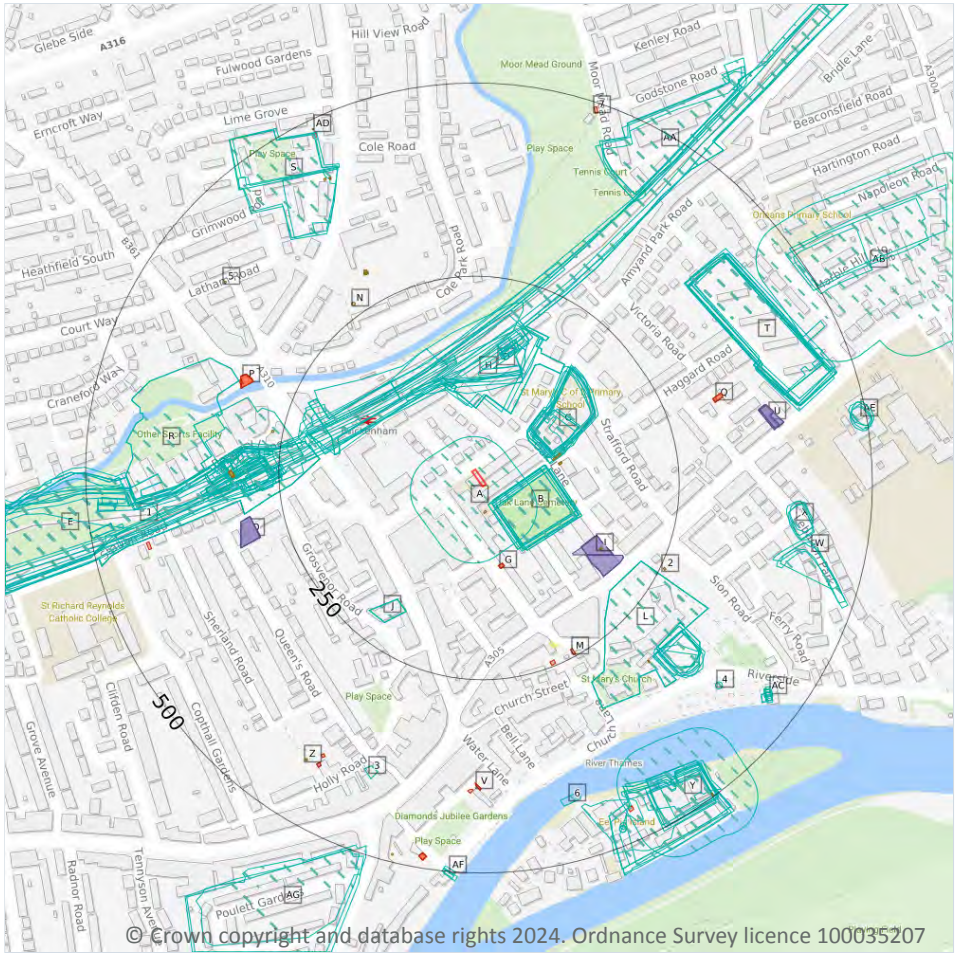
1.6 Historical military land

Records within 500m	**0**

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.

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

2 Past land use - un-grouped



2.1 Historical industrial land uses

Records within 500m	206

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 25 >**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Grave Yard**	**1865**	**2145668**
B	22m SE	Disused Cemetery	1933	2177065
B	23m SE	Disused Cemetery	1938	2285991

ID	Location	Land Use	Date	Group ID
B	23m SE	Disused Cemetery	1912	2262747
B	24m SE	Disused Cemetery	1938	2285991
B	24m SE	Disused Cemetery	1912	2210104
B	26m SE	Cemetery	1991	2285532
B	26m SE	Cemetery	1973	2285532
B	29m SE	Cemetery	1935	2290844
B	31m SE	Cemetery	1966	2201005
B	31m SE	Disused Cemetery	1948	2223904
B	34m SE	Disused Cemetery	1912	2265796
C	78m NE	Hospital	1898	2180958
C	78m NE	Hospital	1894	2284044
D	79m N	Railway Sidings	1973	2172363
D	79m N	Railway Sidings	1966	2172363
D	79m N	Railway Sidings	1948	2172363
C	80m NE	Hospital	1896	2193405
E	80m N	Railway Sidings	1894	2233041
C	81m NE	Hospital	1912	2193939
F	82m N	Railway Sidings	1912	2221623
C	83m NE	Hospital	1912	2287414
C	84m NE	Hospital	1894	2193405
C	85m NE	Hospital	1935	2270098
C	86m NE	Hospital	1966	2197377
C	86m NE	Hospital	1938	2292816
C	88m NE	Hospital	1938	2175309
C	88m NE	Hospital	1912	2193939
C	89m NE	Hospital	1948	2185396
C	89m NE	Hospital	1933	2280668
C	90m NE	Hospital	1991	2197377

ID	Location	Land Use	Date	Group ID
C	90m NE	Hospital	1973	2197377
F	99m N	Railway Sidings	1912	2277753
H	108m N	Railway Sidings	1894	2227216
D	111m NW	Railway Sidings	1938	2181622
F	113m N	Railway Sidings	1898	2204455
E	113m N	Railway Sidings	1933	2172710
F	115m N	Railway Sidings	1912	2261690
H	115m N	Railway Sidings	1938	2193026
H	117m N	Railway Sidings	1935	2246469
F	119m N	Railway Sidings	1896	2197463
H	121m NW	Railway Sidings	1991	2269743
1	129m NW	Railway Sidings	1898	2169629
H	132m NW	Railway Station	1991	2196027
H	132m NW	Railway Station	1973	2196027
H	132m NW	Railway Station	1966	2196027
H	134m NW	Railway Sidings	1896	2238847
H	145m NW	Railway Building	1894	2258544
H	146m NW	Railway Building	1894	2258544
F	147m N	Railway Building	1912	2287779
F	148m N	Railway Building	1966	2181810
F	148m N	Railway Building	1948	2181810
F	149m N	Railway Building	1935	2266340
F	153m N	Railway Building	1973	2285490
F	154m N	Railway Building	1933	2193421
F	156m N	Railway Building	1938	2173298
F	156m N	Railway Building	1912	2287779
J	183m SW	Police Station	1991	2219100
J	183m SW	Police Station	1973	2219100

ID	Location	Land Use	Date	Group ID
J	183m SW	Police Station	1966	2219100
K	198m W	Railway Sidings	1991	2233622
K	198m W	Railway Sidings	1973	2233622
K	198m W	Railway Sidings	1966	2233622
K	198m W	Railway Sidings	1948	2233622
E	202m W	Railway Sidings	1865	2206087
H	205m NW	Unspecified Ground Workings	1896	2133345
L	212m SE	Unspecified Workhouse	1991	2222021
L	212m SE	Unspecified Workhouse	1973	2222021
L	212m SE	Unspecified Workhouse	1966	2222021
K	219m W	Railway Sidings	1938	2183073
K	219m W	Railway Sidings	1912	2215838
K	221m W	Railway Sidings	1896	2295005
E	235m W	Brewery	1865	2152453
E	240m W	Railway Building	1948	2195763
E	243m W	Junction Station	1894	2266521
E	243m W	Railway Buildings	1935	2163414
E	244m W	Railway Station	1933	2270329
E	246m W	Railway Station	1912	2189300
K	246m W	Railway Sidings	1912	2215838
E	246m W	Railway Station	1896	2170771
E	246m W	Railway Station	1938	2285032
E	246m W	Railway Station	1912	2272427
E	246m W	Railway Station	1894	2270014
E	246m W	Railway Station	1898	2170771
E	250m W	Junction Station	1938	2212079
E	250m W	Junction Station	1912	2259696
E	254m W	Railway Station	1865	2239694

ID	Location	Land Use	Date	Group ID
E	259m W	Railway Building	1865	2148379
E	270m W	Railway Building	1865	2202925
K	274m W	Railway Sidings	1912	2295005
E	276m W	Railway Building	1991	2202925
E	276m W	Railway Building	1973	2202925
E	276m W	Railway Building	1966	2202925
E	277m W	Railway Building	1894	2239938
E	278m W	Railway Building	1896	2183939
E	287m W	Railway Building	1938	2240900
E	287m W	Railway Building	1912	2172724
E	296m W	Railway Building	1948	2279073
E	301m W	Railway Buildings	1938	2282089
E	301m W	Railway Buildings	1912	2276146
E	301m W	Railway Buildings	1912	2276146
L	305m SE	Unspecified Pit	1912	2269703
L	306m SE	Unspecified Pit	1938	2210475
L	306m SE	Unspecified Pit	1912	2189614
L	306m SE	Unspecified Pit	1933	2213885
L	306m SE	Unspecified Pit	1933	2213885
E	308m W	Railway Building	1933	2221644
E	310m W	Railway Building	1912	2274814
L	310m SE	Unspecified Pits	1912	2141690
L	310m SE	Unspecified Pit	1935	2210475
L	310m SE	Unspecified Pit	1935	2210475
K	312m W	Railway Land	1898	2141000
L	314m SE	Unspecified Pit	1938	2210475
E	315m W	Railway Building	1991	2292179
E	315m W	Railway Building	1973	2292179

ID	Location	Land Use	Date	Group ID
E	315m W	Railway Building	1966	2292179
E	315m W	Railway Building	1948	2292179
E	317m W	Railway Building	1935	2215319
L	317m SE	Unspecified Pit	1948	2210475
E	323m W	Railway Building	1894	2280079
R	324m W	Nursery	1973	2231848
R	324m W	Nursery	1966	2231848
E	325m W	Railway Building	1894	2280079
S	361m NW	Nursery	1894	2270035
T	362m NE	Nursery	1898	2186232
T	362m NE	Nursery	1938	2259428
T	362m NE	Nursery	1912	2183536
T	363m NE	Nursery	1938	2238392
T	363m NE	Nursery	1912	2238392
T	363m NE	Nursery	1894	2186233
T	363m NE	Nursery	1912	2186232
T	364m NE	Nursery	1896	2186232
S	364m NW	Nursery	1896	2238972
T	367m NE	Nursery	1894	2221930
T	368m NE	Nursery	1935	2186232
S	370m NW	Nursery	1966	2280775
T	371m NE	Nursery	1948	2262394
T	371m NE	Nursery	1933	2186232
W	384m E	Unspecified Ground Workings	1896	2208981
3	389m S	Filter Station	1966	2158228
X	390m E	Unspecified Pit	1896	2262079
W	391m E	Unspecified Ground Workings	1898	2208981
X	393m E	Unspecified Pit	1898	2257942

ID	Location	Land Use	Date	Group ID
4	394m SE	Unspecified Tank	1933	2154364
W	395m E	Unspecified Pit	1894	2125217
X	395m E	Unspecified Pit	1894	2262079
X	395m E	Unspecified Pit	1894	2232328
Y	395m SE	Electric and Steam Works	1948	2165218
K	400m W	Railway Sidings	1894	2180022
AA	403m NE	Poultry Appliance Works	1912	2267571
AA	406m NE	Poultry Appliance Works	1912	2248007
AA	411m NE	Poultry Appliance Works	1933	2248007
AA	412m NE	Poultry Appliance Works	1912	2267571
6	414m S	Boat House	1865	2146195
Y	427m SE	Electricity and Steam Launch Works	1933	2274981
S	428m NW	Nursery	1898	2238972
Y	428m SE	Electricity and Steam Launch Works	1938	2292891
Y	428m SE	Electricity and Steam Launch Works	1912	2195088
S	429m NW	Nursery	1894	2263300
Y	431m S	Electricity and Steam Launch Works	1894	2179203
Y	434m SE	Electricity and Steam Launch Works	1912	2247124
Y	434m SE	Unspecified Works	1991	2279220
Y	434m SE	Unspecified Works	1973	2279220
Y	434m SE	Unspecified Works	1966	2279220
Y	436m SE	Electricity and Steam Launch Works	1938	2292891
Y	439m SE	Electricity and Steam Launch Works	1912	2195088
Y	442m SE	Electric and Steam Work	1935	2163116
Y	443m SE	Electric and Steam Launch Works	1896	2292737
AB	444m NE	Nursery	1865	2182811
K	446m W	Railway Building	1896	2173677
AC	447m SE	Boat House	1933	2171297

ID	Location	Land Use	Date	Group ID
AC	447m SE	Boat House	1938	2292416
AC	447m SE	Boat House	1912	2178594
AC	448m SE	Boat House	1938	2292416
AC	448m SE	Boat House	1912	2178594
Y	449m SE	Electricity and Steam Launch Works	1894	2249627
Y	449m SE	Electric and Steam Launch Works	1898	2292737
AC	449m SE	Boat House	1935	2171297
AC	450m SE	Boat House	1991	2196168
AC	450m SE	Boat House	1973	2196168
AC	450m SE	Boat House	1966	2196168
AC	450m SE	Boat House	1948	2196168
AC	453m SE	Boat House	1912	2189627
K	457m W	Railway Building	1894	2148368
K	460m W	Railway Building	1894	2173677
K	463m W	Railway Building	1894	2195644
K	464m W	Railway Building	1898	2192995
K	470m W	Railway Building	1991	2279718
K	470m W	Railway Building	1973	2279718
K	470m W	Railway Building	1966	2279718
Y	471m SE	Unspecified Tank	1933	2198309
Y	474m S	Unspecified Tank	1938	2232476
Y	474m S	Unspecified Tank	1912	2202431
AE	479m E	Unspecified Heap	1896	2253009
AE	479m E	Unspecified Heap	1898	2261728
AE	480m E	Unspecified Heap	1894	2257767
AE	482m E	Unspecified Heap	1894	2253009
AB	488m NE	Nursery	1912	2199893
AG	489m S	Nursery	1933	2294229

ID	Location	Land Use	Date	Group ID
AB	492m NE	Nursery	1912	2201931
AF	493m S	Boat House	1933	2196946
AF	496m S	Boat House	1912	2268518
AB	497m NE	Nursery	1912	2186555
AF	498m S	Boat House	1935	2277445
AG	499m S	Nursery	1896	2285087
AG	500m S	Nursery	1912	2285087

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**28**

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 25 >**

ID	Location	Land Use	Date	Group ID
A	31m S	Unspecified Tank	1967	362090
C	92m E	Unspecified Tank	1991	362089
C	98m E	Unspecified Tank	1980	391530
C	98m E	Unspecified Tank	1988	391530
I	169m SE	Unspecified Tank	1967	362088
2	254m SE	Unspecified Tank	1914	362085
E	261m W	Unspecified Tank	1959	362092
N	264m NW	Unspecified Tank	1935	362093
N	289m NW	Unspecified Tank	1996	407490
N	289m NW	Unspecified Tank	1980	403744
N	289m NW	Unspecified Tank	1988	403744
N	289m NW	Unspecified Tank	1991	382817
N	290m NW	Unspecified Tank	1996	396325

ID	Location	Land Use	Date	Group ID
E	307m W	Unspecified Tank	1961	395518
E	307m W	Unspecified Tank	1961	395518
E	307m W	Unspecified Tank	1960	397139
L	310m SE	Unspecified Tank	1914	381771
L	310m SE	Unspecified Tank	1934	381771
5	401m NW	Unspecified Tank	1865	362094
Z	419m SW	Unspecified Tank	1972	402143
Z	419m SW	Unspecified Tank	1982	402143
S	419m NW	Unspecified Tank	1959	407194
S	419m NW	Unspecified Tank	1959	381590
S	419m NW	Unspecified Tank	1959	403599
S	421m NW	Unspecified Tank	1935	363159
AD	487m NW	Unspecified Tank	1865	363158
AF	489m S	Unspecified Tank	1898	362107
Y	495m SE	Unspecified Tank	1914	362086

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**25**

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 25 >**

ID	Location	Land Use	Date	Group ID
G	102m S	Electricity Substation	1972	276932
G	103m S	Electricity Substation	1982	276932
M	239m SE	Electricity Substation	1982	242970
M	243m S	Electricity Substation	1990	242971
P	306m NW	Electricity Substation	1980	284327

ID	Location	Land Use	Date	Group ID
P	306m NW	Electricity Substation	1988	284327
P	306m NW	Electricity Substation	1996	284327
P	306m NW	Electricity Substation	1996	284327
Q	313m E	Electricity Substation	1992	284155
Q	314m E	Electricity Substation	1979	284155
P	317m W	Electricity Substation	1991	256448
P	320m W	Electricity Substation	1974	255054
V	384m S	Electricity Substation	1982	283843
V	384m S	Electricity Substation	1990	283843
V	392m S	Electricity Substation	1972	242968
Z	402m SW	Electricity Substation	1972	242967
Z	414m SW	Electricity Substation	1982	268980
Z	414m SW	Electricity Substation	1990	268980
K	426m W	Electricity Substation	1974	242964
Y	456m SE	Electricity Substation	1980	242969
AD	476m NW	Electricity Substation	1973	242966
AF	480m S	Electricity Substation	1972	276337
AF	481m S	Electricity Substation	1982	266246
AF	481m S	Electricity Substation	1990	266246
7	486m N	Electricity Substation	1973	242972

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	**1**

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'.

Features are displayed on the Past land use - un-grouped map on **page 25 >**

ID	Location	Land Use	Date	Group ID
M	220m SE	Filling Station	1972	4140

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	**22**

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'.

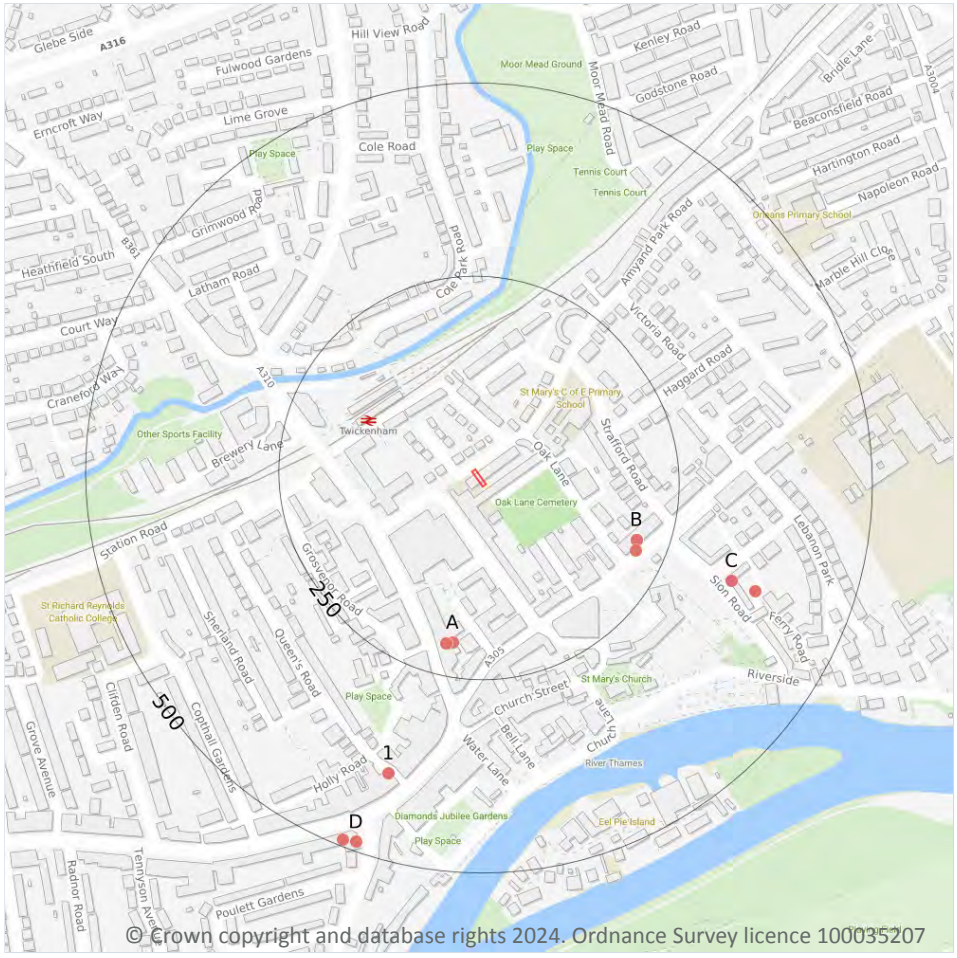
Features are displayed on the Past land use - un-grouped map on **page 25 >**

ID	Location	Land Use	Date	Group ID
I	144m SE	Garage	1967	85263
I	148m SE	Garage	1980	84544
I	148m SE	Garage	1988	84544
I	148m SE	Garage	1991	74934
I	159m SE	Garage	1972	85263
I	159m SE	Garage	1982	84046
I	159m SE	Garage	1990	84046
O	286m W	Garage	1959	84948
O	286m W	Garage	1967	84948
O	286m W	Garage	1980	82589
O	286m W	Garage	1988	82589
O	287m W	Garage	1959	84948
O	287m W	Garage	1959	84948
O	287m W	Garage	1996	85578
O	287m W	Garage	1991	79655
O	287m W	Garage	1996	85578
U	366m E	Garage	1959	83300
U	366m E	Garage	1967	83300
U	366m E	Garage	1959	81606

ID	Location	Land Use	Date	Group ID
U	366m E	Garage	1959	81606
U	366m E	Garage	1992	75694
U	367m E	Garage	1979	81606

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



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	0

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

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

3.6 Licensed waste sites

Records within 500m	0

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

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

3.7 Waste exemptions

Records within 500m	17

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 38 >**

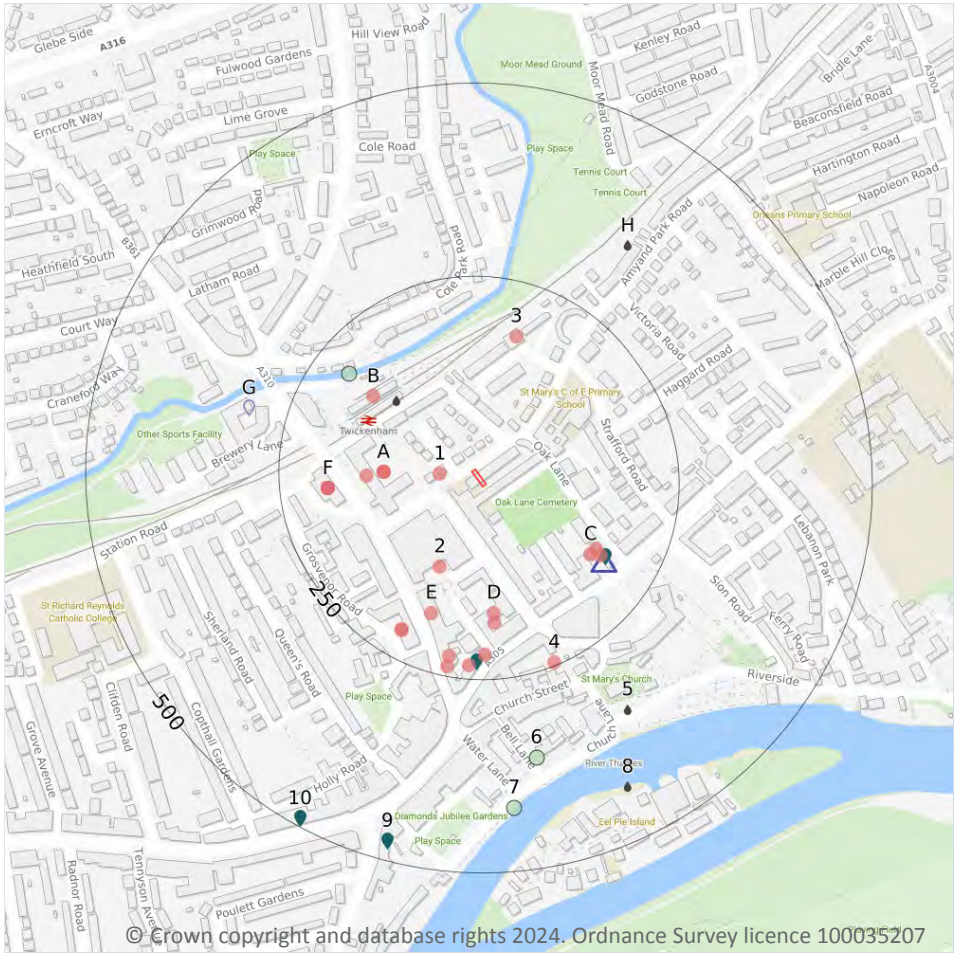
ID	Location	Site	Reference	Category	Sub-Category	Description
A	206m S	22 London Road Twickenham Richmond upon Thames TW1 3RR	EPR/AF0805FZ /A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal

ID	Location	Site	Reference	Category	Sub-Category	Description
B	207m E	17, RICHMOND ROAD, TWICKENHAM, TW1 3AB	WEX286505	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	207m E	17, RICHMOND ROAD, TWICKENHAM, TW1 3AB	WEX369988	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	207m E	17, RICHMOND ROAD, TWICKENHAM, TW1 3AB	WEX149067	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	207m E	7 STATION PARADE, SANDERSTEAD ROAD, SOUTH CROYDON, CR2 0PH	WEX096960	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	207m E	17, RICHMOND ROAD, TWICKENHAM, TW1 3AB	WEX046525	Storing waste exemption	Not on a farm	Storage of waste in secure containers
B	207m E	17, RICHMOND ROAD, TWICKENHAM, TW1 3AB	WEX046525	Storing waste exemption	Not on a farm	Storage of waste in a secure place
B	207m E	17, RICHMOND ROAD, TWICKENHAM, TW1 3AB	WEX046525	Disposing of waste exemption	Not on a farm	Disposal by incineration
B	207m E	17, RICHMOND ROAD, TWICKENHAM, TW1 3AB	WEX240822	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	209m S	22, LONDON ROAD, TWICKENHAM, TW1 3RR	WEX281108	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	209m S	22, LONDON ROAD, TWICKENHAM, TW1 3RR	WEX140258	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	212m SE	17 Richmond Road TWICKENHAM TW1 3AB	EPR/GF0036DX/A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
C	341m E	York House Garden, Sion Road, Twickenham, TW1 3DD	WEX147799	Using waste exemption	Not on a farm	Use of mulch
C	374m E	York House Garden, Sion Road, Twickenham, TW1 3DD	WEX287586	Using waste exemption	Not on a farm	Use of mulch
1	391m S	-	WEX359278	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
D	489m S	CROSS DEEP COURT, HEATH ROAD, TWICKENHAM, TW1 4AG	WEX197603	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal

ID	Location	Site	Reference	Category	Sub-Category	Description
D	492m S	Twickenham 1 Cross Deep Court LONDON TW1 4AG	EPR/CE5082LH /A001	Treating waste exemption	Non-Agricultural Waste Only	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



4.1 Recent industrial land uses

Records within 250m	27

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 42 >**

ID	Location	Company	Address	Activity	Category
1	42m W	Richmond & Twickenham Blinds	15, Amyand Park Road, Twickenham, Greater London, TW1 3HB	Curtains and Blinds	Consumer Products
A	115m W	G B M Ltd	Regal House 70, London Road, Twickenham, Greater London, TW1 3QS	Civil Engineers	Engineering Services

ID	Location	Company	Address	Activity	Category
A	115m W	Cyan Group	Regal House 70, London Road, Twickenham, Greater London, TW1 3QS	Published Goods	Industrial Products
A	115m W	Jain International Food Ltd	Regal House 70, London Road, Twickenham, Greater London, TW1 3QS	Catering and Non Specific Food Products	Foodstuffs
2	117m SW	Electricity Sub Station	Greater London, TW1	Electrical Features	Infrastructure and Facilities
A	137m W	Macopharma	Unit 3.2d Third Floor Front Block Regal House 70, London Road, Twickenham, Greater London, TW1 3QS	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
B	161m NW	Twickenham Rail Station	Greater London, TW1	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure
C	163m SE	Shell Oak Lane	5-11, Richmond Road, Twickenham, Greater London, TW1 3AB	Vehicle Cleaning Services	Personal, Consumer and Other Services
D	164m S	Telephone Exchange	Greater London, TW1	Telecommunications Features	Infrastructure and Facilities
C	165m SE	Shell	5-11, Richmond Road, Twickenham, Greater London, TW1 3AB	Petrol and Fuel Stations	Road and Rail
C	175m SE	Shell Car Wash	Oak Lane Service Station 5-11, Richmond Road, Twickenham, Greater London, TW1 3AB	Vehicle Cleaning Services	Personal, Consumer and Other Services
D	176m S	Electricity Sub Station	Greater London, TW1	Electrical Features	Infrastructure and Facilities
E	176m S	Blue Gnome Computers	32, London Road, Twickenham, Greater London, TW1 3RR	Electrical Equipment Repair and Servicing	Repair and Servicing
3	181m N	Patrick Parsons	34, Candler Mews, Twickenham, Greater London, TW1 3JF	Civil Engineers	Engineering Services
F	188m W	Classic & Sports Car	First to Fourth Floors, Bridge House, 69, London Road, Twickenham, Greater London, TW1 3SP	Published Goods	Industrial Products
F	188m W	Motorsport News	69, London Road, Twickenham, Greater London, TW1 3SP	Published Goods	Industrial Products
F	188m W	Hay Market Medical	69, London Road, Twickenham, Greater London, TW1 3SP	Published Goods	Industrial Products
F	188m W	C A T	69, London Road, Twickenham, Greater London, TW1 3SP	Published Goods	Industrial Products
F	188m W	Management Today	69, London Road, Twickenham, Greater London, TW1 3SP	Published Goods	Industrial Products

ID	Location	Company	Address	Activity	Category
F	188m W	Planning	69, London Road, Twickenham, Greater London, TW1 3SP	Published Goods	Industrial Products
E	213m SW	V3 the Printing Room	37, London Road, Twickenham, Greater London, TW1 3SZ	Published Goods	Industrial Products
E	213m SW	The Printing Room	37, London Road, Twickenham, Greater London, TW1 3SZ	Published Goods	Industrial Products
D	217m S	Excelsior Cars	15-19, York Street, Twickenham, Greater London, TW1 3JZ	Vehicle Hire and Rental	Hire Services
D	223m S	Specsavers Hearcare	16-18, London Road, Twickenham, Greater London, TW1 3RR	Disability and Mobility Equipment	Consumer Products
D	232m S	Rex P C	11, York Street, Twickenham, Greater London, TW1 3JZ	Electrical Equipment Repair and Servicing	Repair and Servicing
D	237m S	Thames Audio Video	12, London Road, Twickenham, Greater London, TW1 3RR	Electrical Equipment Repair and Servicing	Repair and Servicing
4	246m S	Electricity Sub Station	Greater London, TW1	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 42 >**

ID	Location	Company	Address	LPG	Status
C	181m SE	SHELL	5-11, Richmond Road, Oak Lane, Twickenham, Outer London, TW1 3AB	No	Open

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	2

Records of Part A(1) 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 42 >**

ID	Location	Details	
G	300m W	Operator: CIRCULAR WAY LIMITED Installation Name: Proper Oils Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: VP3932CU Original Permit Number: VP3932CU	EPR Reference: EPR/VP3932CU Issue Date: 27/06/2013 Effective Date: 27/06/2013 Last date noted as effective: 23/11/2023 Status: Surrendered
G	300m W	Operator: Proper Energy Limited Installation Name: Proper Oils Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: HP3832NP Original Permit Number: VP3932CU	EPR Reference: - Issue Date: - Effective Date: 27/06/2013 Last date noted as effective: 21/03/2023 Status: Surrender Effective

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

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

Records within 500m	4

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 42 >**

ID	Location	Address	Details	
C	179m SE	Shell (Oak Lane), 5-11 Richmond Road, Twickenham, TW1 3AB	Process: Petrol Vapour Recovery Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
D	227m S	Sky Dry Cleaners, 13 York Street, Twickenham, TW1 3JZ	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
9	474m S	Kings Clothes Care Specialists, 45 King Street, Twickenham, TW1 3SG	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
10	490m SW	MEL Dry Cleaners, 24 Heath Road, Twickenham, TW1 4BZ	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**0**

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	**5**

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 42 >**

ID	Location	Address	Details	
B	135m NW	2B COLE PARK ROAD, TWICKENHAM, MIDD, 2B COLE PARK ROAD, TWICKENHAM, M, IDDLESEX	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2291 Permit Version: 1 Receiving Water: RIVER CRANE	Status: REVOKED - UNSPECIFIED Issue date: 21/03/1988 Effective Date: 21/03/1988 Revocation Date: 12/08/1996

ID	Location	Address	Details	
5	344m SE	SURFACE WATER OUTFALL, CHURCH LANE/, SURFACE WATER OUTFALL, CHURCH LA, NE/EMBANKMENT, TWICKENHAM, MIDDL, ESEX	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CNTW.0228 Permit Version: 1 Receiving Water: RIVER THAMES	Status: REVOKED - UNSPECIFIED Issue date: 16/01/1990 Effective Date: 16/01/1990 Revocation Date: 30/06/1991
H	350m NE	Anyand Park Road, Twickenham, Anyand Park Road, Twickenham	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: TEMP.2369 Permit Version: 2 Receiving Water: Tidal Thames	Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03/09/2010 Revocation Date: -
H	350m NE	Anyand Park Road, Twickenham, Anyand Park Road, Twickenham	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: TEMP.2369 Permit Version: 1 Receiving Water: TIDAL THAMES	Status: TEMPORARY CONSENTS (WATER ACT 1989, SECTION 113) Issue date: 02/11/1989 Effective Date: 02/11/1989 Revocation Date: 02/09/2010
8	431m SE	PALM BEACH, EEL PIE ISLAND, TWICKEN, PALM BEACH, EEL PIE ISLAND, TWIC, KENHAM, LONDON	Effluent Type: MISCELLANEOUS DISCHARGES - UNSPECIFIED Permit Number: CTWC.0573 Permit Version: 1 Receiving Water: RIVER THAMES	Status: REVOKED - UNSPECIFIED Issue date: 20/12/1985 Effective Date: 20/12/1985 Revocation Date: 16/04/1991

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	**0**

Discharges of Special Category Effluents to the public sewer.

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	3

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 42 >**

ID	Location	Details	
B	203m NW	Incident Date: 14/08/2003 Incident Identification: 181948 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
6	357m S	Incident Date: 16/09/2001 Incident Identification: 31019 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
7	417m S	Incident Date: 24/07/2003 Incident Identification: 176346 Pollutant: Sewage Materials Pollutant Description: Other Sewage Material	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) 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.

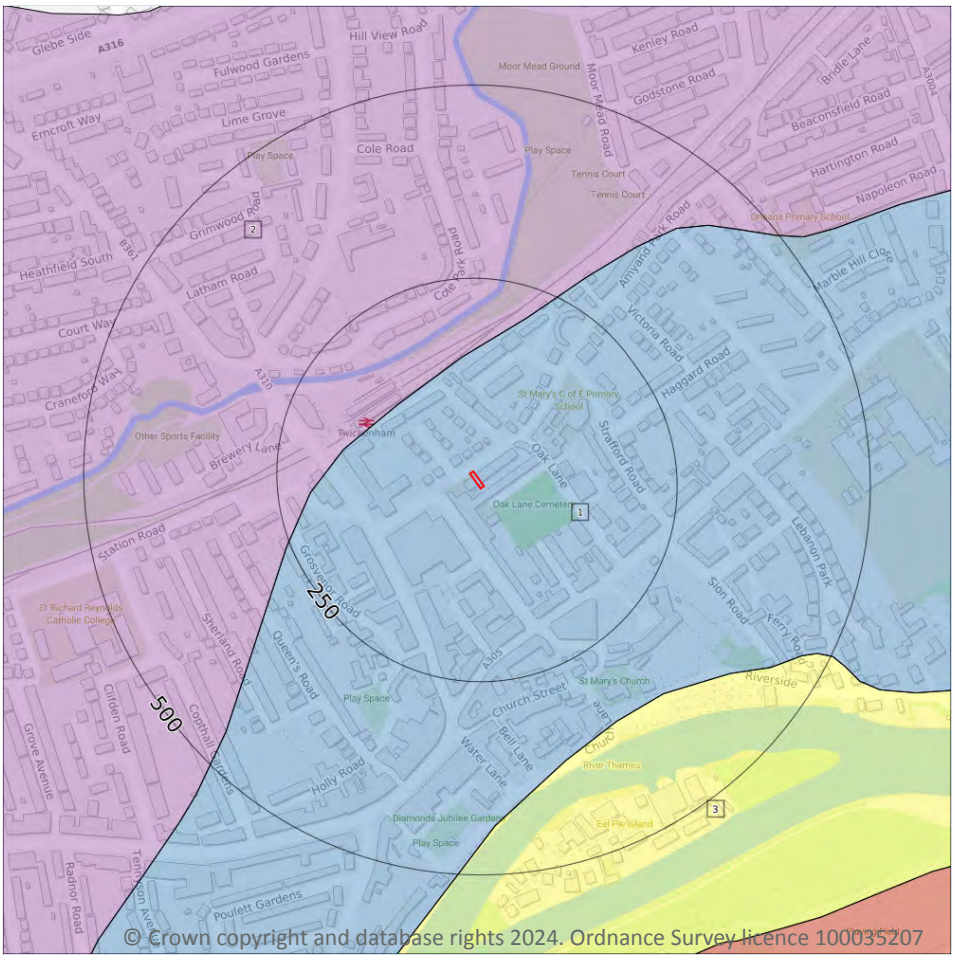
4.21 Pollution inventory radioactive waste

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



5.1 Superficial aquifer

Records within 500m	3

Aquifer status of groundwater held within superficial geology.

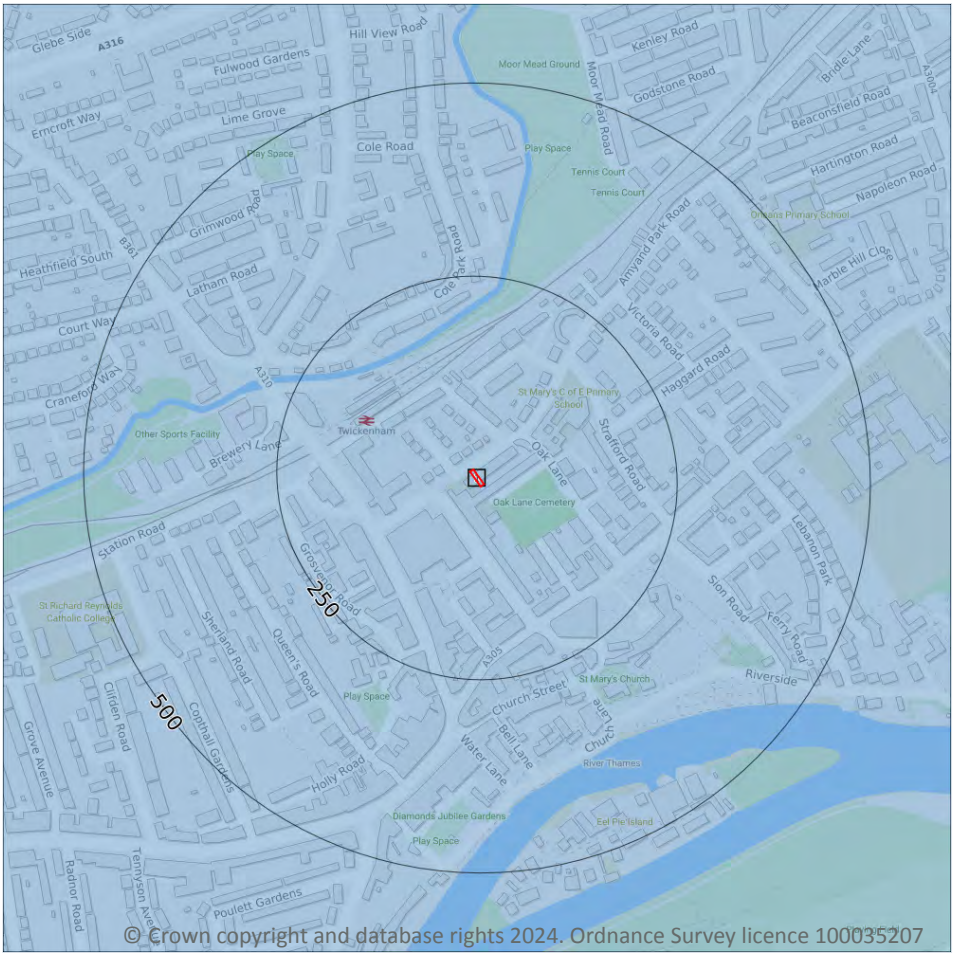
Features are displayed on the Hydrogeology map on **page 51 >**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
2	128m NW	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

ID	Location	Designation	Description
3	349m SE	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



5.2 Bedrock aquifer

Records within 500m	1

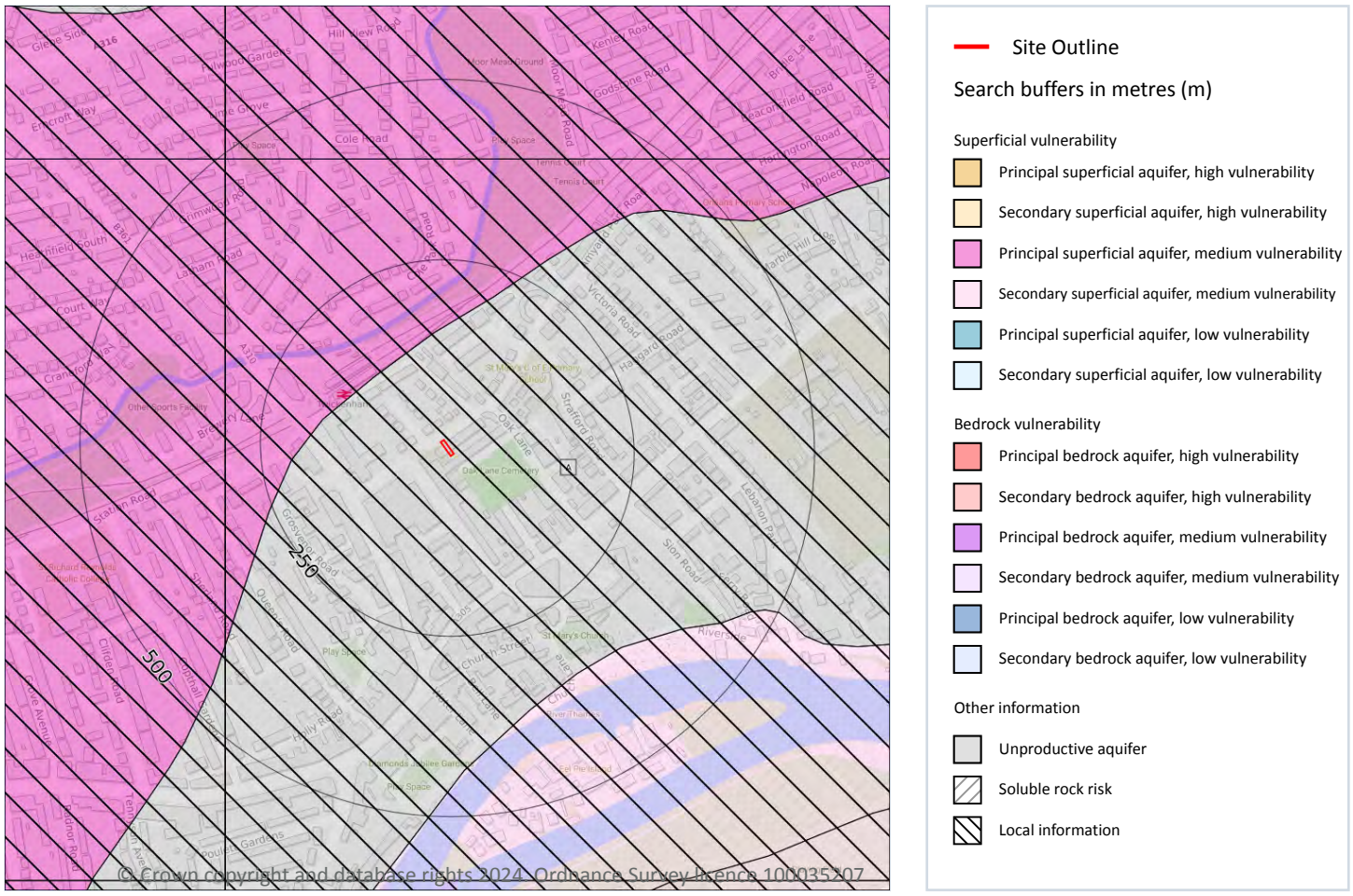
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 53 >**

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

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

Groundwater vulnerability



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 54 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
A	**On site**	**Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Unproductive Aquifer type: Unproductive Thickness: 3-10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed**

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	**0**

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

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

5.5 Groundwater vulnerability- local information

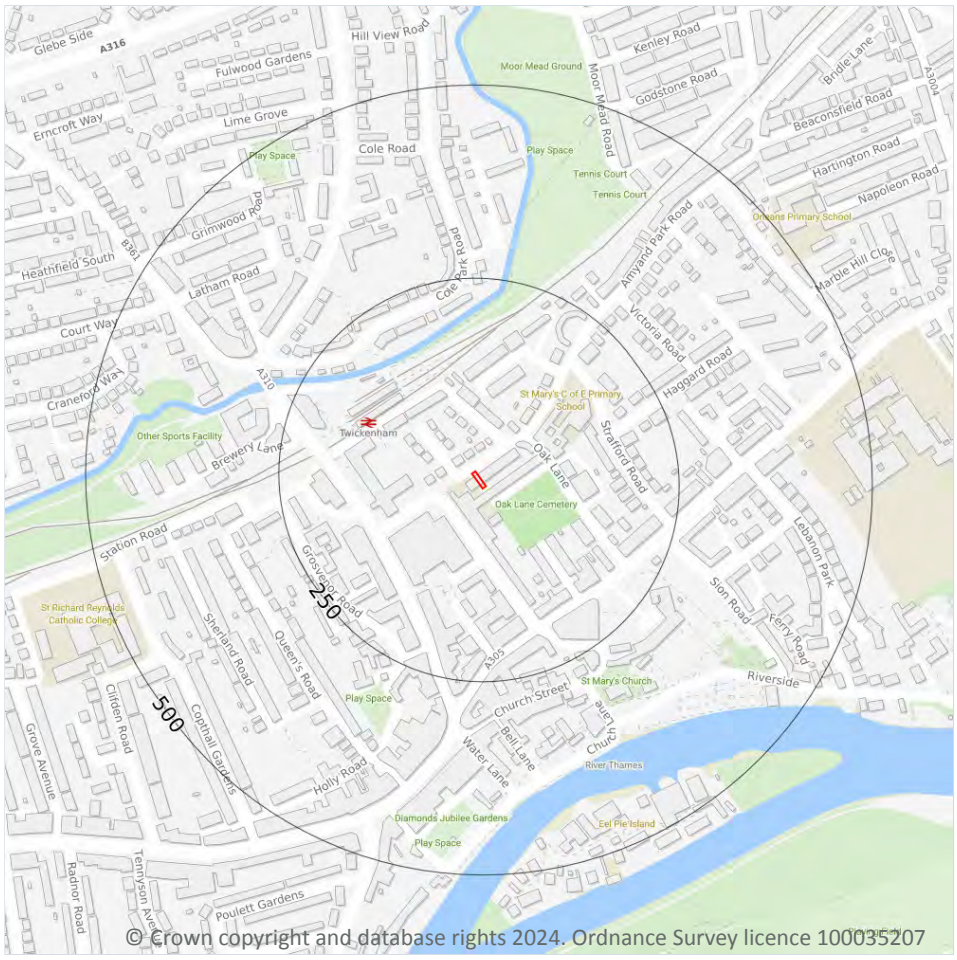
Records on site	**1**

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	**Highly vulnerable Principal superficial aquifer present in river terrace gravels**	**Principal superficial aquifer in river terrace gravels with only a thin cover of low permeability silts and/or alluvium (shown as unproductive)**

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	12

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 56 >**

ID	Location	Details	
-	1107m NE	Status: Historical Licence No: 28/39/34/0006 Details: Lake & Pond Throughflow Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT ST. MARGARET'S LAKE, TWICKENHAM Data Type: Point Name: ST MARGARETS RES GROUNDS Easting: 516800 Northing: 174600	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 08/10/1982 Expiry Date: - Issue No: 100 Version Start Date: 08/10/1982 Version End Date: -
-	1362m NE	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT A Data Type: Point Name: Kier Construction Limited Easting: 517448 Northing: 174350	Annual Volume (m^3): 18144 Max Daily Volume (m^3): 432 Original Application No: - Original Start Date: 23/04/2018 Expiry Date: 31/12/2018 Issue No: 1 Version Start Date: 23/04/2018 Version End Date: -
-	1366m NE	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT D Data Type: Point Name: Kier Construction Limited Easting: 517480 Northing: 174308	Annual Volume (m^3): 18144 Max Daily Volume (m^3): 432 Original Application No: - Original Start Date: 23/04/2018 Expiry Date: 31/12/2018 Issue No: 1 Version Start Date: 23/04/2018 Version End Date: -
-	1415m NE	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT B Data Type: Point Name: Kier Construction Limited Easting: 517490 Northing: 174383	Annual Volume (m^3): 18144 Max Daily Volume (m^3): 432 Original Application No: - Original Start Date: 23/04/2018 Expiry Date: 31/12/2018 Issue No: 1 Version Start Date: 23/04/2018 Version End Date: -

ID	Location	Details	
-	1421m NE	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT C Data Type: Point Name: Kier Construction Limited Easting: 517521 Northing: 174347	Annual Volume (m^3): 18144 Max Daily Volume (m^3): 432 Original Application No: - Original Start Date: 23/04/2018 Expiry Date: 31/12/2018 Issue No: 1 Version Start Date: 23/04/2018 Version End Date: -
-	1546m E	Status: Historical Licence No: 28/39/34/0008 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT THE EXILES GROUND, TWICKENHAM Data Type: Point Name: D.G.TILLES & R.H.TILLES Easting: 517840 Northing: 173860	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/10/1996 Expiry Date: 31-Dec-06 Issue No: 102 Version Start Date: 14/09/2001 Version End Date: -
-	1546m E	Status: Historical Licence No: 28/39/34/0008 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: THE EXILES GROUND, TWICKENHAM-BOREHOLE A Data Type: Point Name: D G TILLES & R H TILLES Easting: 517840 Northing: 173860	Annual Volume (m^3): 5300 Max Daily Volume (m^3): 56 Original Application No: - Original Start Date: 15/10/1996 Expiry Date: 31/12/2006 Issue No: 103 Version Start Date: 24/04/2003 Version End Date: -
-	1784m E	Status: Active Licence No: 28/39/35/0004 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: GRAVELS AT 143 PETERSHAM ROAD, RICHMOND, SURREY Data Type: Point Name: PETERSHAM NURSERIES LIMITED Easting: 518080 Northing: 173320	Annual Volume (m^3): 2500 Max Daily Volume (m^3): 27 Original Application No: - Original Start Date: 09/07/1973 Expiry Date: - Issue No: 102 Version Start Date: 15/05/2008 Version End Date: -

ID	Location	Details	
-	1784m E	Status: Historical Licence No: 28/39/35/0004 Details: Spray Irrigation - Spray Irrigation Definition Order Direct Source: THAMES GROUNDWATER Point: GRAVELS AT 143 PETERSHAM ROAD, RICHMOND, SURREY Data Type: Point Name: PETERSHAM NURSERIES LIMITED Easting: 518080 Northing: 173320	Annual Volume (m^3): 2500 Max Daily Volume (m^3): 27.28 Original Application No: - Original Start Date: 09/07/1973 Expiry Date: - Issue No: 101 Version Start Date: 11/11/2001 Version End Date: -
-	1807m E	Status: Historical Licence No: 28/39/35/0004 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: GRAVELS AT 143 PETERSHAM ROAD, RICHMOND, SURREY Data Type: Point Name: PETERSHAM NURSERIES LIMITED Easting: 518100 Northing: 173300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 09/07/1973 Expiry Date: - Issue No: 100 Version Start Date: 09/07/1973 Version End Date: -
-	1807m E	Status: Historical Licence No: 28/39/35/0004 Details: Spray Irrigation - Spray Irrigation Definition Order Direct Source: THAMES GROUNDWATER Point: GRAVELS AT 143 PETERSHAM ROAD, RICHMOND, SURREY Data Type: Point Name: PETERSHAM NURSERIES LIMITED Easting: 518100 Northing: 173300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 09/07/1973 Expiry Date: - Issue No: 100 Version Start Date: 09/07/1973 Version End Date: -
-	1970m SE	Status: Active Licence No: 28/39/35/0005 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: RICHMOND GOLF CLUB - BOREHOLE 'B' Data Type: Point Name: RICHMOND GOLF CLUB Easting: 518020 Northing: 172600	Annual Volume (m^3): 28200 Max Daily Volume (m^3): 269 Original Application No: WRA/S/1299 Original Start Date: 11/02/1974 Expiry Date: - Issue No: 101 Version Start Date: 01/10/2007 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	6

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.

Features are displayed on the Abstractions and Source Protection Zones map on **page 56 >**

ID	Location	Details	
-	1535m NW	Status: Historical Licence No: 28/39/37/0007 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: MOGDEN SEWAGE TREATMENT WORKS, ISLEWORTH Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515410 Northing: 174860	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: 31/08/2009 Issue No: 1 Version Start Date: 17/08/1999 Version End Date: -
-	1535m NW	Status: Historical Licence No: 28/39/37/0007 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: D.OF NORTHUMBERLAND- MOGDEN SEWAGE TREATMENT WRKS, ISLEWORTH Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515410 Northing: 174860	Annual Volume (m^3): - Max Daily Volume (m^3): 7200 Original Application No: - Original Start Date: 17/08/1999 Expiry Date: 31/08/2009 Issue No: 1 Version Start Date: 17/08/1999 Version End Date: -
-	1535m NW	Status: Historical Licence No: 28/39/37/0007 Details: General Use Relating To Secondary Category (Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: D.OF NORTHUMBERLAND- MOGDEN SEWAGE TREATMENT WRKS, ISLEWORTH Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515410 Northing: 174860	Annual Volume (m^3): - Max Daily Volume (m^3): 7200 Original Application No: - Original Start Date: 17/08/1999 Expiry Date: 31/08/2009 Issue No: 1 Version Start Date: 01/01/2007 Version End Date: -

ID	Location	Details	
-	1536m NW	Status: Historical Licence No: TH/039/0037/001 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: DUKE OF NORTHUMBERLAND RIVER - MOGDEN SEWAGE TREATMENT WORKS Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515406 Northing: 174858	Annual Volume (m^3): 1752000 Max Daily Volume (m^3): 7200 Original Application No: - Original Start Date: 12/08/2009 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 12/08/2009 Version End Date: -
-	1536m NW	Status: Historical Licence No: TH/039/0037/001 Details: General Use Relating To Secondary Category (Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: DUKE OF NORTHUMBERLAND RIVER - MOGDEN SEWAGE TREATMENT WORKS Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515406 Northing: 174858	Annual Volume (m^3): 1752000 Max Daily Volume (m^3): 7200 Original Application No: - Original Start Date: 12/08/2009 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 12/08/2009 Version End Date: -
-	1536m NW	Status: Historical Licence No: TH/039/0037/004 Details: General Use Relating To Secondary Category (Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: DUKE OF NORTHUMBERLAND RIVER - MOGDEN SEWAGE TREATMENT WORKS Data Type: Point Name: Thames Water Utilities Ltd Easting: 515406 Northing: 174858	Annual Volume (m^3): 1752000 Max Daily Volume (m^3): 7200 Original Application No: NPS/WR/009215 Original Start Date: 01/04/2013 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 01/04/2013 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	**0**

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.

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.

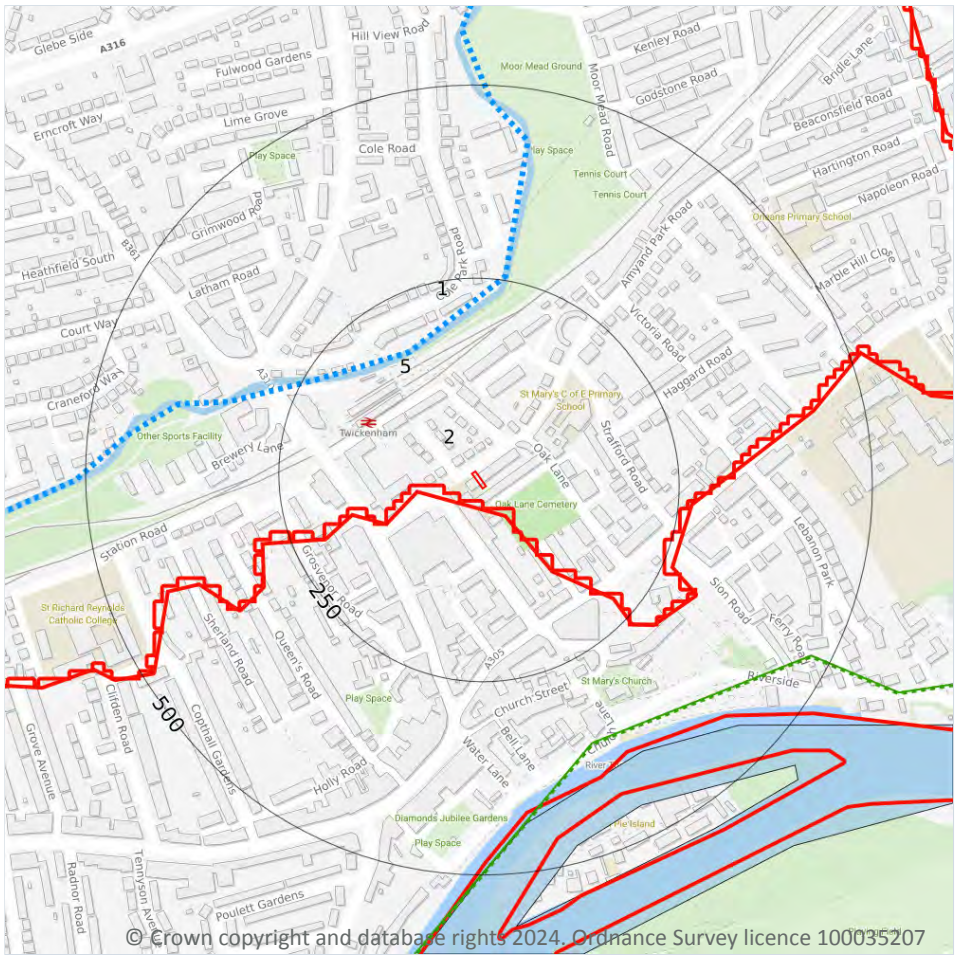
5.10 Source Protection Zones (confined aquifer)

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



6.1 Water Network (OS MasterMap)

Records within 250m	1

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

Features are displayed on the Hydrology map on **page 63 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
5	176m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Crane

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	1

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.

Features are displayed on the Hydrology map on **page 63 >**

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 63 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River**	**Crane**	**GB106039023030**	**Crane Rivers and Lakes**	**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 63 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
6	176m NW	River	Crane	GB106039023030 ↗	Moderate	Fail	Moderate	2019

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 63 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	**On site**	**Lower Thames Gravels**	**GB40603G000300** ↗	**Poor**	**Good**	**Poor**	**2019**

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

7 River and coastal flooding

Site Outline

Search buffers in metres (m)

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 the sea

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; 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). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

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	2

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 66 >**

ID	Location	Update
A	171m NW	08/11/2022
A	182m NW	08/11/2022

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

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.

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

7.6 Flood Zone 2

Records within 50m	0

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.

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

7.7 Flood Zone 3

Records within 50m	0

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.

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	**Negligible**
Highest risk within 50m	**1 in 100 year, 0.1m - 0.3m**

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 69 >**

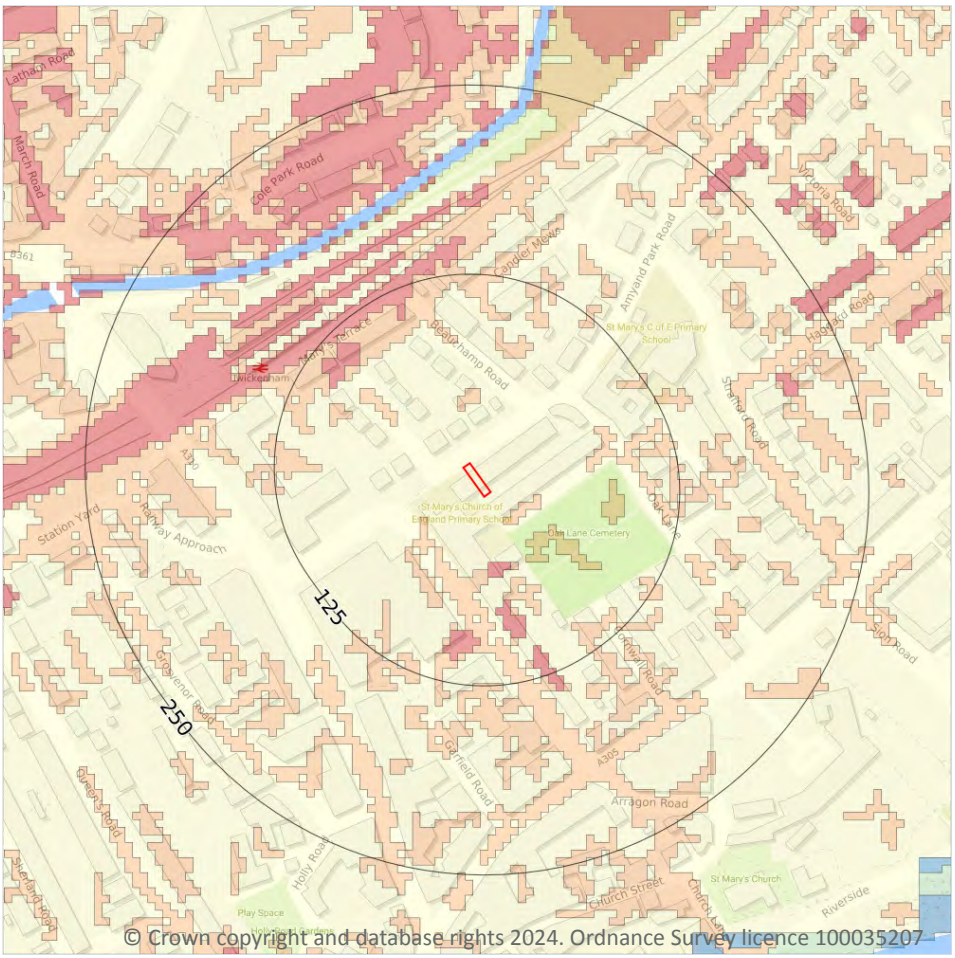
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



9.1 Groundwater flooding

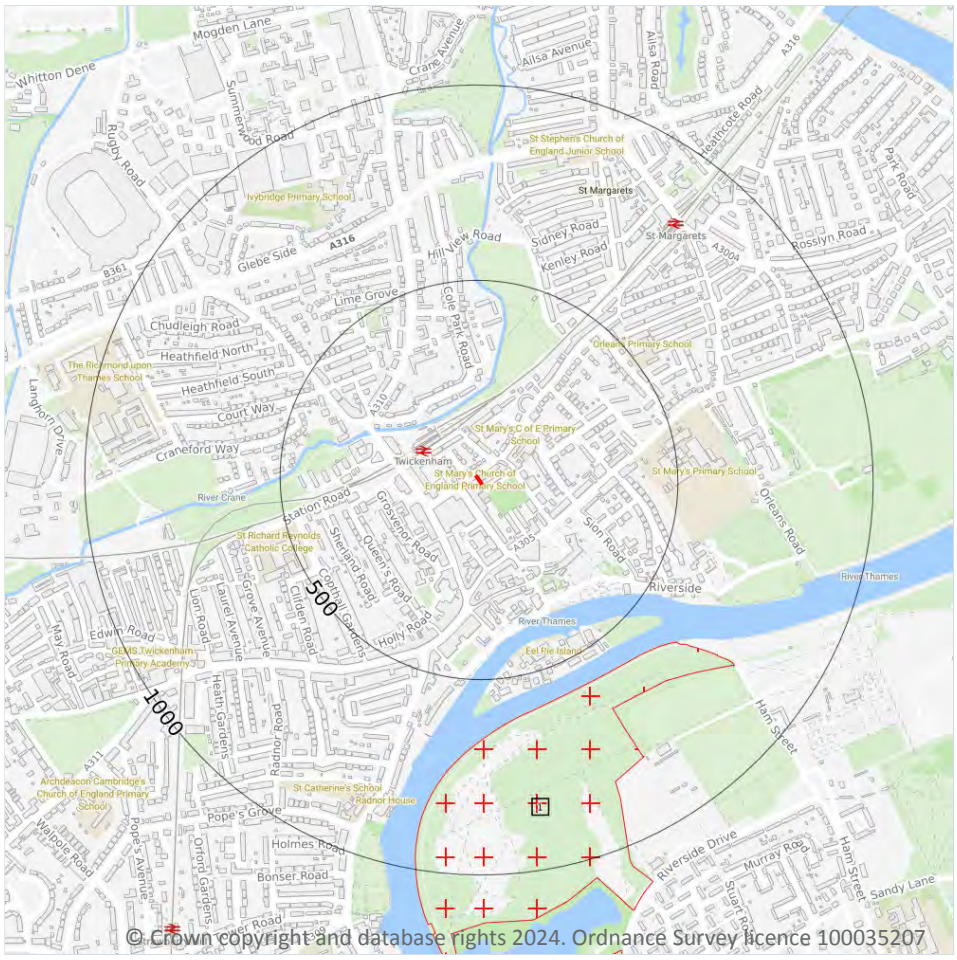
Highest risk on site	**Moderate**
Highest risk within 50m	**High**

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 71 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



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 72 >**

ID	Location	Name	Data source
-	1931m E	Richmond Park	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	1

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.

Features are displayed on the Environmental designations map on **page 72 >**

ID	Location	Name	Features of interest	Habitat description	Data source
-	1931m E	Richmond Park	Stag beetle.	Dry grassland, Steppes; Broad-leaved deciduous woodland; Inland water bodies (Standing water, Running water); Bogs, Marshes, Water fringed vegetation, Fens; Humid grassland, Mesophile grassland; Improved grassland; Heath, Scrub, Maquis and Garrigue, Phygrana; Mixed woodland	Natural England

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	1

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.

Features are displayed on the Environmental designations map on **page 72 >**

ID	Location	Name	Data source
-	1931m E	Richmond Park	Natural England

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	3

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 72 >**

ID	Location	Name	Data source
1	578m SE	Ham Lands	Natural England
2	1246m S	Ham Lands	Natural England
-	1881m N	Isleworth Ait	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.

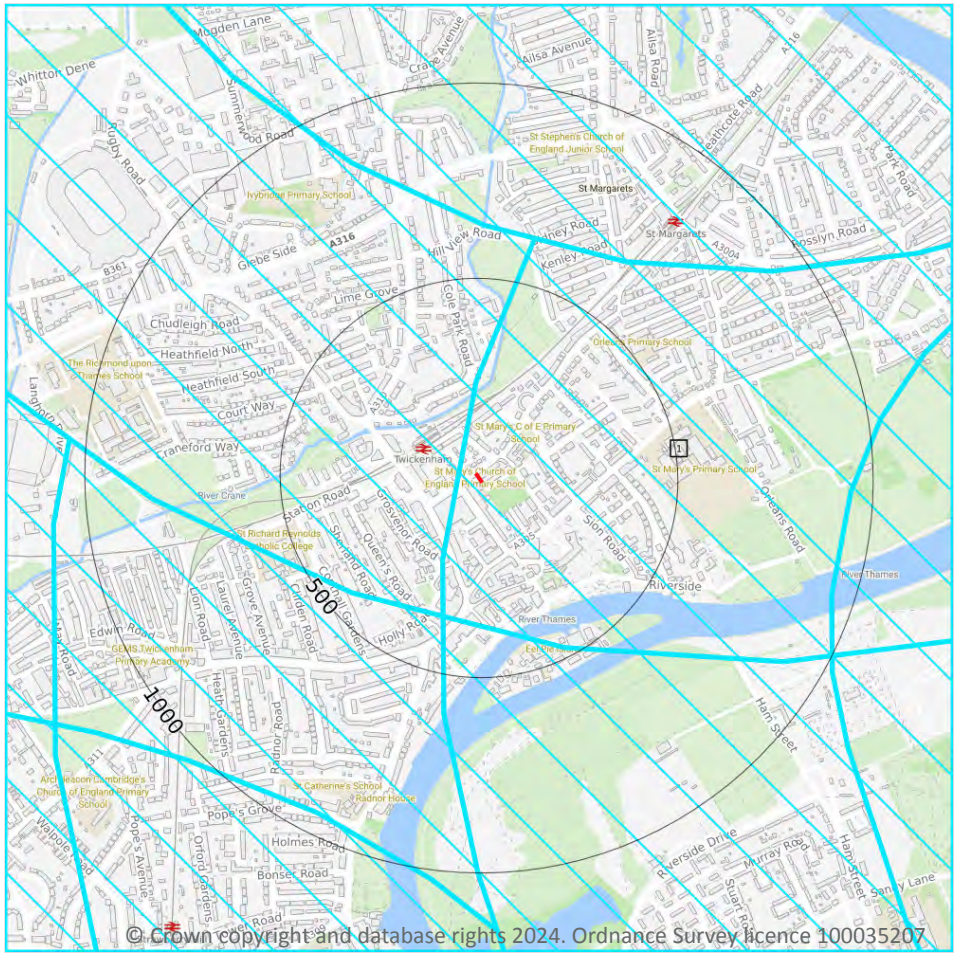
10.16 Nitrate Vulnerable Zones

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



10.17 SSSI Impact Risk Zones

Records on site	1

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 77 >**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). 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 - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20MW 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. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.**

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 77 >**

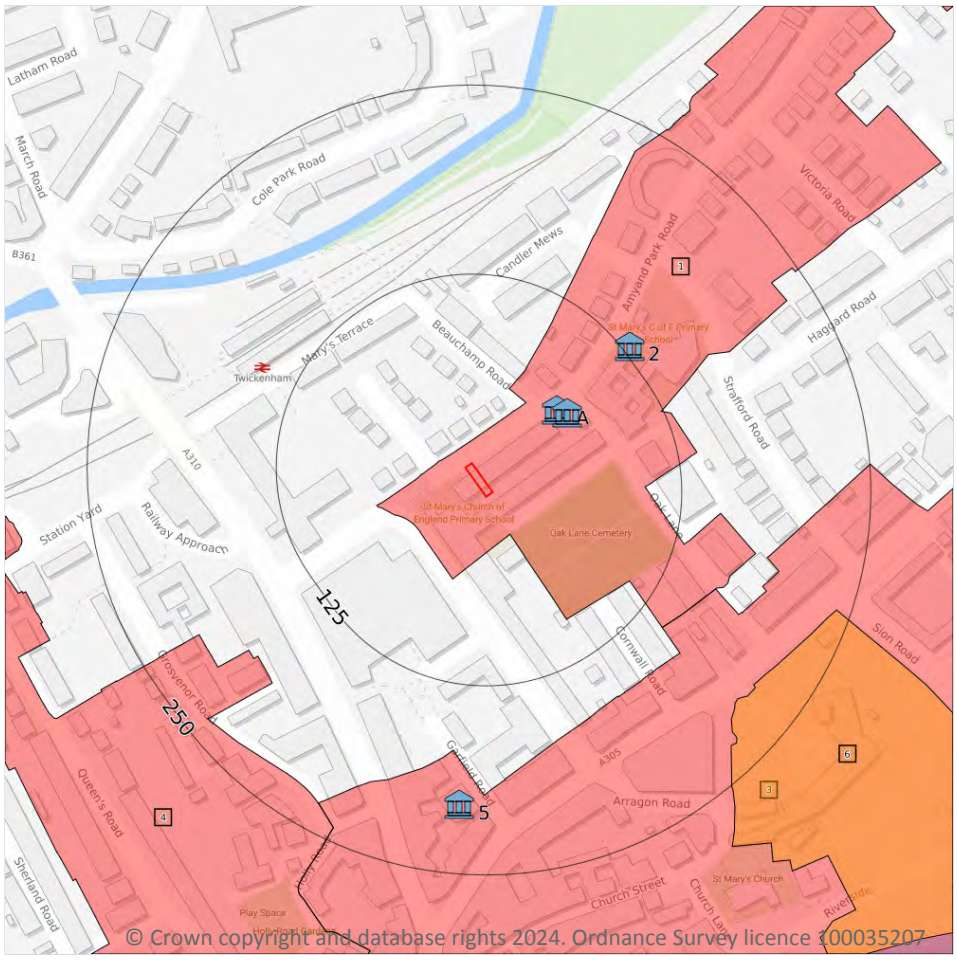
ID: -
Location: 1931m E
SSSI name: Richmond Park
Unit name: Petersham Park
Broad habitat: Acid Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Invert. assemblage A211 heartwood decay	Favourable	27/10/2010
Invert. assemblage A212 bark and sapwood decay	Favourable	27/10/2010
Invert. assemblage A213 fungal fruiting body	Favourable	27/10/2010

Feature name	Feature condition	Date of assessment
Lowland dry acid grassland (U1b,c,d,f)	Unfavourable - Recovering	27/10/2010
Lowland dry acid grassland (U4/20)	Unfavourable - Recovering	27/10/2010
S1083 Stag beetle, Lucanus cervus	Favourable	27/10/2010

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	4

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 80 >**

ID	Location	Name	Grade	Reference Number	Listed date
A	66m NE	Grove Cottage	II	1387750	26/07/1999
A	71m NE	Devoncroft	II	1261471	17/11/1986
2	130m NE	60, Amyand Park Road	II	1080860	25/06/1983
5	204m S	Twickenham Library	II	1400831	23/06/2011

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

11.5 Conservation Areas

Records within 250m	3

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 80 >**

ID	Location	Name	District	Date of designation
1	**On site**	**Amyand Park Road**	**Richmond upon Thames**	**14/06/1988**
3	143m SE	Twickenham Riverside	Richmond upon Thames	14/01/1969
4	184m SW	Queen's Road (Twickenham)	Richmond upon Thames	14/06/1988

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	1

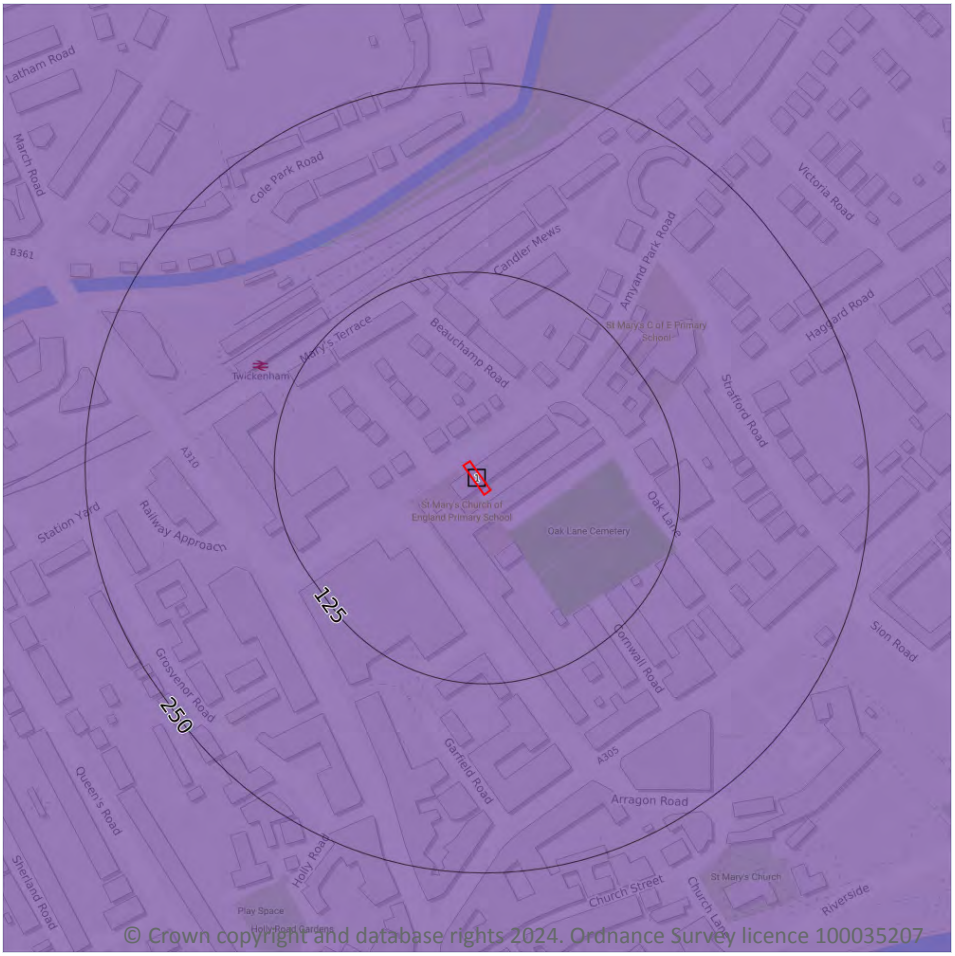
Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the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

Features are displayed on the Visual and cultural designations map on **page 80 >**

ID	Location	Name	Grade
6	212m SE	York House	II

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	1

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 84 >**

ID	Location	Classification	Description
1	**On site**	**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

13.1 Priority Habitat Inventory

Records within 250m	0

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

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

14.1 10k Availability

Records within 500m	1

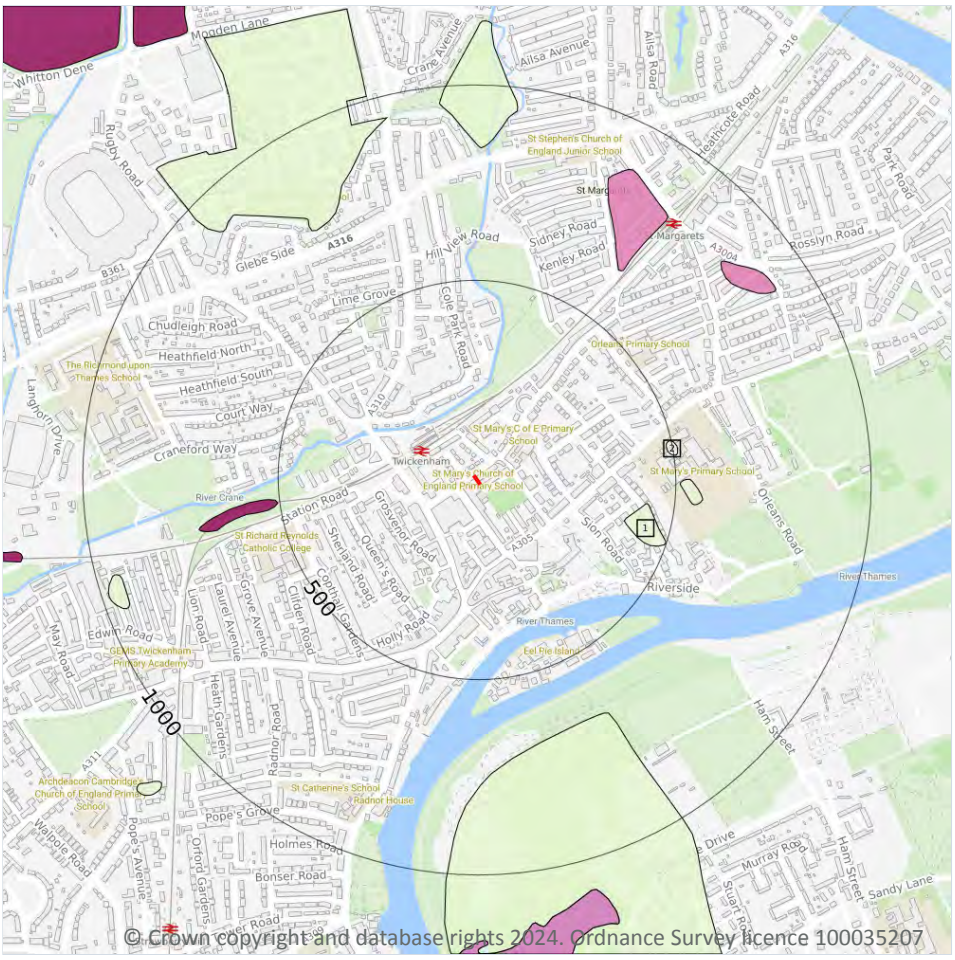
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

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

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**TQ17SE**

This data is sourced from the British Geological Survey.

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



14.2 Artificial and made ground (10k)

Records within 500m	2

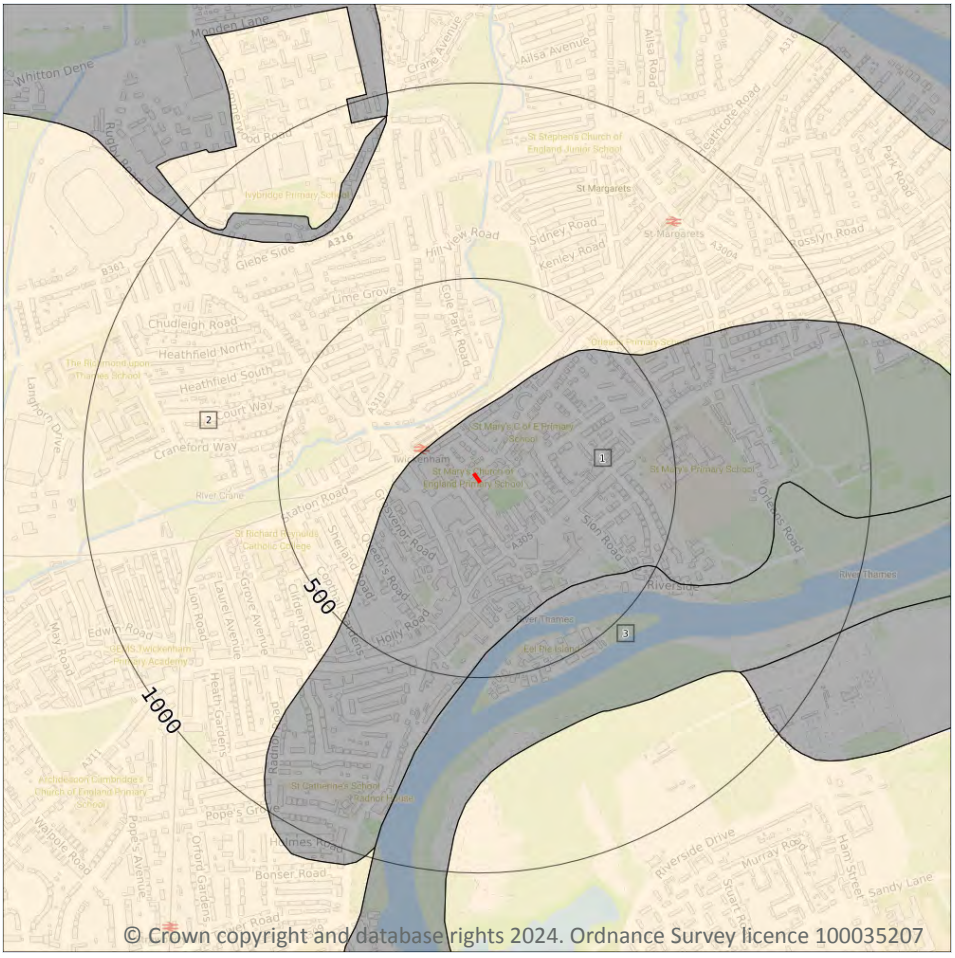
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 88 >**

ID	Location	LEX Code	Description	Rock description
1	381m E	WMGR-UKNOWN	Infilled Ground	Unknown/unclassified Entry
2	485m E	WMGR-UKNOWN	Infilled Ground	Unknown/unclassified Entry

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 **3**

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 89 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**LASI-Z**	**Langley Silt Member - Silt (unlithified Deposits Coding Scheme)**	**Silt**
2	127m NW	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel
3	349m SE	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt

This data is sourced from the British Geological Survey.

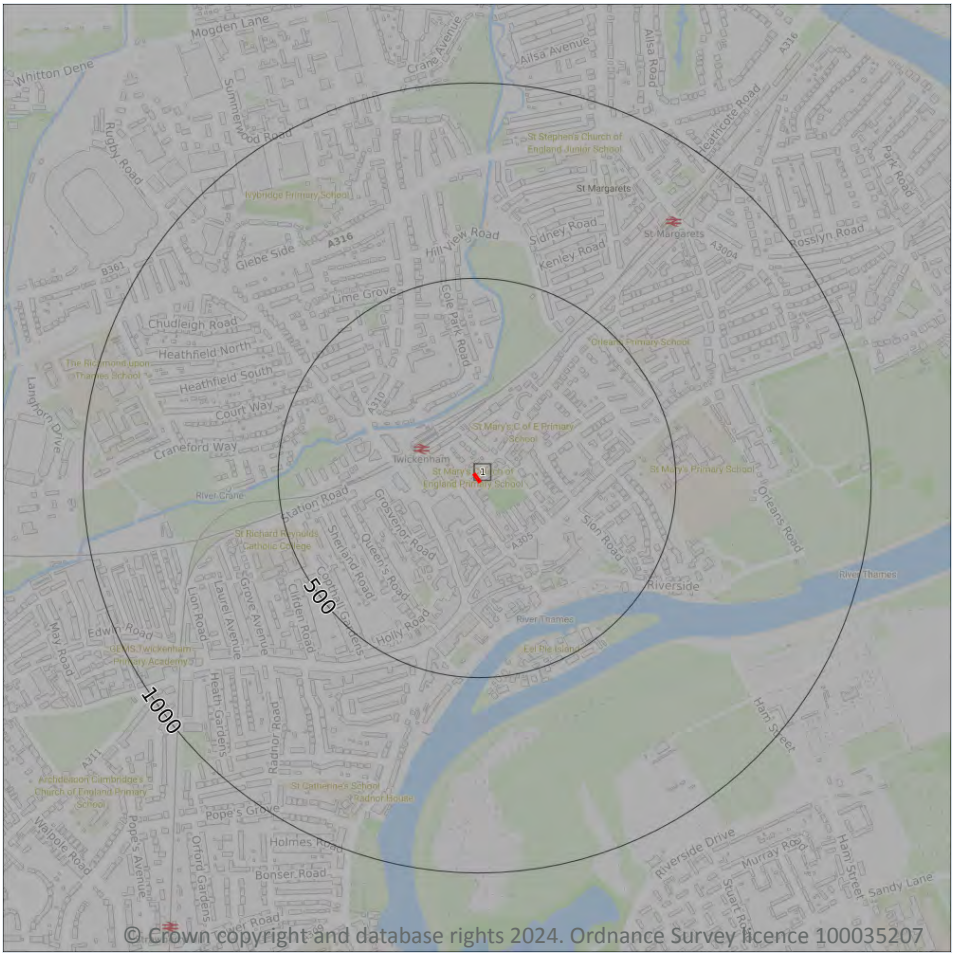
14.4 Landslip (10k)

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	1

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 91 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LC-CLAY**	**London Clay Formation - Clay**	**Eocene 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

15.1 50k Availability

Records within 500m	1

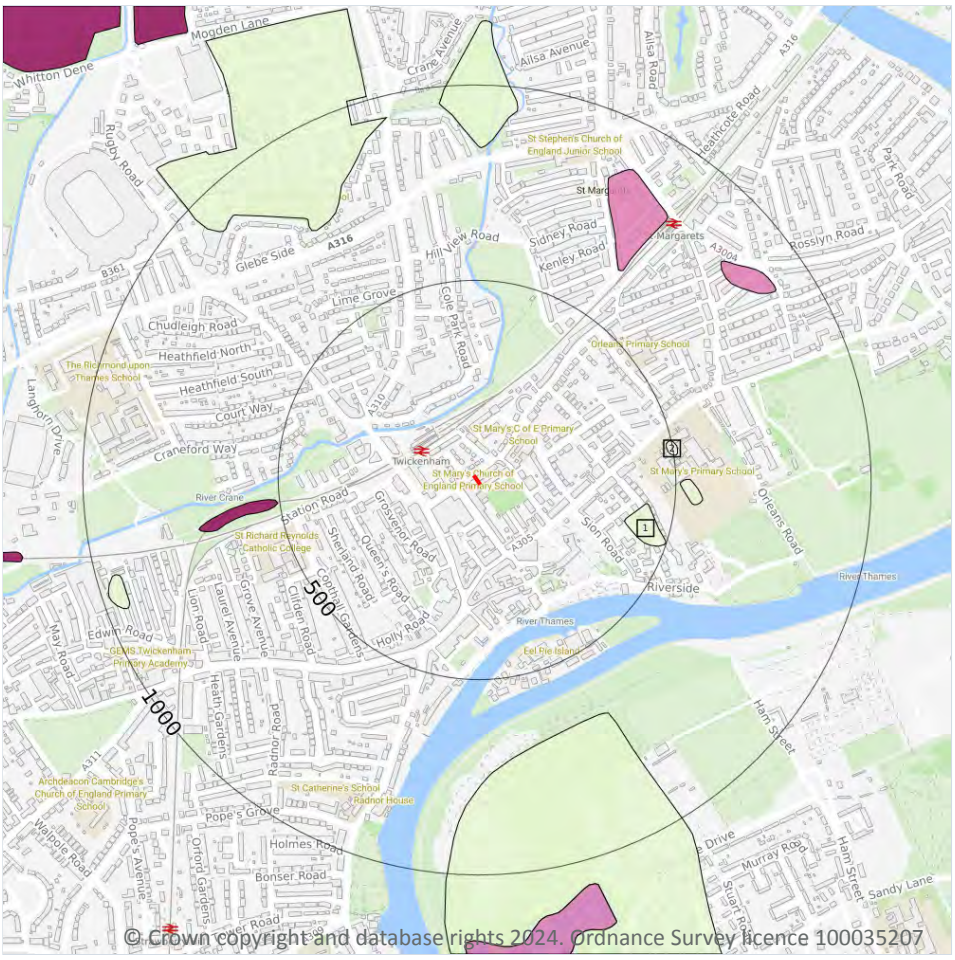
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 93 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW270_south_london_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made 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 94 >**

ID	Location	LEX Code	Description	Rock description
1	381m E	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
2	484m E	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

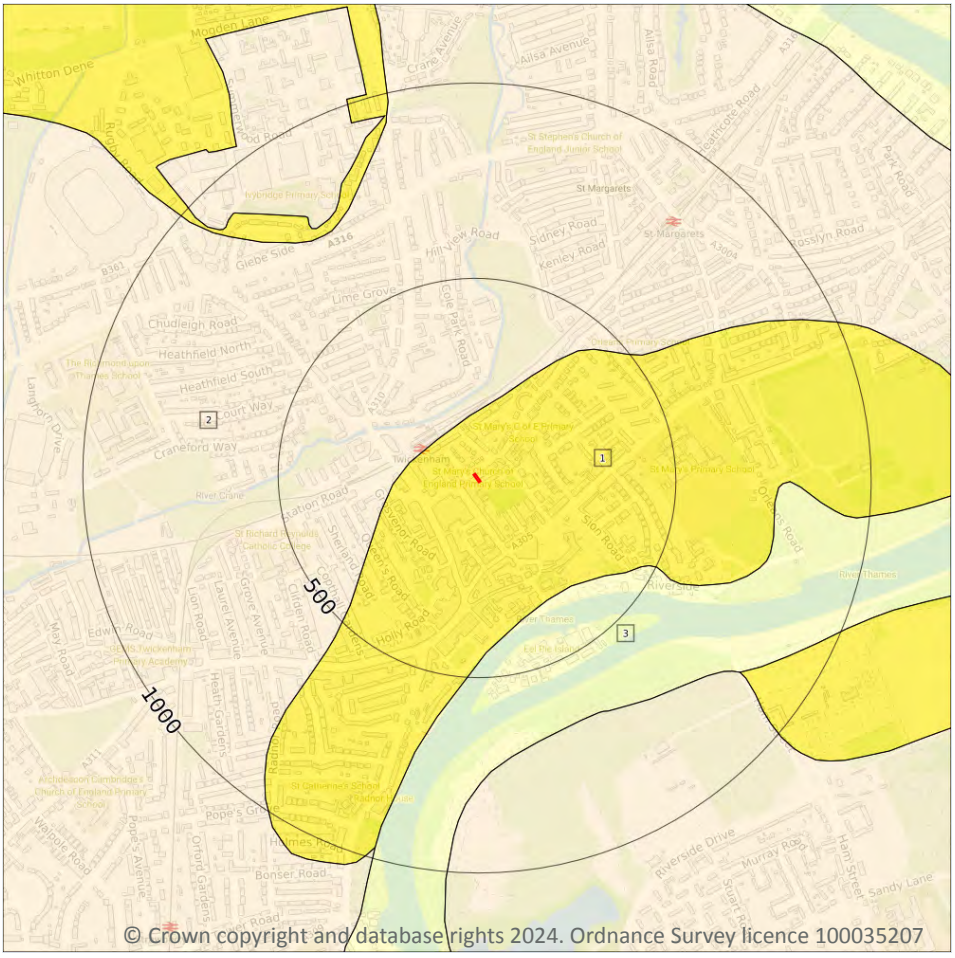
15.3 Artificial ground permeability (50k)

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 **3**

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 96 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**LASI-XCZ**	**LANGLEY SILT MEMBER**	**CLAY AND SILT**
2	128m NW	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL
3	349m SE	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**	**Low**	**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.

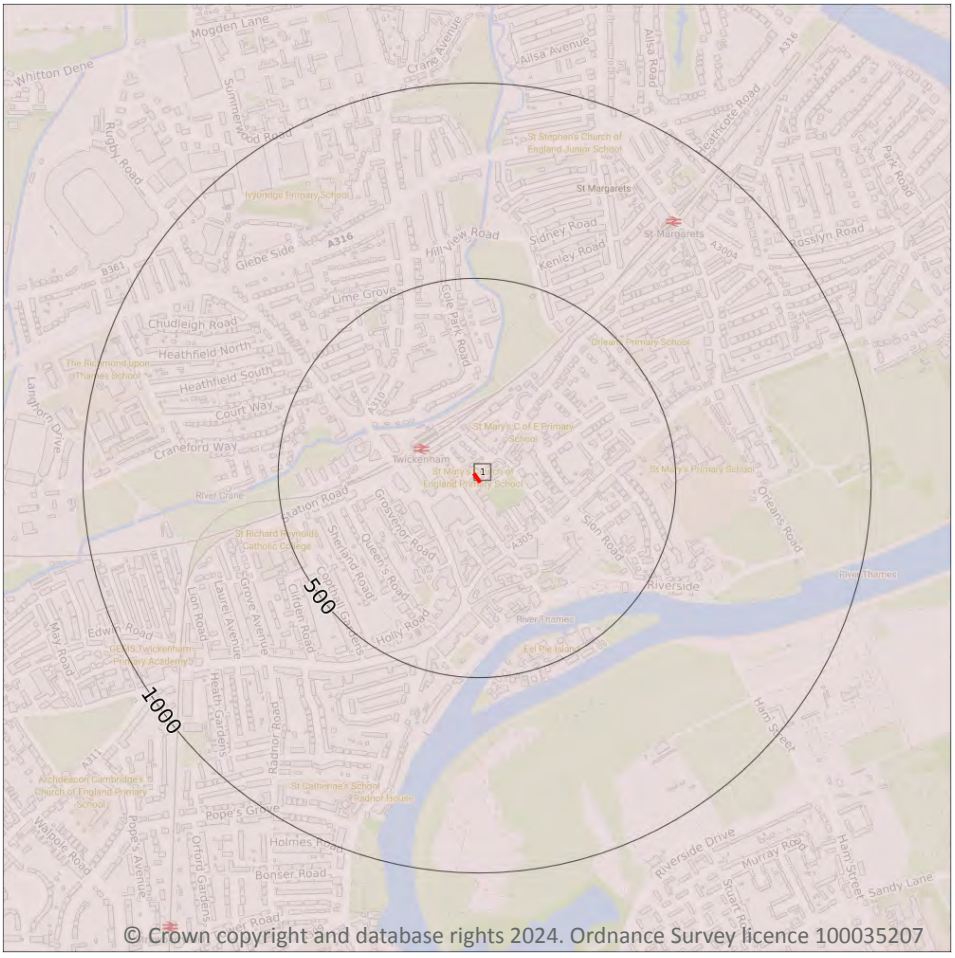
15.7 Landslip permeability (50k)

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	1

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 98 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LC-XCZ**	**LONDON CLAY FORMATION - CLAY AND SILT**	**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	**Mixed**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

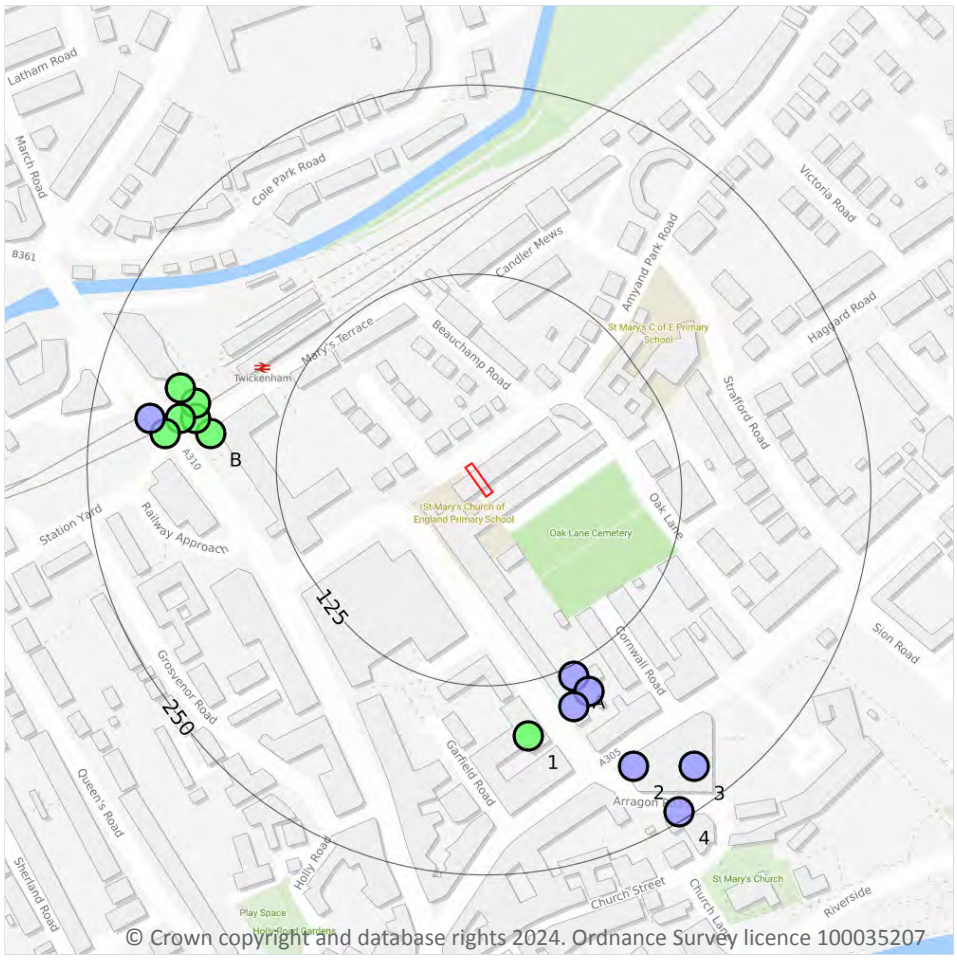
15.10 Bedrock faults and other linear features (50k)

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	14

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.

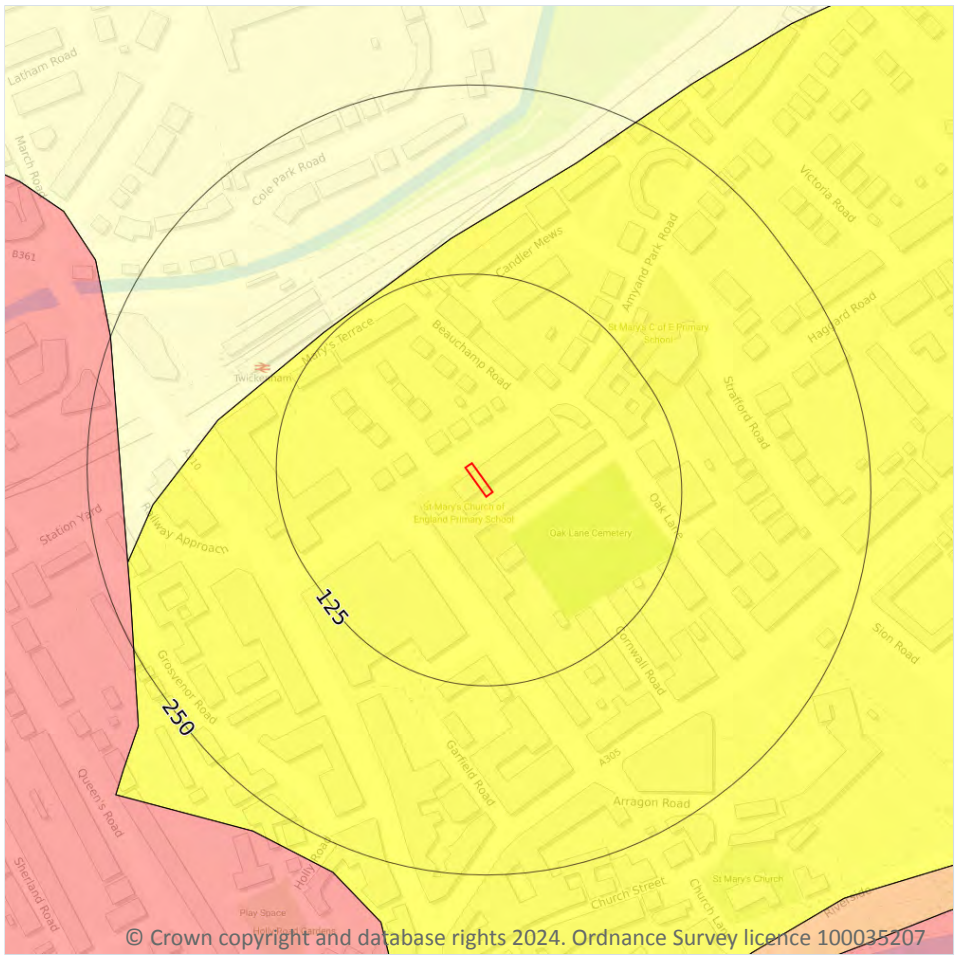
Features are displayed on the Boreholes map on **page 100 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	132m SE	516370 173470	YORK STREET TWICKENHAM 1	7.0	N	15947100 ↗
A	145m SE	516380 173460	YORK STREET TWICKENHAM TP 1	2.0	N	15947101 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	150m SE	516370 173450	YORK STREET TWICKENHAM TP 2	1.0	N	15947102 ↗
1	161m S	516340 173430	T EXCH TWICKENHAM 1	25.0	N	581475 ↗
B	170m W	516130 173630	LONDON ROAD BRIDGE TWICKENHAM 7	18.29	N	581611 ↗
B	182m W	516120 173640	LONDON ROAD BRIDGE TWICKENHAM 4	12.19	N	581608 ↗
B	184m W	516120 173650	LONDON ROAD BRIDGE TWICKENHAM 2	18.29	N	581606 ↗
B	191m W	516110 173640	LONDON ROAD BRIDGE TWICKENHAM 5	18.29	N	581609 ↗
B	196m W	516110 173660	LONDON ROAD BRIDGE TWICKENHAM 1	18.29	N	581605 ↗
B	200m W	516100 173630	LONDON ROAD BRIDGE TWICKENHAM 6	12.19	N	581610 ↗
2	203m SE	516410 173410	TWICKENHAM NWH F5616 A	10.0	N	581579 ↗
B	211m W	516090 173640	LONDON ROAD BRIDGE TWICKENHAM 3	9.14	N	581607 ↗
3	225m SE	516450 173410	TWICKENHAM NWH F5616 B	10.0	N	581580 ↗
4	244m SE	516440 173380	TWICKENHAM NWH F5616 C	10.0	N	581581 ↗

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

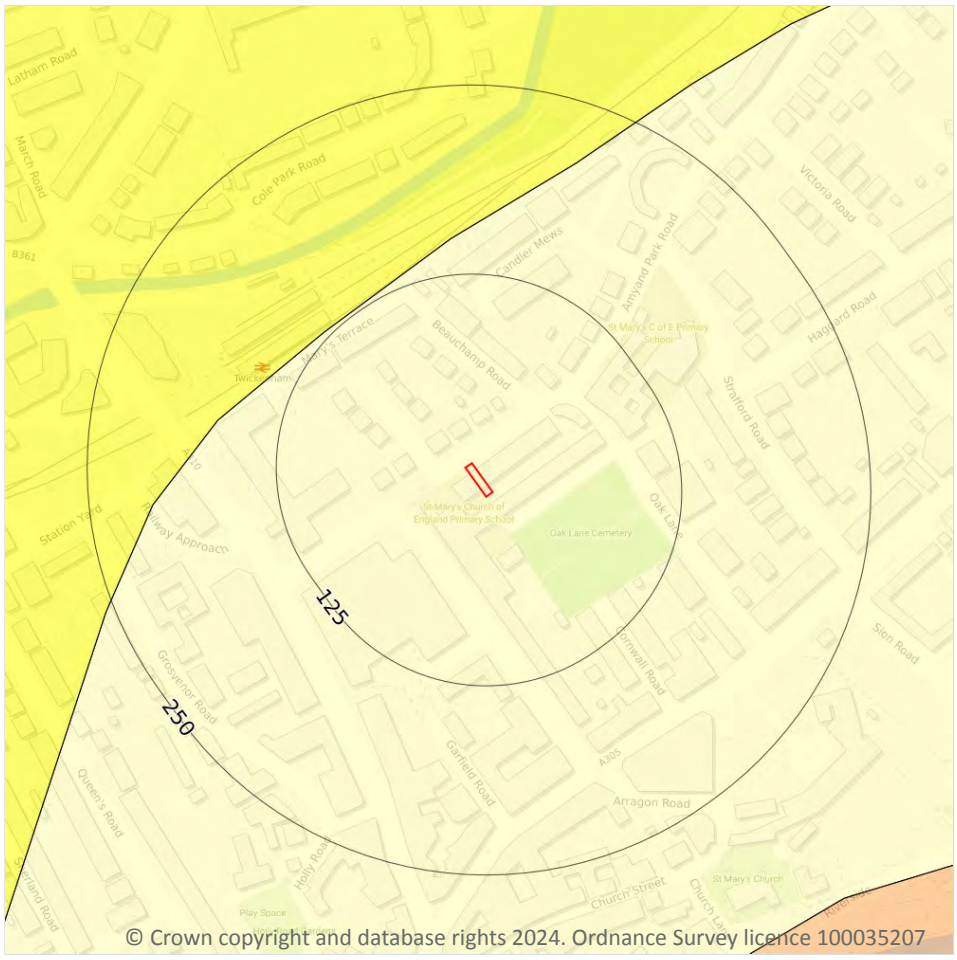
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 102 >**

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 103 >**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

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

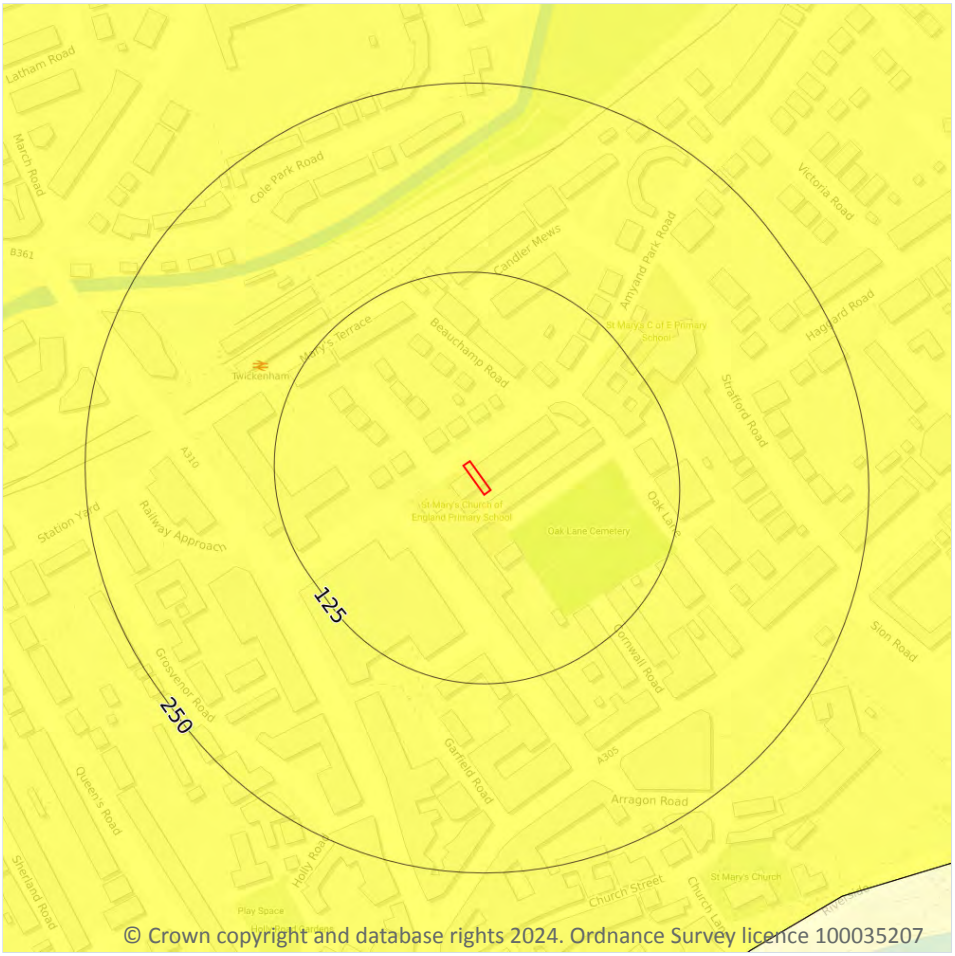
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 104 >**

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

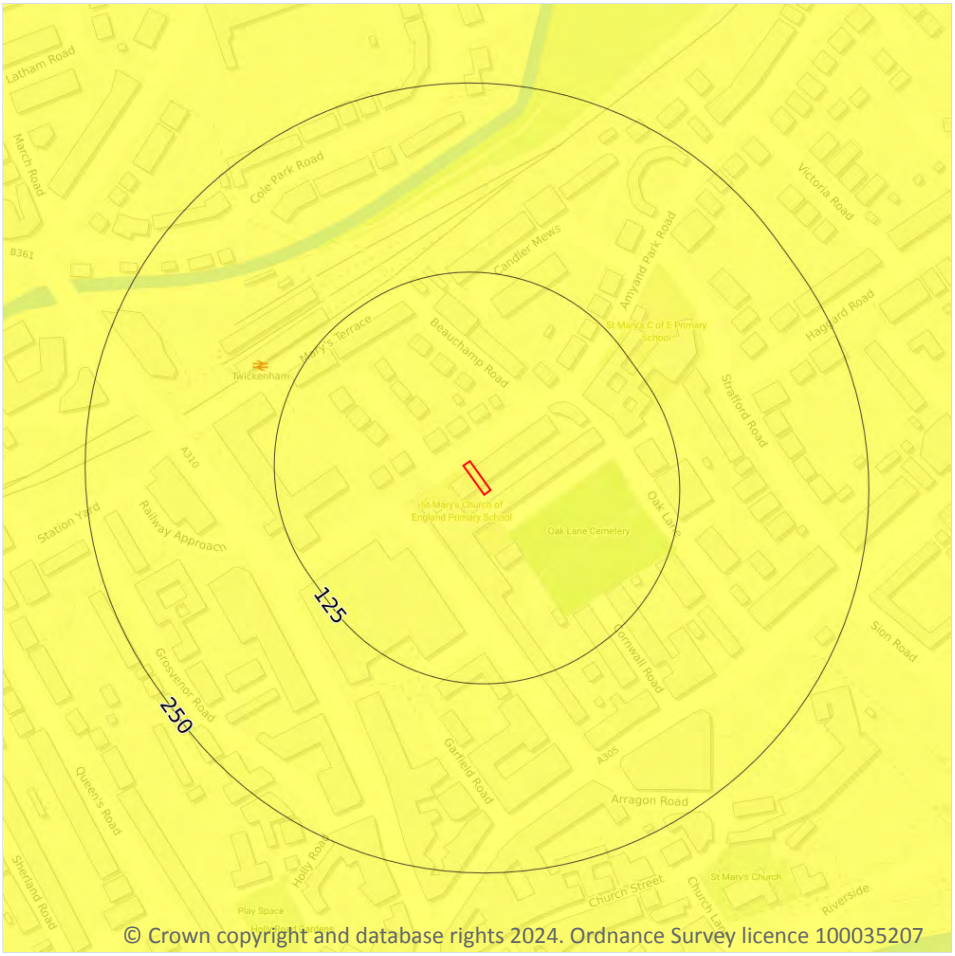
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 105 >**

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 106 >**

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

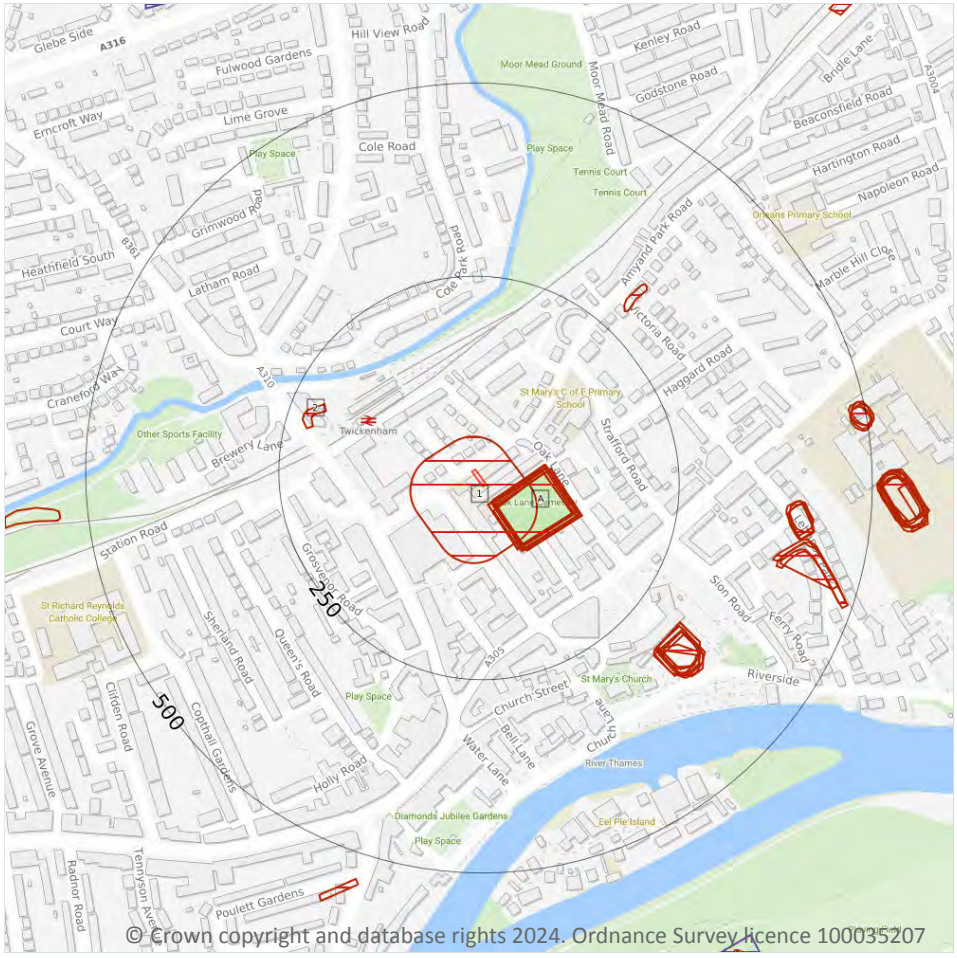
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 107 >**

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 and ground workings



Site Outline

Search buffers in metres (m)

- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining

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 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.

18.2 Surface ground workings

Records within 250m	13

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 and ground workings map on **page 109 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	**On site**	**Grave Yard**	**1865**	**1:10560**
A	22m SE	Disused Cemetery	1933	1:10560
A	23m SE	Disused Cemetery	1938	1:10560
A	23m SE	Disused Cemetery	1912	1:10560
A	24m SE	Disused Cemetery	1938	1:10560
A	24m SE	Disused Cemetery	1912	1:10560
A	26m SE	Cemetery	1991	1:10000
A	26m SE	Cemetery	1973	1:10000
A	29m SE	Cemetery	1935	1:10560
A	31m SE	Cemetery	1966	1:10560
A	31m SE	Disused Cemetery	1948	1:10560
A	34m SE	Disused Cemetery	1912	1:10560
2	205m NW	Unspecified Ground Workings	1896	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	0

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

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from 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	0

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).

This data is sourced from the British Geological Survey.

18.7 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.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the

Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 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.

18.13 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.

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 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 Ground cavities and sinkholes

19.1 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.

19.2 Mining cavities

Records within 1000m	0

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.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 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%

20.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 116 >**

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

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	1

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**

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	4

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	**17**	**3**	**457**	**314**	**0.8**	**72**	**47**	**23**	**22**
On site	**17**	**3**	**504**	**346**	**0.9**	**71**	**49**	**24**	**19**
On site	**18**	**3.2**	**488**	**335**	**0.8**	**67**	**50**	**25**	**27**
3m W	18	3.2	461	317	0.8	66	48	24	30

This data is sourced from the British Geological Survey.

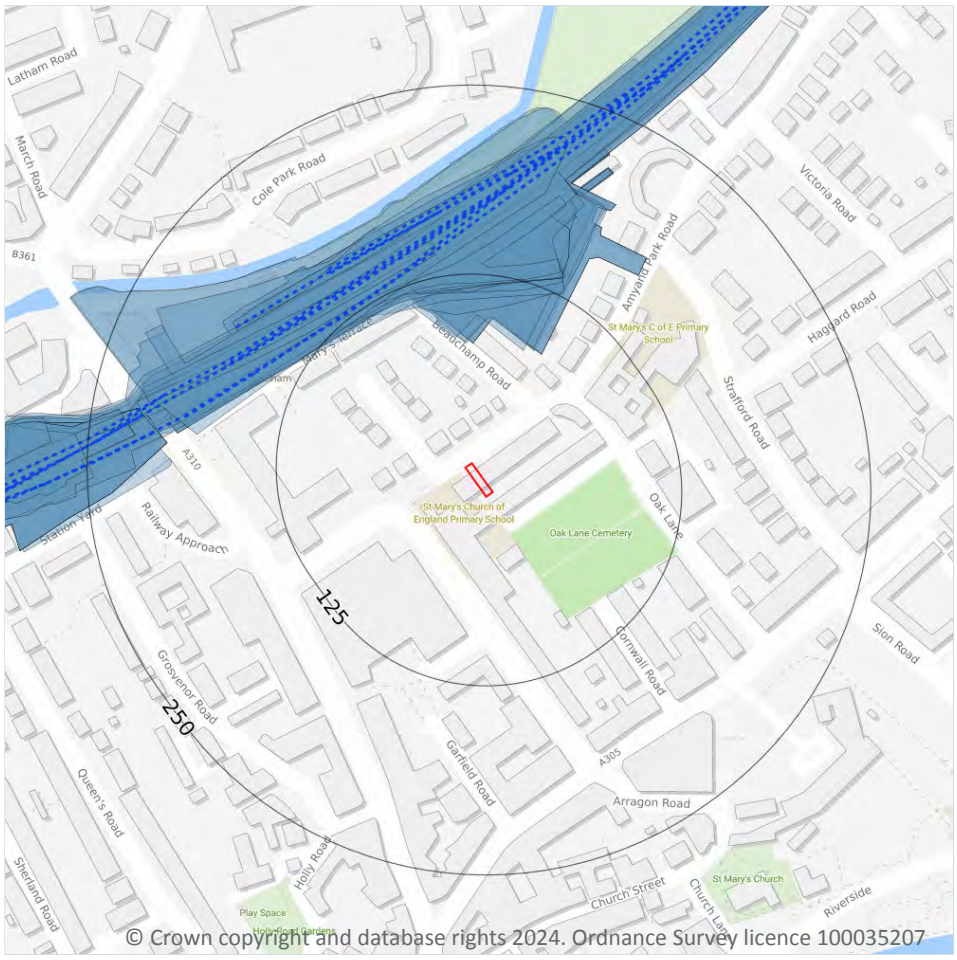
21.3 BGS Measured Urban Soil Chemistry

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.

22 Railway infrastructure and projects



Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- 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

22.1 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.

22.2 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.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	54

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 120 >**

Location	Land Use	Year of mapping	Mapping scale
79m N	Railway Sidings	1973	10000
79m N	Railway Sidings	1966	10560
79m N	Railway Sidings	1948	10560
80m N	Railway	1893	-
80m N	Railway Sidings	1894	10560
82m N	Railway Sidings	1912	10560
99m N	Railway Sidings	1912	10560
108m N	Railway Sidings	1894	10560
110m N	Railway	1913	-
111m N	Railway	1932	-
111m NW	Railway Sidings	1938	10560
113m N	Railway Sidings	1898	10560
113m N	Railway Sidings	1933	10560
114m N	Railway Sidings	1898	2500
115m N	Railway Sidings	1938	10560
115m N	Railway Sidings	1912	10560
117m N	Railway Sidings	1935	10560

Location	Land Use	Year of mapping	Mapping scale
117m N	Railway Sidings	1915	2500
117m N	Railway Sidings	1935	2500
119m N	Railway Sidings	1896	2500
119m NW	Railway Sidings	1959	2500
119m N	Railway Sidings	1896	10560
120m N	Railway Sidings	1967	1250
120m N	Railway Sidings	1959	1250
120m N	Railway Sidings	1973	-
121m NW	Railway Sidings	1991	10000
123m N	Railway	1897	-
125m NW	Railway Sidings	1865	2500
129m NW	Railway Sidings	1898	10560
130m NW	Railway Sidings	1996	1250
134m NW	Railway Sidings	1896	10560
151m NW	Railway Sidings	1980	1250
151m NW	Railway Sidings	1988	1250
152m NW	Railway Sidings	1996	1250
152m NW	Railway Sidings	1991	1250
152m NW	Railway Sidings	1973	-
152m NW	Railway Sidings	1959	2500
152m NW	Railway Sidings	1959	2500
169m W	Railway	1932	-
173m W	Railway	1913	-
173m W	Railway	1868	-
198m W	Railway Sidings	1991	10000
198m W	Railway Sidings	1973	10000
198m W	Railway Sidings	1966	10560
198m W	Railway Sidings	1948	10560

Location	Land Use	Year of mapping	Mapping scale
202m W	Railway Sidings	1865	10560
217m W	Railway Sidings	1865	2500
217m W	Railway Sidings	1896	2500
219m W	Railway Sidings	1938	10560
219m W	Railway Sidings	1912	10560
221m W	Railway Sidings	1896	10560
223m W	Railway Sidings	1934	2500
244m N	Railway Sidings	1973	-
246m W	Railway Sidings	1912	10560

This data is sourced from Ordnance Survey/Groundsure.

22.5 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.

22.6 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.

22.7 Railways

Records within 250m	31

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 120 >**

Location	Name	Type
128m NW	Waterloo to Reading Line	rail
129m NW	Not given	Single Track
131m NW	Not given	Single Track
133m N	Not given	Single Track
138m N	Not given	Single Track
140m NW	Waterloo to Reading Line	rail
142m NW	Not given	Multi Track
143m NW	Not given	Multi Track
143m NW		rail
143m NW	Not given	Multi Track
147m NW	Not given	Multi Track
153m NW	Not given	Single Track
156m NW		rail
156m NW	Not given	Single Track
157m NW	Not given	Single Track
159m NW		rail
159m NW	Not given	Single Track
165m NW	Not given	Multi Track
167m N	Not given	Single Track
170m N	Not given	Single Track
174m W	Not given	Single Track
188m N	Not given	Multi Track
192m N	Not given	Single Track
195m N	Not given	Single Track
205m W		rail
205m W	Kingston Loop Line	rail
207m N	Not given	Multi Track
208m W	Not given	Single Track

Location	Name	Type
218m W	Not given	Multi Track
219m N	Not given	Multi Track
245m N		rail

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

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.

This data is sourced from publicly available information by Groundsure.

22.9 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.

22.10 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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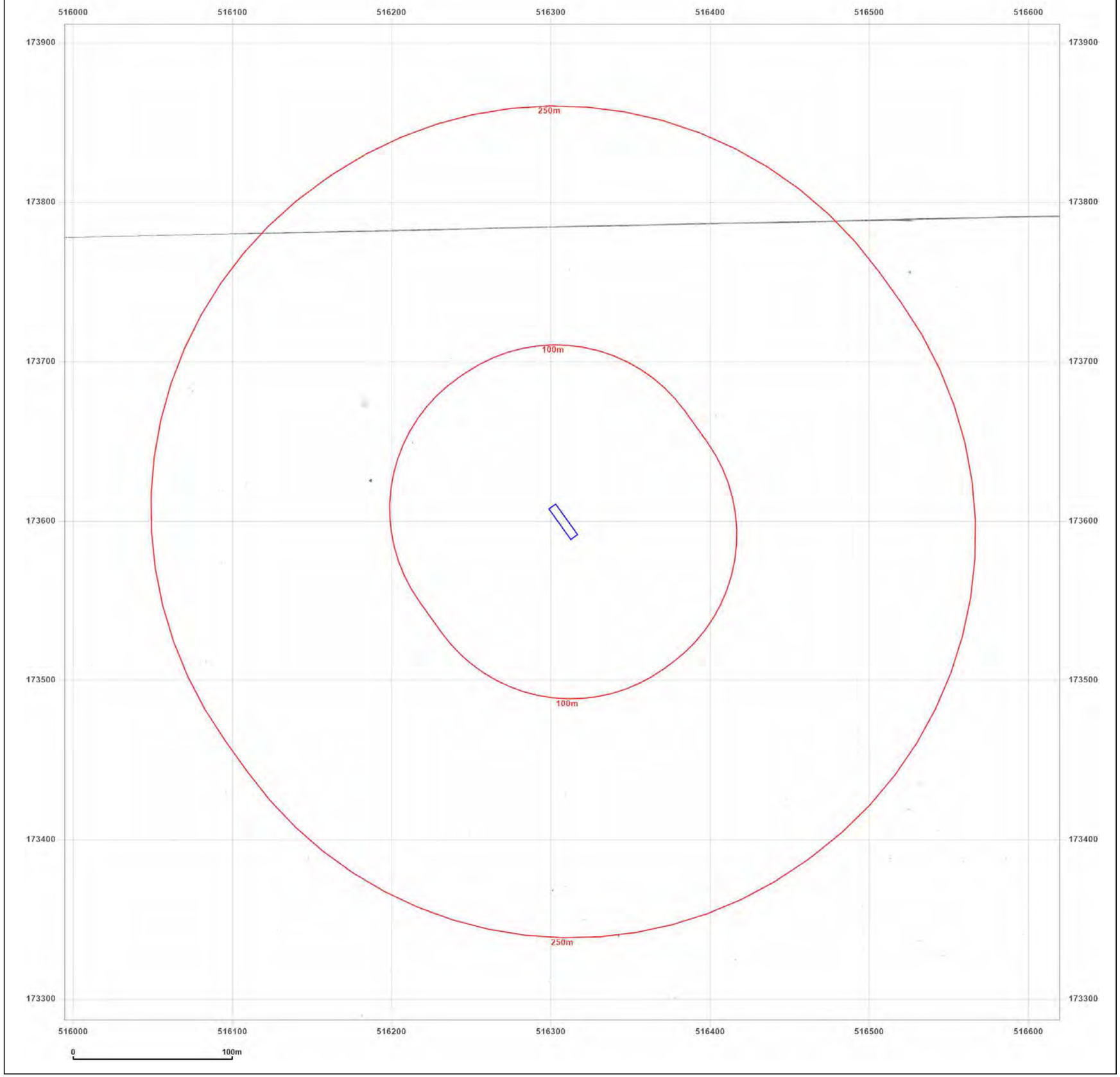
APPENDIX 3 – OS HISTORICAL MAPS



Groundsure INSIGHTS

Site Details:

26, AMYAND PARK ROAD,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3HE

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Report Ref: GS-J8Q-TRJ-Y52-DNR
Grid Ref: 516307, 173599

Map Name: County Series

Map date: **1840**

Scale: 1:2,500

Printed at: 1:2,500

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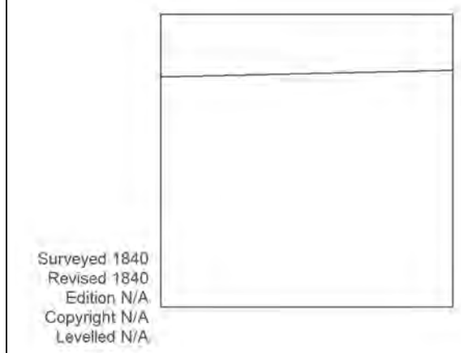

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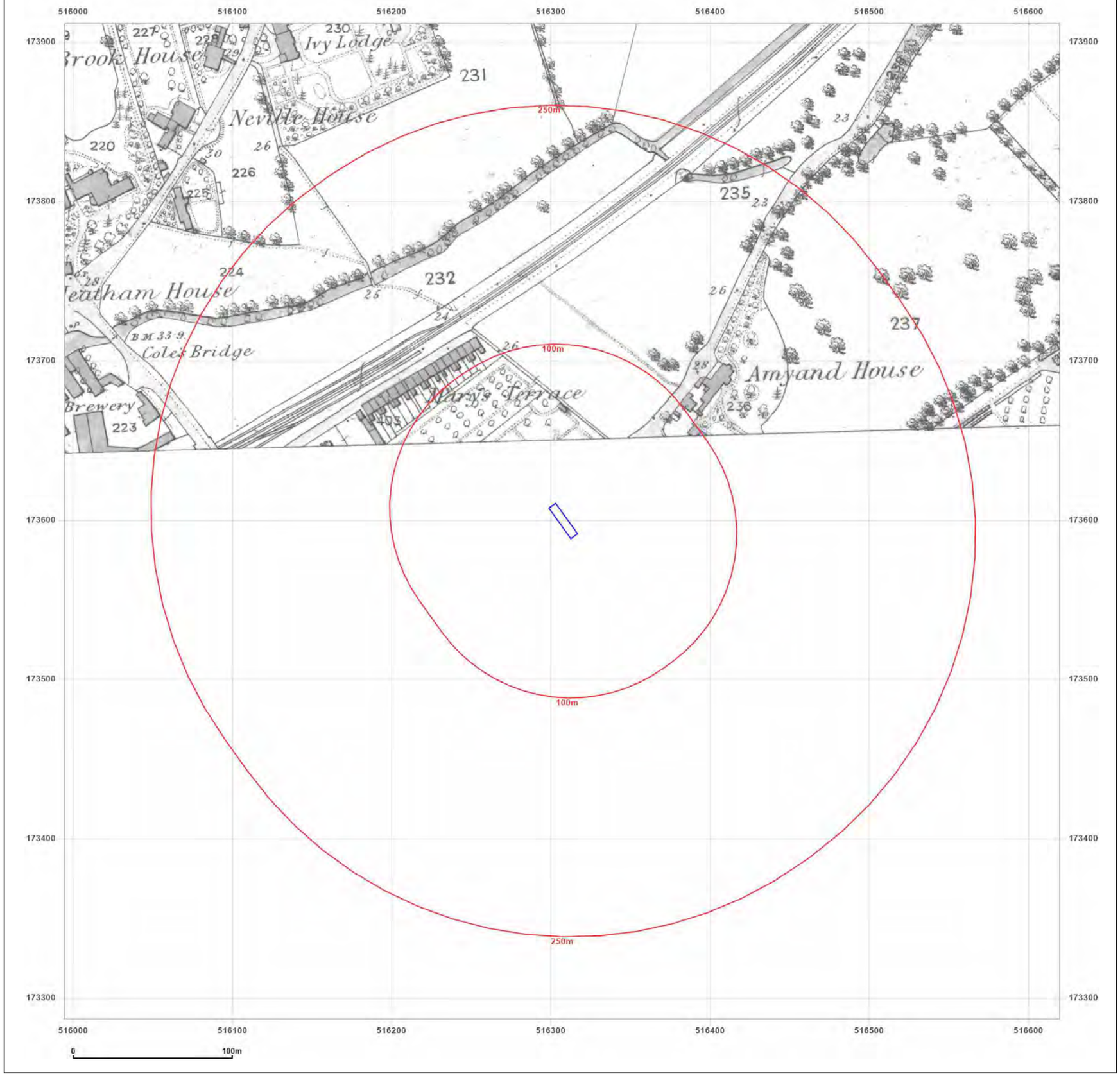
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 31 May 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



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Site Details:

26, AMYAND PARK ROAD,
TWICKENHAM, RICHMOND
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Client Ref: P5802J3027 .1 26 Amyand Park
Report Ref: GS-J8Q-TRJ-Y52-DNR
Grid Ref: 516307, 173599

Map Name: County Series

Map date: **1865**

Scale: 1:2,500

Printed at: 1:2,500

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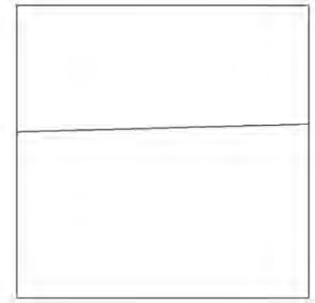
Levelled N/A



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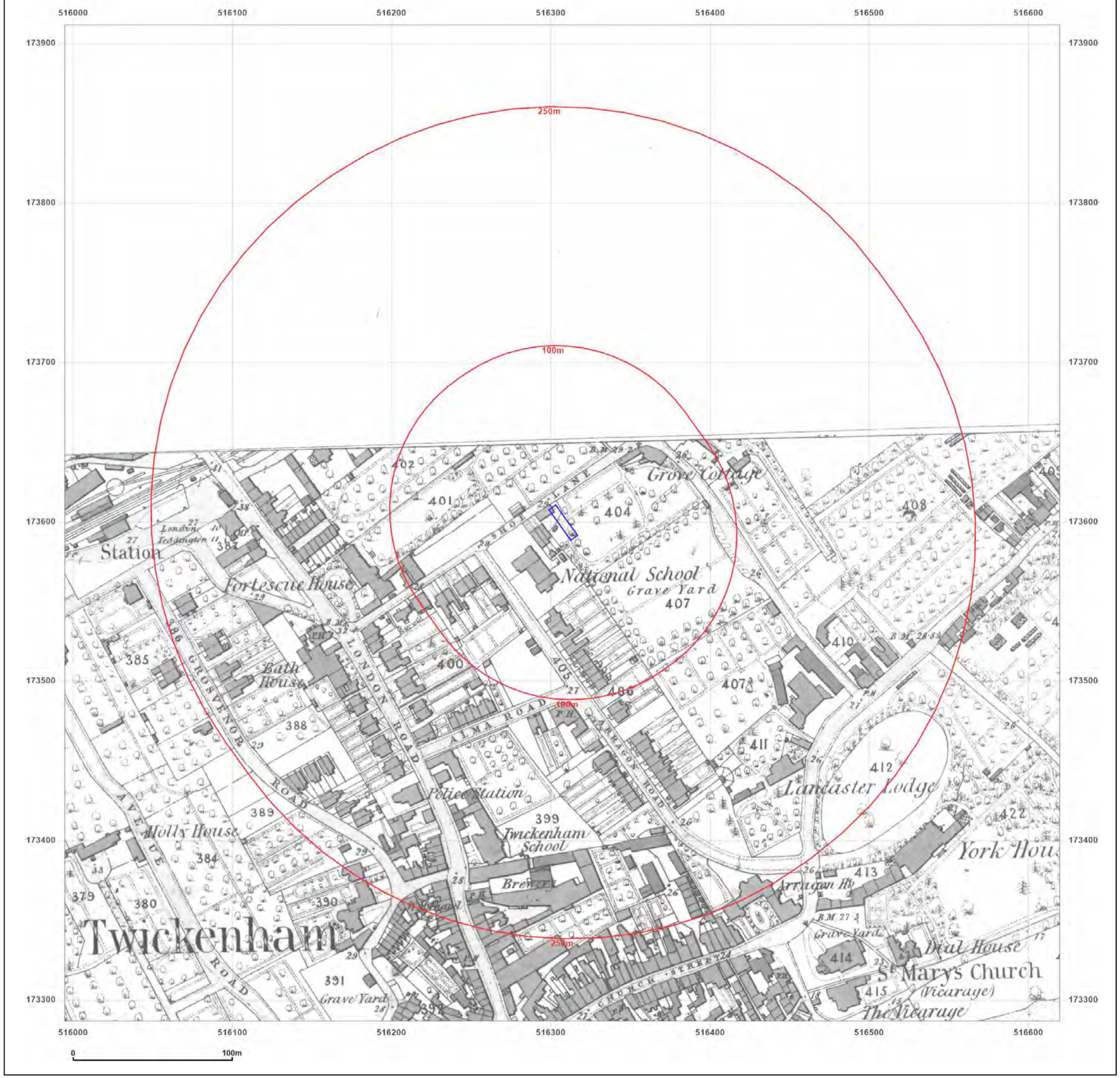
www.groundsure.com/sites/default/files/groundsure_legend.pdf



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Grid Ref: 516307, 173599

Map Name: County Series

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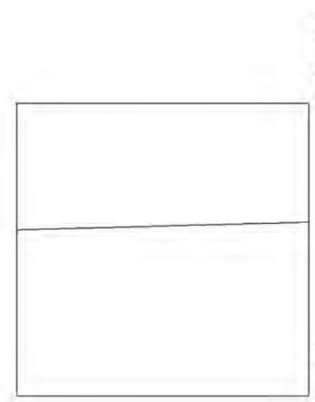

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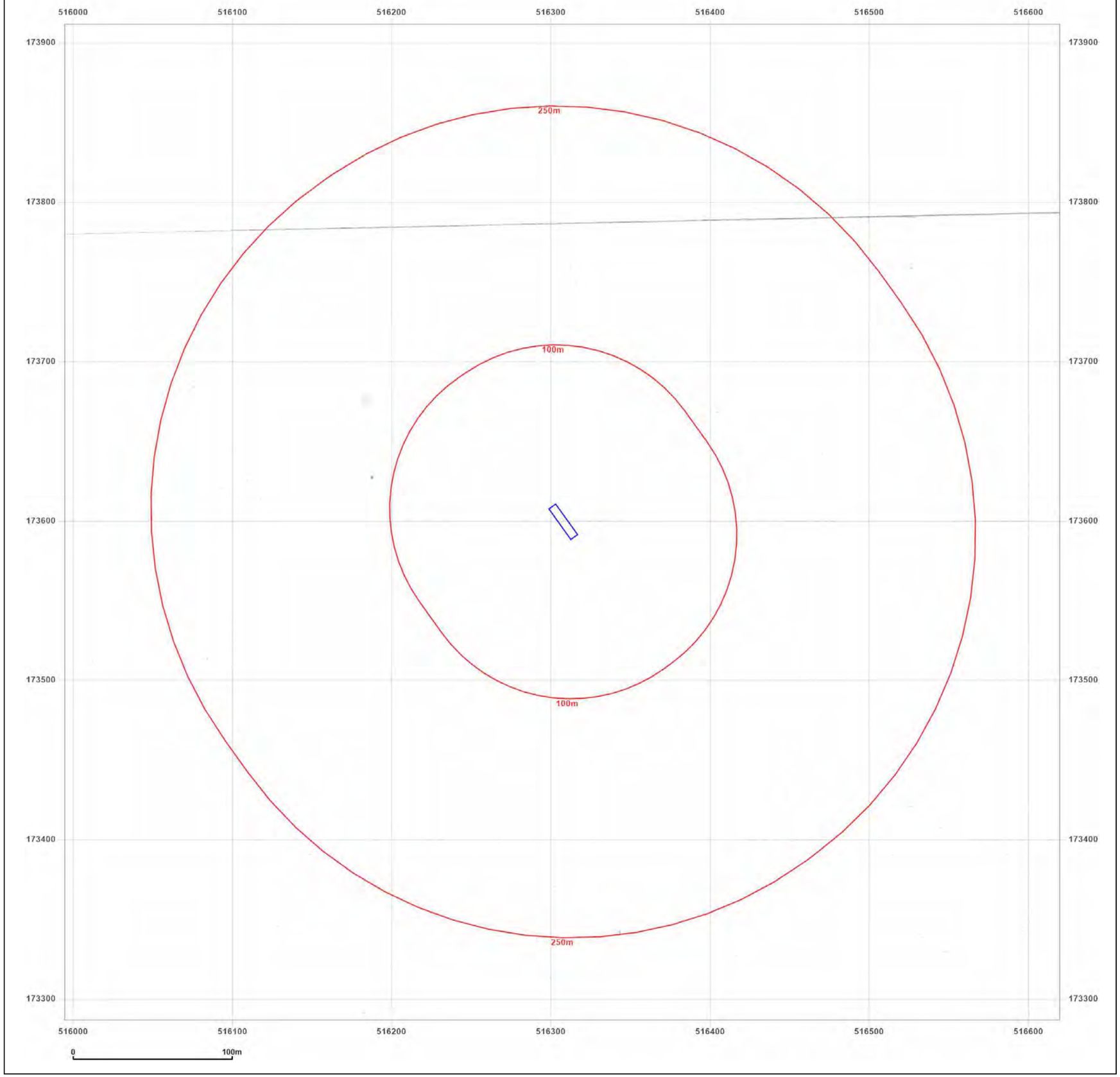

Groundsure INSIGHTS

Site Details:

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TWICKENHAM, RICHMOND
UPON THAMES, TW1 3HE

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Report Ref: GS-J8Q-TRJ-Y52-DNR
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Printed at: 1:2,500

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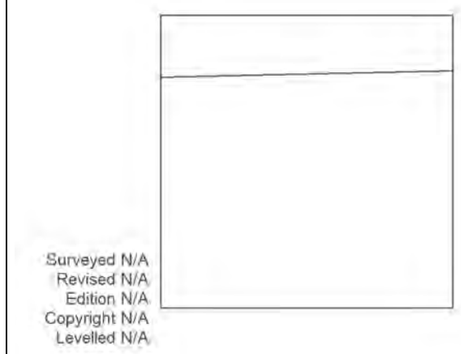

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T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 31 May 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf