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

26 AMYAND PARK ROAD
TWICKENHAM
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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 a rear-side extension and creation of 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.<br>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.<br>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.<br>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.<br>The River Crane is reported 176m north-west.<br>Groundsure states the highest risk of surface water flooding on site is "negligible".<br>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.<br>The potential impacts of shallow groundwater should be considered during preliminary foundation design.<br>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.<br>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. A drainage strategy should be produced to demonstrate how surface waters will be managed. |

| 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.<br>The proposed basement excavation will be within 5m of a public pavement. It is also laterally within 5m of neighbouring properties.<br>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.<br>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.<br>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. |

| Recommended Further Work | |
|---|---|
| | A drainage strategy/SUDS report is recommended.<br>A Ground Movement Assessment is also considered prudent but may not be a requirement of the London Borough of Richmond upon Thames . |

# 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 a rear-side extension and creation of 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<br>Twickenham,<br>Richmond Upon Thames,<br>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**<br>1:2,500 | Incomplete mapping | Incomplete mapping |
| **1865 - 1868**<br>1:2,500<br>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.<br>Railway present approximately 150m north-west of the site.<br>River Thames is reported approximately 400m south of the site.<br>The surrounding area comprises predominantly agricultural use with residential areas presents to the south. |
| **1894 - 1898**<br>1:1,056<br>1:2,500<br>1:10,560 | No significant changes. | No significant changes. |
| **1912 - 1915**<br>1:2,500<br>1:10,560 | The site lies within a row of terraced housing. | Immediate surroundings developed with terraced residential properties.<br>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**<br>1:2,500<br>1:10,560 | No significant changes. | The surrounding area is now predominantly residential.<br>Large ground working feature, possibly gravel pit or lake shown from 750m south-east of site. |
| **1948 - 1959**<br>1:1,250<br>1:10,560 | No significant changes. | Further predominantly residential development in surrounding area. Railway expanded 150m north-west and Twickenham Station shown. |
| **1960 - 1966**<br>1:1,250<br>1:2,500<br>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**<br>1:1,250<br>1:10,000 | No significant changes. | One of the ground working features 750m south-east no longer shown and area partially developed. |
| **1991 - 2001**<br>1:1,250<br>1:10,000 | No significant changes. | No significant changes. |
| **2003 – 2010**<br>1:1,250<br>1:10,000 | No significant changes. | No significant changes. |
| **2024**<br>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)<br>Principal (Kempton Park Gravel Member, assuming present) | Principal Aquifer, 128m NW<br>Secondary Undifferentiated, 349m SE |

| Feature | | On Site | Off Site |
|---|---|---|---|
| Surface Water Features | Solid: | Unproductive | Unproductive |
| | | 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. | Proposed basement development will be formed on a similar building footprint to the existing/proposed structure. |
| | Risk of flooding from rivers and the sea (RoFRaS) rating N/A. | 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.<br>Low risk. |
| **Artificial Sources** | No artificial sources identified. | Low risk. |
| **Surface Water / Sewer Flooding** | River Crane is reported 176m NW.<br>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.<br>Basement will be fully waterproofed as appropriate to industry standard.<br>Low risk. |
| **Climate Change** | Included in the flood modelling extents.<br>Site not within climate change flood extent area | Development will not significantly increase the peak flow and volume of discharge from the site.<br>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.<br>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.<br>Presence of this railway is not considered likely to impact on the proposed basement development. |
| **Flood Risk and Drainage**<br>**(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.<br>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.<br>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. A drainage strategy/SuDS report should also be produced.

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.

5.2.8 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.

# 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 SUDS will be required by NPPF, PPG and LLFA policy requirements, where practicable, the remaining hard surfaces will likely be replaced with permeable paving.

6.1.3 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)

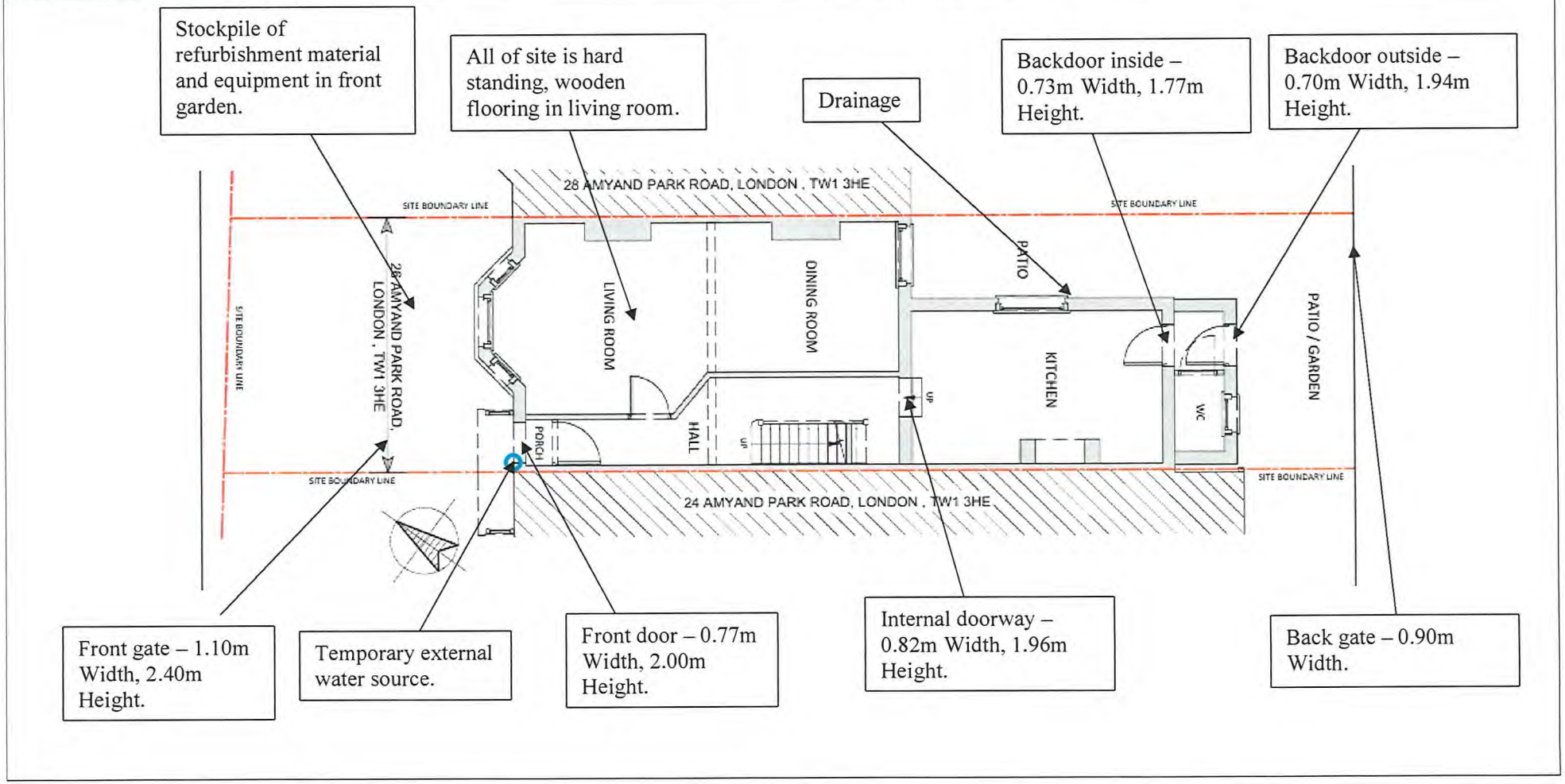
Surface Water Management Plan - London Borough of Richmond upon Thames, Metis Consultants Ltd (December 2021)

## 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 |

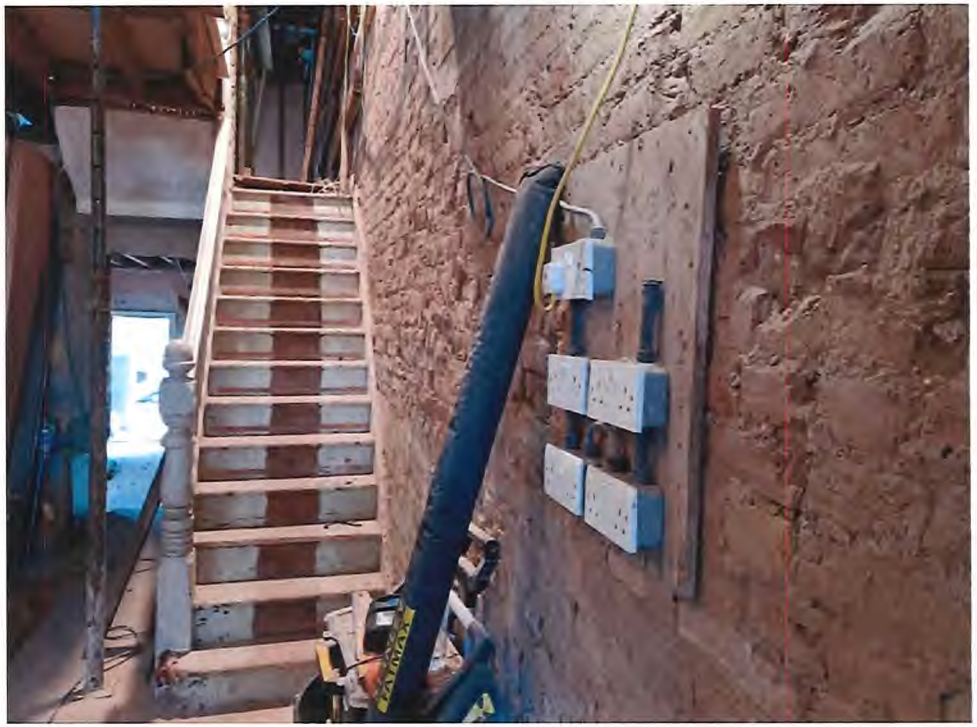
**Photo 1:** Overview of front of site.

**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 |

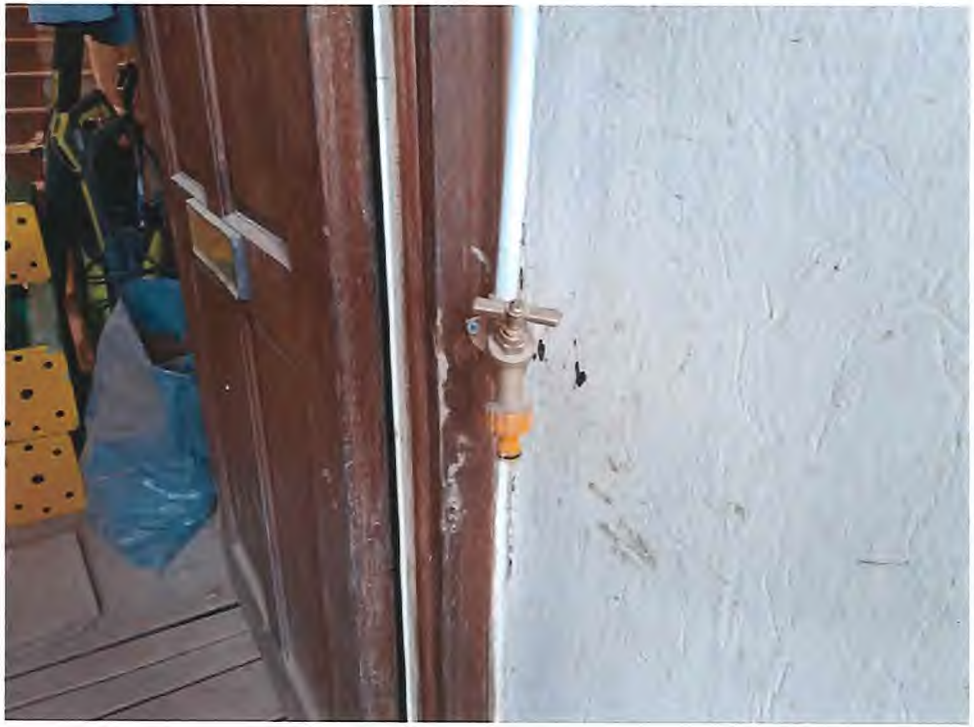
**Photo 7:** Toilet of site.

**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.

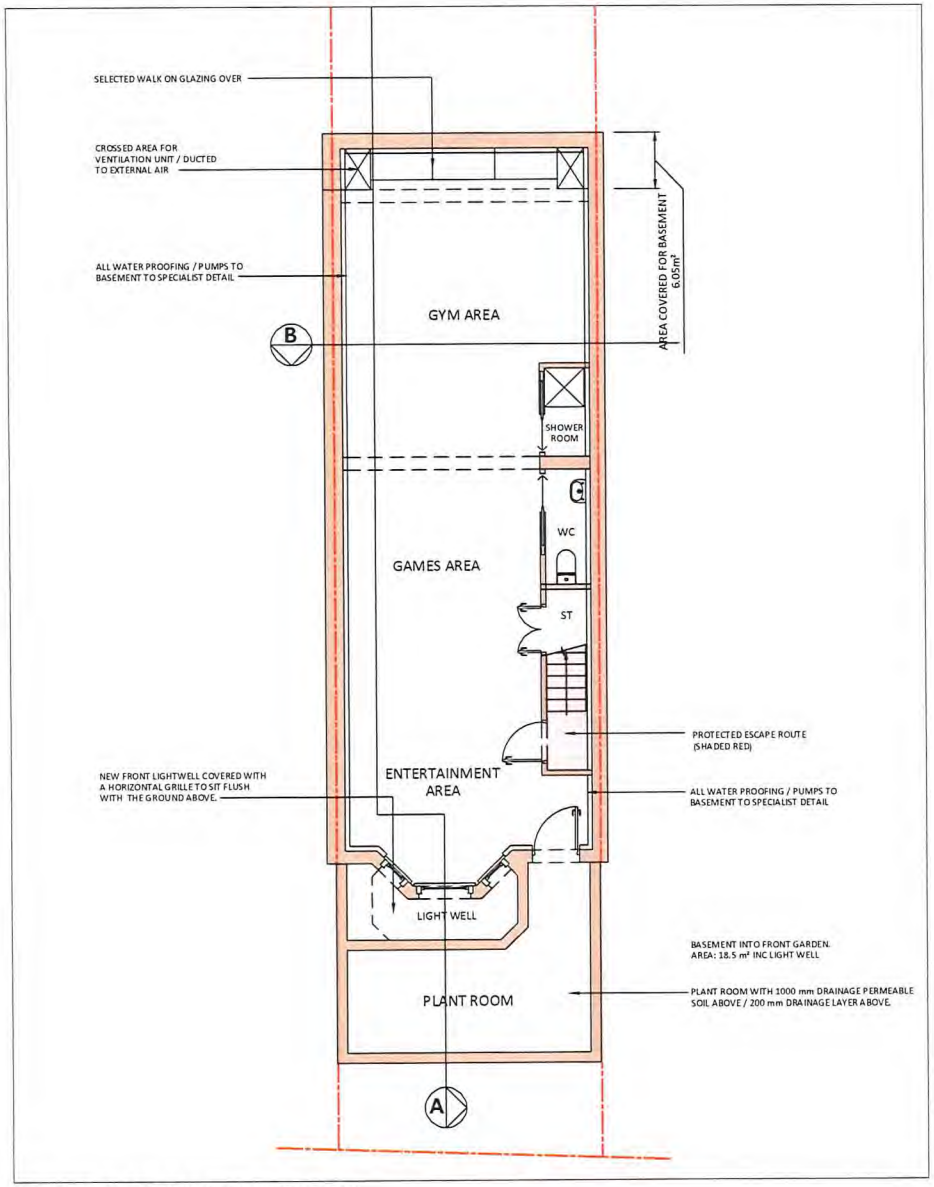
**Photo 12:** Alleyway leading to back gate.

| | | | |
|---|---|---|---|
| **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.

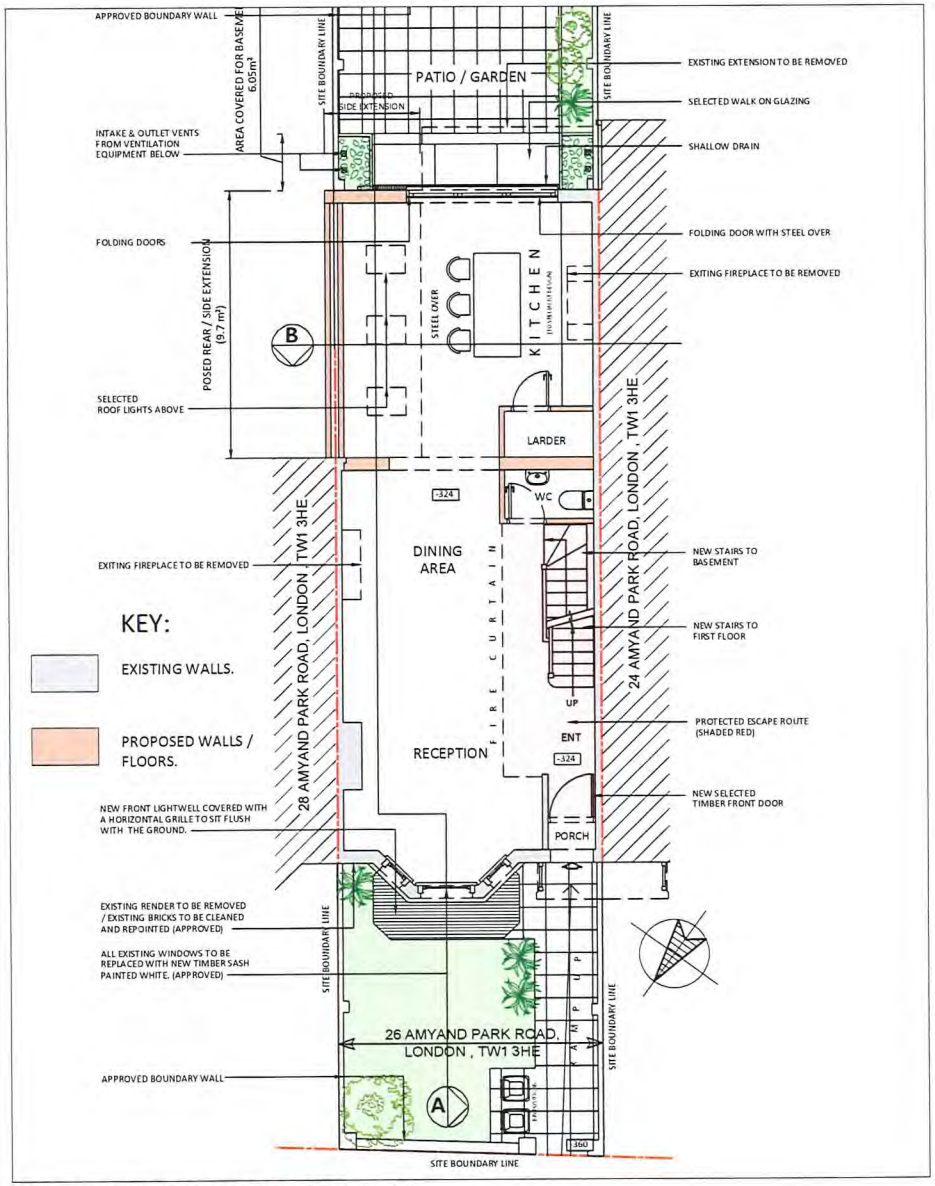
**Photo 14:**

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.

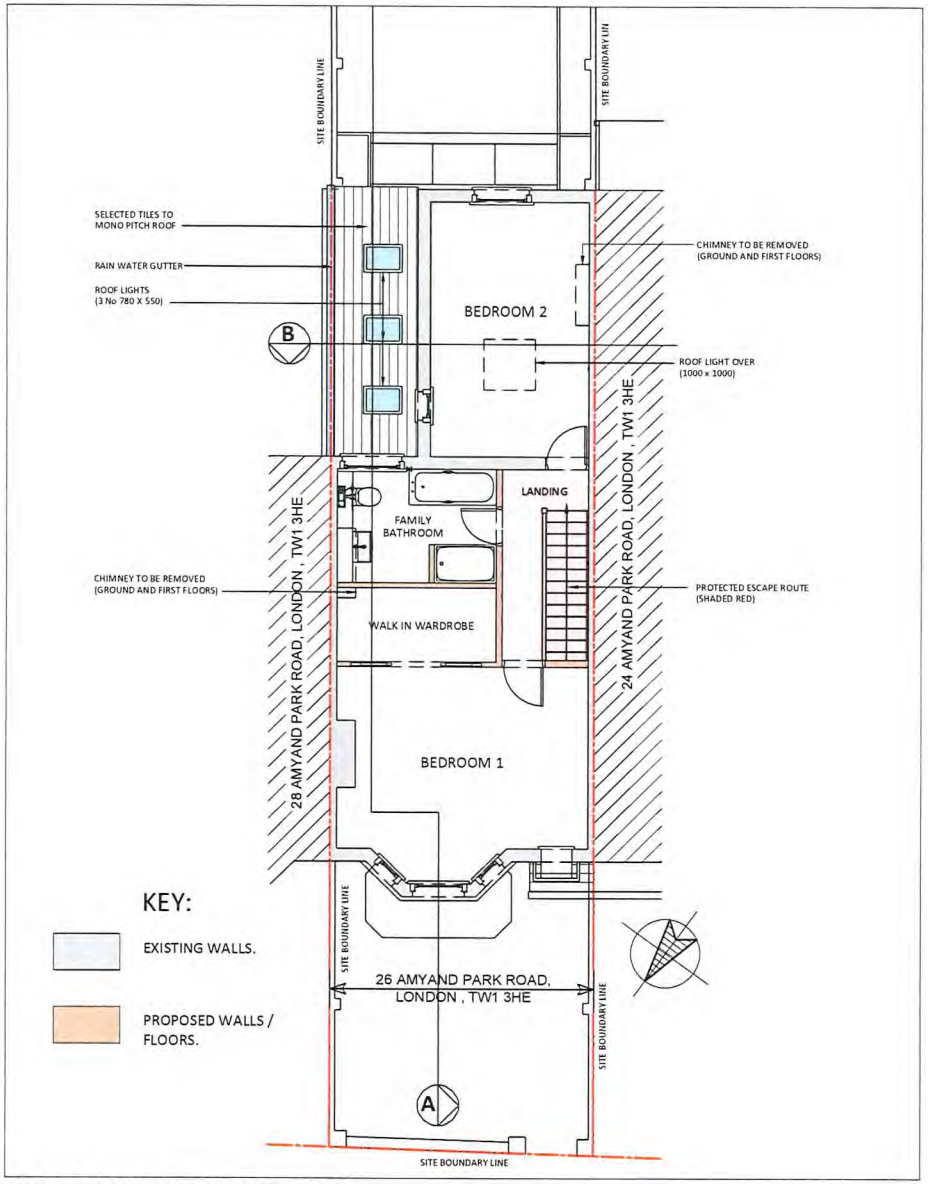
BAR SCALE: 1:100 @ A3

1CM 0 1CM 2CM 3CM 4CM
1.0M 0 1.0M 2.0M 3.0M 4.0M

REVISIONS:

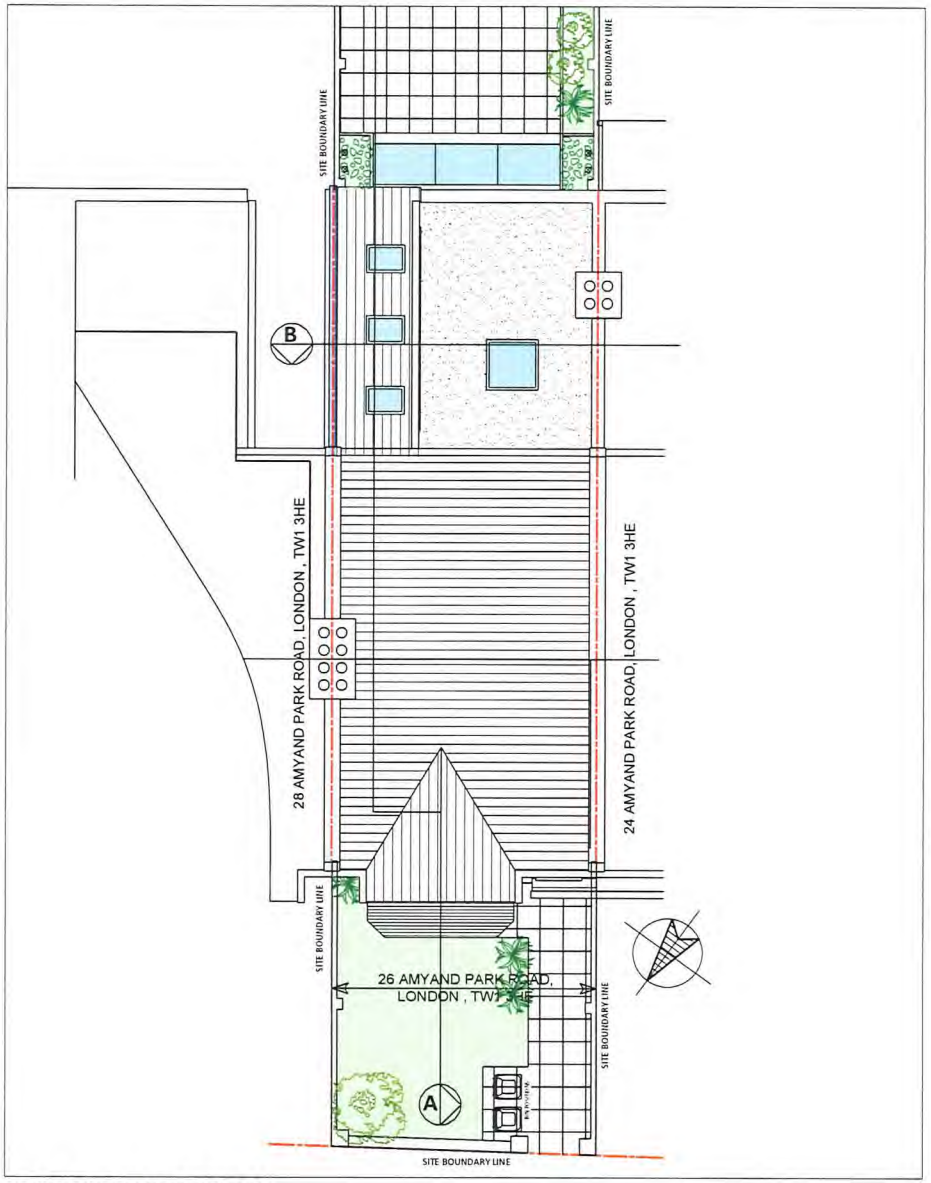
| | |
|---|---|
| Drawing Title: | PROPOSED BASEMENT & GROUND FLOOR PLANS. |
| Property Address: | 26 AMYAND PARK ROAD, LONDON, TW1 3HE. |
| Date: | MAY 2024 |
| Scale @ A3: | 1:100 |
| Drawing Number: | SC 23111 / AP / BA01 |

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

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 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

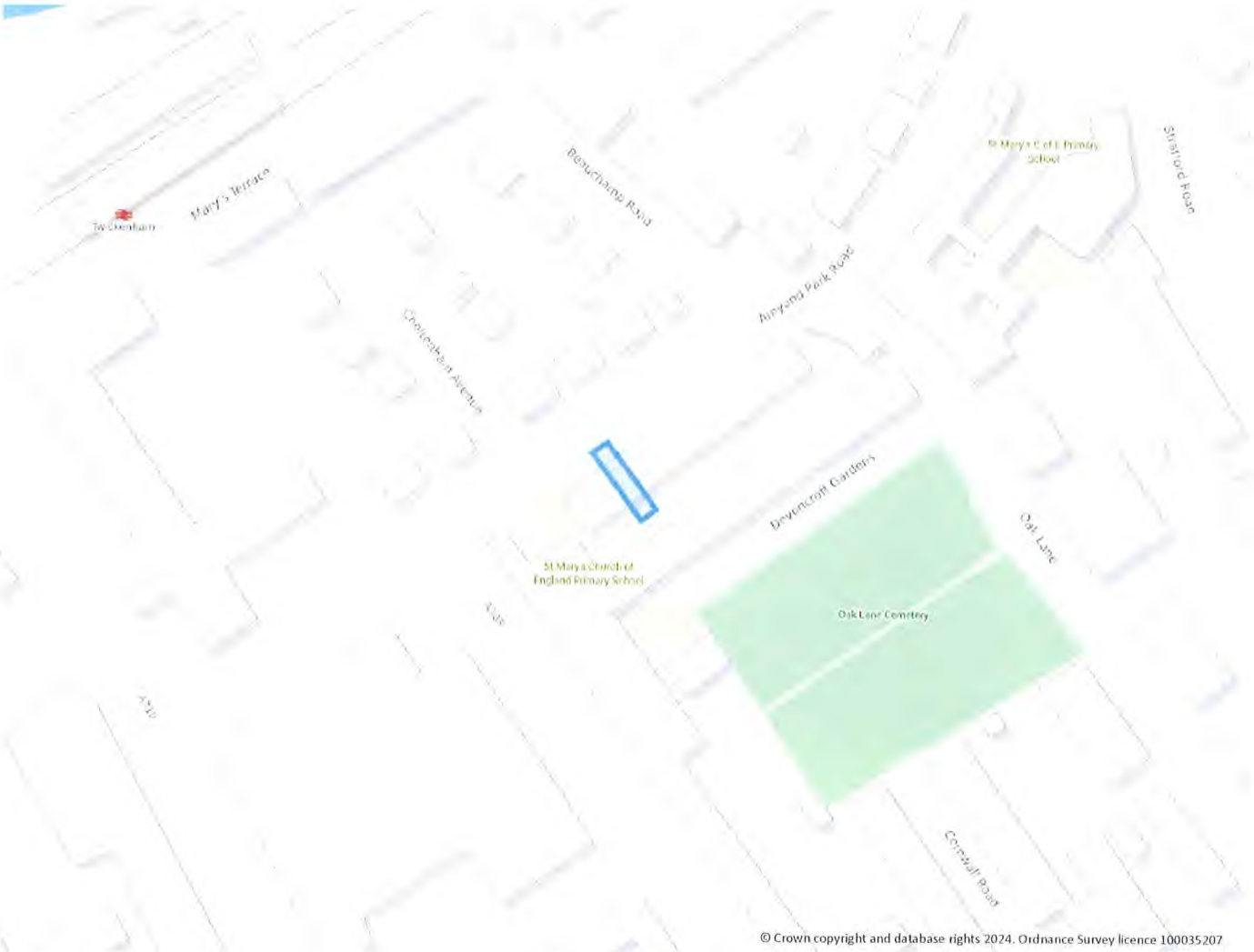
**Our Ref:** GS-TV8-XR9-OR9-9OX

## Site Details

**Location:** 516307 173599

**Area:** 0.01 ha

**Authority:** London Borough of Richmond upon Thames ↗






**Summary of findings** p. 2 >

**Aerial image** p. 9 >

**OS MasterMap site plan** p.14 >

Insight User Guide ↗

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

# 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 |

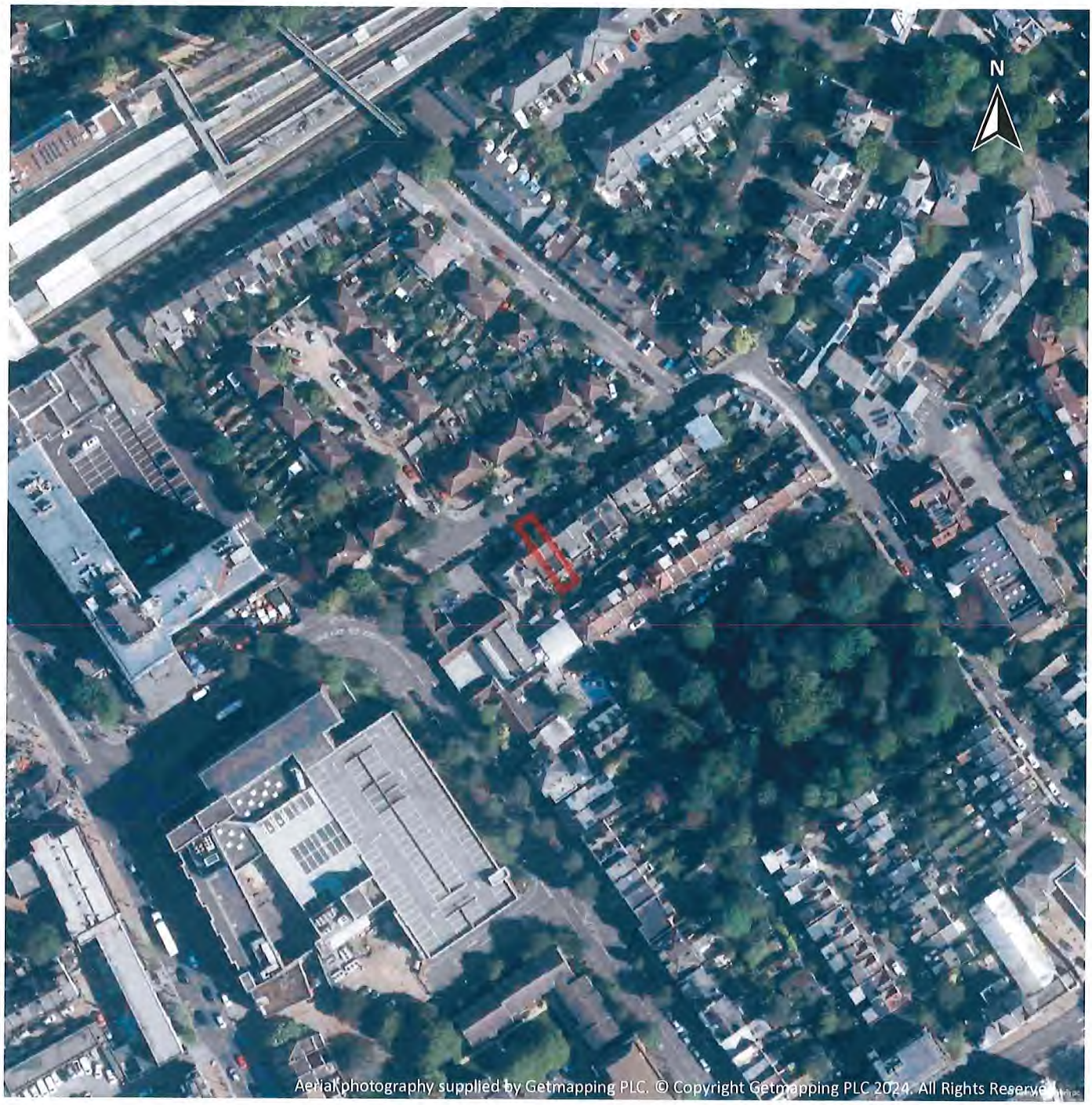
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 76 | 10.13 | Possible Special Areas of Conservation (pSAC) | 0 | 0 | 0 | 0 | 0 |
| 76 | 10.14 | Potential Special Protection Areas (pSPA) | 0 | 0 | 0 | 0 | 0 |
| 76 | 10.15 | Nitrate Sensitive Areas | 0 | 0 | 0 | 0 | 0 |
| 76 | 10.16 | Nitrate Vulnerable 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 | - |

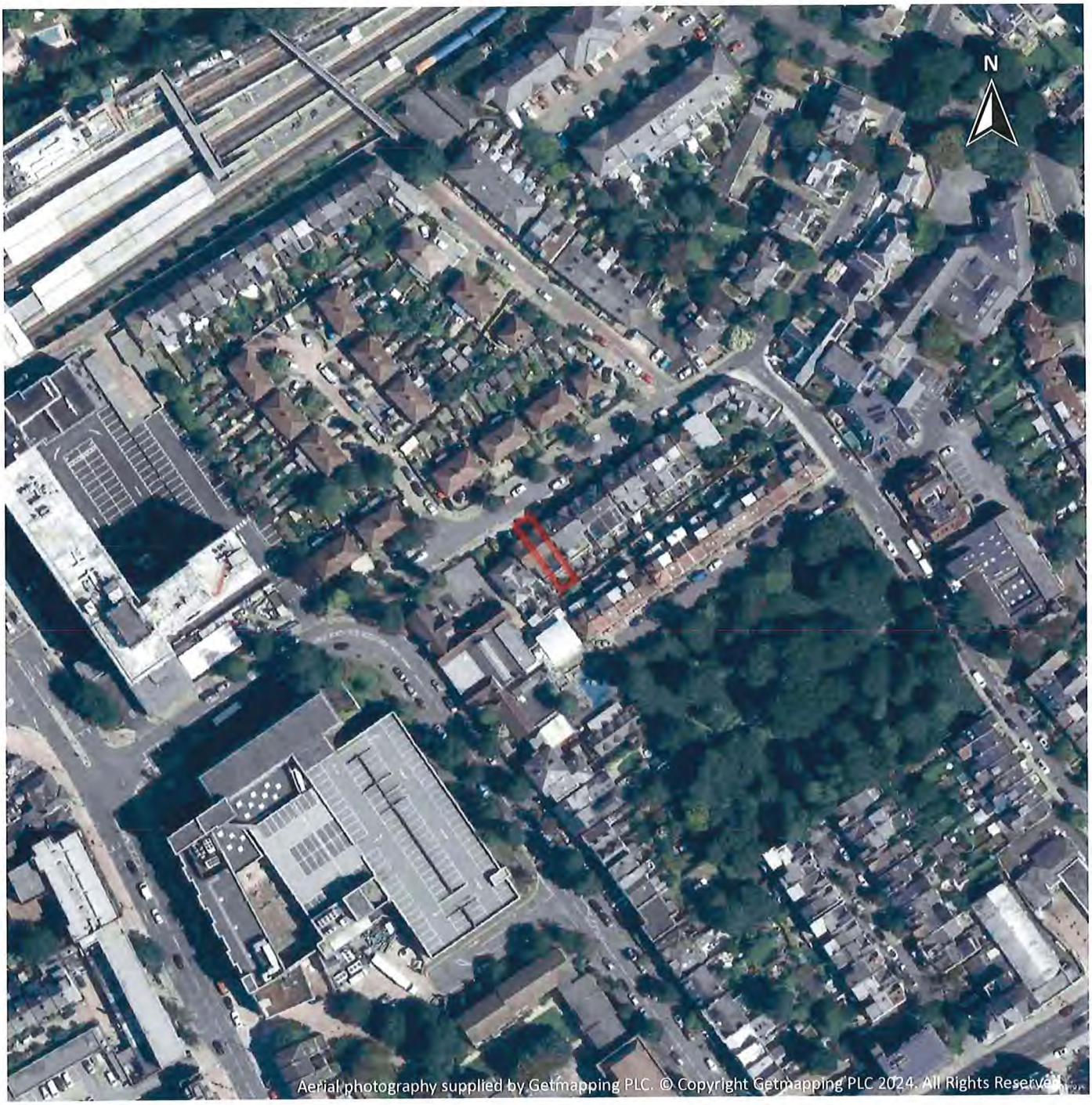
## Recent aerial photograph




Capture Date: 30/04/2022

Site Area: 0.01ha

# Recent site history - 2021 aerial photograph




Capture Date: 13/06/2021

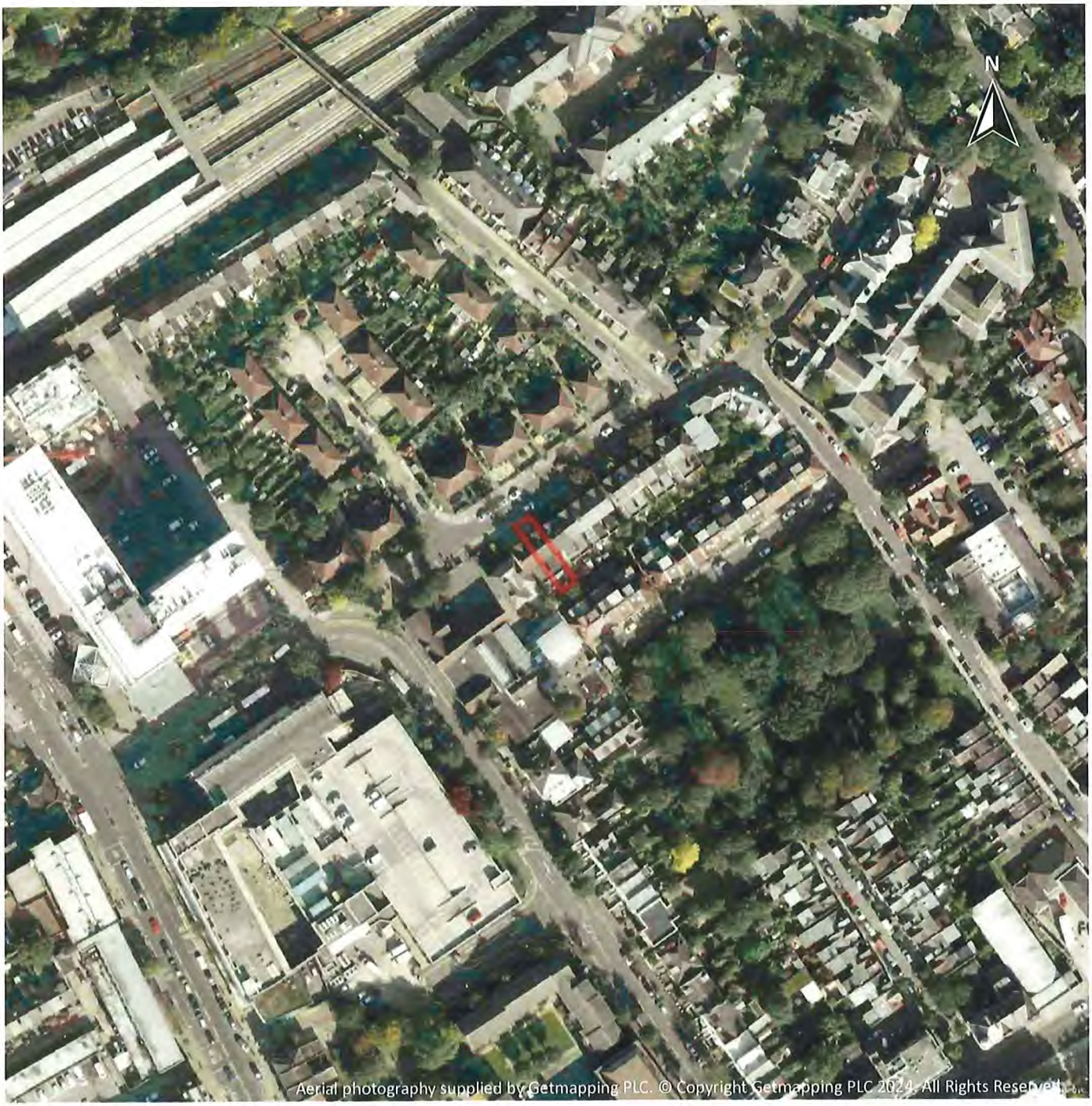
Site Area: 0.01ha

# 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

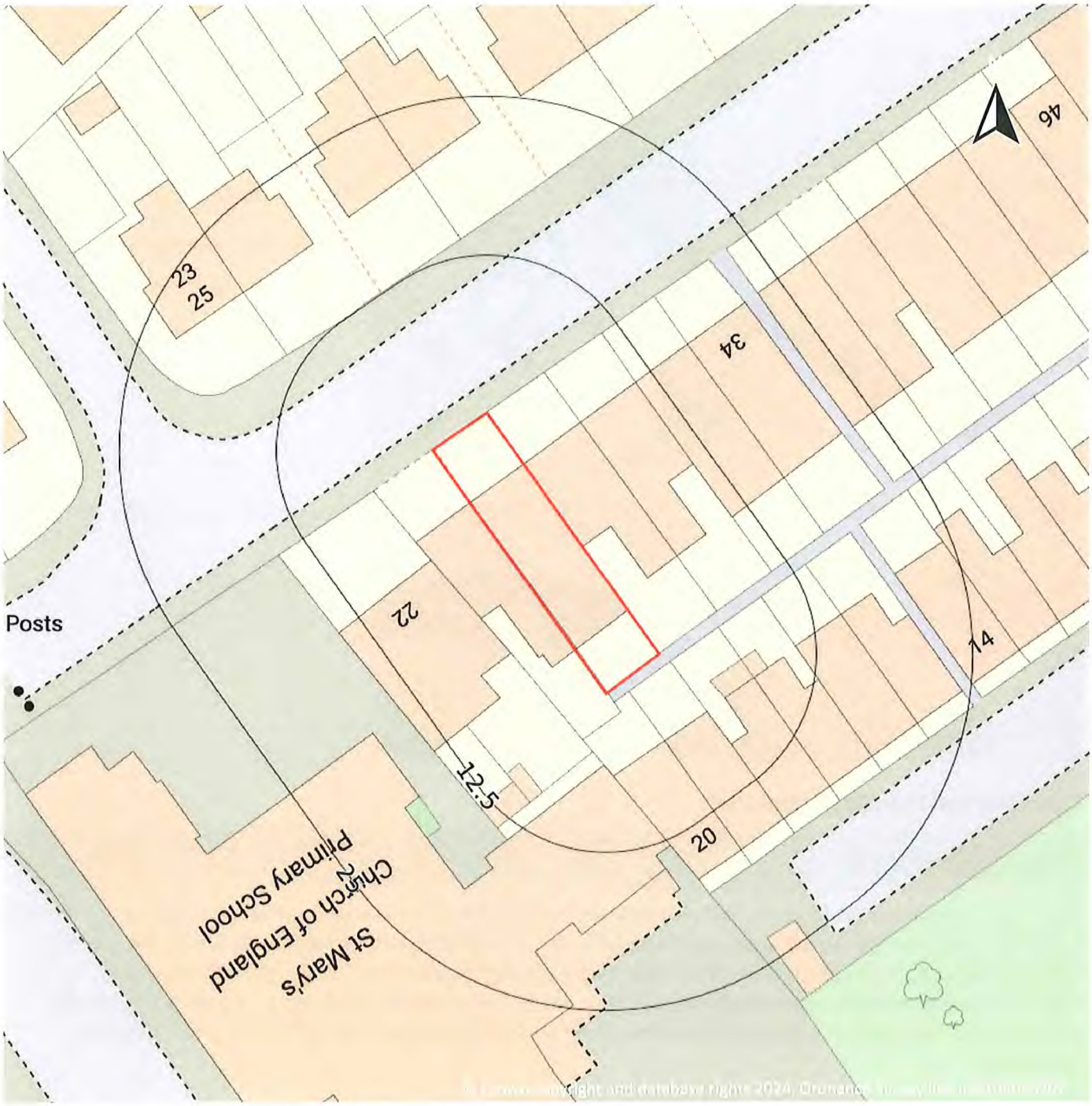
Site Area: 0.01ha

## Recent site history - 1999 aerial photograph


Capture Date: 29/08/1999

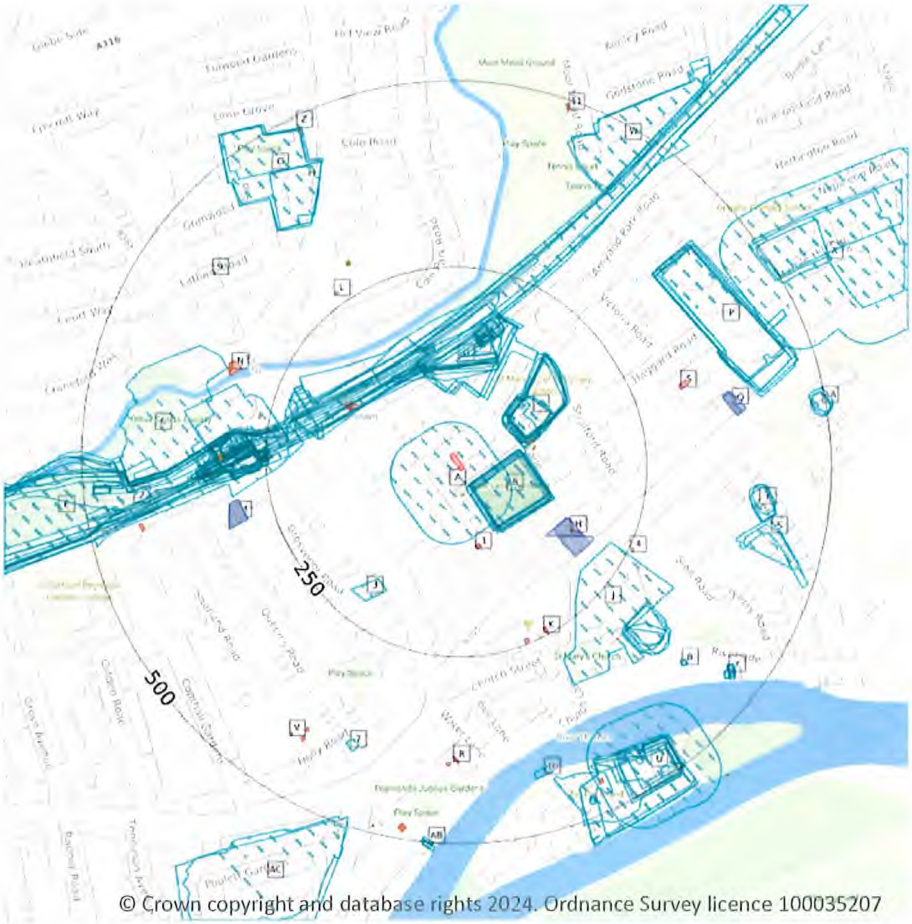
Site Area: 0.01ha

## OS MasterMap site plan




Site Area: 0.01ha

# 1 Past land use






Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical petrol stations

Historical garages

## 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 |
|---|---|---|---|---|
| G | 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.*