5A King Street, Twickenham

Phase 1 Ground Conditions Assessment (Contamination)

On behalf of **Essential Living Ltd**

Project Ref: 332612048/3500 | Rev: 00 | Date: October 2024

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1 Introduction

1.1 Preamble

1.1.1 Stantec UK Limited (Stantec) has been instructed by Essential Living Ltd, the Client, to prepare a Phase 1 Ground Conditions Assessment to support a prior approval application for the change of use from office, to residential accommodation, of the first and second storeys of 5A King Street, Twickenham (the site).

1.1.2 Attention is drawn to the Essential Guidance for Report Readers included after the main report text.

1.1.3 This report presents the findings of the study together with a qualitative assessment of any hazards and constraints posed by the existing ground conditions to the proposed development.

1.2 Objectives

1.2.1 The objective of this report is to identify the likely ground conditions using published and publicly available information (see below for sources of information accessed) and to assess whether there are contamination risks associated with the ground conditions that require management (remediation or mitigation).

1.3 Context

1.3.1 This report has been prepared in a planning context (rather than a Part 2A statutory contaminated land context).

1.3.2 In preparing this report Stantec has considered the requirements of the National Planning Policy Framework (NPPF) (MHCLG, 2023) in respect of ground conditions and in particular paragraph 189 which states:

"*Planning policies and decisions should ensure that:*

a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);

b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and

c) adequate site investigation information, prepared by a competent person, is available to inform these assessments"

1.3.3 The objective of this report is to identify the likely ground conditions using published and publicly available information (see below for sources of information accessed) and to assess whether there are contamination risks associated with the ground conditions that require management (remediation or mitigation).

1.4 Methodology

1.4.1 The following summarises the ground conditions assessment methodology adopted by Stantec with a more detailed description in our guide entitled Stantec Guide: Methodology for Assessment of Land Contamination (England), a copy of which is presented in **Appendix B**.

Assessment of Ground Conditions - Contamination

1.4.2 UK legislation on contaminated land from historical activities is principally contained in Part 2A of the Environmental Protection Act, 1990 (which was inserted into the 1990 Act by section 57 of the Environment Act 1995).

1.4.3 The Regulations and Statutory Guidance that accompanied the Act, including the Contaminated Land (England) Regulations 2006, have been revised with the issue of the Contaminated Land (England) (Amendment) Regulations 2012 (SI 2012/263) and the Contaminated Land Statutory Guidance for England 2012.

1.4.4 With the introduction of the NPPF, Planning Policy Statement 23 (PPS 23), which provided guidance on how to deal with contaminated land within a planning context, was withdrawn. However, the broad approach, concepts and principles behind land contamination management advocated by the Part 2A regime are still applied to the determination of planning applications.

1.4.5 As required by the NPPF this assessment has been carried out in accordance with "*established procedures*". Our methodology follows guidance on how to assess and manage the risks from land contamination given in "Land Contamination Risk Management" (LCRM) (EA, 2023).

1.4.6 The principal planning objective in respect of contamination is to ensure that any unacceptable risks to human health, buildings and other property and the natural and historical environment from the contaminated condition of the land are identified so that appropriate action can be considered and taken to address those risks.

1.4.7 LCRM presents a three-stage process to the management of contaminated land:

- Stage 1 = risk assessment.
- Stage 2 = options appraisal.
- Stage 3 = remediation.

1.4.8 The Stage 1 risk assessment is undertaken in a phased manner comprising three tiers, with the three tiers being:

- Tier 1 – "Preliminary Risk Assessment" – a qualitative assessment forming part of a Phase 1 report.
- Tier 2 – "Generic Risk Assessment" - a quantitative assessment using published criteria to screen site specific ground condition data forming part of a Phase 2 report.
- Tier 3 – "Detailed Risk Assessment" – a quantitative assessment involving the generation of site-specific assessment criteria (SSAC).

1.4.9 The underlying principle is the evaluation of *contaminant linkages* in order to assess whether the presence of a source of contamination could potentially lead to harmful consequences. A pollutant linkage consists of the following three elements:

- A source of contamination or hazard that has the potential to cause harm or pollution.
- A pathway for the hazard to move along / generate exposure.
- A receptor which is affected by the hazard.

1.4.10 Each tier of risk assessment comprises the following four stages:

- Hazard Identification – identifying potential contaminant sources on and off site.
- Hazard Assessment – assessing the potential for unacceptable risks by identifying what pathways and receptors could be present, and what pollutant linkages could result (forming the Conceptual Site Model (CSM)).
- Risk Estimation – estimating the magnitude and probability of the possible consequences (what degree of harm might result to a defined receptor and how likely).
- Risk Evaluation – evaluating whether the risk needs to be, and can be, managed.

1.5 Sources of Information

1.5.1 The following sources of information were used in the preparation of this report. Where applicable, the date that each source was accessed is given in the references section of this report:

- British Geological Survey 1:50,000 scale published geological maps, and online geological maps via the Geology of Britain Viewer https://www.bgs.ac.uk/map-viewers/geology-of-britain-viewer/.
- British Geological Survey (BGS) historical exploratory records.
- A Groundsure Insight Report (GS, 2024), commissioned from Groundsure Ltd., to provide environmental setting data searches, provide as a Groundsure Insight Report. This information is presented in its entirety in **Appendix C**.
- Historical mapping was provided by Groundsure, included within the Insight Report (GS, 2024), and is presented in **Appendix D**.
- The MAGIC (Multi-Agency Geographic Information for the Countryside) website, http://www.magic.gov.uk. The MAGIC website provides authoritative geographic information about the natural environment from across government.
- A search of the Stantec project database to identify ground condition reports within 250 m of the Site.
- A review of historical and current aerial photography accessed via Google Earth.

2 The Site

2.1 Introduction

2.1.1 This section presents a summary of current and historical land uses on and immediately adjacent to the site. Land use is used to inform principally the hazard identification element of the risk assessment.

2.2 Site Location and General Description

2.2.1 The site is located at 5A King Street, Twickenham, approximately 450 m to the south of Twickenham station, and is centred at approximate National Grid Reference (NGR) 517720 E, 174810 N as shown on the application boundary plan presented in **Appendix A**.

2.2.2 The site occupies an area of approximately 165 square metres and comprises the first and second floors of number 5A. The ground floor of the building is occupied by a Boots Pharmacy.

2.2.3 Contemporary Ordnance Survey (OS) mapping shows the ground level surrounding the site is between 5 m and 10 m above Ordnance Datum (m AOD). The ground level in the surrounding area falls from the north-west to the south-east towards the river Thames, approximately 70 m to the south-east of the site.

2.3 Site History

2.3.1 Information on the history of the site and surrounding area has been determined by reference to various sources including a number of readily available historical and current OS maps. Copies of the OS maps are presented in **Appendix D**.

2.3.2 The earliest OS map provided within the Groundsure Report is dated 1865 and shows the site to be occupied by several buildings. The land to the north of the site is occupied by King Street and further (likely) residential and commercial properties. The land to the south is typically gardens / yard spaces associated with the site's neighbouring properties.

2.3.3 Mapping from the 1890s shows the majority of the site to be occupied by structures, with the undeveloped areas used as yards / access. A 'town hall' has been constructed in the former garden space approximately 15 m west of the site. King Street is shown to have been fitted with a tramway. The surrounding land use remains predominantly as residential and 'high street' commercial properties. A "Motor Works" has been constructed approximately 170 m to the west.

2.3.4 By 1934 all former structures on and adjacent to the Site had been demolished. King Street was re-aligned to its existing orientation and the existing terrace of properties was constructed, with the site shown to be fully occupied by No. 5A. The former motor works to the west is shown to be in use as a "rubber works". A "swimming baths" is present approximately 30 m to the south.

2.3.5 Mapping dated 1959 shows the tramway within King Street was removed, a 'works' was constructed approximately 190 m to the north-east and a 'warehouse' was constructed approximately 210 m to the east.

2.3.6 Further significant changes are not recorded until the late 1960s when the former public house at No. 1 King Street was demolished and replaced with the existing Nos. 1 and 1A King Street, and the associated car park to their rear (approximately 5 m east of the site). The existing electricity substation approximately 15 m south of the site was also constructed at this time. A 'builder's yard' is recorded approximately 150 m to the north-east and a 'filling station' is present approximately 200 m to the north-east

2.3.7 By 1980 the works and filling station to the north-east and the warehouse to the east had been demolished. By 1990 the works to the north-west was similarly demolished and replaced by car parking.

2.3.8 Further significant changes are not recorded.

2.4 Industrial Setting

2.4.1 Information on the industrial setting of the Site is presented in the Groundsure report (GS, 2024) prepared for the Site, a copy of this report is reproduced in **Appendix C.**

2.4.2 The results of the database search are summarised on the following table and discussed in the following sections.

Table 2.1 Summary of Selected Industrial Setting Records

Data Type	Number on Site [1]	Number within 250m of Site [1]
Waste Regulation		
Landfill Sites	0 (0)	0 (0)
Licensed Waste Management Facilities	0 (0)	0 (0)
Statutory Permits and Authorisations		
Pollution Prevention and Control[2]	0 (0)	0 (0)
Registered Radioactive Substances	0 (0)	0 (0)
Planning Hazardous Substance Consents	0 (0)	0 (0)
Potential Contaminative Land Uses		
COMAH Sites[3] and NIHHS Sites[4]	0 (0)	0 (0)
Fuel Stations and Garages	0 (0)	0 (1)
Relevant Historical and Recent Industrial and Energy Land Uses	0	Multiple
Discharge Consents	0 (0)	3 (0)
Pollution Record		
Contaminated Land Register Entries and Notices	0	0
Pollution Incidents to Controlled Waters	0	0

Notes:

1) Numbers in brackets denotes number of authorisations, licences or permits that are lapsed, revoked, cancelled, superseded, defunct, surrendered, not applicable, withdrawn or not yet started.

2) Includes Integrated Pollution Controls, Integrated Pollution Prevention and Control, Local Authority Integrated Pollution Prevention and Control and Local Authority Pollution Prevention and Control permits.

3) COMAH denotes Control of Major Accident Hazards

4) NIHHS denotes Notification of Installations Handling Hazardous Substances

Discharge Consents

2.4.3 The Groundsure Report contains records for two licenced discharge consents to controlled waters located within 250m of the Site.

2.4.4 The nearest of these (ref: CTWC.0573) was located approximately 210 m to the east of the site, on Eel Pie Island, and was revoked in April 1991. This consent permitted the discharge of "miscellaneous discharges – unspecified" to the River Thames.

2.4.5 The second consent (ref: CNTW.0228) was located approximately 230 m to the east of the site and was revoked in June 1991. This consent permitted the discharge of "surface water" to the River Thames.

2.4.6 On the basis that both of these discharges are to the River Thames approximately 70 m south of the site, alongside the considerable distance from the site and the time since these consents were revoked, it is considered highly unlikely that these consents present a geoenvironmental hazard to the site and they will therefore not be taken forwards for assessment as potential sources of contamination.

Relevant Recent and Historical Land Uses

2.4.7 The Groundsure Report contains records for multiple industrial and energy land uses located within 250m of the site. The records typically relate to small-scale commercial / light industrial uses during the late-18th Century and the first half of the 20th Century, with land uses including various 'works', electricity substations, cemeteries etc.

2.4.8 Many of the historical land uses are located hydraulically downgradient (south-east) of the site, or on Eel Pie Island within the River Thames. Land uses in these areas are considered highly unlikely to present a hazard to the Site as contamination would be very unlikely to migrate north-east, against the anticipated groundwater flow direction.

2.4.9 The nearest of these features is the existing substation approximately 15 m south of the site.

2.4.10 Credible potential sources of contamination hydraulically upgradient of the site are limited to the former motor / rubber works approximately 170 m to the north.

2.4.11 Electricity substations greater than 50 m from the site are not taken forwards as potential sources of contamination on the basis that poly-chlorinated biphenyls (PCBs), the principal contaminant of concern associated with these features, is very strongly sorbed to the soil phase and therefore highly unlikely to migrate far from the source.

3 Environmental Setting

3.1 Introduction

3.1.1 Information on the environmental setting is presented in this section and the data is used to inform the Preliminary Risk Assessment presented in **Section 4**.

3.2 Geology

Published Maps

3.2.1 The British Geological Survey (BGS) 1:50,000 scale geological map of the area (BGS, 1998) and the BGS GeoIndex (onshore) interactive map (BGS, 2024) indicate that the ground conditions at the site comprise the following:

Superficial Deposits

3.2.2 The BGS mapping shows that the site is underlain by superficial deposits from the Langley Silt Member. The BGS states that these deposits "*vary from silt to clay, commonly yellow-brown and massively bedded".* The BGS Memoir states that Langley Silt is a 'brickearth' and consists of "*very fine-grained sand, silt, and clayey silt, which is brown to orange-brown in colour*".

3.2.3 Superficial deposits of the Kempton Park Gravel Member are recorded in the surrounding area and are likely to be present beneath the Langley Silt. The BGS generically describe these deposits as "*sand and gravel, locally with lenses of silt, clay or peat*".

3.2.4 Superficial deposits of Alluvium are recorded within the land to the south of the site, associated with the River Thames, and may be present beneath the site. The BGS generically describe Alluvium as "*normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel*".

Bedrock Geology

3.2.5 The site is underlain by bedrock geology of the London Clay Formation. The BGS describes this stratum as *"bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty, clayey silt and sometimes silt, with some layers of sandy clay*".

Historical BGS Exploratory Hole Records

3.2.6 A search of the BGS's GeoIndex (Onshore) interactive map shows that numerous exploratory holes are located within 250 m of the site. A selection of these[1] have been reviewed, based upon the distance from the site and whether the exploratory hole is situated within the same geological context as the site. Extracts of these exploratory hole logs are presented in **Appendix E**.

[1] TQ17SE14, TQ17SE15, TQ17SE149, TQ17SE147 and TQ17SE146

3.2.7 A summary of the natural ground conditions based on the exploratory hole records reviewed is presented in the table below.

Table 3.1 Summary of Ground Conditions Encountered BGS Exploratory Hole Logs

Stratum	Depth to top (m)	Thickness (m)	Typical Description
Made Ground*	Ground level	1.05 to 2.80	Typically brown to dark brown occasionally gravelly clay with brick and glass fragments and ash.
Langley Silt	Variable beneath overlying Made Ground	1.0**	Firm yellowish-brown very sandy CLAY
Kempton Park Gravel Member	Variable beneath overlying Made Ground. 2.7 m where overlain by Langley Silt	2.7 to 4.75**	Dense yellowish-brown sandy fine to coarse GRAVEL with occasional beds of medium-dense yellowish-brown, gravelly SAND.
London Clay Formation	4.4 to 5.8	>4.5 (base not proven)	Firm yellowish-brown sandy to very sandy, occasionally slightly gravelly CLAY becoming with depth stiff greyish brown silty CLAY.
*Made Ground is generated by a variety of processes relating to historical land use within a site. The land uses off-site will differ from the land-uses on site and therefore the thickness and composition of off-site Made Ground should not be taken as wholly indicative of the thickness and composition of on-site Made Ground. **Noting that this thickness has been reduced by the presence of the overlying Made Ground			

3.2.8 Groundwater was recorded during drilling operations in the Kempton Park Gravel Member at depths between 2.85 m and 5.00 m bgl, rising by between 0.05 m and 0.90m after 20 minutes.

3.3 Hydrogeology

3.3.1 Table 3.2 below summarises information regarding hydrogeology and groundwater.

Table 3.2 Summary of Hydrogeology and Groundwater Vulnerability Related Information

Item and Provenance	Description
Aquifer Classification Groundsure Report (Groundsure 2024) Classification Definitions https://www.gov.uk/government/publications/protect-groundwater-and-prevent-groundwater-pollution/protect-groundwater-and-prevent-groundwater-pollution	The superficial deposits of the Langley Silt Member and the bedrock of the London Clay Formation are classified by the EA as Unproductive Aquifers, defined as "*rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow".* The Kempton Park Gravel Member is classified as a Principal Aquifer, defined by the EA as strata which "*provide significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands*".

Item and Provenance	Description
Groundwater (Catchment Planning) https://environment.data.gov.uk/catchment-planning/WaterBody/GB40603G000300	The groundwater beneath the site is shown to be part of the Lower Thames Gravels Water Body. In 2019 this water body received an Overall Water Framework Directive (WFD) classification of Poor. This classification can be further broken down to classifications of Poor for quantitative supply and Good for chemical quality.
Groundwater Abstraction Groundsure Report (Groundsure 2024)	There are no recorded active or historical groundwater abstraction records within 500m of the site.
Source Protection Zone (SPZ) Groundsure Report (Groundsure 2024)	The site is not located within a groundwater Source Protection Zone and no such zones are present within 1.0 km of the site.
Groundwater Vulnerability Groundsure Report (Groundsure 2024) https://assets.publishing.service.gov.uk/media/5a81dd24ed915d74e6234867/Groundwater_vulnerability_report_2017.pdf	Groundwater within the Principal Aquifer beneath the site is indicated to be of Medium vulnerability. The EA defines 'Medium' vulnerability as intermediate between 'High' ("*Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits"*) and Low ("*Areas that provide the greatest protection to groundwater from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability"*) vulnerability
Groundwater Flood Risk* Groundsure Report (Groundsure 2024)	The site is indicated to be located within an area of moderate to moderate/high groundwater flooding vulnerability. It should however be noted that the site is located at first and second-storey levels and is not connected to the ground.
*The scope of this report does not include a flood risk assessment.	

3.3.2 On the basis that the site overlies a principal aquifer, hydrogeology will be taken forwards for assessment as a potential receptor.

3.4 Hydrology

3.4.1 Table 3.3 below summarises the information regarding hydrology and surface water.

Table 3.3 Summary of Surface Water Related Information

Item and Provenance	Description
Nearest Surface Water Feature Groundsure Report (Groundsure 2024)	The River Thames is approximately 70 m south-east of the site.

Item and Provenance	Description
Catchment & River Quality https://environment.data.gov.uk/catchment-planning/WaterBody/GB106039023030	The EA's Catchment Data Explorer indicates that the site is located approximately 300 m south-east of the "Crane" catchment. In 2019 this catchment received a WFD classification of Moderate for ecological quality and Fail for chemical quality due to priority hazardous substances benzo(g,h,i)perylene, perfluorooctane sulphonate (PFOS) and polybrominated diphenyl ethers (PBDE). In the 2022 assessment cycle this catchment received a WFD classification of Moderate for ecological quality. The chemical quality is listed as "*does not require assessment*".
Abstractions Groundsure Report (Groundsure 2024)	There are no recorded active or historical surface water abstractions recorded within 500m of the site.
Drinking Water Safeguard Zone and Drinking Water Protected Area (Surface Water) https://magic.defra.gov.uk/	The site is indicated to not be located within drinking water safeguard zone (surface water).
Fluvial Flood Risk* https://flood-map-for-planning.service.gov.uk/	The site and the surrounding area is shown to be located within a Flood Zone 1, defined by the EA as "*land having a less than 1 in 1,000 annual probability of river or sea flooding*".
*The scope of this report does not include a flood risk assessment.	

3.4.2 Given the site's proximity to the River Thames, hydrology will be taken forward in this assessment as a sensitive receptor.

3.5 Radon

3.5.1 Radon is a naturally occurring radioactive gas and emanates from certain geological formations to varying degrees, depending on the type, porosity and permeability.

3.5.2 The Groundsure Report indicates that the site is situated within a lower probability radon area, where less than 1% of homes are estimated to be at or above the UK Health Security Agency (UKHSA) Action Level.

3.5.3 On the basis of the above, it is not considered that radon protection measures are required in the construction of new buildings at the site.

3.6 Ecological Systems

3.6.1 DEFRA's MAGIC viewer (DEFRA, 2024) and the Groundsure Report indicate that there are no Sites of Specific Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas, or National Nature Reserves, Ramsar convention designated wetlands of international importance or areas of ancient woodland located within 1.0 km of the site.

3.6.2 A Local Nature Reserve (Ham Lands) is located approximately 250 m south of the site, beyond the River Thames.

3.6.3 Groundwater within the principal aquifer beneath the site is anticipated to be in hydraulic continuity with the River Thames. It is therefore considered highly unlikely that any

contamination originating within the land beneath the site (were any to be present) would migrate to the south of the River Thames without first being intercepted by the River.

3.6.4 On this basis, nationally or internationally designated ecological receptors are not considered as a plausible receptor and will not be taken forward in this assessment.

3.6.5 It should be noted that the statement above regarding ecological systems does not purport to be an ecological risk assessment which might require a separated commission.

3.7 Buildings and Archaeology

3.7.1 A preliminary appraisal of readily available sources of information has been undertaken to determine whether archaeological settings and property requires consideration within the ground condition assessment.

3.7.2 The Groundsure Report (GS, 2024) indicates that there a multiple listed buildings within 250 m of the site. The closest such feature, a Grade II listed “K6 Telephone Kiosk” is located approximately 30 m north of the site. Nos. 10 and 12 King Street located approximately 40 m north-west of the site are also Grade II listed.

3.7.3 There are no scheduled ancient monuments, registered parks or gardens or world heritage sites located within 100 m of the site.

3.7.4 On the basis that the proposed development comprises the internal alterations to an existing (non-listed) building only, at first and second storey level, it is considered that the proposed development will not impact upon buildings or archaeology and therefore buildings and archaeology will not be taken forwards in this assessment as a sensitive receptor.

3.7.5 It should be noted the statement regarding the archaeological setting does not purport to be an archaeological risk assessment.

4 Tier 1 Preliminary Risk Assessment

4.1 Introduction

4.1.1 The methodology developed and adopted by Stantec for the assessment of ground conditions is presented in **Appendix A**.

4.1.2 In accordance with guidance presented in LCRM (EA, 2023) we adopt a staged approach to risk assessment and this report presents a Tier 1 assessment or first stage.

4.1.3 The underlying principle to ground condition assessment is the identification of contaminant linkages to evaluate whether the presence of a source of contamination could potentially lead to harmful consequences.

4.1.4 The Tier 1 Preliminary Risk Assessment includes the development of a conceptual site model (CSM). The CSM describes the types and locations of potential contamination sources, the identification of potential receptors and the identification of potential transport/migration pathways.

4.1.5 For a pollutant linkage to be identified a connection between all three elements (source-pathway-receptor) is required.

4.2 Potential Exposure Pathways

4.2.1 The proposed redevelopment comprises the change of use from commercial to residential of the 1st and the 2nd floors only. As such, the development occupies the whole footprint of the site, outdoor inhalation / ingestion pathways have been eliminated.

4.2.2 As the site is located at first and second floor, pathways associated with migration from the site to nearby receptors have been eliminated. Additionally dermal contact with soils and water, soil and water ingestion / inhalation and ingestion of home grown produce pathways have been eliminated.

4.2.3 Indoors vapour / gas inhalation and explosion due to migration of natural / anthropogenic gases pathways have been maintained as credible pathways by which contamination within the ground could impact upon the site.

4.3 Potential Receptors and Sensitivity Score

4.3.1 The receptors considered as part of this land contamination assessment are summarised in **Table 4.1** and based on the information reviewed either eliminated from further consideration or allocated a sensitivity score in accordance with the Stantec Methodology presented in **Appendix A**. The sensitivity score informs the consequence element of the risk estimation process.

Table 4.1 Potential Receptors and Sensitivity Score

Receptor Type	Comment	Sensitivity Score
Human Health – Current	Site currently used as offices and storage associated with the pharmacy at ground floor level.	4
Human Health – Future	Residents of proposed residential unit.	5
Human Health – Construction and Maintenance Workers	Anticipated construction and maintenance workers	4

Receptor Type	Comment	Sensitivity Score
Human Health – Neighbours	Current and future residential neighbours, members of the public using neighbouring commercial properties.	5
Groundwater	Principal Aquifer	3
Surface Water	Site located within catchment with a WFD ecological classification of Moderate. River Thames located approximately 70 m the south of the site.	3
Property - Buildings	Grade II listed structures are present approximately 30 m north and 40 m north-west of the site.	3
Ecological Systems	Eliminated – Nationally or internationally designated sites have not been identified within 250 m of the site, with the exception of Ham Lands which is located south of the River Thames which would intercept any contamination migrating south towards Ham Lands.	1
Property - Animal or Crop Effect	Eliminated – receptor not present	n/a

4.4 Potential Sources (Hazards) and Contaminants of Concern

4.4.1 The following sources of potential contamination have been identified below, or within 250 m of the Site:

- The former motor works / rubber works located approximately 170 m west of the site. A Hazard Classification of **Low** (Classification Score of 2 out of 5 in Table 1, **Appendix A**) has been assigned.

- The electricity substation located approximately 15 m south of the site. A Hazard Classification of **Low** (Classification Score of 2 out of 5 in Table 1, **Appendix A**) has been assigned.

4.4.2 Neither the electricity substation approximately 15 m to the south or the former works approximately 170 m to the north-west present a gas / vapour hazard. There are therefore no credible potential sources of contamination that could impact upon the site.

4.5 Risk Estimation and Evaluation

4.5.1 As described above, the proposed redevelopment comprises the change of use of the 1st and the 2nd storey from commercial to residential use. As such there are no credible pathways between any contamination or ground gas that may be present on the ground, and the receptors on site. Therefore there are no credible pollutant linkages identified which require further assessment.

4.5.2 The conceptual site model and the Tier 1 risk assessment have been adequately informed such that the potential hazards and their associated risks are clearly identified.

4.5.3 Whilst the data used in this assessment is considered robust and suitable for purpose, there is some degree of uncertainty due to the potential for unforeseen ground conditions. However, it is considered that even if present these will be localised and relatively small in scale and there will be no credible pathways to impact the site or the site users. As such further assessments

are not required in relation to the geoenvironmental conditions at the site and the proposed development .

5 Conclusions and Recommendations

5.1 Conclusions

5.1.1 A review of the site's historical, industrial, environmental, geological, hydrogeological and hydrological setting has been undertaken.

5.1.2 This review has identified that, whilst potential sensitive receptors to contamination are present, as the site is located at first and second floor, i.e., is not connected to the ground, the only credible pathways by which contamination within the ground beneath the pharmacy beneath the site may affect on-site receptors, are inhalation of vapours / gases and explosion due to migration of natural / anthropogenic gases.

5.1.3 Potential sources of contamination presenting a gaseous hazard have not been identified, and therefore there are no credible pollutant linkages identified which require further assessment.

Essential Guidance for Report Readers

This report has been prepared within an agreed timeframe and to an agreed budget that will necessarily apply some constraints on its content and usage. The remarks below are presented to assist the reader in understanding the context of this report and any general limitations or constraints. If there are any specific limitations and constraints, they are described in the report text.

The opinions and recommendations expressed in this report are based on statute, guidance, and best practice current at the time of its publication. Stantec UK Ltd (Stantec) does not accept any liability whatsoever for the consequences of any future legislative changes or the release of subsequent guidance documentation, etc. Such changes may render some of the opinions and advice in this report inappropriate or incorrect and the report should be returned to us and reassessed if required for re-use after one year from date of publication. Following delivery of the report, Stantec has no obligation to advise Blue Infinity SSAS Pension or any other party of such changes or their repercussions.

Some of the conclusions in this report may be based on third party data. No guarantee can be given for the accuracy or completeness of any of the third-party data used.

Historical maps and aerial photographs provide a “snapshot” in time about conditions or activities at the Site and cannot be relied upon as indicators of any events or activities that may have taken place at other times. It is possible for developments to have occurred between surveys that are not shown or for the map record to have been censored for military security.

The absence of cavity records in the Stantec natural and mining cavities (non-coal) databases is not considered as conclusive as to the absence of these features and we do not warranty that the data is complete or error free.

The conclusions and recommendations made in this report and the opinions expressed are based on the information reviewed and/or the ground conditions encountered in exploratory holes and the results of any field or laboratory testing undertaken. There may be ground conditions at the Site that have not been disclosed by the information reviewed or by the investigative work undertaken. Such undisclosed conditions cannot be considered in any analysis and reporting.

It should be noted that this report is a land condition assessment and does not purport to be an ecological, flood risk or archaeological survey and additional specific surveys may be required.

The identification of invasive and/or noxious plants such as Japanese Knotweed is outside the remit of our appointment.

This report has been written for the sole use of Blue Infinity SSAS Pension stated at the front of the report in relation to a specific development or scheme. The conclusions and recommendations presented herein are only relevant to the scheme or the phase of project under consideration. This report shall not be relied upon or transferred to any other party without the expressed written authorisation of Stantec. Any such party relies upon the report at its own risk.

The interpretation carried out in this report is based on scientific and engineering appraisal carried out by suitably experienced and qualified technical consultants based on the scope of our engagement. We have not considered the perceptions of, for example, banks, insurers, other funders, lay people, etc., unless the report has been prepared specifically for that purpose. Advice from other specialists may be required such as the legal, planning and architecture professions, whether specifically recommended in our report or not.

Public or legal consultations or enquiries, or consultation with any Regulatory Bodies (such as the Environment Agency, Natural England or Local Authority) have taken place only as part of this work where specifically stated.

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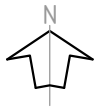
Appendix A Application Red Line Boundary Plan



Rev	Details	Date
P1	First issue	25.10.23

KEY

Denotes site boundary line

Denotes ownership boundary line

PLANNING

align

Client
Essential Living

Project
5a King Street
Twickenham

Title
Existing
Site Location Plan

Scale
1:1250 @ A4

Date
Oct 2024

Drawn By
LP

Checked
NT

Project No | Dwg. No | Issue
1470-ALN-KS-00-D-A-020 -P1

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Appendix B Stantec Methodology for Assessing Land Contamination in England

Stantec Guide: Methodology for Assessment of Land Contamination (England)

1 INTRODUCTION

This document defines the approach adopted by Stantec in relation to the assessment of land contamination in England. The aim is for the approach to (i) be systematic and objective, (ii) provide for the assessment of uncertainty and (iii) provide a rational, consistent, transparent framework.

When preparing our methodology, we have made reference to various technical guidance documents and legislation referenced in Section 7 of which the principal documents are (I) Contaminated Land Statutory Guidance (Defra 2012), (ii) online guidance Land Contamination Risk Management (LCRM) accessed from GOV.UK which has replaced Contaminated Land Research (CLR) Report 11: Model Procedures for the Management of Contamination (EA 2004). LCRM has been revised (July 2023) and CLR 11 is archived, (iii) Contaminated land risk assessment: A guide to good practice (C552) (CIRIA 2001) (iv) National Planning Policy Framework (NPPF, 2019) (v) BS 10175 Investigation of potentially contaminated sites - Code of Practice (BSI 2017) and (vi) The series of British Standards on Soil Quality BS 18400.

2 DEALING WITH LAND CONTAMINATION

Government policy on land contamination aims to prevent new contaminated land from being created and promotes a risk-based approach to addressing historical contamination. For historical contamination, regulatory intervention is held in reserve for land that meets the legal definition and cannot be dealt with through any other means, including through planning. Land is only considered to be "*contaminated land*" in the legal sense if it poses an unacceptable risk.

UK legislation on contaminated land is principally contained in Part 2A of the Environmental Protection Act, 1990 (which was inserted into the 1990 Act by section 57 of the Environment Act 1995). Part 2A was introduced in England on 1 April 2000 and provides a risk-based approach to the identification and remediation of land where contamination poses an unacceptable risk to human health or the environment.

The Model Procedures for the Management of Land Contamination (CLR 11), were developed to provide the technical framework for applying a risk management process when dealing with land affected by contamination. The process involves identifying, making decisions on, and taking appropriate action to deal with land contamination in a way that is consistent with government policies and legislation within the UK. The approach, concepts and principles for land contamination management promoted by LCRM (and its predecessor CLR 11) are applied to the determination of planning applications. The guidance given in LCRM follows the same principles.

Other legislative regimes may also provide a means of dealing with land contamination issues, such as the regimes for waste, water, environmental permitting, and environmental damage. Further, the law of statutory nuisance may result in contaminants being unacceptable to third parties whilst not attracting action under Part 2A or other environmental legislation.

2.1 Part 2A

The Regulations and Statutory Guidance that accompanied the Act, including the Contaminated Land (England) Regulations 2006, has been revised with the issue of The Contaminated Land (England) (Amendment) Regulations 2012 (SI 2012/263) and the Contaminated Land Statutory Guidance for England 2012.

Part 2A defines contaminated land as "*land which appears to the Local Authority in whose area it is situated to be in such a condition that, by reason of substances in, on or under the land that significant harm is being caused, or there is a significant possibility that such significant harm (SPOSH) could be caused, or significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution (SPOSP) being caused*".

Harm is defined as "*harm to the health of living organisms or other interference with the ecological systems of which they form part, and in the case of man, includes harm to his property*".

Part 2A provides a means of dealing with unacceptable risks posed by land contamination to human health and the environment, and under the guidance enforcing authorities should seek to find and deal with such land. It states that "*under Part 2A the starting point should be that land is not contaminated land unless there is reason to consider otherwise. Only land where unacceptable risks are clearly identified, after a risk assessment has been undertaken in accordance with the Guidance, should be considered as meeting the Part 2A definition of contaminated land*". Further, the guidance makes it clear that *"regulatory decisions should be based on what is reasonably likely, not what is hypothetically possible".*

The overarching objectives of the Government's policy on contaminated land and the Part 2A regime are:

"(a) To identify and remove unacceptable risks to human health and the environment.

(a) To seek to ensure that contaminated land is made suitable for its current use.

(b) To ensure that the burdens faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of sustainable development".

The enforcing authority may need to decide whether and how to act in situations where decisions are not straight forward, and where there is uncertainty. "*In so doing, the authority should use its judgement to strike a reasonable balance between: (a) dealing with risks raised by contaminants in land and the benefits of remediating land to remove or reduce those risks; and (b) the potential impacts of regulatory intervention including financial costs to whoever will pay for remediation, health and environmental impacts of taking action, property blight, and burdens on affected people".*

The authority is required to "*take a precautionary approach to the risks raised by contamination, whilst avoiding a disproportionate approach given the circumstances of each case".* The aim is "*that the regime produces net benefits, taking account of local circumstances*".

The guidance recognises that *"normal levels of contaminants in soils should not be considered to cause land to qualify as contaminated land, unless there is a particular reason to consider otherwise".* Normal levels are quoted as:

"a) *natural presence of contaminants'* such as from underlying geology *'that have not been shown to pose an unacceptable risk to health and the environment*

b) *…low level diffuse pollution, and common human activity…"*

Similarly the guidance states that significant pollution or significant possibility of significant pollution of controlled waters is required for land to be considered contaminated and the "*fact that substances are merely entering water"* or "*where discharge from land is not discernible at a location immediately downstream"* does not constitute contaminated land.

To help achieve a more targeted approach to identifying and managing contaminated land in relation to the risk (or possibility) of harm to human health, the revised Statutory Guidance presented a new four category system for considering land under Part 2A, ranging from Category 4, where there is no risk that land poses a significant possibility of significant harm (SPOSH), or the level of risk is low, to Category 1, where the risk that land poses a significant possibility of significant harm (SPOSH) is unacceptably high.

For land that cannot be readily placed into Categories 1 or 4 further assessment is required. If there is sufficient concern that the risks could cause significant harm or have the significant possibility of significant harm the land is to be placed into Category 2. If the concern is not met land is considered Category 3.

The technical guidance clearly states that the currently published Soil Guidance Values (SGV's) and Generic Assessment Criteria (GAC's) represent *"cautious estimates of level of contaminants in soils"* which should be considered *"no risk to health or, at most, a minimal risk"*. These values do not represent the boundary between categories 3 and 4 and "*should be considered to be comfortably within Category 4".*

At the end of 2013 technical guidance in support of Defra's revised Statutory Guidance (SG) was published and then revised in 2014 (CL: AIRE 2014) with further publications in 2021, 2023 and 2024 which provided:

- A methodology for deriving C4SLs for four generic land-uses comprising residential, commercial, allotments and public open space; and

- A demonstration of the methodology, via the derivation of C4SLs for twelve substances – arsenic, benzene, benzo(a)pyrene, cadmium, chromium (VI), lead, vinyl chloride, trichloroethene, tetrachloroethene, trans-1,2-dichloroethene, cic-1,2-dichloroethene, 1,2-dichloroethane and naphthalene.

For controlled waters, the revised Statutory Guidance states that the following types of pollution should be considered to constitute significant pollution of controlled waters:

"(a) Pollution equivalent to "environmental damage" to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but which cannot be dealt with under those Regulations.

(b) Inputs resulting in deterioration of the quality of water abstracted, or intended to be used in the future, for human consumption such that additional treatment would be required to enable that use.

(c) A breach of a statutory surface water Environment Quality Standard, either directly or via a groundwater pathway.

(d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC)".

The guidance also states that, in some circumstances, significant concentrations at a compliance point (in groundwater or surface water) may constitute pollution of controlled waters.

As with SPOSH for human health, the revised Statutory Guidance presents a four-category system for Significant Pollution of controlled waters. Category 1 covers land where there is a strong and compelling case for SPOSP, for example where significant pollution would almost certainly occur if no action was taken to avoid it. Category 4 covers

land where there is no risk or the risk is low, for example, where the land contamination is having no discernible impact on groundwater or surface water quality. Category 2 is for land where the risks posed to controlled waters are not high enough to consider the land as Category 1 but nonetheless are of sufficient concern to constitute SPOSP, Category 3 is for land where the risks posed to controlled waters are higher than low but not of sufficient concern to constitute SPOSP.

2.2 Planning

The Local Planning Authority (LPA) is responsible for the control of development, and in doing so it has a duty to take account of all material considerations, including contamination.

The principal planning objective is to ensure that any unacceptable risks to human health, buildings and other property and the natural and historical environment from the contaminated condition of the land are identified so that appropriate action can be considered and taken to address those risks.

The National Planning Policy Framework (NPPF, 2023), includes the following.

Paragraph 124 states that planning policies and decisions should "*(c) give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land*."

Paragraph 190 states "*Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner*".

Paragraph 180 states "*planning policies and decisions should contribute to and enhance the natural and local environment by:*

(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; *and*

(f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate."

Paragraph 189 describes the policy considerations the Government expects LPA's to have in regard to land affected by contamination when preparing policies for development plans and in taking decisions on applications.

Paragraph 189 states "*planning policies and decisions should ensure that:*

(a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);

(b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and

c) adequate site investigation information, prepared by a competent person, is available to inform these assessments."

Paragraph 194 states "*The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.*"

The Glossary in Annex 2 provides the following:

***Brownfield land registers**: Registers of previously developed land that local planning authorities consider to be appropriate for residential development, having regard to criteria in the Town and Country Planning (Brownfield Land Registers) Regulations 2017. Local planning authorities will be able to trigger a grant of permission in principle for residential development on suitable sites in their registers where they follow the required procedures.*

***Competent person (to prepare site investigation information)**: A person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation.*

***Previously developed land**: Land which is or was occupied by a permanent structure, including the curtilage of the developed land (although it should not be assumed that the whole of the curtilage should be developed) and any associated fixed surface infrastructure. This excludes: land that is or was last occupied by agricultural or forestry buildings; land that has been developed for minerals extraction or waste disposal by landfill, where provision for restoration has been made through development management procedures; land in built-up areas such as residential gardens, parks, recreation grounds and allotments; and land that was previously developed but where the*

remains of the permanent structure or fixed surface structure have blended into the landscape.

***Site investigation information**: Includes a risk assessment of land potentially affected by contamination, or ground stability and slope stability reports, as appropriate. All investigations of land potentially affected by contamination should be carried out in accordance with established procedures (such as BS10175 Investigation of Potentially Contaminated Sites – Code of Practice).*

Stantec adopt the principle that a Preliminary Investigation (Desk Study and Site Reconnaissance) and Preliminary Risk Assessment (see below) is the minimum assessment requirement to support a planning application.

The level at which contamination is deemed to be unacceptable, or, gives rise to adverse effects under a planning context has not been identified but is envisaged to be more precautionary than the level required to determine land as contaminated under Part 2A.

2.3 Building Control

The building control department of the local authority or private sector approved inspectors are responsible for the operation and enforcement of the Building Regulations (DCLG 2010) to protect the health, safety and welfare of people in and around buildings. Approved Document C requires the protection of buildings and associated land from the effects of contamination, to be applied (non-exclusively) in all changes of use from commercial or industrial premises, to residential property.

3 APPROACH

As with CLR11 the guidance given in LCRM presents three stages of land contamination management: -

(a) Stage 1 - Risk Assessment;

(b) Stage 2 - Options Appraisal; and

(c) Stage 3 - Remediation.

Each stage has three tiers. The three tiers of Stage 1 Risk Assessment are: -

- Tier 1 - Preliminary Risk Assessment (PRA) - first tier of RA that develops the outline conceptual model (CM) and establishes whether there are any potentially unacceptable risks.

- Tier 2 - Generic Quantitative Risk Assessment (GQRA) - carried out using generic assessment criteria and assumptions to estimate risk.

- Tier 3 - Detailed Quantitative Risk Assessment (DQRA) - carried out using detailed site-specific information to generate Site Specific Assessment Criteria (SSAC) as risk evaluation criteria.

For each tier of a Stage 1 - Risk Assessment you must:

1. Identify the hazard - establish contaminant sources.

2. Assess the hazard - use a source-pathway-receptor (S-P-R) pollutant linkage approach to find out if there is the potential for unacceptable risk.

3. Estimate the risk - predict what degree of harm or pollution might result and how likely it is to occur.

4. Evaluate the risk - decide whether a risk is unacceptable.

A Stantec Preliminary Investigation report normally comprises a desk study, walkover site reconnaissance and preliminary risk assessment (PRA). The project specific proposal defines the actual scope of work which might include review of ground investigation data in which case the report includes a GQRA.

Risk estimation involves identifying the magnitude of the potential consequence (taking into account both the potential severity of the hazard and the sensitivity of the receptor) and the magnitude of the likelihood i.e. the probability (taking into account the presence of the hazard and the receptor and the integrity of the pathway). This approach is promoted in current guidance such as R&D 66 (NHBC 2008).

For a PRA, Stantec's approach is that if a pollution linkage is identified then it represents a potentially unacceptable risk which either (1) remediation / direct risk management or (2) progression to further tiers of risk assessment (GQRA and GQRA) requiring additional data collection and enabling refinement of the CM using the site specific data.

4 IDENTIFICATION OF POLLUTANT LINKAGES AND DEVELOPMENT OF A CONCEPTUAL MODEL (CM)

For all Tiers of a Stage 1 Risk Assessment, the underlying principle to ground condition assessment is the identification of *pollutant linkages* in order to evaluate whether the presence of a source of contamination could potentially lead to harmful consequences. A pollutant linkage consists of the following three elements: -

- A source/hazard – a substance or situation which has the potential to cause harm or pollution;
- A pathway – a means by which the hazard moves along / generates exposure; and
- A receptor/target – an entity which is vulnerable to the potential adverse effects of the hazard.

The *Conceptual Model* identifies the types and locations of potential contaminant sources/hazards and potential receptors and potential migration/transportation pathway(s). The CM is refined through progression to further tiers of risk assessment (GQRA and GQRA) requiring additional data collection.

4.1 Hazard Identification

A hazard is a substance or situation that has the potential to cause harm. Hazards may be chemical, biological or physical.

In a PRA the potential for hazards to be present is determined from consideration of the previous or ongoing activities on or near to the site in accordance with the criteria presented in the **Table 1**.

Based on the land use information Contaminants of Potential Concern (COPC) are identified. The COPC direct the scope of the collection of site-specific data and the analytical testing selected for subsequent Tiers.

At Tier 2 the site-specific data is evaluated using appropriate published assessment criteria (refer to Stantec document entitled Rationale for the Selection of Evaluation Criteria for a Generic Quantitative Risk Assessment (GQRA)). In general, published criteria have been developed using highly conservative assumptions and therefore if the screening criterion is not exceeded (and if enough samples from appropriate locations have been analysed) then the COPC is eliminated as a potential Hazard. It should be noted that exceedance does not necessarily indicate that a site is contaminated and/or unsuitable for use only that the COPC is retained as a potential Hazard. Published criteria are generated using models based on numerous and complex assumptions. Whether or not these assumptions are appropriate or sufficiently protective requires confirmation on a project by project basis. Manipulation of the default assumptions would normally form part of a Tier 3 Detailed Quantitative Risk Assessment (DQRA).

When reviewing or assessing site specific data Stantec utilise published guidance on comparing contamination data with a critical concentration (CL:AIRE/CIEH 2008) which presents a structured process for employing statistical techniques for data assessment purposes.

4.2 Receptor and Pathway Identification

For all Tiers the potential receptors (for both on site and adjoining land) that will be considered are:

- Human Health – including current and future occupiers, construction and future maintenance workers, and neighbouring properties/third parties;
- Ecological Systems; [1]
- Controlled Waters [2] – Under section 78A(9) of Part 2A the term "pollution of controlled waters" means the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter. The term "controlled waters" in relation to England has the same meaning as in Part 3 of the Water Resources Act 1991, except that "ground waters" does not include waters contained in underground strata but above the saturation zone.
- Property - Animal or Crop (including timber; produce grown domestically, or on allotments, for consumption; livestock; other owned or domesticated animals; wild animals which are the subject of shooting or fishing rights); and
- Property - Buildings (any structure or erection, and any part of a building including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables including archaeological sites and ancient monuments).

If a receptor is taken forward for further assessment it will be classified in terms of its sensitivity, the criteria for which are presented in **Table 2**. Table 2 has been generated using descriptions of environmental receptor importance/value given in various guidance documents including R&D 66 (NHBC 2008), EA 2017 and Transport Analysis Guidance (based on DETR 2000). Human health and buildings classifications have been generated by Stantec using the attribute description for each class. Surface water sensitivity is classified using the Water Framework Directive (WFD) status for the River Basin obtained from: https://environment.data.gov.uk/catchment-planning/

[1] International or nationally designated sites (as defined in the statutory guidance (Defra Circular 04/12)) "*in the local area*" will be identified as potential ecological receptors. A search radius of 1, 2 or 5km will be utilised depending on the site-specific circumstances (see also pathway identification). The Environment Agency has published an ecological risk assessment framework (EA 2008) which promotes (as opposed to statutorily enforces) consideration of additional receptors to include locally protected sites and protected or notable species. These additional potential receptors will only be considered if a Phase 1 habitat survey, undertaken in accordance with guidance (JNCC 1993), is commissioned and the data provided to Stantec. It should be noted that without such a survey a Land Contamination risk assessment may conclude that the identification of potential ecological receptors is inconclusive (refer to Stantec Specification for a Preliminary Investigation (Desk Study and Site Reconnaissance).

[2] The definition of "pollution of controlled water" was amended by the introduction of Section 86 of the Water Act 2003. For the purposes of Part 2A groundwater does not include waters above the saturated zone and our assessment does not therefore address perched water other than where development causes a pathway to develop.

The exposure pathway and modes of transport that will be considered are presented in **Table 3**.

4.3 Note regarding Ecological Systems

The Environment Agency (EA) has developed an ecological risk assessment framework which aims to provide a structured approach for assessing the risks to ecology from chemical contaminants in soils (EA 2008). In circumstances where contaminants in water represent a potential risk to aquatic ecosystems then risk assessors will need to consider this separately.

The framework consists of a three-tiered process: -

- Tier 1 is a screening step where the site soils chemical data is compared to a soil screening value (SSV)
- Tier 2 uses various tools (including surveys and biological testing) to gather evidence for any harm to the ecological receptors
- Tier 3 seeks to attribute the harm to the chemical contamination

Tier 1 is preceded by a desk study to collate information about the site and the nature of the contamination to assess whether pollutant linkages are feasible. The framework presents ten steps for ecological desk studies and development of a conceptual model as follows.

1. Establish Regulatory Context
2. Collate and Assess Documentary Information
3. Summarise Documentary Information
4. Identify Contaminants of Potential Concern
5. Identify Likely Fate Transport of Contaminants
6. Identify Potential Receptors of Concern
7. Identify Potential Pathways of Concern
8. Create a Conceptual Model
9. Identify Assessment and Measurement Endpoints
10. Identify Gaps and Uncertainties

The information in a standard PRA report covers Steps 1 to 4 inclusive. Step 5 considers fate and transport of contaminants and it should be noted that our standard report adopts a simplified approach considering only transport mechanisms. A simplified approach has also been adopted in respect of Steps 6 and 7 receptors (a detailed review of the ecological attributes has not been undertaken) and pathways (a food chain assessment has not been undertaken). Step 9 is outside the scope of our standard PRA report.

It should be noted that the PRA report will present an assessment for ecological systems (where identified as a receptor for a land contamination assessment) considering the viability of the mode of transport given the site-specific circumstances and not specific pathways. The PRA may conclude that the risk to potential ecological receptors is inconclusive.

4.4 Note regarding controlled waters

Controlled waters are rivers, estuaries, coastal waters, lakes and groundwaters, but not perched waters.

The EU Water Framework Directive (WFD) 2000/60/EC provides for the protection of sub-surface, surface, coastal and territorial waters through a framework of river basin management. The EU Updated Water Framework Standards Directive 2014/101/EU amended the EU WFD to update the international standards therein; it entered into force on 20 November 2014 with the requirements for its provisions to be transposed in Member State law by 20 May 2016. Other EU Directives in the European water management framework include:

- the EU Priority Substances Directive 2013/39/EU;
- EU Groundwater Pollutants Threshold Values Directive 2014/80/EU amending the EU Groundwater Directive 2006/118/EC; and
- EU Biological Monitoring Directive 2014/101/EU.

The Ground Water Daughter Directive (GWDD) was enacted by the Groundwater Regulations (2009), which were subsumed by the Environmental Permitting Regulations (2010) which provide essential clarification including on the four objectives specifically for groundwater quality in the WFD: -

Achieve ‘Good’ groundwater chemical status by 2015, commonly referred to as ‘status objective’;
Achieve Drinking Water Protected Area Objectives;
Implement measures to reverse any significant and sustained upward trend in groundwater quality, referred to as ‘trend objective’; and

Prevent or limit the inputs of pollutants into groundwater, commonly referred to as ‘prevent or limit’ objectives

The Water Act 2003 (Commencement No.11) Order 2012 amends the test for 'contaminated land' which relates to water pollution so that pollution of controlled waters must now be "significant" to meet the definition of contaminated land.

The Water Framework Directive (WFD) requires the preparation, implementation and review of River Basin Management Plans (RBMP) on a six-year cycle. River basins are made up of lakes, rivers, groundwaters, estuaries and coastal waters, together with the land they drain. River Basin Districts (RBD) and the WFD Waterbodies that they comprise are important spatial management units, regularly used in catchment management studies. River Basin Management Plans (RBMP) have been developed for the 11 River Basin Districts in England and Wales.

These were released by Defra in 2009 (Defra 2009) and updated in 2015.

These RBMP's establish the current status of waters within the catchments of the respective Districts and the current status of adjoining waters identified. As part of a Tier 2 risk assessment water quality data is screened against the WFD assessment criteria. Comparison with the RBMP's current status of waters for the catchment under consideration would form part of a Tier 3 assessment.

5 RISK ESTIMATION

Risk estimation classifies what degree of harm might result to a receptor (defined as consequence) and how likely it is that such harm might arise (probability).
At Tier 1 the consequence classification is generated by multiplying the hazard classification score and the receptor sensitivity score. This approach follows that presented in the republished R&D 66 (NHBC 2008).

The criteria for classifying probability are set out in **Table 4** and have been taken directly from Table 6.4 CIRIA C552 (CIRIA 2001). Probability considers the integrity of the exposure pathway.

The consequence classifications detailed in **Table 5** have been adapted from Table 6.3 presented in C552 and R&D 66 (Annex 4 Table A4.3).

The Tier 1 risk classification is estimated for each pollutant linkage using the matrix given in **Table 6** which is taken directly from C552 (Table 6.5).

Subsequent Tiers refine the CM through retention or elimination of potential hazards and pollutant linkages.

6 RISK EVALUATION

Evaluation criteria are the parameters used to judge whether harm or pollution needs further assessment or is unacceptable. The evaluation criteria used will depend on:

- the reasons for doing the RA and the regulatory context such as Part 2A or planning;
- the CM and pollutant linkages present;
- any criteria set by regulators;
- any advisory requirements such as from Public Health England;
- the degree of confidence and precaution required;
- the level of confidence required to judge whether a risk is unacceptable;
- how you've used or developed more detailed assessment criteria in the later tiers of RA;
- the availability of robust scientific data;
- how much is known - for example, about the pathway mechanism and how the contaminants affect receptors; and
- any practical reasons such as being able to measure or predict against the criteria.

In order to put the Tier 1 risk classification into context the likely actions are described in **Table 7** which is taken directly from Table 6.6 of C552 (CIRIA 2001).

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BSI 2017 BS 10175:2011+A2:2017 Investigation of potentially contaminated sites - Code of Practice

BSI 2019 BS 8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings

CIRIA 2001: Contaminated land risk assessment – a guide to good practice C552.

CIRIA 2008: Assessing risks posed by hazardous ground gases to buildings C655

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Table 1: Criteria for Classifying Hazards / Potential for Generating Contamination

Classification/Score	Potential for generating contamination/gas based on land use
Very Low 1	Land Use: Residential, retail or office use, agriculture Contamination: Limited. Gas generation potential: Soils with low organic content
Low 2	Land Use: Recent small scale industrial and light industry Contamination: locally slightly elevated concentrations. Gas generation potential: Soils with high organic content (limited thickness)
Moderate 3	Land Use: Railway yards, collieries, scrap yards, engineering works. Contamination: Possible widespread slightly elevated concentrations and locally elevated concentrations. Gas generation potential: Dock silt and substantial thickness of organic alluvium/peat
High 4	Land Use: Heavy industry, non-hazardous landfills. Contamination: Possible widespread elevated concentrations. Gas generation potential: Shallow mine workings Pre 1960s landfill
Very High 5	Land Use: Hazardous waste landfills, gas works, chemical works, Contamination: Likely widespread elevated concentrations. Gas generation potential: Landfill post 1960

"Greenfield" is land which has not been developed and there has been no use of agrochemicals

Table 2: Criteria for Classifying Receptor Sensitivity/Value

Classification	Definition
Very Low 1	Receptor of limited importance • Groundwater: Unproductive strata (Strata with negligible significance for water supply or river baseflow) (previously Non-aquifer), Secondary B (water-bearing parts of non-aquifers), Secondary undifferentiated (previously minor or non-aquifer, but information insufficient to classify as secondary A or B) • Surface water: WFD Surface Water status Bad • Ecology: No local designation • Buildings: Replaceable • Human health: Unoccupied/limited access
Low 2	Receptor of local or county importance with potential for replacement • Groundwater: Secondary A aquifer • Surface water: WFD Surface Water status Poor • Ecology: local habitat resources • Buildings: Local value • Human health: Minimum score 4 where human health identified as potential receptor
Moderate 3	Receptor of local or county importance with potential for replacement • Groundwater: Principal aquifer • Surface water: WFD Surface Water status Moderate • Ecology: County wildlife sites, Areas of Outstanding Natural Beauty (AONB) • Buildings: Area of Historic Character • Human health: Minimum score 4 where human health identified as potential receptor
High 4	Receptor of county or regional importance with limited potential for replacement • Groundwater: Source Protection Zone 2 or 3 • Surface water: WFD Surface Water status Good • Ecology: SSSI, National or Marine Nature Reserve (NNR or MNR) • Buildings: Conservation Area • Human health: Minimum score 4 where human health identified as potential receptor
Very High 5	Receptor of national or international importance • Groundwater: Source Protection Zone (SPZ) 1 • Surface water: WFD Surface Water status High • Ecology: Special Areas of Conservation (SAC and candidates), Special Protection Areas (SPA and potentials) or wetlands of international importance (RAMSAR) • Buildings: World Heritage site • Human health: Residential, open spaces and uses where children are present

Table 3: Exposure Pathway and Modes of Transport

Receptor	Pathway	Mode of transport
Human health	Ingestion	Fruit or vegetable leaf or roots
		Contaminated water
		Soil/dust indoors
		Soil/dust outdoors
	Inhalation	Particles (dust / soil) – outdoor
		Particles (dust / soil) - indoor
		Vapours – outdoor - migration via natural or anthropogenic pathways
		Vapours - indoor - migration via natural or anthropogenic pathways
	Dermal absorption	Direct contact with soil
		Direct contact with waters (swimming / showering)
		Irradiation
Groundwater	Leaching	Gravity / permeation
	Migration	Natural – groundwater as pathway Anthropogenic (e.g. boreholes, culverts, pipelines etc.)
Surface Water	Direct	Runoff or discharges from pipes
	Indirect	Recharge from groundwater
	Indirect	Deposition of windblown dust
Buildings	Direct contact	Sulphate attack on concrete, hydrocarbon corrosion of plastics
	Gas ingress	Migration via natural or anthropogenic paths
Ecological systems	See Notes	Runoff/discharge to surface water body
	See Notes	Windblown dust
	See Notes	Groundwater migration
	See Notes	At point of contaminant source
Animal and crop	Direct	Windblown or flood deposited particles / dust / sediments
	Indirect	Plants via root up take or irrigation. Animals through watering
	Inhalation	By livestock / fish - gas / vapour / particulates / dust
	Ingestion	Consumption of vegetation / water / soil by animals

Table 4: Classification of Probability

Classification	Definition
High likelihood	There is a pollution linkage and an event either appears very likely in the short-term and almost inevitable over the long-term, or there is already evidence at the receptor of harm / pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter-term.
Unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long-term.

Table 5: Classification of Consequence (score = magnitude of hazard and sensitivity of receptor)

Classification / Score	Examples
Severe **17-25** **(3 out of 25 outcomes)**	Human health effect - exposure likely to result in "significant harm" as defined in the Defra (2012) Part 2A Statutory Guidance [1]. Controlled water effect - short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Equivalent to EA Category 1 incident (persistent and/or extensive effects on water quality leading to closure of potable abstraction point or loss of amenity, agriculture or commercial value. Major fish kill. Ecological effect - short-term exposure likely to result in a substantial adverse effect. Catastrophic damage to crops, buildings or property
Medium **10-16** **(7 out of 25 outcomes)**	Human health effect - exposure could result in "significant harm" [1]. Controlled water effect - equivalent to EA Category 2 incident requiring notification of abstractor Ecological effect - short-term exposure may result in a substantial adverse effect. Damage to crops, buildings or property
Mild **5-9** **(7 out of 25 outcomes)**	Human health effect - exposure may result in "significant harm" [1]. Controlled water effect - equivalent to EA Category 3 incident (short lived and/or minimal effects on water quality). Ecological effect - unlikely to result in a substantial adverse effect. Minor damage to crops, buildings or property. Damage to building rendering it unsafe to occupy (for example foundation damage resulting in instability).
Minor **1-4** **(8 out of 25 outcomes)**	No measurable effect on humans. Protective equipment is not required during site works. Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems. Repairable effects to crops, buildings or property. The loss of plants in a landscaping scheme. Discolouration of concrete.

[1] Significant harm includes death, disease, serious injury, genetic mutation, birth defects or impairment of reproductive function. The local authority may also consider other health effects to constitute significant harm such as physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts. Whether or not these would constitute significant harm would depend on the seriousness of harm including impact on health, quality of life and scale of impact.

Table 6: Classification of Risk (Combination of Consequence Table 5 and Probability Table 4)

	Consequence			
Probability	***Severe***	***Medium***	***Mild***	***Minor***
High likelihood	Very high	High	Moderate	Low
Likely	High	Moderate	Moderate/	Low
Low likelihood	Moderate	Moderate	Low	Very low
Unlikely	Low	Low	Very low	Very low

Table 7: Description of Risks and Likely Action Required

Risk Classification	Description
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation is likely to be required in the short term.
High risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer-term.
Moderate risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer-term.
Low risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Appendix C Groundsure Report

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

5a KING STREET, TWICKENHAM, RICHMOND UPON THAMES, TW1 3SN

Order Details

Date: 25/10/2024

Your ref: EPL035870

Our Ref: HMD-WL8-DWC-29W-822

Site Details

Location: 516277 173220

Area: 0.02 ha

Authority: London Borough of Richmond upon Thames ↗

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 >	0	0	31	96	-
20 >	1.2 >	Historical tanks >	0	0	2	12	-
21 >	1.3 >	Historical energy features >	0	2	9	4	-
22 >	1.4 >	Historical petrol stations >	0	0	1	0	-
22 >	1.5 >	Historical garages >	0	0	0	13	-
23	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
24 >	2.1 >	Historical industrial land uses >	0	0	44	132	-
31 >	2.2 >	Historical tanks >	0	0	3	14	-
32 >	2.3 >	Historical energy features >	0	3	12	9	-
33 >	2.4 >	Historical petrol stations >	0	0	1	0	-
33 >	2.5 >	Historical garages >	0	0	0	21	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
35	3.1	Active or recent landfill	0	0	0	0	-
35	3.2	Historical landfill (BGS records)	0	0	0	0	-
36	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
36	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
36	3.5	Historical waste sites	0	0	0	0	-
36	3.6	Licensed waste sites	0	0	0	0	-
36 >	3.7 >	Waste exemptions >	0	0	6	12	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
39 >	4.1 >	Recent industrial land uses >	0	3	28	-	-
41 >	4.2 >	Current or recent petrol stations >	0	0	0	1	-
42	4.3	Electricity cables	0	0	0	0	-
42	4.4	Gas pipelines	0	0	0	0	-
42	4.5	Sites determined as Contaminated Land	0	0	0	0	-

42	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
43	4.7	Regulated explosive sites	0	0	0	0	-
43	4.8	Hazardous substance storage/usage	0	0	0	0	-
43	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
43	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
43 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	3	1	-
44	4.12	Radioactive Substance Authorisations	0	0	0	0	-
44 >	4.13 >	Licensed Discharges to controlled waters >	0	0	2	1	-
45	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
45	4.15	Pollutant release to public sewer	0	0	0	0	-
45	4.16	List 1 Dangerous Substances	0	0	0	0	-
45	4.17	List 2 Dangerous Substances	0	0	0	0	-
46 >	4.18 >	Pollution Incidents (EA/NRW) >	0	0	3	1	-
46	4.19	Pollution inventory substances	0	0	0	0	-
47	4.20	Pollution inventory waste transfers	0	0	0	0	-
47	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
48 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
50 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
51 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
52	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
52 >	5.5 >	Groundwater vulnerability- local information >	Identified (within 0m)				
53 >	5.6 >	Groundwater abstractions >	0	0	0	0	13
57 >	5.7 >	Surface water abstractions >	0	0	0	0	6
59	5.8	Potable abstractions	0	0	0	0	0
59	5.9	Source Protection Zones	0	0	0	0	-
59	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
60 >	6.1 >	Water Network (OS MasterMap) >	0	0	2	-	-

61	6.2	Surface water features	0	0	0	-	-
61 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
61 >	6.4 >	WFD Surface water bodies >	0	0	1	-	-
62 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
63 >	7.1 >	Risk of flooding from rivers and the sea >	High (within 50m)				
64	7.2	Historical Flood Events	0	0	0	-	-
64 >	7.3 >	Flood Defences >	0	5	40	-	-
66 >	7.4 >	Areas Benefiting from Flood Defences >	0	2	10	-	-
67	7.5	Flood Storage Areas	0	0	0	-	-
68 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
69 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
70 >	8.1 >	Surface water flooding >	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding >					
72 >	9.1 >	Groundwater flooding >	High (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
73 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
74	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
74 >	10.3 >	Special Areas of Conservation (SAC) >	0	0	0	0	1
74	10.4	Special Protection Areas (SPA)	0	0	0	0	0
75 >	10.5 >	National Nature Reserves (NNR) >	0	0	0	0	1
75 >	10.6 >	Local Nature Reserves (LNR) >	0	0	1	0	2
75	10.7	Designated Ancient Woodland	0	0	0	0	0
76	10.8	Biosphere Reserves	0	0	0	0	0
76	10.9	Forest Parks	0	0	0	0	0
76	10.10	Marine Conservation Zones	0	0	0	0	0
76	10.11	Green Belt	0	0	0	0	0
76	10.12	Proposed Ramsar sites	0	0	0	0	0

77	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
77	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
77	10.15	Nitrate Sensitive Areas	0	0	0	0	0
77	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
78 >	10.17 >	SSSI Impact Risk Zones >	2	-	-	-	-
79 >	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
81	11.1	World Heritage Sites	0	0	0	-	-
82	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
82	11.3	National Parks	0	0	0	-	-
82 >	11.4 >	Listed Buildings >	0	2	29	-	-
84 >	11.5 >	Conservation Areas >	0	2	0	-	-
84	11.6	Scheduled Ancient Monuments	0	0	0	-	-
84 >	11.7 >	Registered Parks and Gardens >	0	0	1	-	-
Page	Section	**Agricultural designations** >	On site	0-50m	50-250m	250-500m	500-2000m
85 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
86	12.2	Open Access Land	0	0	0	-	-
86	12.3	Tree Felling Licences	0	0	0	-	-
86 >	12.4 >	Environmental Stewardship Schemes >	0	0	1	-	-
86	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	**Habitat designations** >	On site	0-50m	50-250m	250-500m	500-2000m
87 >	13.1 >	Priority Habitat Inventory >	0	0	1	-	-
88	13.2	Habitat Networks	0	0	0	-	-
88	13.3	Open Mosaic Habitat	0	0	0	-	-
88	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
89 >	14.1 >	10k Availability >	Identified (within 500m)				
90 >	14.2 >	Artificial and made ground (10k) >	0	0	0	2	-
91 >	14.3 >	Superficial geology (10k) >	1	0	1	2	-

92	14.4	Landslip (10k)	0	0	0	0	-
93 >	14.5 >	Bedrock geology (10k) >	1	0	0	0	-
94	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
95 >	15.1 >	50k Availability >	Identified (within 500m)				
96 >	15.2 >	Artificial and made ground (50k) >	0	0	0	2	-
97	15.3	Artificial ground permeability (50k)	0	0	-	-	-
98 >	15.4 >	Superficial geology (50k) >	1	0	1	2	-
99 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
99	15.6	Landslip (50k)	0	0	0	0	-
99	15.7	Landslip permeability (50k)	None (within 50m)				
100 >	15.8 >	Bedrock geology (50k) >	1	0	0	0	-
101 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
101	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
102 >	16.1 >	BGS Boreholes >	0	3	16	-	-
Page	Section	Natural ground subsidence >					
104 >	17.1 >	Shrink swell clays >	Moderate (within 50m)				
105 >	17.2 >	Running sands >	Negligible (within 50m)				
106 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
107 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
108 >	17.5 >	Landslides >	Very low (within 50m)				
109 >	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
111	18.1	BritPits	0	0	0	0	-
112 >	18.2 >	Surface ground workings >	0	0	1	-	-
112	18.3	Underground workings	0	0	0	0	0
112	18.4	Underground mining extents	0	0	0	0	-
112 >	18.5 >	Historical Mineral Planning Areas >	0	0	0	1	-

113	18.6	Non-coal mining	0	0	0	0	0
113	18.7	JPB mining areas	None (within 0m)				
113	18.8	The Coal Authority non-coal mining	0	0	0	0	-
113 >	**18.9 >**	**Researched mining >**	0	0	0	1	-
114	18.10	Mining record office plans	0	0	0	0	-
114	18.11	BGS mine plans	0	0	0	0	-
114	18.12	Coal mining	None (within 0m)				
114	18.13	Brine areas	None (within 0m)				
114	18.14	Gypsum areas	None (within 0m)				
115	18.15	Tin mining	None (within 0m)				
115	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
116	19.1	Natural cavities	0	0	0	0	-
116	19.2	Mining cavities	0	0	0	0	0
116	19.3	Reported recent incidents	0	0	0	0	-
116	19.4	Historical incidents	0	0	0	0	-
117	19.5	National karst database	0	0	0	0	-
Page	Section	**Radon >**					
118 >	**20.1 >**	**Radon >**	Less than 1% (within 0m)				
Page	Section	**Soil chemistry >**	On site	0-50m	50-250m	250-500m	500-2000m
120 >	**21.1 >**	**BGS Estimated Background Soil Chemistry >**	1	0	-	-	-
120 >	**21.2 >**	**BGS Estimated Urban Soil Chemistry >**	1	3	-	-	-
121	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
122	22.1	Underground railways (London)	0	0	0	-	-
122	22.2	Underground railways (Non-London)	0	0	0	-	-
122	22.3	Railway tunnels	0	0	0	-	-
122	22.4	Historical railway and tunnel features	0	0	0	-	-
122	22.5	Royal Mail tunnels	0	0	0	-	-

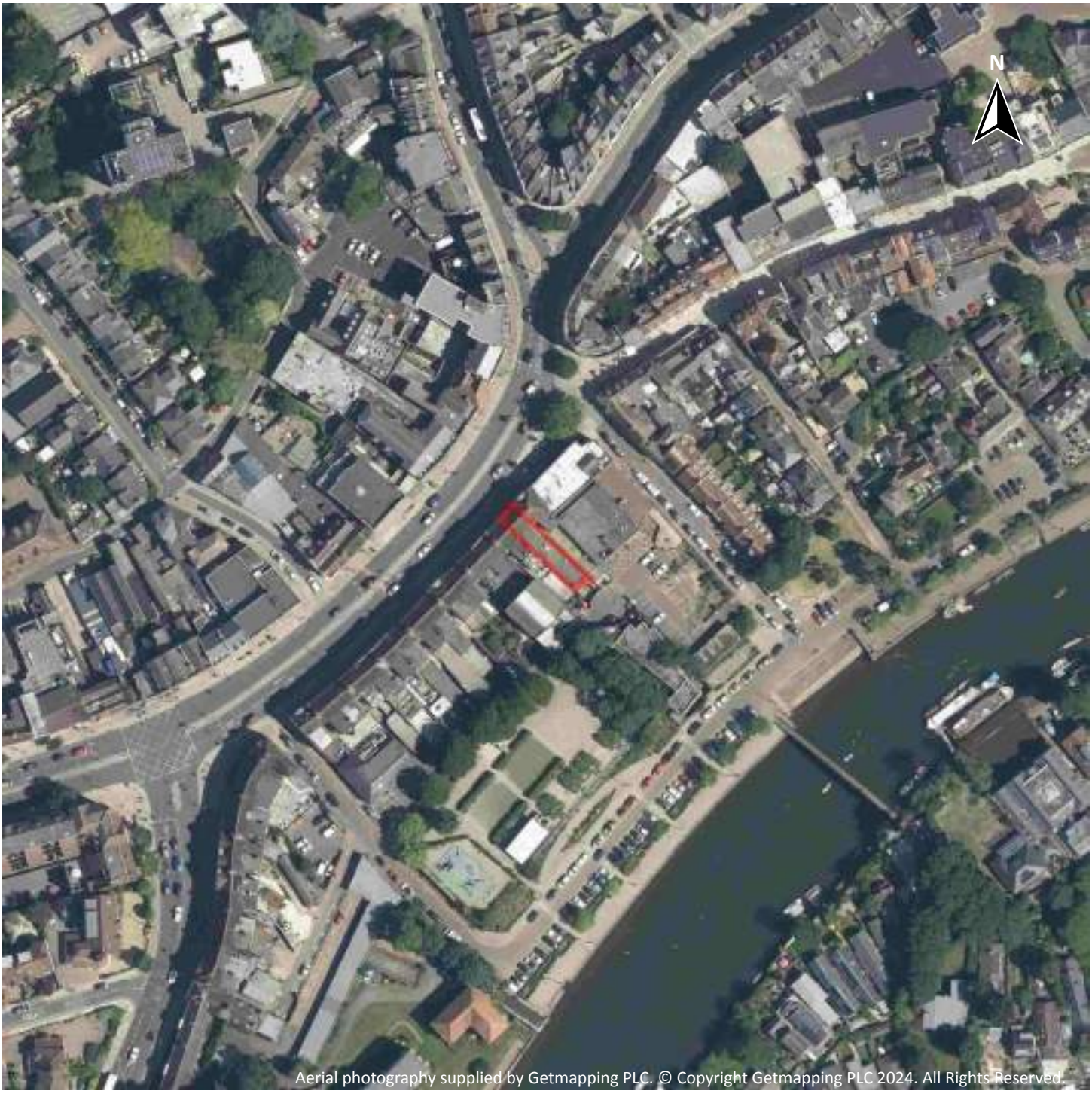
123	22.6	Historical railways	0	0	0	-	-
123	22.7	Railways	0	0	0	-	-
123	22.8	Crossrail 1	0	0	0	0	-
123	22.9	Crossrail 2	0	0	0	0	-
123	22.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 30/04/2022

Site Area: 0.02ha

Recent site history - 2021 aerial photograph



Capture Date: 13/06/2021

Site Area: 0.02ha

Recent site history - 2015 aerial photograph

Capture Date: 20/04/2015

Site Area: 0.02ha

Recent site history - 2011 aerial photograph

Capture Date: 30/09/2011

Site Area: 0.02ha

Recent site history - 1999 aerial photograph

Capture Date: 29/08/1999

Site Area: 0.02ha

OS MasterMap site plan

Site Area: 0.02ha

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	127

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
1	88m W	Filter Station	1966	2189657

ID	Location	Land use	Dates present	Group ID
B	113m S	Boat House	1933	2205733
B	116m S	Boat House	1912	2284341
B	118m S	Boat House	1935	2292979
B	120m S	Boat House	1948	2247256
B	122m S	Boat House	1973 - 1991	2235650
B	123m S	Boat House	1912	2229958
B	123m S	Boat House	1938	2295142
B	123m S	Boat House	1966	2318217
2	124m E	Boat House	1865	2172759
C	147m SW	Nursery	1933	2257736
D	153m E	Electricity and Steam Launch Works	1894	2260307
C	159m SW	Nursery	1896 - 1912	2235271
C	160m SW	Nursery	1894	2331356
C	161m SW	Nursery	1912	2260643
C	163m SW	Nursery	1912	2269443
C	171m SW	Nursery	1894	2225998
D	190m E	Electricity and Steam Launch Works	1912	2212507
D	190m E	Electricity and Steam Launch Works	1938	2279953
D	194m E	Electric and Steam Works	1948	2188623
3	197m NW	Police Station	1966 - 1991	2277978
H	198m NE	Unspecified Workhouse	1966 - 1991	2210245
D	200m E	Electricity and Steam Launch Works	1912	2320038
D	205m E	Electricity and Steam Launch Works	1933	2238631
D	207m E	Unspecified Tank	1933	2255115
D	208m E	Unspecified Tank	1912	2213507
D	208m E	Unspecified Tank	1938	2231090
D	230m E	Electric and Steam Launch Works	1894 - 1896	2330695
D	232m E	Unspecified Works	1966 - 1991	2227174

ID	Location	Land use	Dates present	Group ID
D	236m E	Electricity and Steam Launch Works	1894	2224450
D	245m E	Electric and Steam Work	1935	2181576
I	257m N	Grave Yard	1865	2166036
J	270m S	Boat House	1933	2172760
J	275m S	Boat House	1912	2256868
J	275m S	Boat House	1938	2332607
J	281m S	Boat House	1912	2212171
K	287m N	Disused Cemetery	1912	2329449
K	288m N	Disused Cemetery	1938	2248718
K	288m N	Disused Cemetery	1912	2309062
H	289m NE	Unspecified Pits	1912	2198547
K	290m N	Cemetery	1973 - 1991	2230584
K	290m N	Cemetery	1935	2222968
K	290m N	Cemetery	1966	2312177
K	290m N	Disused Cemetery	1948	2313691
H	291m NE	Unspecified Pit	1912	2323508
K	294m N	Disused Cemetery	1912	2317208
H	295m NE	Unspecified Pit	1935 - 1938	2218357
K	296m N	Disused Cemetery	1933	2313263
H	297m NE	Unspecified Pit	1912	2255778
H	297m NE	Unspecified Pit	1938	2279936
H	299m NE	Unspecified Pit	1948	2323580
H	300m NE	Unspecified Pit	1933	2314161
6	343m E	Unspecified Tank	1933	2192527
N	395m E	Boat House	1912	2207173
N	395m E	Boat House	1938	2310159
N	400m E	Boat House	1948 - 1991	2304152
N	401m E	Boat House	1933 - 1935	2238103

ID	Location	Land use	Dates present	Group ID
N	401m E	Boat House	1912	2239471
O	406m N	Hospital	1894	2288121
O	407m N	Hospital	1894	2213453
O	411m N	Hospital	1912	2254013
P	411m NW	Railway Sidings	1948 - 1991	2268428
O	412m N	Hospital	1912	2276578
O	413m N	Hospital	1894 - 1896	2291305
O	415m N	Hospital	1966	2269672
O	416m N	Hospital	1973 - 1991	2307258
O	417m N	Hospital	1935	2316578
Q	418m NW	Railway Sidings	1865	2295344
O	419m N	Hospital	1938	2318447
O	419m N	Hospital	1938	2221982
O	420m N	Hospital	1948	2250174
O	421m N	Hospital	1933	2209699
P	421m NW	Railway Sidings	1912	2221451
Q	421m NW	Railway Station	1912	2231393
Q	422m NW	Railway Station	1894 - 1896	2276518
S	422m N	Railway Station	1966 - 1991	2211034
S	422m N	Railway Sidings	1991	2256598
Q	423m NW	Railway Station	1865	2266023
Q	423m NW	Railway Station	1894	2311829
Q	426m NW	Railway Buildings	1935	2160612
Q	426m NW	Railway Sidings	1935	2252939
Q	427m NW	Junction Station	1894	2233367
Q	427m NW	Railway Sidings	1894	2320676
Q	427m NW	Railway Building	1948	2304598
S	428m N	Railway Sidings	1948 - 1973	2249974

ID	Location	Land use	Dates present	Group ID
P	431m NW	Railway Sidings	1938	2262956
Q	431m NW	Junction Station	1912	2262745
Q	431m NW	Junction Station	1938	2327788
Q	431m NW	Railway Station	1933	2242365
Q	432m NW	Railway Station	1938	2231546
Q	432m NW	Railway Station	1912	2292973
S	432m NW	Railway Sidings	1938	2287423
Q	435m NW	Railway Sidings	1933	2328011
Q	435m N	Railway Sidings	1938	2280178
10	441m NW	Railway Sidings	1894	2303497
S	445m NW	Railway Sidings	1894	2268538
P	447m NW	Railway Sidings	1896 - 1912	2271110
S	453m NW	Railway Sidings	1896	2286353
P	455m NW	Railway Land	1894	2201088
Q	456m NW	Railway Building	1865	2313538
Q	456m NW	Railway Building	1865	2196659
S	456m N	Railway Sidings	1912	2250881
Q	459m NW	Railway Building	1894	2312718
Q	460m NW	Brewery	1865	2159143
Q	462m NW	Railway Building	1966 - 1991	2307101
Q	464m NW	Railway Building	1896	2329576
11	467m NW	Unspecified Ground Workings	1896	2164369
Q	468m NW	Railway Building	1933	2222609
S	469m N	Railway Sidings	1894	2242624
Q	469m NW	Railway Building	1912	2240971
Q	470m NW	Railway Building	1935	2224046
Q	470m NW	Railway Building	1948 - 1991	2212769
Q	472m NW	Railway Building	1948	2306287

ID	Location	Land use	Dates present	Group ID
Q	473m NW	Railway Building	1894	2227387
P	473m NW	Railway Sidings	1894	2291300
S	474m N	Railway Building	1894	2287269
S	476m N	Railway Sidings	1912	2254348
S	476m N	Railway Sidings	1896	2221207
Q	477m NW	Railway Building	1912	2217532
Q	477m NW	Railway Building	1938	2219085
Q	478m NW	Railway Buildings	1938	2243160
Q	478m NW	Railway Buildings	1912	2300086
13	480m SE	Refuse Heap	1938 - 1948	2232458
T	486m NE	Unspecified Ground Workings	1894 - 1896	2270655
S	488m N	Railway Sidings	1912	2231679
T	492m NE	Unspecified Pit	1894	2175024
14	492m NW	Nursery	1966 - 1973	2252478

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m **14**

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
B	131m SW	Unspecified Tank	1898	388395
E	178m W	Unspecified Tank	1972 - 1982	411450
H	279m NE	Unspecified Tank	1914	400532
H	279m NE	Unspecified Tank	1934	403844

ID	Location	Land use	Dates present	Group ID
D	317m E	Unspecified Tank	1914	388384
I	323m N	Unspecified Tank	1967	388383
L	336m NE	Unspecified Tank	1967	388382
7	371m NE	Unspecified Tank	1914	388385
O	408m N	Unspecified Tank	1980 - 1988	398893
O	411m N	Unspecified Tank	1991	388386
8	431m W	Unspecified Tank	1935	388399
Q	460m NW	Unspecified Tank	1961	405700
Q	461m NW	Unspecified Tank	1962	430305
Q	481m NW	Unspecified Tank	1959	388377

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**15**

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
A	13m SE	Electricity Substation	1982 - 1990	319984
A	14m SE	Electricity Substation	1972	268896
B	107m S	Electricity Substation	1972	287235
B	108m S	Electricity Substation	1982 - 1990	277585
E	156m W	Electricity Substation	1972	268895
E	161m W	Electricity Substation	1982 - 1990	288868
F	181m NE	Electricity Substation	1990	272167
G	195m SW	Electricity Substation	1972 - 1982	297305

ID	Location	Land use	Dates present	Group ID
G	196m SW	Electricity Substation	1990	278087
F	211m NE	Electricity Substation	1982	271879
D	213m E	Electricity Substation	1980	273127
4	258m N	Electricity Substation	1972 - 1982	303312
5	323m SW	Electricity Substation	1972 - 1991	296416
9	440m W	Electricity Substation	1981 - 1991	277304
12	471m NW	Electricity Substation	1974	267634

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
F	199m NE	Filling Station	1972	4345

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	**13**

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
L	311m NE	Garage	1982 - 1990	93979
L	311m NE	Garage	1967 - 1972	82571
L	321m NE	Garage	1991	88838
L	321m NE	Garage	1980 - 1988	90535
M	378m NW	Garage	1967	88040
M	378m NW	Garage	1959 - 1960	90434
M	378m NW	Garage	1991	92393
M	378m NW	Garage	1996	95302
M	378m NW	Garage	1980 - 1988	94047
R	420m W	Garage	1962	91241
R	420m W	Garage	1961	92301
R	425m W	Garage	1981 - 1987	88866
R	426m W	Garage	1991	90981

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

Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical petrol stations

Historical garages

2.1 Historical industrial land uses

Records within 500m	176

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 24 >**

ID	Location	Land Use	Date	Group ID
1	88m W	Filter Station	1966	2189657
B	113m S	Boat House	1933	2205733
B	116m S	Boat House	1912	2284341

ID	Location	Land Use	Date	Group ID
B	118m S	Boat House	1935	2292979
B	120m S	Boat House	1948	2247256
B	122m S	Boat House	1991	2235650
B	122m S	Boat House	1973	2235650
B	123m S	Boat House	1938	2295142
B	123m S	Boat House	1912	2229958
B	123m S	Boat House	1966	2318217
B	124m S	Boat House	1912	2229958
2	124m E	Boat House	1865	2172759
C	147m SW	Nursery	1933	2257736
D	153m E	Electricity and Steam Launch Works	1894	2260307
C	159m SW	Nursery	1896	2235271
C	160m SW	Nursery	1894	2331356
C	161m SW	Nursery	1912	2260643
C	162m SW	Nursery	1912	2235271
C	163m SW	Nursery	1912	2269443
C	163m SW	Nursery	1894	2331356
C	171m SW	Nursery	1894	2225998
D	190m E	Electricity and Steam Launch Works	1938	2279953
D	190m E	Electricity and Steam Launch Works	1912	2212507
D	194m E	Electric and Steam Works	1948	2188623
D	195m E	Electricity and Steam Launch Works	1912	2212507
H	197m NW	Police Station	1991	2277978
H	197m NW	Police Station	1973	2277978
H	197m NW	Police Station	1966	2277978
I	198m NE	Unspecified Workhouse	1991	2210245
I	198m NE	Unspecified Workhouse	1973	2210245
I	198m NE	Unspecified Workhouse	1966	2210245

ID	Location	Land Use	Date	Group ID
D	200m E	Electricity and Steam Launch Works	1912	2320038
D	204m E	Electricity and Steam Launch Works	1938	2279953
D	205m E	Electricity and Steam Launch Works	1933	2238631
D	207m E	Unspecified Tank	1933	2255115
D	208m E	Unspecified Tank	1938	2231090
D	208m E	Unspecified Tank	1912	2213507
D	230m E	Electric and Steam Launch Works	1896	2330695
D	232m E	Unspecified Works	1991	2227174
D	232m E	Unspecified Works	1973	2227174
D	232m E	Unspecified Works	1966	2227174
D	233m E	Electric and Steam Launch Works	1894	2330695
D	236m E	Electricity and Steam Launch Works	1894	2224450
D	245m E	Electric and Steam Work	1935	2181576
J	257m N	Grave Yard	1865	2166036
L	270m S	Boat House	1933	2172760
L	275m S	Boat House	1938	2332607
L	275m S	Boat House	1912	2256868
L	281m S	Boat House	1912	2212171
L	281m S	Boat House	1912	2212171
M	287m N	Disused Cemetery	1912	2329449
M	288m N	Disused Cemetery	1938	2248718
M	288m N	Disused Cemetery	1912	2309062
I	289m NE	Unspecified Pits	1912	2198547
M	290m N	Cemetery	1991	2230584
M	290m N	Cemetery	1973	2230584
M	290m N	Cemetery	1935	2222968
M	290m N	Cemetery	1966	2312177
M	290m N	Disused Cemetery	1948	2313691

ID	Location	Land Use	Date	Group ID
I	291m NE	Unspecified Pit	1912	2323508
M	294m N	Disused Cemetery	1938	2248718
M	294m N	Disused Cemetery	1912	2317208
I	295m NE	Unspecified Pit	1938	2218357
M	296m N	Disused Cemetery	1933	2313263
I	296m NE	Unspecified Pit	1935	2218357
I	296m NE	Unspecified Pit	1935	2218357
I	297m NE	Unspecified Pit	1938	2279936
I	297m NE	Unspecified Pit	1912	2255778
I	299m NE	Unspecified Pit	1948	2323580
I	300m NE	Unspecified Pit	1933	2314161
I	300m NE	Unspecified Pit	1933	2314161
3	343m E	Unspecified Tank	1933	2192527
Q	395m E	Boat House	1938	2310159
Q	395m E	Boat House	1912	2207173
Q	399m E	Boat House	1938	2310159
Q	399m E	Boat House	1912	2207173
Q	400m E	Boat House	1991	2304152
Q	400m E	Boat House	1973	2304152
Q	400m E	Boat House	1966	2304152
Q	400m E	Boat House	1948	2304152
Q	401m E	Boat House	1935	2238103
Q	401m E	Boat House	1912	2239471
Q	402m E	Boat House	1933	2238103
R	406m N	Hospital	1894	2288121
R	407m N	Hospital	1894	2213453
R	411m N	Hospital	1912	2254013
S	411m NW	Railway Sidings	1991	2268428

ID	Location	Land Use	Date	Group ID
S	411m NW	Railway Sidings	1973	2268428
S	411m NW	Railway Sidings	1966	2268428
S	411m NW	Railway Sidings	1948	2268428
R	412m N	Hospital	1912	2276578
R	413m N	Hospital	1896	2291305
R	414m N	Hospital	1894	2291305
R	415m N	Hospital	1966	2269672
R	416m N	Hospital	1991	2307258
R	416m N	Hospital	1973	2307258
R	417m N	Hospital	1935	2316578
T	418m NW	Railway Sidings	1865	2295344
R	419m N	Hospital	1938	2318447
R	419m N	Hospital	1938	2221982
R	419m N	Hospital	1912	2276578
R	420m N	Hospital	1948	2250174
R	421m N	Hospital	1933	2209699
S	421m NW	Railway Sidings	1912	2221451
T	421m NW	Railway Station	1912	2231393
T	422m NW	Railway Station	1894	2276518
V	422m N	Railway Station	1991	2211034
V	422m N	Railway Station	1973	2211034
V	422m N	Railway Station	1966	2211034
V	422m N	Railway Sidings	1991	2256598
T	423m NW	Railway Station	1865	2266023
T	423m NW	Railway Station	1894	2311829
T	426m NW	Railway Buildings	1935	2160612
T	426m NW	Railway Sidings	1935	2252939
T	427m NW	Railway Station	1896	2276518

ID	Location	Land Use	Date	Group ID
T	427m NW	Railway Sidings	1894	2320676
T	427m NW	Junction Station	1894	2233367
T	427m NW	Railway Building	1948	2304598
V	428m N	Railway Sidings	1973	2249974
V	428m N	Railway Sidings	1966	2249974
V	428m N	Railway Sidings	1948	2249974
S	431m NW	Railway Sidings	1938	2262956
S	431m NW	Railway Sidings	1912	2221451
T	431m NW	Junction Station	1938	2327788
T	431m NW	Junction Station	1912	2262745
T	431m NW	Railway Station	1933	2242365
T	432m NW	Railway Station	1938	2231546
T	432m NW	Railway Station	1912	2292973
V	432m NW	Railway Sidings	1938	2287423
T	435m NW	Railway Sidings	1933	2328011
T	435m N	Railway Sidings	1938	2280178
6	441m NW	Railway Sidings	1894	2303497
V	445m NW	Railway Sidings	1894	2268538
S	447m NW	Railway Sidings	1896	2271110
V	453m NW	Railway Sidings	1896	2286353
S	455m NW	Railway Land	1894	2201088
T	456m NW	Railway Building	1865	2313538
T	456m NW	Railway Building	1865	2196659
V	456m N	Railway Sidings	1912	2250881
T	459m NW	Railway Building	1894	2312718
T	460m NW	Brewery	1865	2159143
S	461m NW	Railway Sidings	1912	2271110
T	462m NW	Railway Building	1991	2307101

ID	Location	Land Use	Date	Group ID
T	462m NW	Railway Building	1973	2307101
T	462m NW	Railway Building	1966	2307101
T	464m NW	Railway Building	1896	2329576
7	467m NW	Unspecified Ground Workings	1896	2164369
T	468m NW	Railway Building	1933	2222609
V	469m N	Railway Sidings	1894	2242624
T	469m NW	Railway Building	1912	2240971
T	470m NW	Railway Building	1935	2224046
T	470m NW	Railway Building	1991	2212769
T	470m NW	Railway Building	1973	2212769
T	470m NW	Railway Building	1966	2212769
T	470m NW	Railway Building	1948	2212769
T	472m NW	Railway Building	1948	2306287
T	473m NW	Railway Building	1894	2227387
S	473m NW	Railway Sidings	1894	2291300
V	474m N	Railway Building	1894	2287269
T	475m NW	Railway Building	1894	2227387
V	476m N	Railway Sidings	1912	2254348
V	476m N	Railway Sidings	1896	2221207
V	477m N	Railway Building	1894	2287269
T	477m NW	Railway Building	1938	2219085
T	477m NW	Railway Building	1912	2217532
T	478m NW	Railway Buildings	1938	2243160
T	478m NW	Railway Buildings	1912	2300086
T	478m NW	Railway Buildings	1912	2300086
X	480m SE	Refuse Heap	1938	2232458
Y	486m NE	Unspecified Ground Workings	1894	2270655
X	486m SE	Refuse Heap	1948	2232458

ID	Location	Land Use	Date	Group ID
Y	486m NE	Unspecified Ground Workings	1896	2270655
V	488m N	Railway Sidings	1912	2231679
Y	492m NE	Unspecified Pit	1894	2175024
Z	492m NW	Nursery	1973	2252478
Z	492m NW	Nursery	1966	2252478

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**17**

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 24 >**

ID	Location	Land Use	Date	Group ID
B	131m SW	Unspecified Tank	1898	388395
E	178m W	Unspecified Tank	1972	411450
E	178m W	Unspecified Tank	1982	411450
I	279m NE	Unspecified Tank	1914	400532
I	279m NE	Unspecified Tank	1934	403844
D	317m E	Unspecified Tank	1914	388384
J	323m N	Unspecified Tank	1967	388383
N	336m NE	Unspecified Tank	1967	388382
4	371m NE	Unspecified Tank	1914	388385
R	408m N	Unspecified Tank	1980	398893
R	408m N	Unspecified Tank	1988	398893
R	411m N	Unspecified Tank	1991	388386
5	431m W	Unspecified Tank	1935	388399
T	460m NW	Unspecified Tank	1961	405700
T	460m NW	Unspecified Tank	1961	405700

ID	Location	Land Use	Date	Group ID
T	461m NW	Unspecified Tank	1962	430305
T	481m NW	Unspecified Tank	1959	388377

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**24**

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 24 >**

ID	Location	Land Use	Date	Group ID
A	13m SE	Electricity Substation	1982	319984
A	13m SE	Electricity Substation	1990	319984
A	14m SE	Electricity Substation	1972	268896
B	107m S	Electricity Substation	1972	287235
B	108m S	Electricity Substation	1982	277585
B	108m S	Electricity Substation	1990	277585
E	156m W	Electricity Substation	1972	268895
E	161m W	Electricity Substation	1982	288868
E	161m W	Electricity Substation	1990	288868
F	181m NE	Electricity Substation	1990	272167
G	195m SW	Electricity Substation	1972	297305
G	196m SW	Electricity Substation	1982	297305
G	196m SW	Electricity Substation	1990	278087
F	211m NE	Electricity Substation	1982	271879
D	213m E	Electricity Substation	1980	273127
K	258m N	Electricity Substation	1982	303312
K	258m N	Electricity Substation	1972	303312
O	323m SW	Electricity Substation	1972	296416

ID	Location	Land Use	Date	Group ID
O	323m SW	Electricity Substation	1991	296416
W	440m W	Electricity Substation	1987	277304
W	441m W	Electricity Substation	1991	277304
W	441m W	Electricity Substation	1991	277304
W	441m W	Electricity Substation	1981	277304
8	471m NW	Electricity Substation	1974	267634

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 24 >**

ID	Location	Land Use	Date	Group ID
F	199m NE	Filling Station	1972	4345

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	**21**

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 24 >**

ID	Location	Land Use	Date	Group ID
N	311m NE	Garage	1982	93979
N	311m NE	Garage	1990	93979
N	311m NE	Garage	1967	82571
N	312m NE	Garage	1972	82571

ID	Location	Land Use	Date	Group ID
N	321m NE	Garage	1991	88838
N	321m NE	Garage	1980	90535
N	321m NE	Garage	1988	90535
P	378m NW	Garage	1959	90434
P	378m NW	Garage	1967	88040
P	378m NW	Garage	1960	90434
P	378m NW	Garage	1960	90434
P	378m NW	Garage	1996	95302
P	378m NW	Garage	1991	92393
P	378m NW	Garage	1996	95302
P	378m NW	Garage	1980	94047
P	378m NW	Garage	1988	94047
U	420m W	Garage	1962	91241
U	420m W	Garage	1961	92301
U	425m W	Garage	1987	88866
U	426m W	Garage	1991	90981
U	427m W	Garage	1981	88866

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill

Site Outline

Search buffers in metres (m)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

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

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

3.5 Historical waste sites

Records within 500m	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	18

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

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

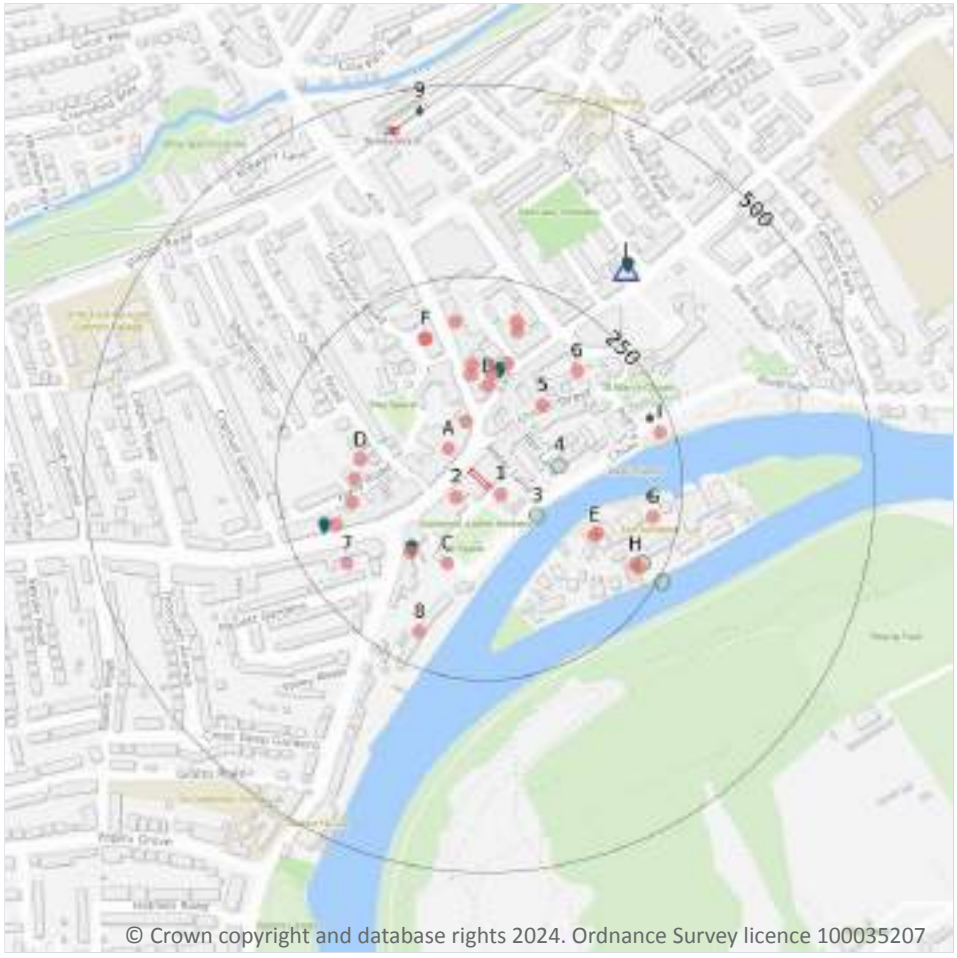
ID	Location	Site	Reference	Category	Sub-Category	Description
1	75m W	-	WEX359278	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal

ID	Location	Site	Reference	Category	Sub-Category	Description
A	151m N	22, London Road, Twickenham, Tw1 3rr	WEX281108	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	151m N	22, London Road, Twickenham, Tw1 3rr	WEX140258	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	152m N	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
B	154m SW	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
B	166m SW	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
2	283m SW	-	WEX357202	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	363m NE	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	375m NE	17, Richmond Road, Twickenham, Tw1 3ab	WEX286505	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	375m NE	17, Richmond Road, Twickenham, Tw1 3ab	WEX369988	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	375m NE	17, Richmond Road, Twickenham, Tw1 3ab	WEX240822	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	375m NE	17, Richmond Road, Twickenham, Tw1 3ab	WEX149067	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	375m NE	17, Richmond Road, Twickenham, Tw1 3ab	WEX046525	Storing waste exemption	Not on a farm	Storage of waste in secure containers
C	375m NE	17, Richmond Road, Twickenham, Tw1 3ab	WEX046525	Storing waste exemption	Not on a farm	Storage of waste in a secure place
C	375m NE	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
C	375m NE	17, Richmond Road, Twickenham, Tw1 3ab	WEX046525	Disposing of waste exemption	Not on a farm	Disposal by incineration
D	427m NE	York House Garden, Sion Road, Twickenham, Tw1 3dd	WEX147799	Using waste exemption	Not on a farm	Use of mulch

ID	Location	Site	Reference	Category	Sub-Category	Description
D	443m NE	York House Garden, Sion Road, Twickenham, Tw1 3dd	WEX287586	Using waste exemption	Not on a farm	Use of mulch

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

4 Current industrial land use



Site Outline

Search buffers in metres (m)

Recent industrial land uses

Current or recent petrol stations

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

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	**31**

Current potentially contaminative industrial sites.

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

ID	Location	Company	Address	Activity	Category
1	17m SE	Electricity Sub Station	Greater London, TW1	Electrical Features	Infrastructure and Facilities
2	35m SW	Boots Hearing Care	17, King Street, Twickenham, Greater London, TW1 3SD	Disability and Mobility Equipment	Consumer Products

ID	Location	Company	Address	Activity	Category
A	40m NW	Asbestos Removal Services	Flat 3 18, King Street, Twickenham, Greater London, TW1 3SN	Recycling, Reclamation and Disposal	Recycling Services
A	63m N	Anonse Ltd	1, London Road, Twickenham, Greater London, TW1 3SX	Published Goods	Industrial Products
B	109m N	Twickenham Boiler Service & Installation	5a, York Street, Twickenham, Greater London, TW1 3JZ	Industrial Repairs and Servicing	Repair and Servicing
C	110m S	Electricity Sub Station	Greater London, TW1	Electrical Features	Infrastructure and Facilities
B	122m N	Thames Audio Video	12, London Road, Twickenham, Greater London, TW1 3RR	Electrical Equipment Repair and Servicing	Repair and Servicing
5	123m NE	Sbri Healthcare	Ground and First and Second Floor Grange House 15, Church Street, Twickenham, Greater London, TW1 3NL	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
B	126m N	Rex P C	11, York Street, Twickenham, Greater London, TW1 3JZ	Electrical Equipment Repair and Servicing	Repair and Servicing
C	127m SW	Nilu Enterprise	47 King Street Parade, King Street, Twickenham, Greater London, TW1 3SG	Published Goods	Industrial Products
B	136m N	Specsavers Hearcare	16-18, London Road, Twickenham, Greater London, TW1 3RR	Disability and Mobility Equipment	Consumer Products
D	142m W	Electricity Sub Station	Greater London, TW1	Electrical Features	Infrastructure and Facilities
B	145m N	Excelsior Cars	15-19, York Street, Twickenham, Greater London, TW1 3JZ	Vehicle Hire and Rental	Hire Services
D	148m W	Wellmanor Ltd	3 Ilex House 94, Holly Road, Twickenham, Greater London, TW1 4HF	Civil Engineers	Engineering Services
E	150m SE	Slipway	Greater London, TW1	Moorings and Unloading Facilities	Water
E	151m SE	Tech 21	Syds Quay, Eel Pie Island, Twickenham, Greater London, TW1 3DY	Radar and Telecommunications Equipment	Industrial Products
D	157m W	Works	Greater London, TW1	Unspecified Works Or Factories	Industrial Features
F	180m N	V3 the Printing Room	37, London Road, Twickenham, Greater London, TW1 3SZ	Published Goods	Industrial Products

ID	Location	Company	Address	Activity	Category
F	180m N	The Printing Room	37, London Road, Twickenham, Greater London, TW1 3SZ	Published Goods	Industrial Products
F	180m N	B 3 Print	37, London Road, Twickenham, Greater London, TW1 3SX	Published Goods	Industrial Products
6	187m NE	Electricity Sub Station	Greater London, TW1	Electrical Features	Infrastructure and Facilities
D	187m W	Amplifon	18, Heath Road, Twickenham, Greater London, TW1 4BZ	Disability and Mobility Equipment	Consumer Products
B	189m N	Electricity Sub Station	Greater London, TW1	Electrical Features	Infrastructure and Facilities
F	193m N	Blue Gnome Computers	32, London Road, Twickenham, Greater London, TW1 3RR	Electrical Equipment Repair and Servicing	Repair and Servicing
7	198m SW	Electricity Sub Station	Greater London, TW1	Electrical Features	Infrastructure and Facilities
B	200m N	Telephone Exchange	Greater London, TW1	Telecommunications Features	Infrastructure and Facilities
8	205m S	S K Auto Locksmith	Thames Eyot, Cross Deep, Twickenham, Greater London, TW1 4QL	Vehicle Repair, Testing and Servicing	Repair and Servicing
H	215m SE	Slipway	Greater London, TW1	Moorings and Unloading Facilities	Water
G	216m E	Electricity Sub Station	Greater London, TW1	Electrical Features	Infrastructure and Facilities
H	220m SE	Slipway	Greater London, TW1	Moorings and Unloading Facilities	Water
I	231m E	Champions Wharf	Greater London, TW1	Moorings and Unloading Facilities	Water

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	**1**

Open, closed, under development and obsolete petrol stations.

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

ID	Location	Company	Address	LPG	Status
J	327m NE	SHELL	5-11, Richmond Road, Oak Lane, Twickenham, Outer London, TW1 3AB	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

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

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

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

Records within 500m	4

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

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

ID	Location	Address	Details	
C	124m SW	Kings Clothes Care Specialists, 45 King Street, Twickenham, TW1 3SG	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
B	132m N	Sky Dry Cleaners, 13 York Street, Twickenham, TW1 3JZ	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
D	201m W	MEL Dry Cleaners, 24 Heath Road, Twickenham, TW1 4BZ	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
J	333m NE	Shell (Oak Lane), 5-11 Richmond Road, Twickenham, TW1 3AB	Process: Petrol Vapour Recovery Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**0**

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	**3**

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

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

ID	Location	Address	Details	
G	208m E	PALM BEACH, EEL PIE ISLAND, TWICKEN, PALM BEACH, EEL PIE ISLAND, TWIC, KENHAM, LONDON	Effluent Type: MISCELLANEOUS DISCHARGES - UNSPECIFIED Permit Number: CTWC.0573 Permit Version: 1 Receiving Water: RIVER THAMES	Status: REVOKED - UNSPECIFIED Issue date: 20/12/1985 Effective Date: 20/12/1985 Revocation Date: 16/04/1991

ID	Location	Address	Details	
I	226m E	SURFACE WATER OUTFALL, CHURCH LANE/, SURFACE WATER OUTFALL, CHURCH LA, NE/EMBANKMENT, TWICKENHAM, MIDDL, ESEX	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CNTW.0228 Permit Version: 1 Receiving Water: RIVER THAMES	Status: REVOKED - UNSPECIFIED Issue date: 16/01/1990 Effective Date: 16/01/1990 Revocation Date: 30/06/1991
9	471m N	2B COLE PARK ROAD, TWICKENHAM, MIDD, 2B COLE PARK ROAD, TWICKENHAM, M, IDDLESEX	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2291 Permit Version: 1 Receiving Water: RIVER CRANE	Status: REVOKED - UNSPECIFIED Issue date: 21/03/1988 Effective Date: 21/03/1988 Revocation Date: 12/08/1996

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	**0**

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

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

4.15 Pollutant release to public sewer

Records within 500m	**0**

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	**0**

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

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

4.17 List 2 Dangerous Substances

Records within 500m	**0**

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	4

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

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

ID	Location	Details	
3	72m SE	Incident Date: 24/07/2003 Incident Identification: 176346 Pollutant: Sewage Materials Pollutant Description: Other Sewage Material	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 4 (No Impact)
4	94m E	Incident Date: 16/09/2001 Incident Identification: 31019 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
H	222m SE	Incident Date: 28/06/2002 Incident Identification: 88084 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
H	256m SE	Incident Date: 29/06/2002 Incident Identification: 88227 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

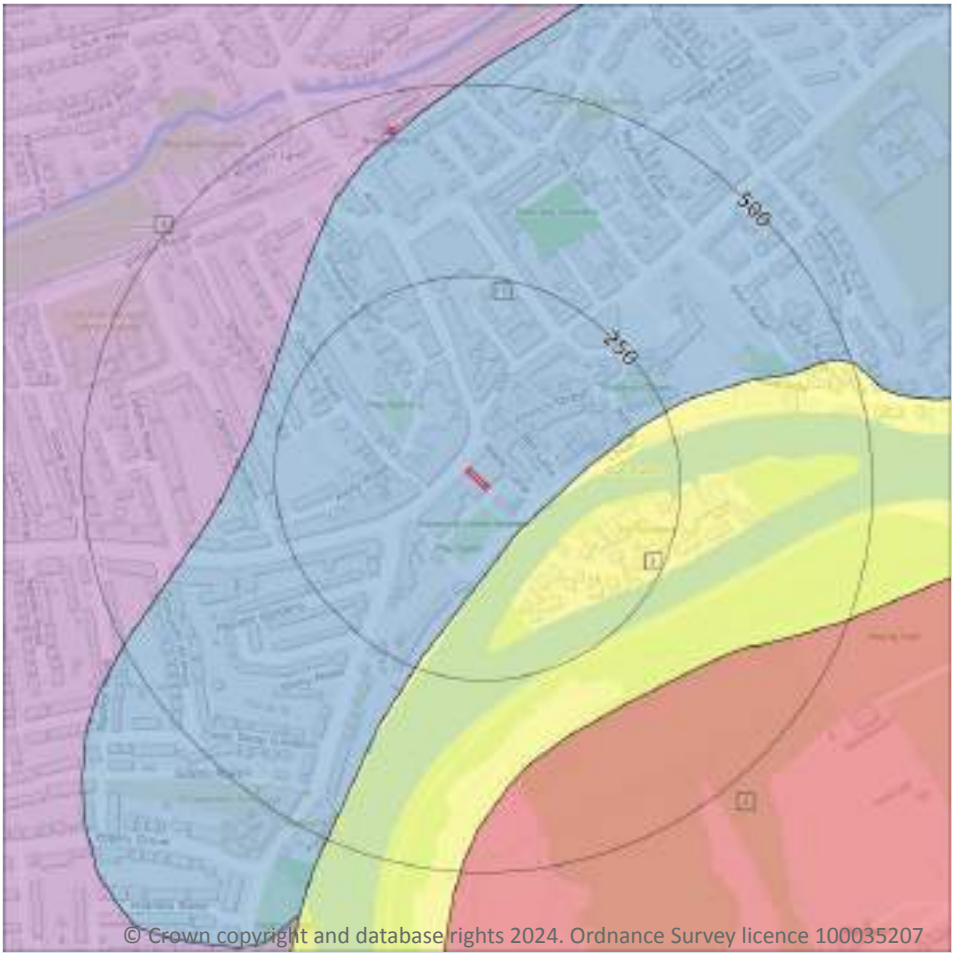
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m	4

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 48 >**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
2	70m SE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

ID	Location	Designation	Description
3	281m W	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
4	334m SE	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

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

Bedrock aquifer

Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	1

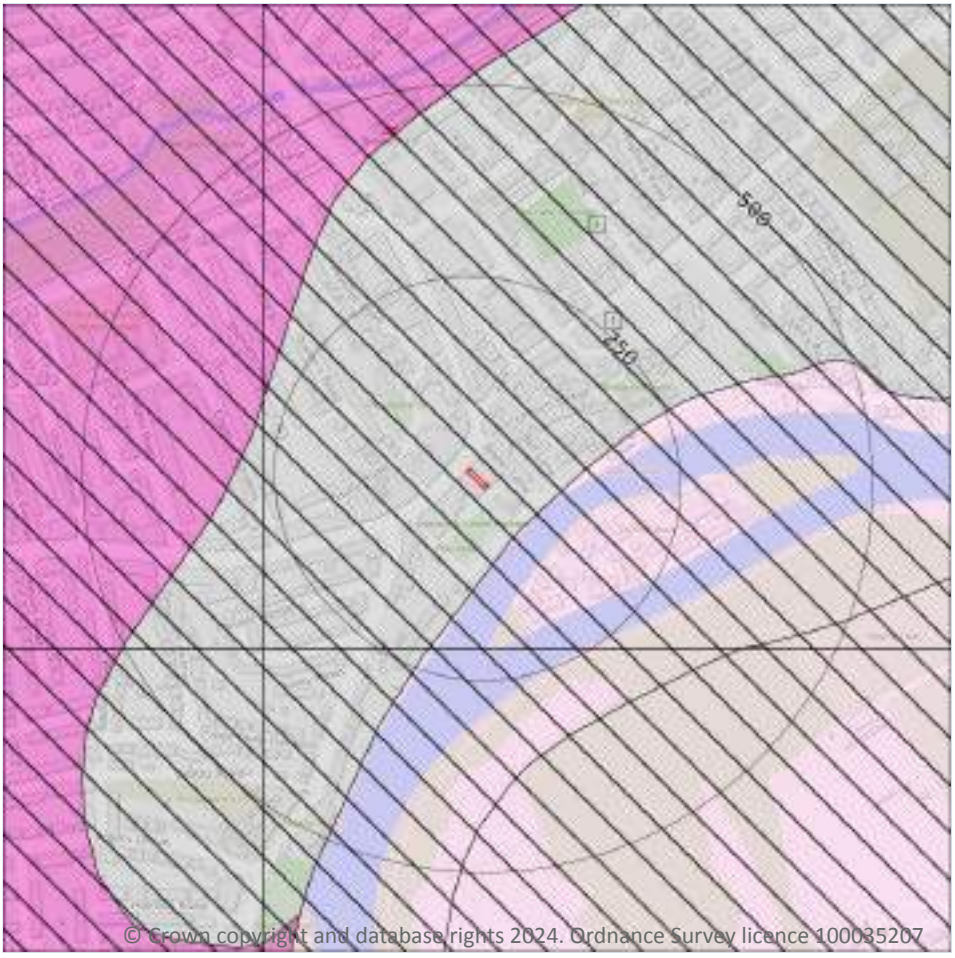
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 50 >**

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

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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

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

Bedrock vulnerability

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

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	1

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

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

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

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

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

5.5 Groundwater vulnerability- local information

Records on site	1

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

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

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

Abstractions and Source Protection Zones

Site Outline

Search buffers in metres (m)

Source Protection Zone 1
Inner catchment

Source Protection Zone 2
Outer catchment

Source Protection Zone 3
Total catchment

Source Protection Zone 4
Zone of Special Interest

Source Protection Zone 1c
Inner catchment - confined aquifer

Source Protection Zone 2c
Outer catchment - confined aquifer

Source Protection Zone 3c
Total catchment - confined aquifer

Drinking water abstraction licences

Drinking water abstraction licences
Polygon features

Drinking water abstraction licences
Linear features

Groundwater abstraction licence (point)

Groundwater abstraction licence (area)

Groundwater abstraction licence (linear)

Surface Water Abstractions (point)

Surface Water Abstractions (area)

Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	13

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

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

ID	Location	Details	
-	1466m N	Status: Historical Licence No: 28/39/34/0006 Details: Lake & Pond Throughflow Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT ST. MARGARET'S LAKE, TWICKENHAM Data Type: Point Name: ST MARGARETS RES GROUNDS Easting: 516800 Northing: 174600	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 08/10/1982 Expiry Date: - Issue No: 100 Version Start Date: 08/10/1982 Version End Date: -
-	1617m NE	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT D Data Type: Point Name: Kier Construction Limited Easting: 517480 Northing: 174308	Annual Volume (m^3): 18144 Max Daily Volume (m^3): 432 Original Application No: - Original Start Date: 23/04/2018 Expiry Date: 31/12/2018 Issue No: 1 Version Start Date: 23/04/2018 Version End Date: -
-	1623m NE	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT A Data Type: Point Name: Kier Construction Limited Easting: 517448 Northing: 174350	Annual Volume (m^3): 18144 Max Daily Volume (m^3): 432 Original Application No: - Original Start Date: 23/04/2018 Expiry Date: 31/12/2018 Issue No: 1 Version Start Date: 23/04/2018 Version End Date: -
-	1674m NE	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT C Data Type: Point Name: Kier Construction Limited Easting: 517521 Northing: 174347	Annual Volume (m^3): 18144 Max Daily Volume (m^3): 432 Original Application No: - Original Start Date: 23/04/2018 Expiry Date: 31/12/2018 Issue No: 1 Version Start Date: 23/04/2018 Version End Date: -

ID	Location	Details	
-	1676m NE	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT B Data Type: Point Name: Kier Construction Limited Easting: 517490 Northing: 174383	Annual Volume (m^3): 18144 Max Daily Volume (m^3): 432 Original Application No: - Original Start Date: 23/04/2018 Expiry Date: 31/12/2018 Issue No: 1 Version Start Date: 23/04/2018 Version End Date: -
-	1678m E	Status: Historical Licence No: 28/39/34/0008 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT THE EXILES GROUND, TWICKENHAM Data Type: Point Name: D.G.TILLES & R.H.TILLES Easting: 517840 Northing: 173860	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/10/1996 Expiry Date: 31-Dec-06 Issue No: 102 Version Start Date: 14/09/2001 Version End Date: -
-	1678m E	Status: Historical Licence No: 28/39/34/0008 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: THE EXILES GROUND, TWICKENHAM-BOREHOLE A Data Type: Point Name: D G TILLES & R H TILLES Easting: 517840 Northing: 173860	Annual Volume (m^3): 5300 Max Daily Volume (m^3): 56 Original Application No: - Original Start Date: 15/10/1996 Expiry Date: 31/12/2006 Issue No: 103 Version Start Date: 24/04/2003 Version End Date: -
-	1791m E	Status: Active Licence No: 28/39/35/0004 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: GRAVELS AT 143 PETERSHAM ROAD, RICHMOND, SURREY Data Type: Point Name: PETERSHAM NURSERIES LIMITED Easting: 518080 Northing: 173320	Annual Volume (m^3): 2500 Max Daily Volume (m^3): 27 Original Application No: - Original Start Date: 09/07/1973 Expiry Date: - Issue No: 102 Version Start Date: 15/05/2008 Version End Date: -

ID	Location	Details	
-	1791m E	Status: Historical Licence No: 28/39/35/0004 Details: Spray Irrigation - Spray Irrigation Definition Order Direct Source: THAMES GROUNDWATER Point: GRAVELS AT 143 PETERSHAM ROAD, RICHMOND, SURREY Data Type: Point Name: PETERSHAM NURSERIES LIMITED Easting: 518080 Northing: 173320	Annual Volume (m^3): 2500 Max Daily Volume (m^3): 27.28 Original Application No: - Original Start Date: 09/07/1973 Expiry Date: - Issue No: 101 Version Start Date: 11/11/2001 Version End Date: -
-	1810m E	Status: Historical Licence No: 28/39/35/0004 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: GRAVELS AT 143 PETERSHAM ROAD, RICHMOND, SURREY Data Type: Point Name: PETERSHAM NURSERIES LIMITED Easting: 518100 Northing: 173300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 09/07/1973 Expiry Date: - Issue No: 100 Version Start Date: 09/07/1973 Version End Date: -
-	1810m E	Status: Historical Licence No: 28/39/35/0004 Details: Spray Irrigation - Spray Irrigation Definition Order Direct Source: THAMES GROUNDWATER Point: GRAVELS AT 143 PETERSHAM ROAD, RICHMOND, SURREY Data Type: Point Name: PETERSHAM NURSERIES LIMITED Easting: 518100 Northing: 173300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 09/07/1973 Expiry Date: - Issue No: 100 Version Start Date: 09/07/1973 Version End Date: -
-	1833m E	Status: Active Licence No: 28/39/35/0005 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: RICHMOND GOLF CLUB - BOREHOLE 'B' Data Type: Point Name: RICHMOND GOLF CLUB Easting: 518020 Northing: 172600	Annual Volume (m^3): 28200 Max Daily Volume (m^3): 269 Original Application No: WRA/S/1299 Original Start Date: 11/02/1974 Expiry Date: - Issue No: 101 Version Start Date: 01/10/2007 Version End Date: -

ID	Location	Details	
-	1995m E	Status: Active Licence No: 28/39/35/0005 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: RICHMOND GOLF CLUB - BOREHOLE 'C' Data Type: Point Name: RICHMOND GOLF CLUB Easting: 518250 Northing: 172830	Annual Volume (m^3): 28200 Max Daily Volume (m^3): 269 Original Application No: WRA/S/1299 Original Start Date: 11/02/1974 Expiry Date: - Issue No: 101 Version Start Date: 01/10/2007 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	**6**

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

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

ID	Location	Details	
-	1839m NW	Status: Historical Licence No: 28/39/37/0007 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: MOGDEN SEWAGE TREATMENT WORKS, ISLEWORTH Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515410 Northing: 174860	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: 31/08/2009 Issue No: 1 Version Start Date: 17/08/1999 Version End Date: -
-	1839m NW	Status: Historical Licence No: 28/39/37/0007 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: D.OF NORTHUMBERLAND- MOGDEN SEWAGE TREATMENT WRKS, ISLEWORTH Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515410 Northing: 174860	Annual Volume (m^3): - Max Daily Volume (m^3): 7200 Original Application No: - Original Start Date: 17/08/1999 Expiry Date: 31/08/2009 Issue No: 1 Version Start Date: 17/08/1999 Version End Date: -

ID	Location	Details	
-	1839m NW	Status: Historical Licence No: 28/39/37/0007 Details: General Use Relating To Secondary Category (Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: D.OF NORTHUMBERLAND- MOGDEN SEWAGE TREATMENT WRKS, ISLEWORTH Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515410 Northing: 174860	Annual Volume (m^3): - Max Daily Volume (m^3): 7200 Original Application No: - Original Start Date: 17/08/1999 Expiry Date: 31/08/2009 Issue No: 1 Version Start Date: 01/01/2007 Version End Date: -
-	1839m NW	Status: Historical Licence No: TH/039/0037/001 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: DUKE OF NORTHUMBERLAND RIVER - MOGDEN SEWAGE TREATMENT WORKS Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515406 Northing: 174858	Annual Volume (m^3): 1752000 Max Daily Volume (m^3): 7200 Original Application No: - Original Start Date: 12/08/2009 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 12/08/2009 Version End Date: -
-	1839m NW	Status: Historical Licence No: TH/039/0037/001 Details: General Use Relating To Secondary Category (Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: DUKE OF NORTHUMBERLAND RIVER - MOGDEN SEWAGE TREATMENT WORKS Data Type: Point Name: THAMES WATER UTILITIES LTD Easting: 515406 Northing: 174858	Annual Volume (m^3): 1752000 Max Daily Volume (m^3): 7200 Original Application No: - Original Start Date: 12/08/2009 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 12/08/2009 Version End Date: -
-	1839m NW	Status: Historical Licence No: TH/039/0037/004 Details: General Use Relating To Secondary Category (Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: DUKE OF NORTHUMBERLAND RIVER - MOGDEN SEWAGE TREATMENT WORKS Data Type: Point Name: Thames Water Utilities Ltd Easting: 515406 Northing: 174858	Annual Volume (m^3): 1752000 Max Daily Volume (m^3): 7200 Original Application No: NPS/WR/009215 Original Start Date: 01/04/2013 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 01/04/2013 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

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

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	**2**

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

Features are displayed on the Hydrology map on **page 60 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
3	93m SE	Tidal river or stream.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Thames

ID	Location	Type of water feature	Ground level	Permanence	Name
5	221m SE	Tidal river or stream.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Thames

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	0

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

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

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

Features are displayed on the Hydrology map on **page 60 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**Coastal Catchment**	**Not part of a river WB catchment**	**131**	**Land area part of London Management Catchment draining to the Tidal Thames**	**London**

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

6.4 WFD Surface water bodies

Records identified	1

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

water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 60 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
4	95m SE	Transi	THAMES UPPER	GB530603911403 ↗	Moderate	Fail	Moderate	2019

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

6.5 WFD Groundwater bodies

Records on site	**1**

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

Features are displayed on the Hydrology map on **page 60 >**

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

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

7 River and coastal flooding

Site Outline

Search buffers in metres (m)

River and coastal flooding:

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

7.1 Risk of flooding from rivers and the sea

Records within 50m	6

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on **page 63 >**

Distance	Flood risk category
On site	**N/A**
0 - 50m	High

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

7.2 Historical Flood Events

Records within 250m	**0**

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

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

7.3 Flood Defences

Records within 250m	**45**

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

Features are displayed on the River and coastal flooding map on **page 63 >**

ID	Location	Update
A	34m E	08/11/2022
A	34m E	08/11/2022
B	38m SE	08/11/2022
B	38m SE	08/11/2022
A	44m E	08/11/2022
D	84m E	08/11/2022
B	103m S	08/11/2022
E	112m S	08/11/2022
G	115m SE	08/11/2022
G	116m SE	08/11/2022

ID	Location	Update
G	116m SE	08/11/2022
G	117m SE	08/11/2022
G	117m SE	08/11/2022
G	118m SE	08/11/2022
2	120m SE	08/11/2022
G	120m SE	08/11/2022
G	122m SE	08/11/2022
G	125m SE	08/11/2022
G	129m SE	08/11/2022
G	132m SE	08/11/2022
G	136m SE	08/11/2022
F	140m E	08/11/2022
3	142m E	08/11/2022
4	154m E	08/11/2022
5	155m S	08/11/2022
F	159m E	08/11/2022
I	194m SE	08/11/2022
I	194m SE	08/11/2022
H	195m NE	08/11/2022
I	195m SE	08/11/2022
I	195m SE	08/11/2022
I	196m SE	08/11/2022
6	197m S	08/11/2022
F	197m E	08/11/2022
I	200m SE	08/11/2022
I	201m SE	08/11/2022
I	202m SE	08/11/2022
7	205m E	08/11/2022

ID	Location	Update
I	206m SE	08/11/2022
I	211m SE	08/11/2022
I	214m SE	08/11/2022
I	222m SE	08/11/2022
I	230m SE	08/11/2022
8	232m E	08/11/2022
9	239m SE	08/11/2022

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	**12**

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

Features are displayed on the River and coastal flooding map on **page 63 >**

ID	Location	
A	31m E	Area benefiting from flood defences
B	44m SE	Area benefiting from flood defences
A	51m E	Area benefiting from flood defences
B	108m SW	Area benefiting from flood defences
F	142m E	Area benefiting from flood defences
C	147m S	Area benefiting from flood defences
F	147m E	Area benefiting from flood defences
F	181m NE	Area benefiting from flood defences
E	185m SW	Area benefiting from flood defences
F	197m E	Area benefiting from flood defences
F	198m NE	Area benefiting from flood defences
F	210m E	Area benefiting from flood defences

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

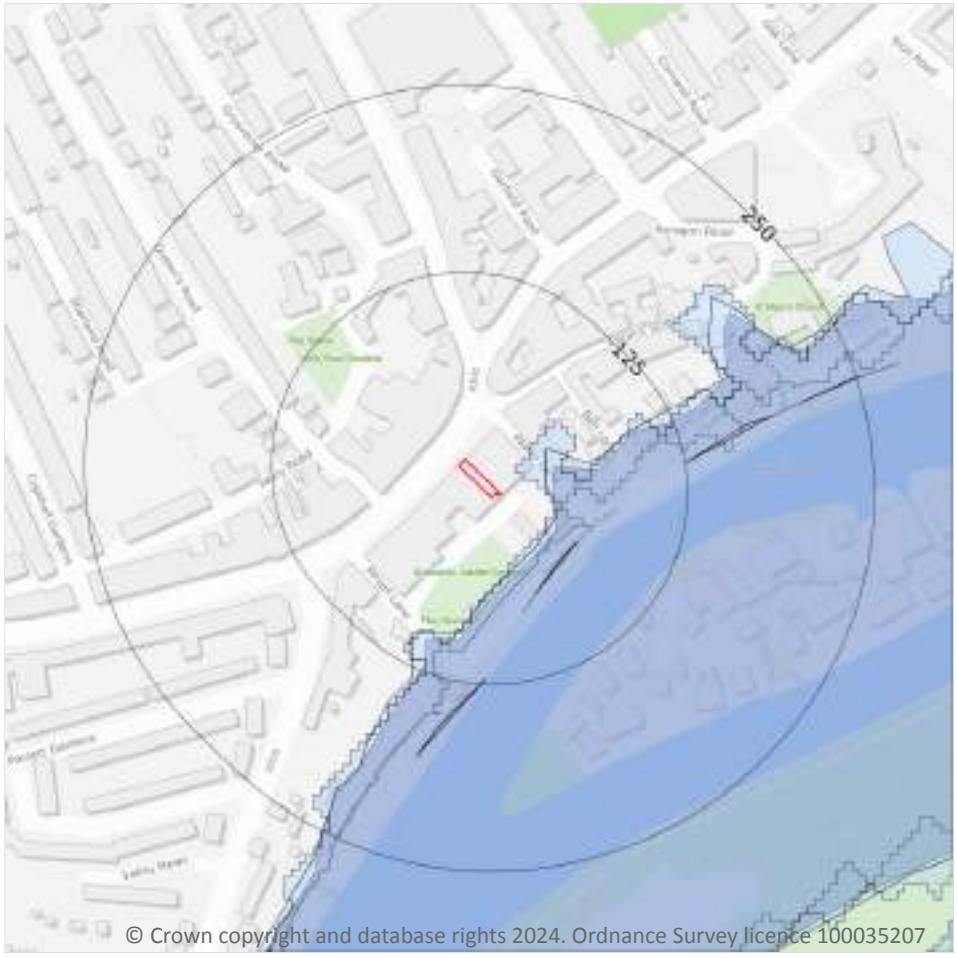
7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

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

Features are displayed on the River and coastal flooding map on **page 63 >**

Location	Type
17m E	Zone 2 - (Fluvial /Tidal Models)

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

7.7 Flood Zone 3

Records within 50m	1

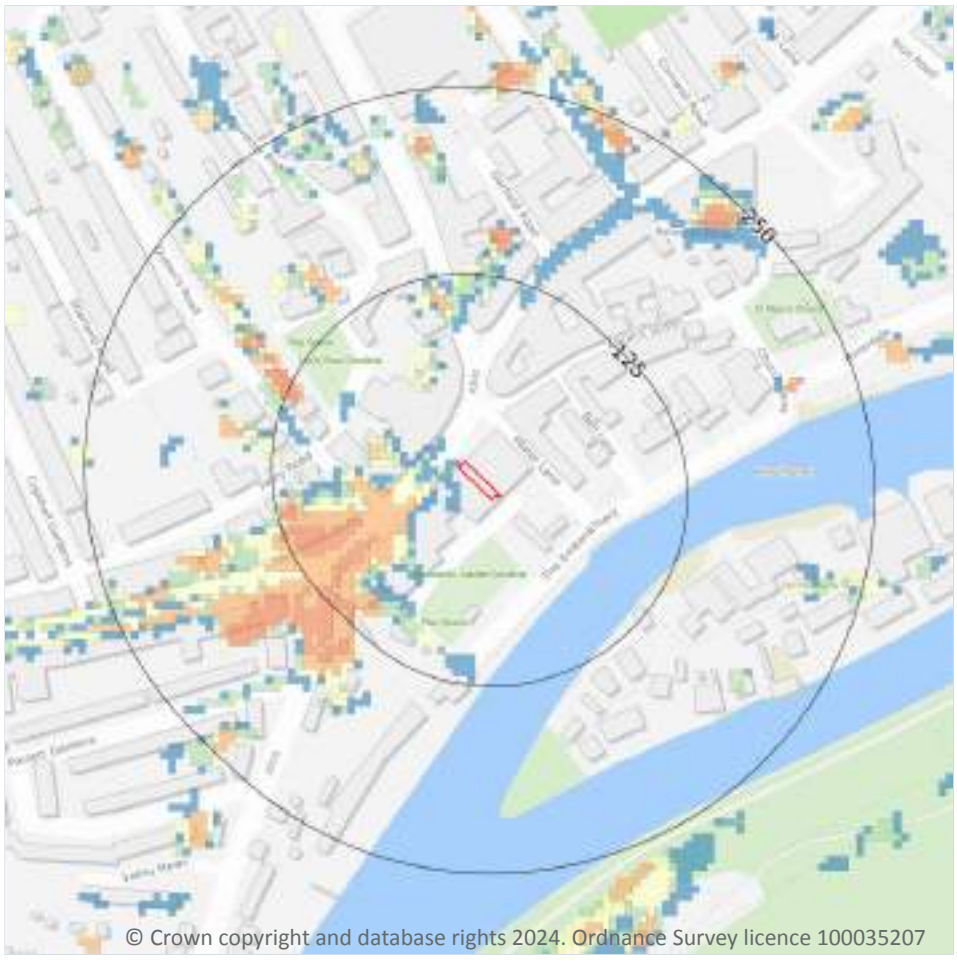
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 63 >**

Location	Type
36m E	Zone 3 - (Fluvial Models)

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

8 Surface water flooding



Site Outline
Search buffers in metres (m)

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

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

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

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

8.1 Surface water flooding

Highest risk on site	**1 in 1000 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 30 year, 0.1m - 0.3m**

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

Features are displayed on the Surface water flooding map on **page 70 >**

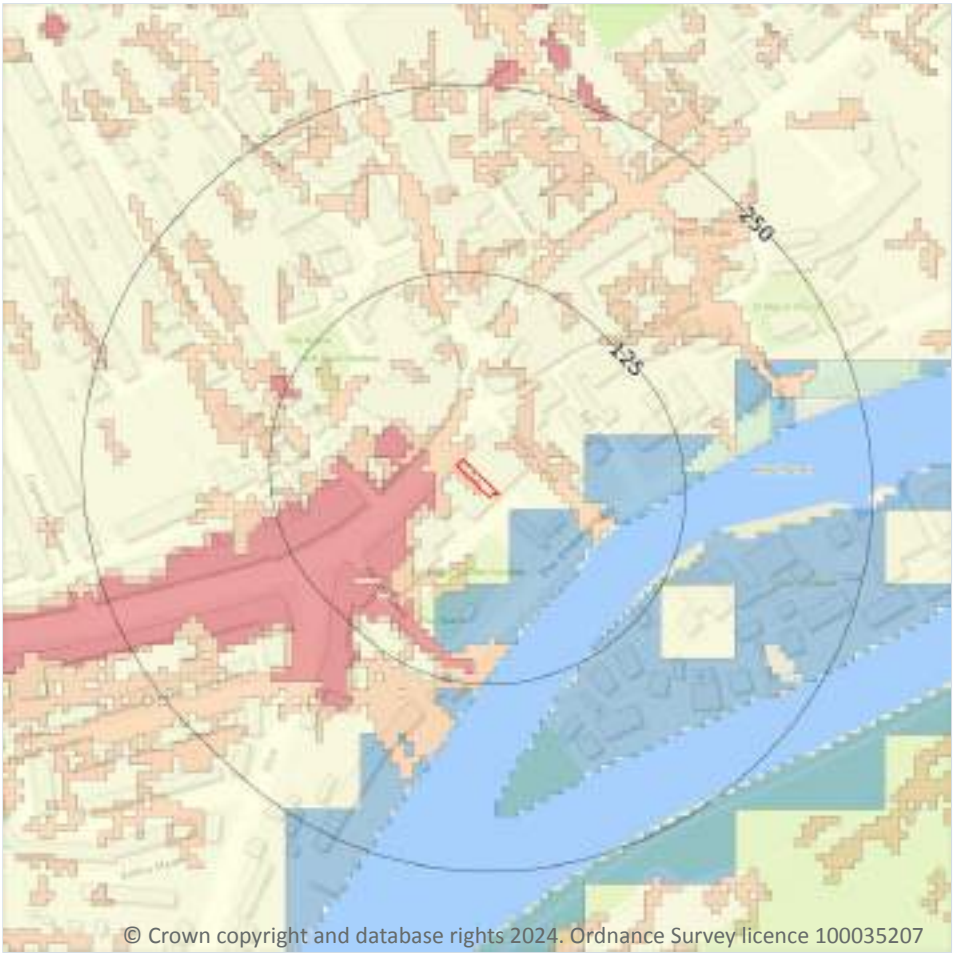
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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

Return period	Maximum modelled depth
1 in 1000 year	Between 0.1m and 0.3m
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

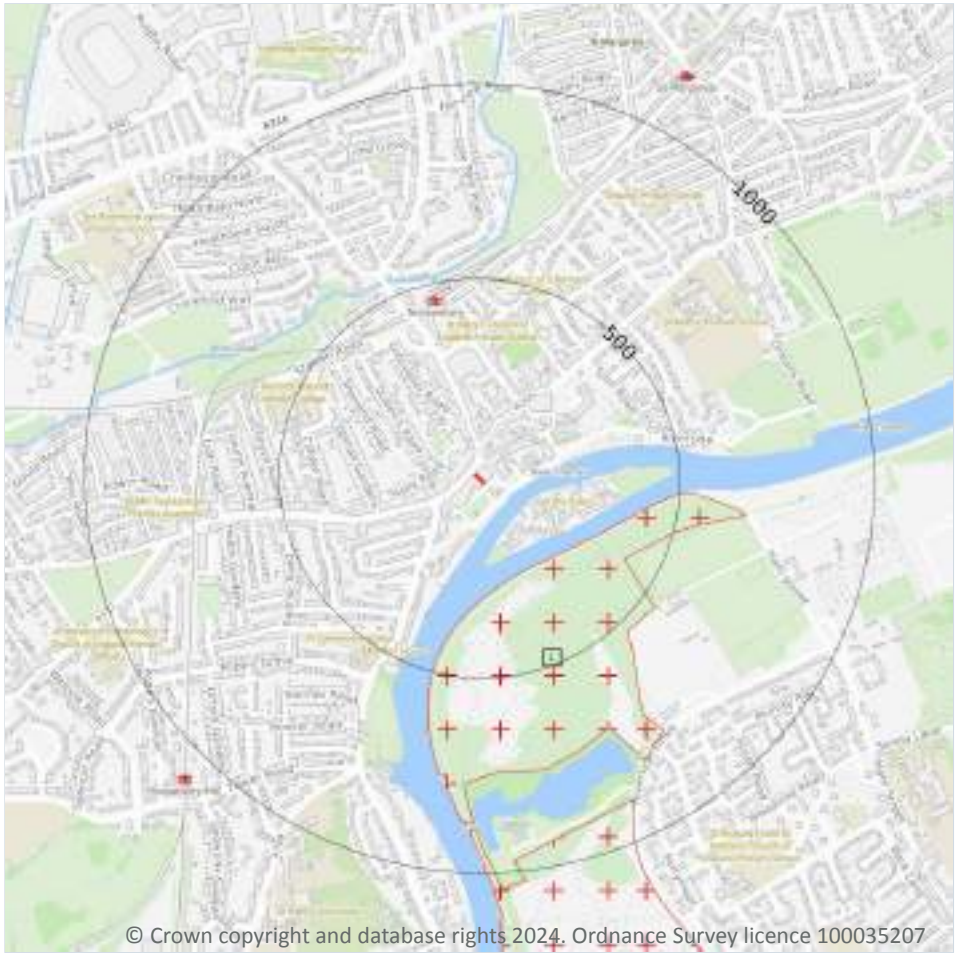
Highest risk on site	**Moderate-High**
Highest risk within 50m	**High**

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

Features are displayed on the Groundwater flooding map on **page 72 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Special Areas of Conservation (SAC)

National Nature Reserves (NNR)

Local Nature Reserves (LNR)

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	1

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

Features are displayed on the Environmental designations map on **page 73 >**

ID	Location	Name	Data source
-	1918m E	Richmond Park	Natural England

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	1

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

Features are displayed on the Environmental designations map on **page 73 >**

ID	Location	Name	Features of interest	Habitat description	Data source
-	1918m E	Richmond Park	Stag beetle.	Dry grassland, Steppes; Broad-leaved deciduous woodland; Inland water bodies (Standing water, Running water); Bogs, Marshes, Water fringed vegetation, Fens; Humid grassland, Mesophile grassland; Improved grassland; Heath, Scrub, Maquis and Garrigue, Phygrana; Mixed woodland	Natural England

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	1

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

Features are displayed on the Environmental designations map on **page 73 >**

ID	Location	Name	Data source
-	1918m E	Richmond Park	Natural England

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	3

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

Features are displayed on the Environmental designations map on **page 73 >**

ID	Location	Name	Data source
1	247m SE	Ham Lands	Natural England
2	888m S	Ham Lands	Natural England
-	1965m SE	Ham Common, Richmond, London	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m	0

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

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	0

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

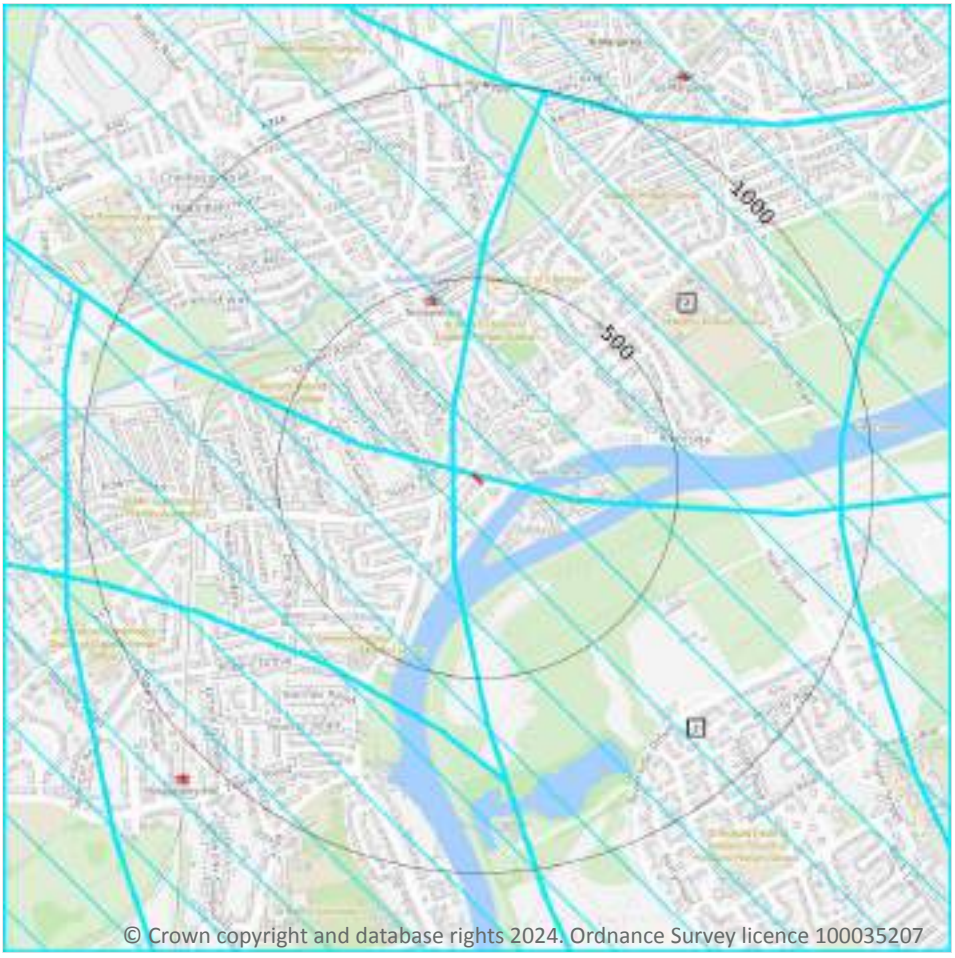
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

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

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

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

Not recorded

Favourable

Unfavourable - Recovering

Unfavourable - No change

Unfavourable - Declining

Partially destroyed

Destroyed

10.17 SSSI Impact Risk Zones

Records on site	2

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

Features are displayed on the SSSI Impact Zones and Units map on **page 78 >**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.**
2	On site	**Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	1

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

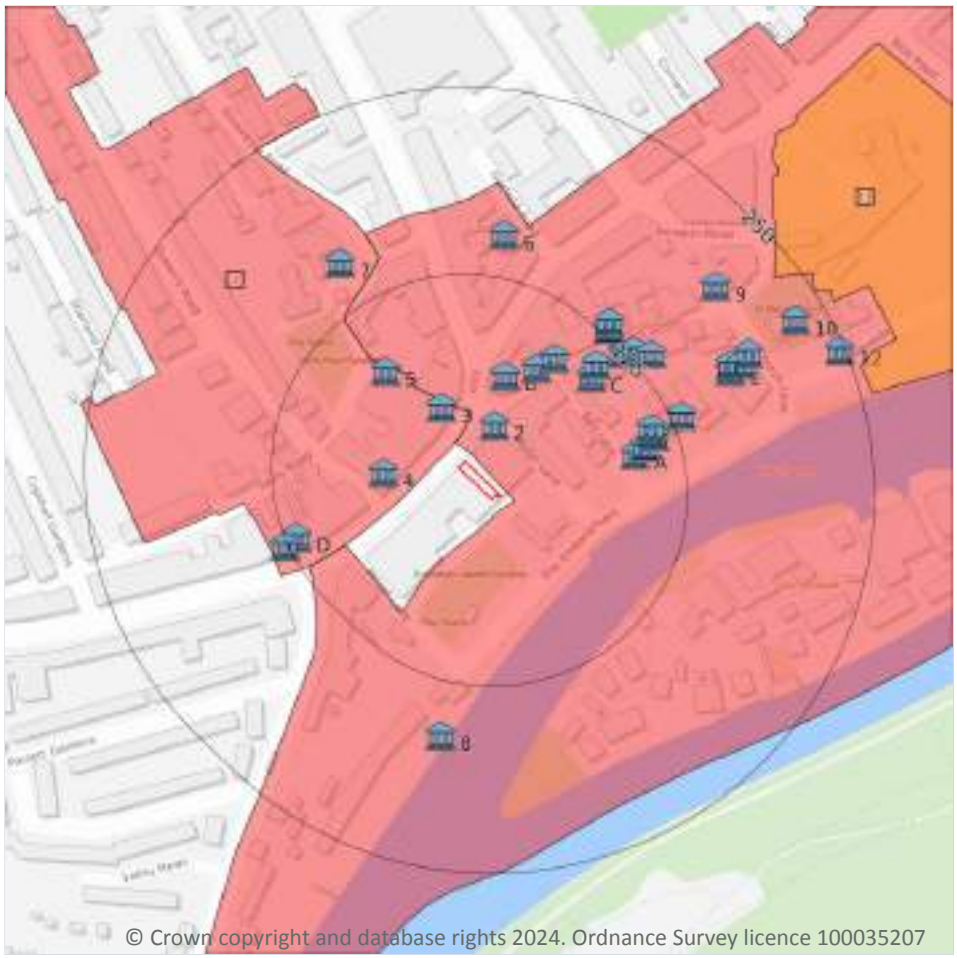
Features are displayed on the SSSI Impact Zones and Units map on **page 78 >**

ID: -
Location: 1918m E
SSSI name: Richmond Park
Unit name: Petersham Park
Broad habitat: Acid Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Invert. assemblage A211 heartwood decay	Favourable	27/10/2010
Invert. assemblage A212 bark and sapwood decay	Favourable	27/10/2010
Invert. assemblage A213 fungal fruiting body	Favourable	27/10/2010
Lowland dry acid grassland (U1b,c,d,f)	Unfavourable - Recovering	27/10/2010
Lowland dry acid grassland (U4/20)	Unfavourable - Recovering	27/10/2010
S1083 Stag beetle, Lucanus cervus	Favourable	27/10/2010

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

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	31

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

Features are displayed on the Visual and cultural designations map on **page 81 >**

ID	Location	Name	Grade	Reference Number	Listed date
2	31m N	K6 Telephone Kiosk Junction Of King Street And Water Lane	II	1254087	23/06/1987
3	39m NW	10 And 12 King Street	II	1357721	25/06/1983
4	50m W	The George Public House 32 King Street, And 34 And 36 King Street	II	1065375	05/01/1961
B	63m N	Barclays Bank	II	1253034	25/05/1983
B	79m NE	24, 25 And 26, Church Street	II	1358046	25/06/1983

ID	Location	Name	Grade	Reference Number	Listed date
5	80m NW	29 And 31, Holly Road	II	1254308	14/05/1990
B	92m NE	22, Church Street	II	1191956	25/06/1983
A	94m E	2, The Embankment	II	1080813	02/09/1952
C	99m NE	The Fox Public House	II	1080851	25/06/1983
A	102m E	Strand House	II	1358069	02/09/1952
C	107m NE	40, Church Street	II	1261407	13/11/1989
A	110m E	5, The Embankment	II	1080814	25/06/1983
A	111m E	7, The Embankment	II	1358070	25/06/1983
D	118m W	54 King Street	II	1065376	25/06/1983
C	125m NE	44 And 45, Church Street	II	1191967	25/06/1983
D	127m W	60 And 62 King Street	II	1357722	25/06/1983
C	130m NE	14, Church Street	II	1080850	25/06/1983
C	132m NE	46, Church Street	II	1358047	25/06/1983
A	132m E	8, 9 And 10, The Embankment	II	1080815	25/06/1983
C	134m NE	13, Church Street	II	1080849	25/06/1983
C	138m NE	47, Church Street	II	1191977	25/06/1983
6	154m N	Twickenham Library	II	1400831	23/06/2011
7	156m NW	Grosvenor House	II	1358072	02/09/1952
8	161m S	Boathouse And Deep-Water Dock, Riverside Landing Stage, Steps, Balustrade And Gates, Thames Eyot	II	1400159	17/10/2011
E	175m NE	22, The Embankment	II	1358071	02/09/1952
E	177m NE	23, The Embankment	II	1080816	02/09/1952
E	183m NE	24, The Embankment	II	1080817	02/09/1952
E	191m NE	25, The Embankment (See Details For Further Address Information)	II	1080818	02/09/1952
9	201m NE	Arragon House	II	1191947	25/03/1976
10	229m NE	Church Of St Mary	II*	1080852	02/09/1952
12	247m E	Brick Wall To South And East St Mary's Church, Running From South To South East	II	1286899	25/06/1983

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

11.5 Conservation Areas

Records within 250m	2

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

Features are displayed on the Visual and cultural designations map on **page 81 >**

ID	Location	Name	District	Date of designation
A	4m E	Twickenham Riverside	Richmond upon Thames	14/01/1969
1	13m NW	Queen's Road (Twickenham)	Richmond upon Thames	14/06/1988

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

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

11.7 Registered Parks and Gardens

Records within 250m	1

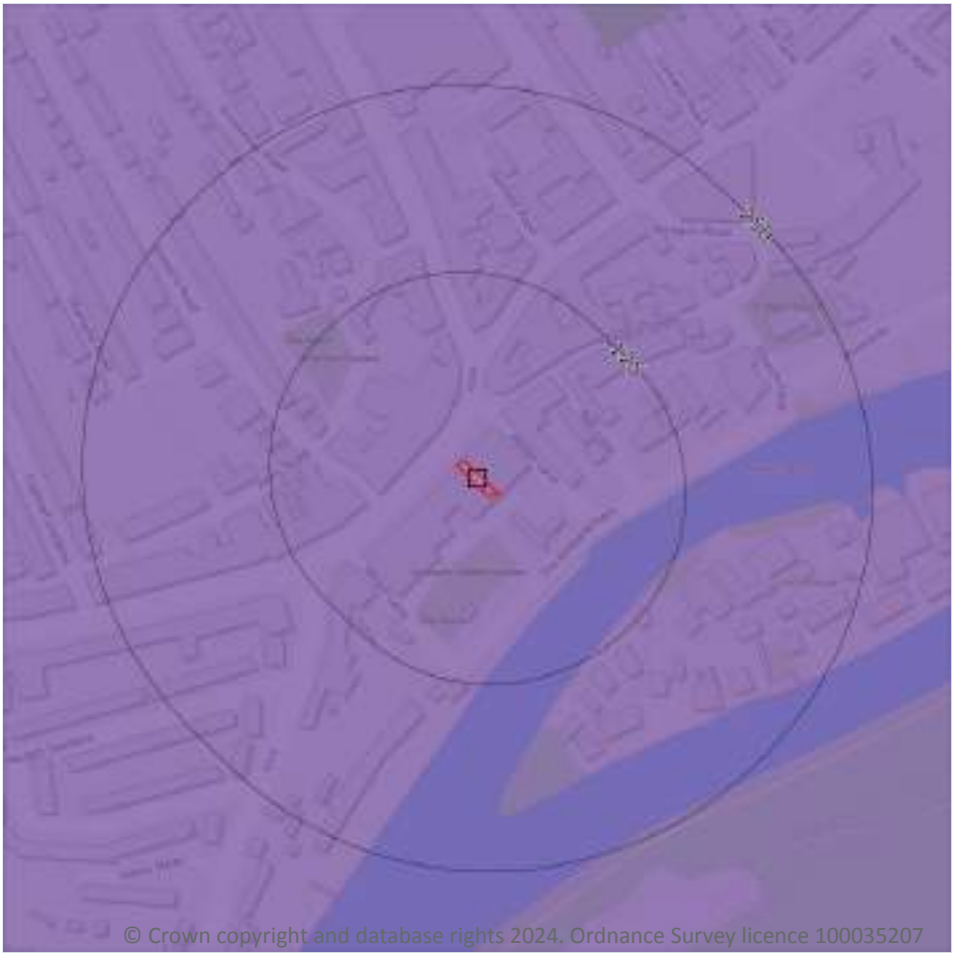
Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the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

Features are displayed on the Visual and cultural designations map on **page 81 >**

ID	Location	Name	Grade
11	234m NE	York House	II

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

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

12.1 Agricultural Land Classification

Records within 250m	1

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

Features are displayed on the Agricultural designations map on **page 85 >**

ID	Location	Classification	Description
1	**On site**	**Urban**	**Non-agricultural/no quality assigned**

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	1

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

Location	Reference	Scheme	Start Date	End date
246m SE	AG00428970	Higher Level Stewardship	01/03/2013	28/02/2023

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations

Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

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

13.1 Priority Habitat Inventory

Records within 250m	1

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

Features are displayed on the Habitat designations map on **page 87 >**

ID	Location	Main Habitat	Other habitats
1	247m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); Additional: GQSIG (FEP 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

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

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability

Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

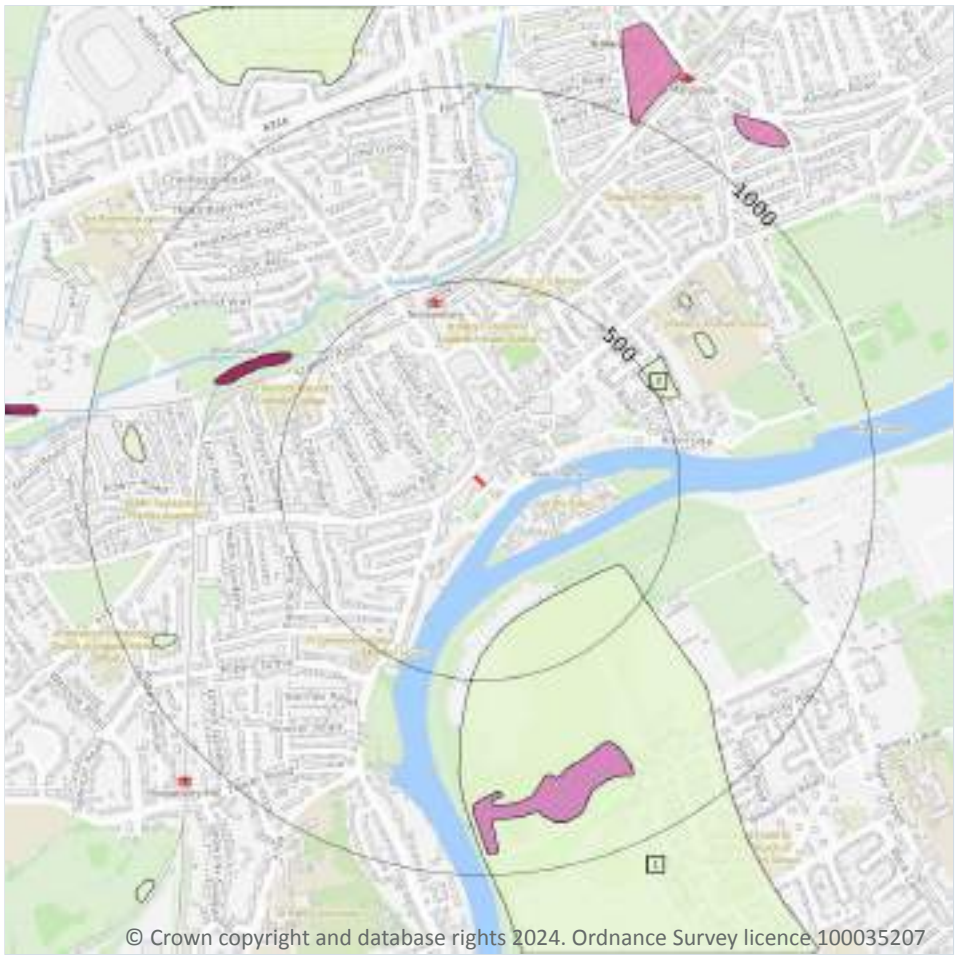
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 89 >**

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

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

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

14.2 Artificial and made ground (10k)

Records within 500m	2

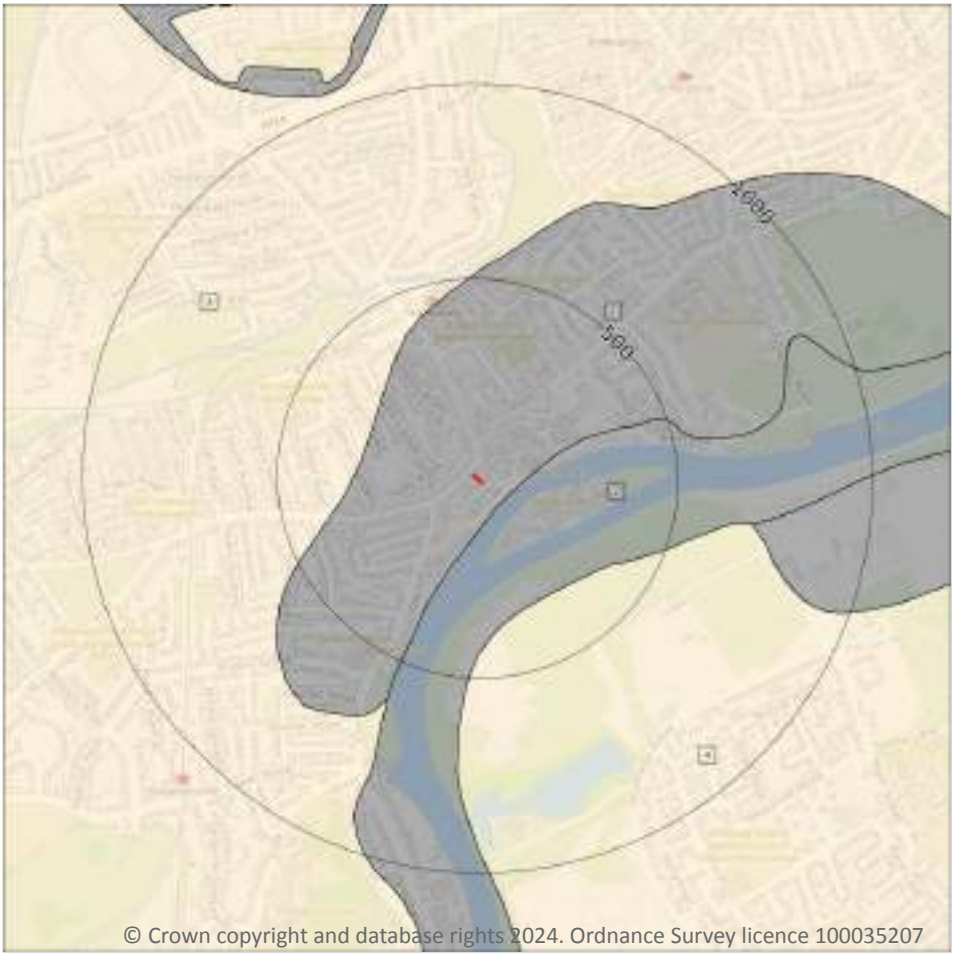
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 90 >**

ID	Location	LEX Code	Description	Rock description
1	334m SE	WMGR-UKNOWN	Infilled Ground	Unknown/unclassified Entry
2	484m NE	WMGR-UKNOWN	Infilled Ground	Unknown/unclassified Entry

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m **4**

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 91 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**LASI-Z**	**Langley Silt Member - Silt (unlithified Deposits Coding Scheme)**	**Silt**
2	70m SE	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt
3	281m W	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel

ID	Location	LEX Code	Description	Rock description
4	334m SE	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	**0**

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m	1

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 93 >**

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

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability

Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

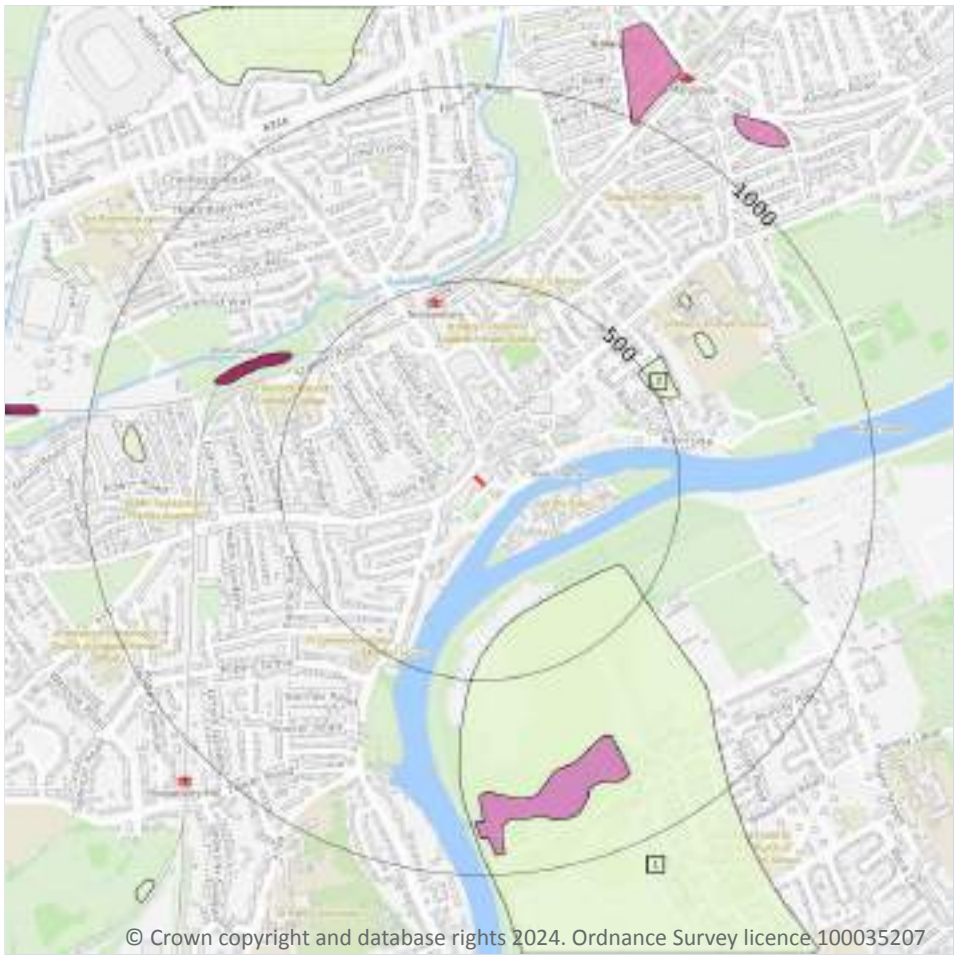
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 95 >**

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

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

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

15.2 Artificial and made ground (50k)

Records within 500m	2

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 96 >**

ID	Location	LEX Code	Description	Rock description
1	334m SE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
2	484m NE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

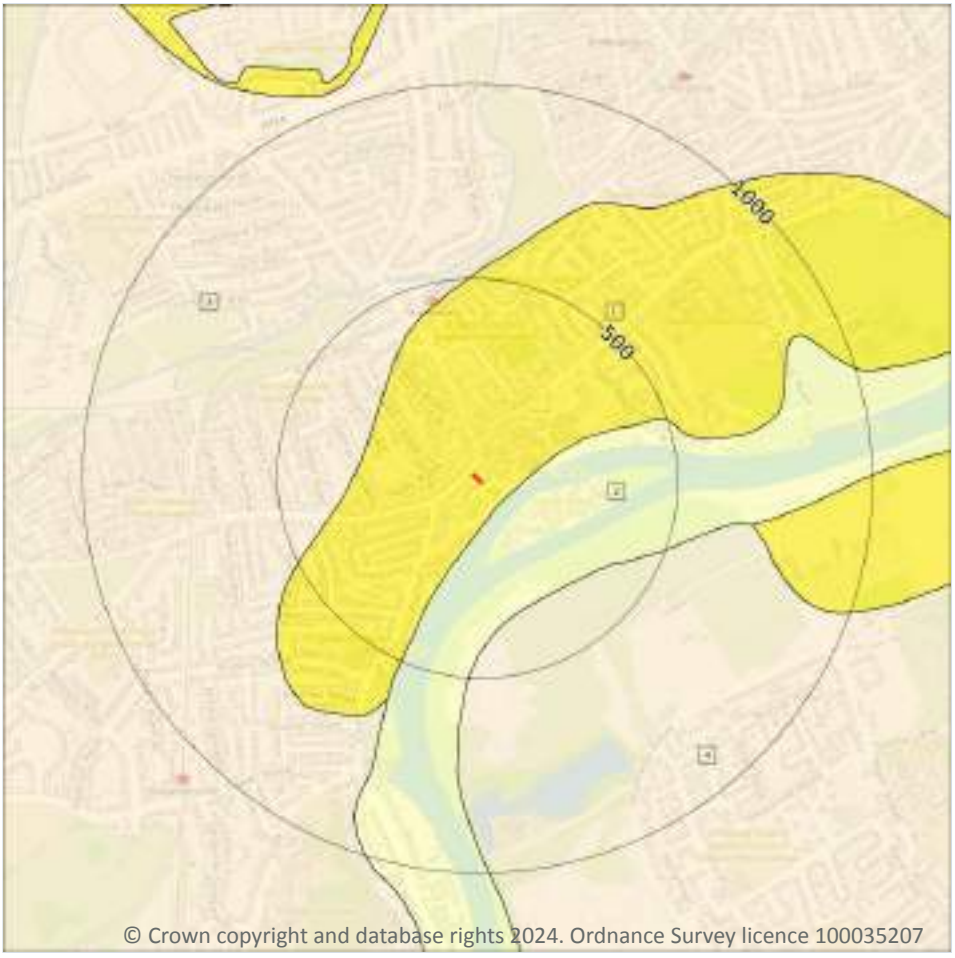
15.3 Artificial ground permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m **4**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 98 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**LASI-XCZ**	**LANGLEY SILT MEMBER**	**CLAY AND SILT**
2	70m SE	ALV-XCZSP	ALLUVIUM	CLAY, SILT, SAND AND PEAT
3	281m W	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL
4	334m SE	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1

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

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

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

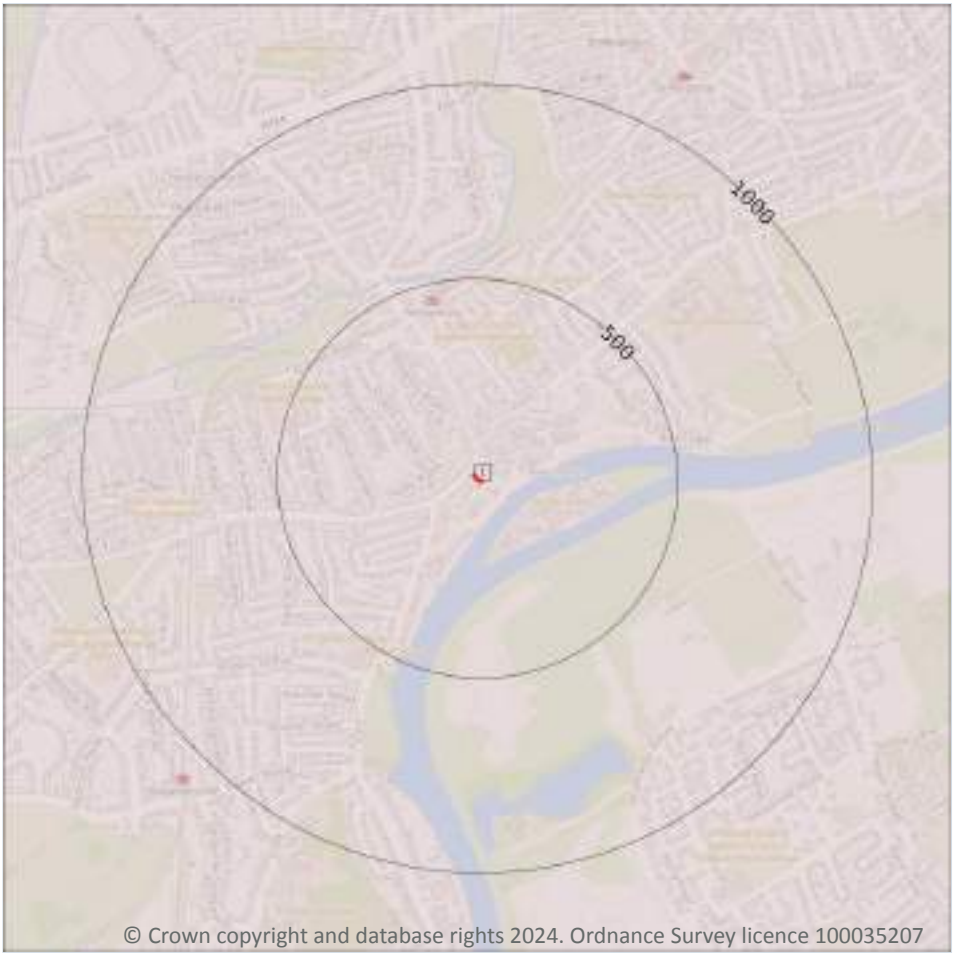
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m	1

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 100 >**

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

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1

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

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

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

16 Boreholes

Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	19

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

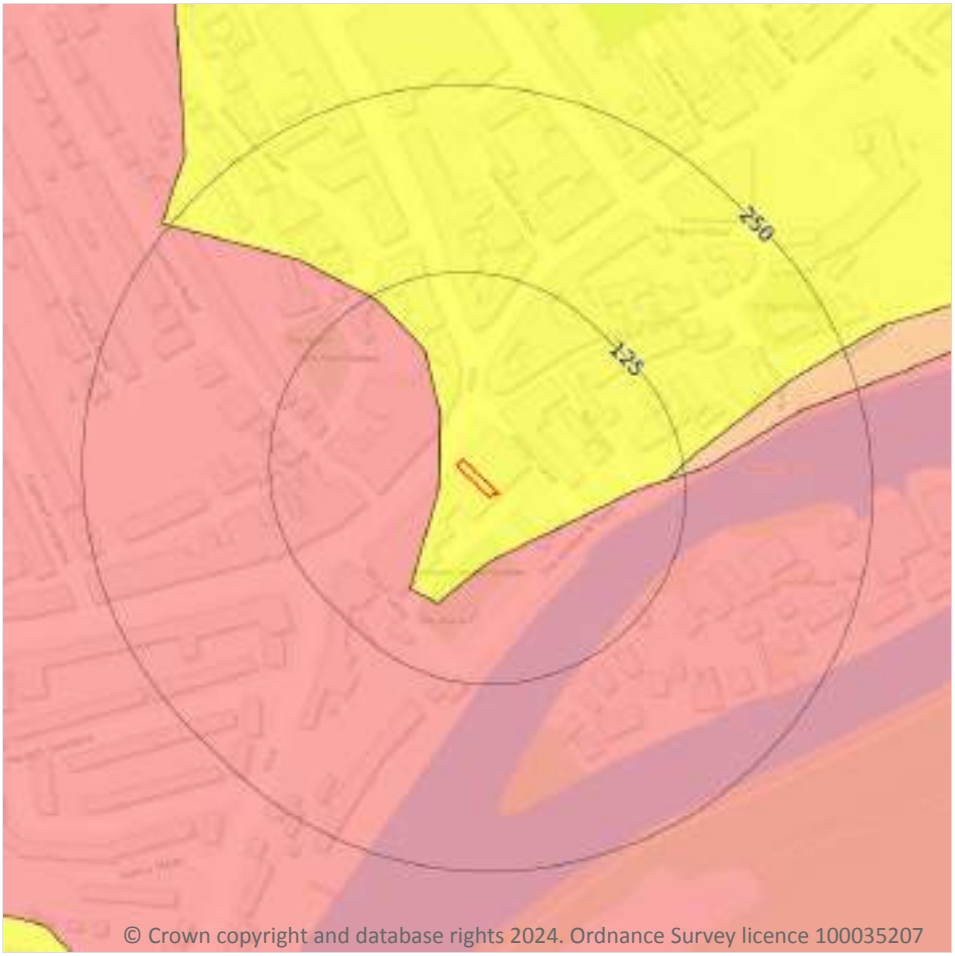
Features are displayed on the Boreholes map on **page 102 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	28m E	516320 173210	TWICKENHAM BATHS 1	4.57	N	581397 ↗
A	38m E	516330 173210	TWICKENHAM BATHS 2	5.33	N	581398 ↗
B	44m SE	516310 173170	TWICKENHAM NWH F5616 H	10.0	N	581586 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
B	56m SE	516330 173170	TWICKENHAM NWH F5616 F	10.0	N	581584 ↗
1	68m E	516360 173210	TWICKENHAM NWH F5616 E	10.0	N	581583 ↗
2	77m S	516250 173140	TWICKENHAM NWH F5616 D	10.0	N	581582 ↗
3	100m S	516270 173110	TWICKENHAM NWH F5616 G	10.0	N	581585 ↗
4	114m NE	516390 173270	CHURCH ST, TWICKENHAM BH1	10.5	N	581613 ↗
C	143m W	516130 173180	GILBERT STREET TWICKENHAM 2	6.25	N	581578 ↗
C	149m W	516120 173190	GILBERT STREET TWICKENHAM 1	6.1	N	581577 ↗
D	154m NE	516410 173310	CHURCH ST, TWICKENHAM BH2	10.5	N	581614 ↗
5	169m E	516450 173270	CHURCH ST, TWICKENHAM BH5	10.0	N	581617 ↗
D	170m NE	516430 173310	CHURCH ST, TWICKENHAM BH3	10.0	N	581615 ↗
6	182m SW	516153 173084	STRAWBERRY VALE TWICKENHAM 5	6.0	N	581569 ↗
7	200m NE	516460 173320	CHURCH ST, TWICKENHAM BH4	10.0	N	581616 ↗
8	209m N	516340 173430	T EXCH TWICKENHAM 1	25.0	N	581475 ↗
9	224m NE	516440 173380	TWICKENHAM NWH F5616 C	10.0	N	581581 ↗
10	226m NE	516410 173410	TWICKENHAM NWH F5616 A	10.0	N	581579 ↗
11	239m N	516370 173450	YORK STREET TWICKENHAM TP 2	1.0	N	15947102 ↗

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	2

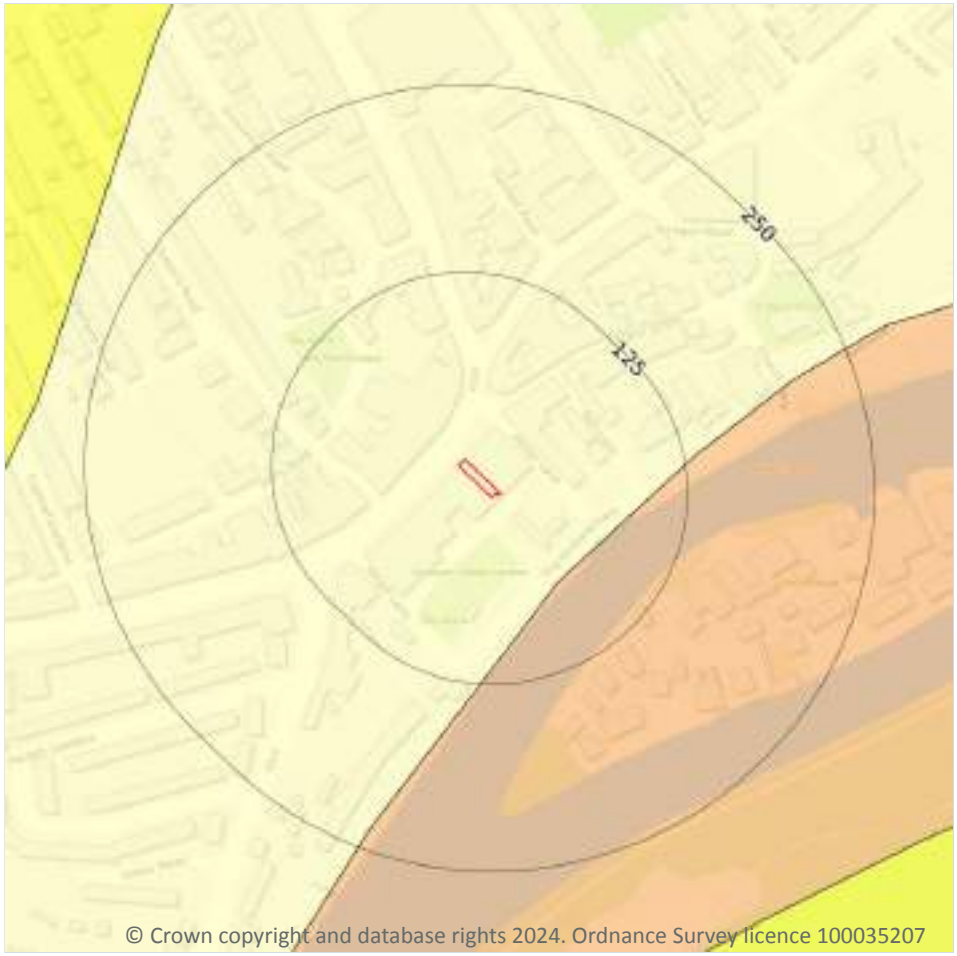
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 104 >**

Location	Hazard rating	Details
On site	**Very low**	**Ground conditions predominantly low plasticity.**
12m W	Moderate	Ground conditions predominantly high plasticity.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	1

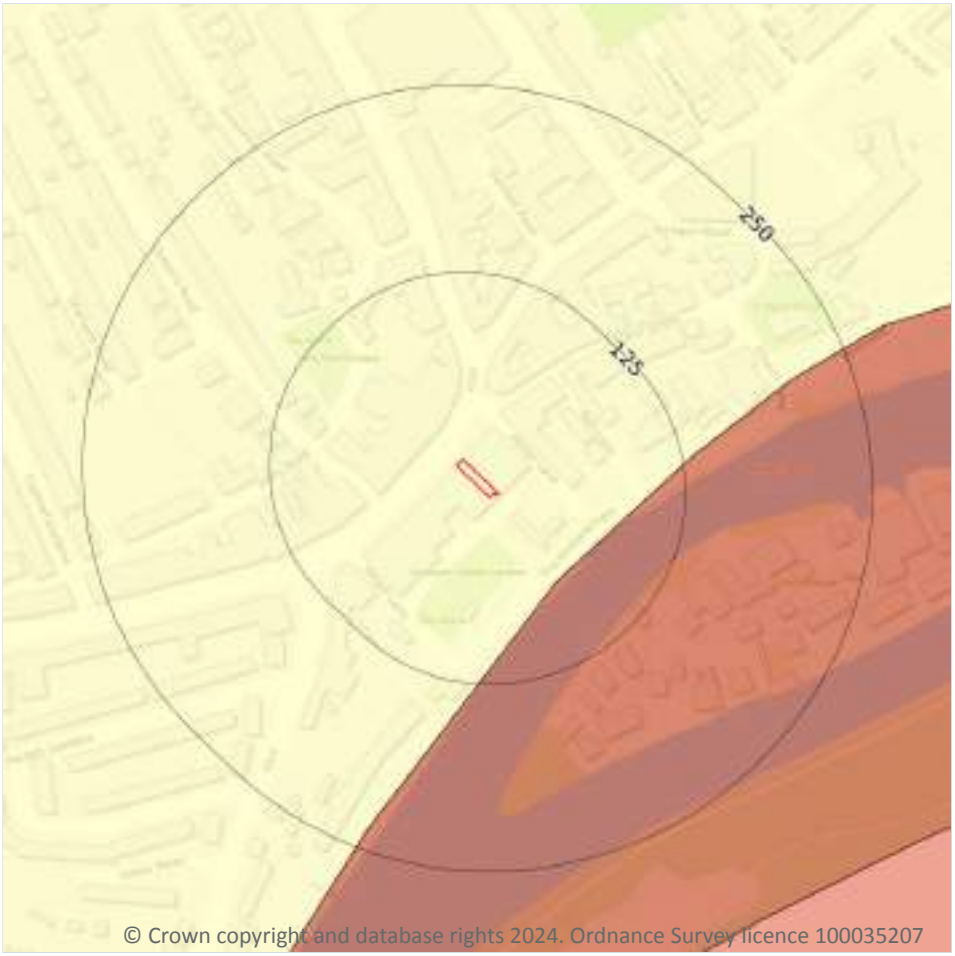
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 105 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

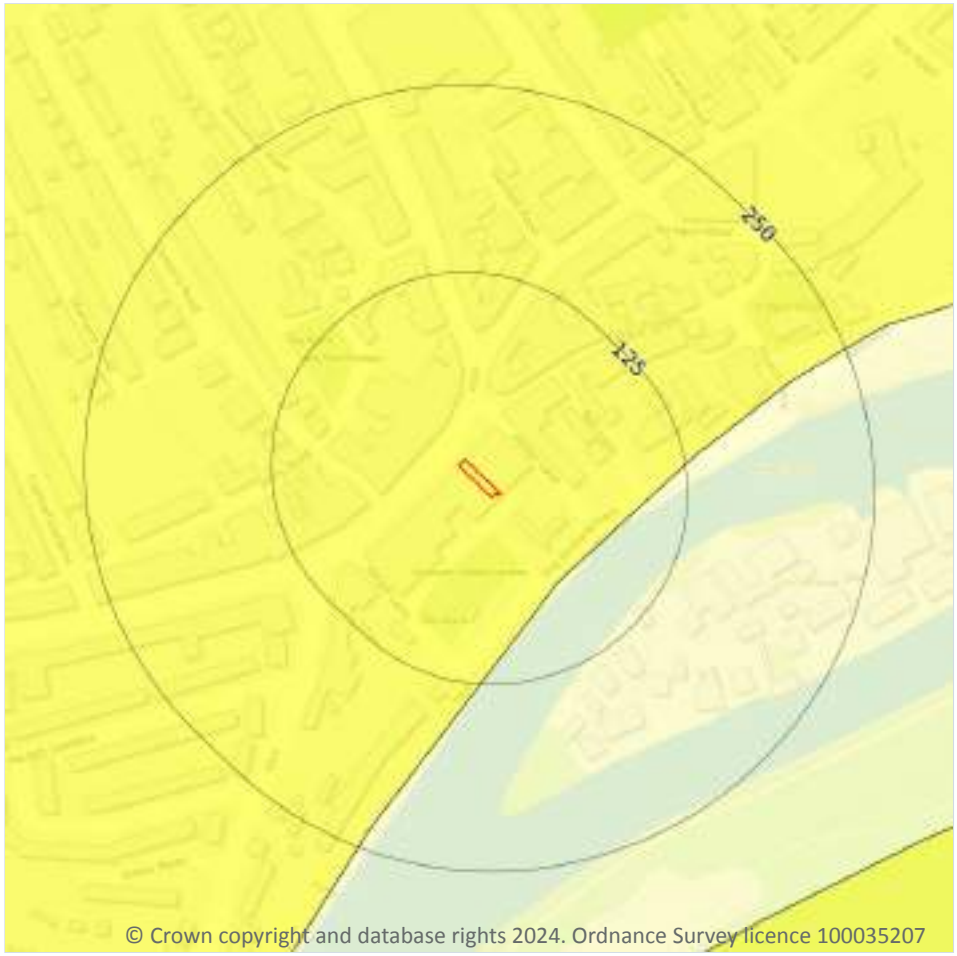
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 106 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

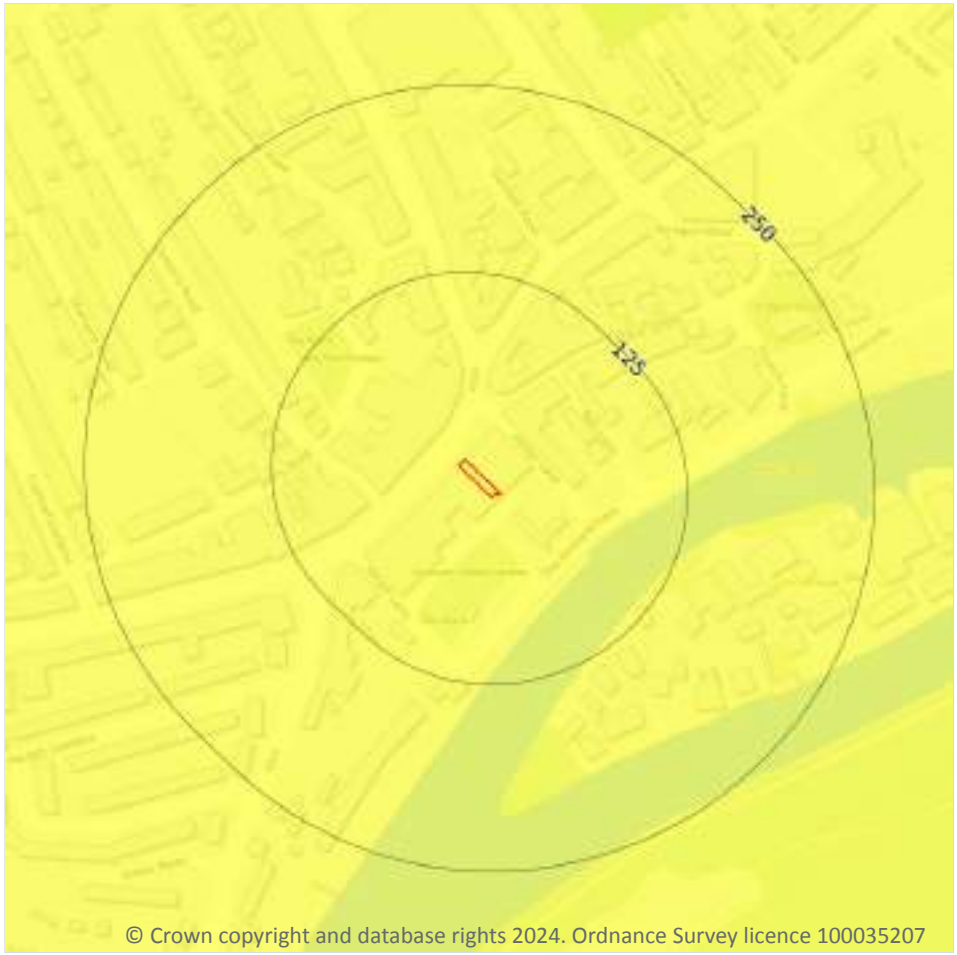
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 107 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	1

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

Features are displayed on the Natural ground subsidence - Landslides map on **page 108 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks

Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

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

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 109 >**

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

This data is sourced from the British Geological Survey.

18 Mining and ground workings

Site Outline

Search buffers in metres (m)

BritPits

Surface ground workings

Underground workings

Underground mining extents

Historical mineral planning areas

TCA non-coal mining

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	1

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

Features are displayed on the Mining and ground workings map on **page 111 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	188m SW	Pond	1865	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	0

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

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

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

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	1

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

Features are displayed on the Mining and ground workings map on **page 111 >**

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
D	359m SE	Ham	Sand and gravel	Surface mineral working	Valid	Not available

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

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

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0

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

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

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

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	1

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

Location	Mineral type
334m SE	Stone

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	0

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

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

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

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

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

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

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

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

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

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

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

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

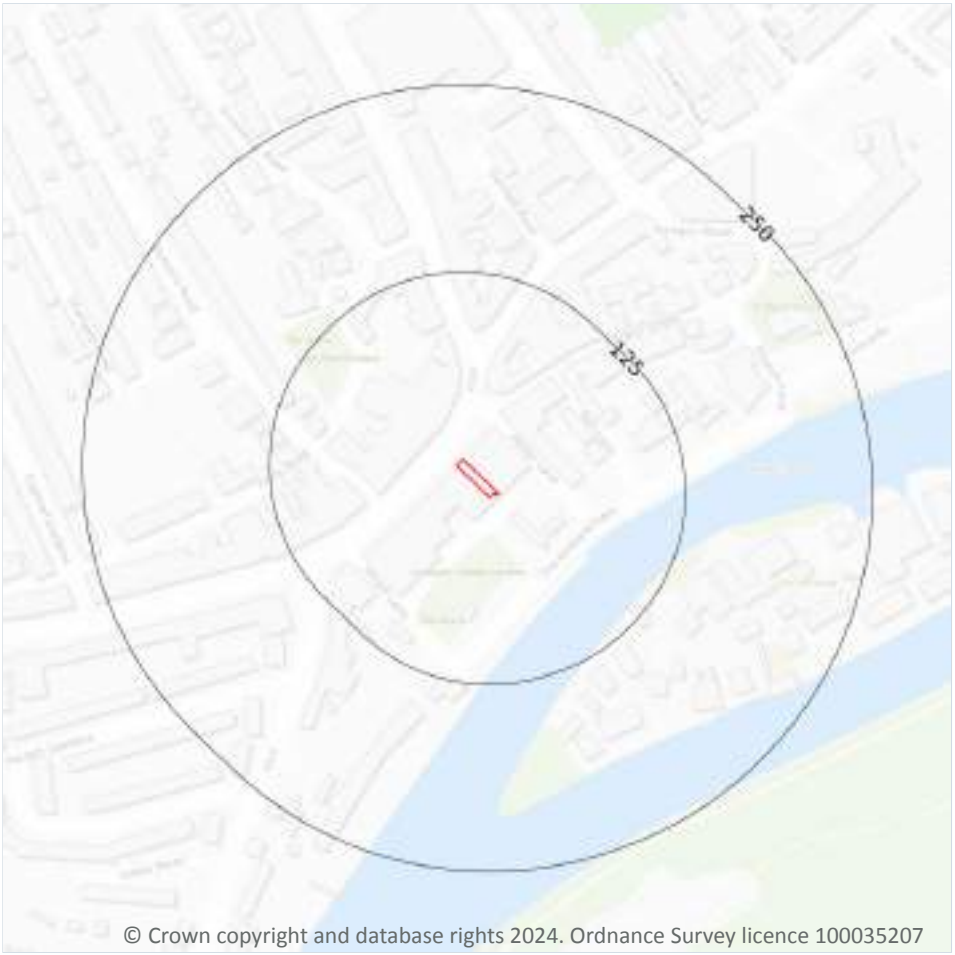
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

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

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

This data is sourced from the British Geological Survey.

20 Radon



Site Outline

Search buffers in metres (m)

Greater than 30%

Between 10% and 30%

Between 5% and 10%

Between 3% and 5%

Between 1% and 3%

Less than 1%

20.1 Radon

Records on site	1

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

Features are displayed on the Radon map on **page 118 >**

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

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

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	1

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

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

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	4

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

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
On site	**20**	**3.5**	**372**	**256**	**0.7**	**58**	**46**	**24**	**55**
8m SE	20	3.5	368	253	0.7	59	45	24	45
8m SE	19	3.3	308	212	0.7	59	45	25	41
13m SE	20	3.5	277	190	0.6	61	40	25	33

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	0

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

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.

Appendix D Historical Maps

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series
Map date: **1896**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

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

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Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500

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

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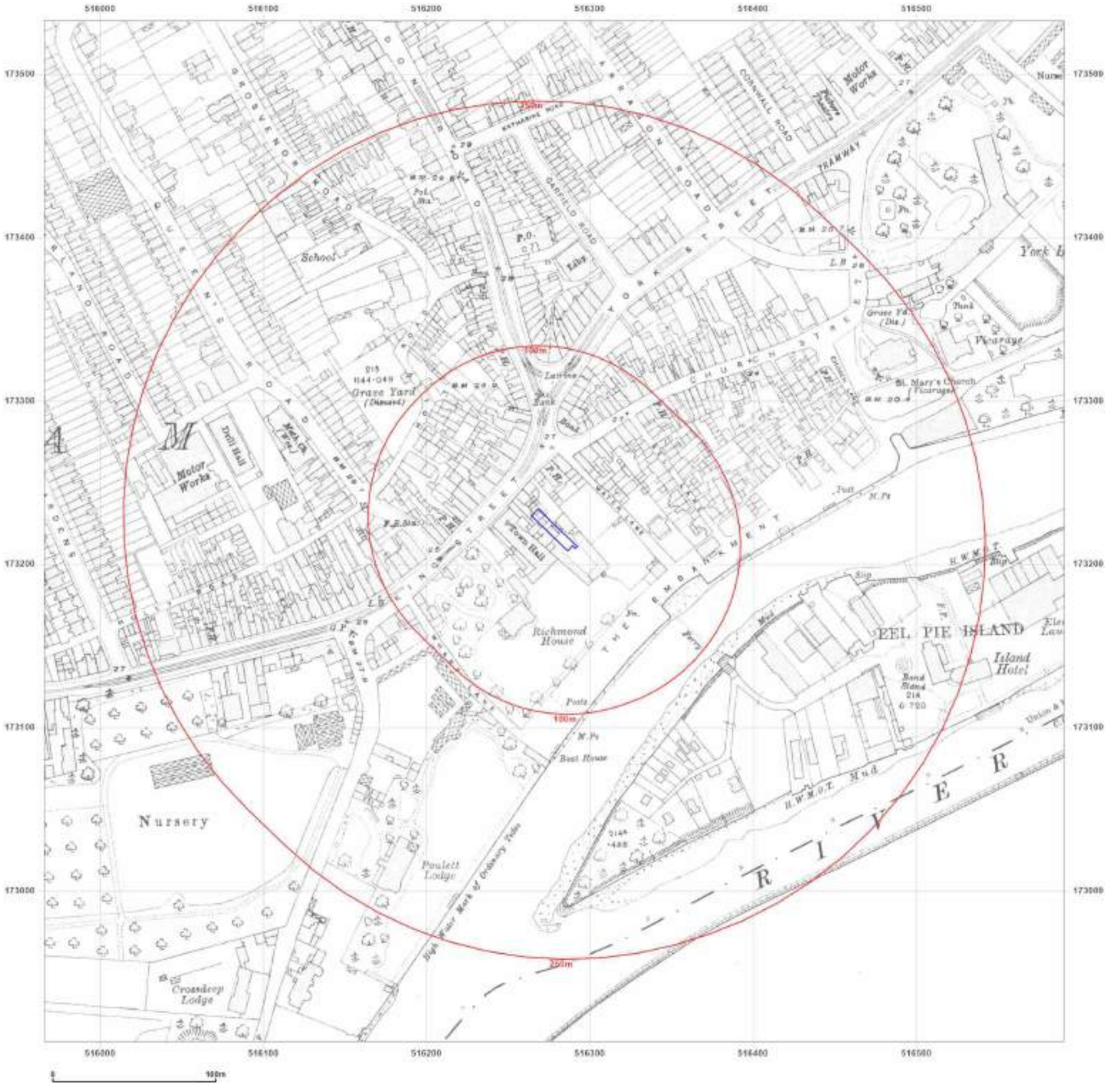

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1914**

Scale: 1:2,500

Printed at: 1:2,500

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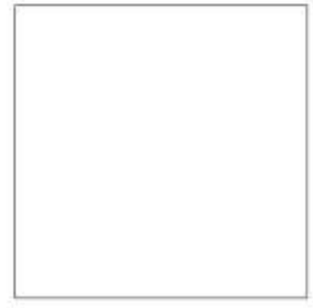

Surveyed 1914
Revised 1914
Edition N/A
Copyright N/A
Levelled N/A

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Map legend available at:
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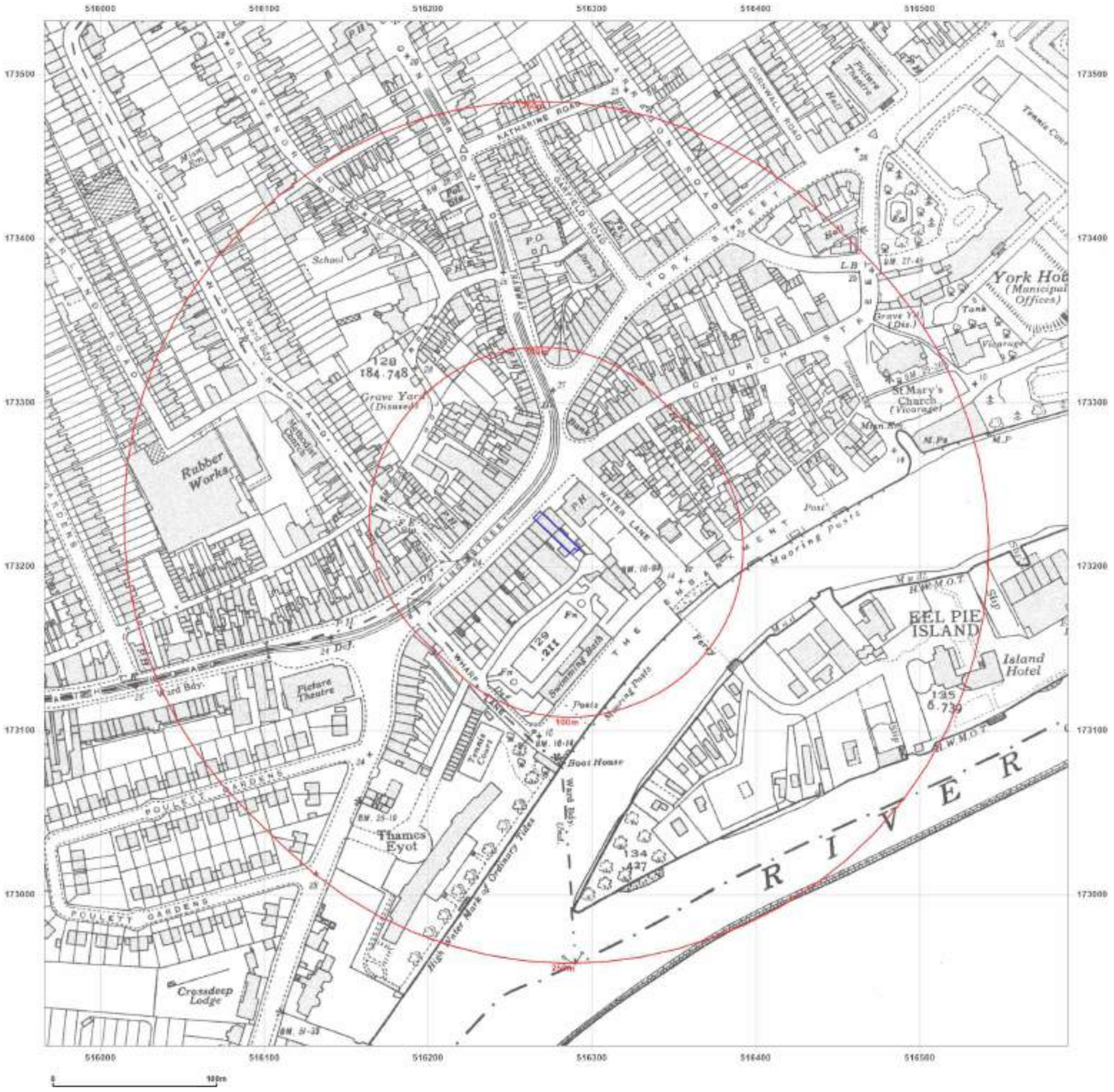

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1934**

Scale: 1:2,500

Printed at: 1:2,500

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

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Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid

Map date: **1959**

Scale: 1:1,250

Printed at: 1:2,000

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Production date: 25 October 2024

Map legend available at:
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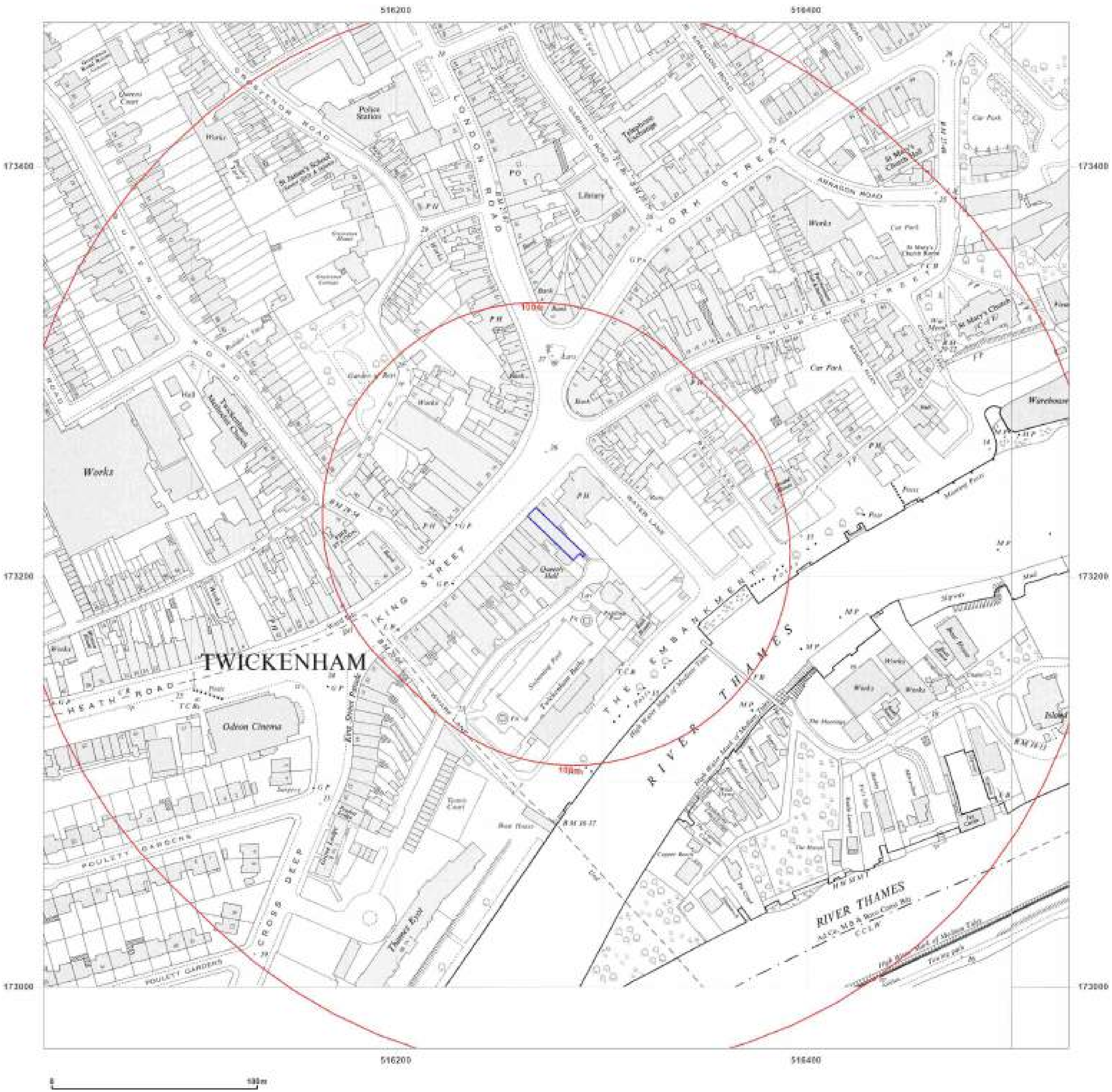

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid

Map date: **1959-1960**

Scale: 1:1,250

Printed at: 1:2,000

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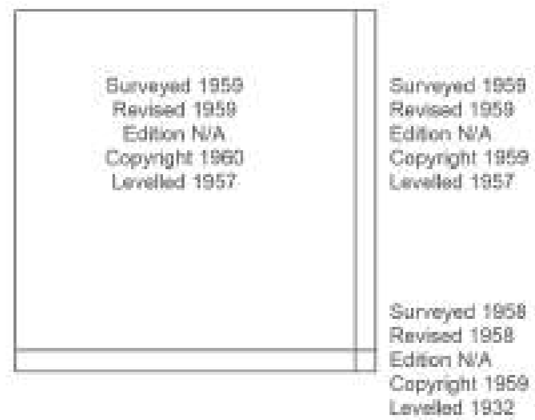

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Production date: 25 October 2024

Map legend available at:
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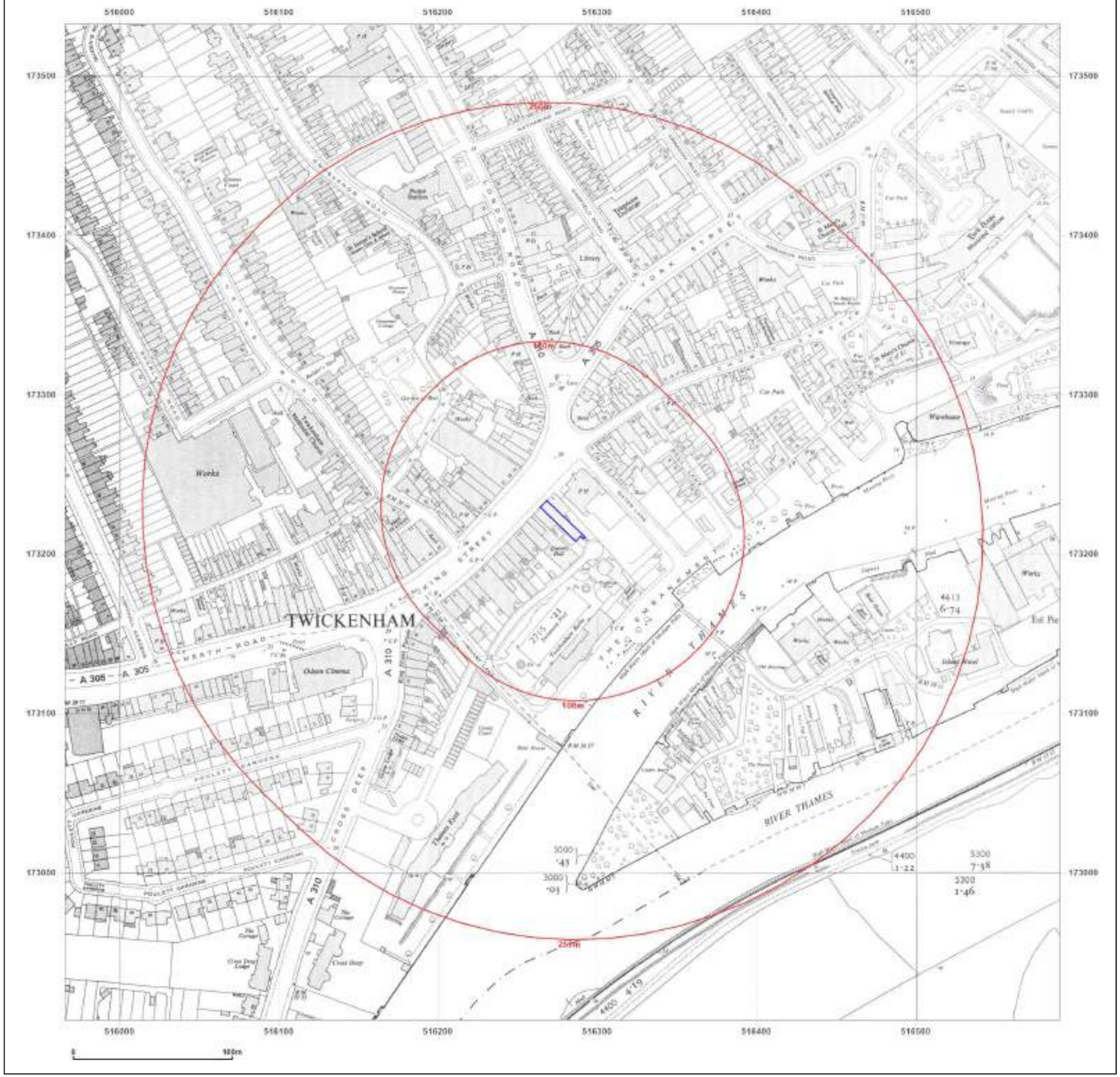

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid

Map date: **1960-1962**

Scale: 1:2,500

Printed at: 1:2,500

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Production date: 25 October 2024

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Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid

Map date: **1960-1962**

Scale: 1:2,500

Printed at: 1:2,500

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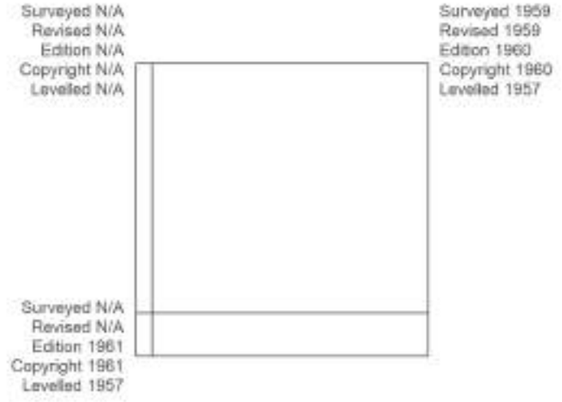

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Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid

Map date: **1969-1973**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed 1959 Revised 1971 Edition N/A Copyright 1972 Levelled 1957	Surveyed N/A Revised N/A Edition N/A Copyright 1973 Levelled N/A
Surveyed 1958 Revised 1972 Edition N/A Copyright 1972 Levelled 1957	Surveyed 1958 Revised 1969 Edition N/A Copyright 1969 Levelled 1957

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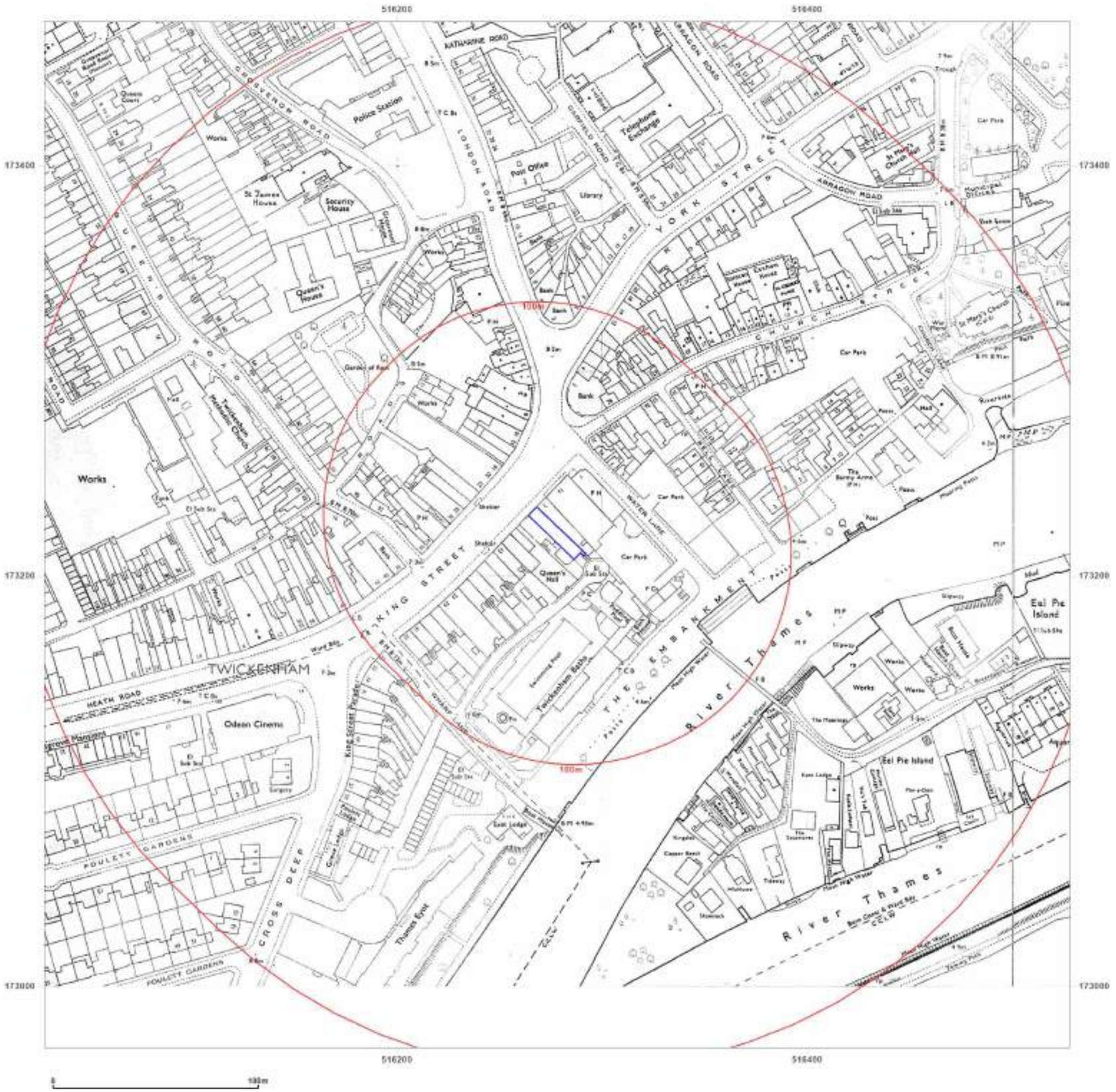

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid

Map date: **1980-1982**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1957	Surveyed N/A
Revised 1982	Revised N/A
Edition N/A	Edition N/A
Copyright 1982	Copyright 1980
Levelled 1957	Levelled 1957

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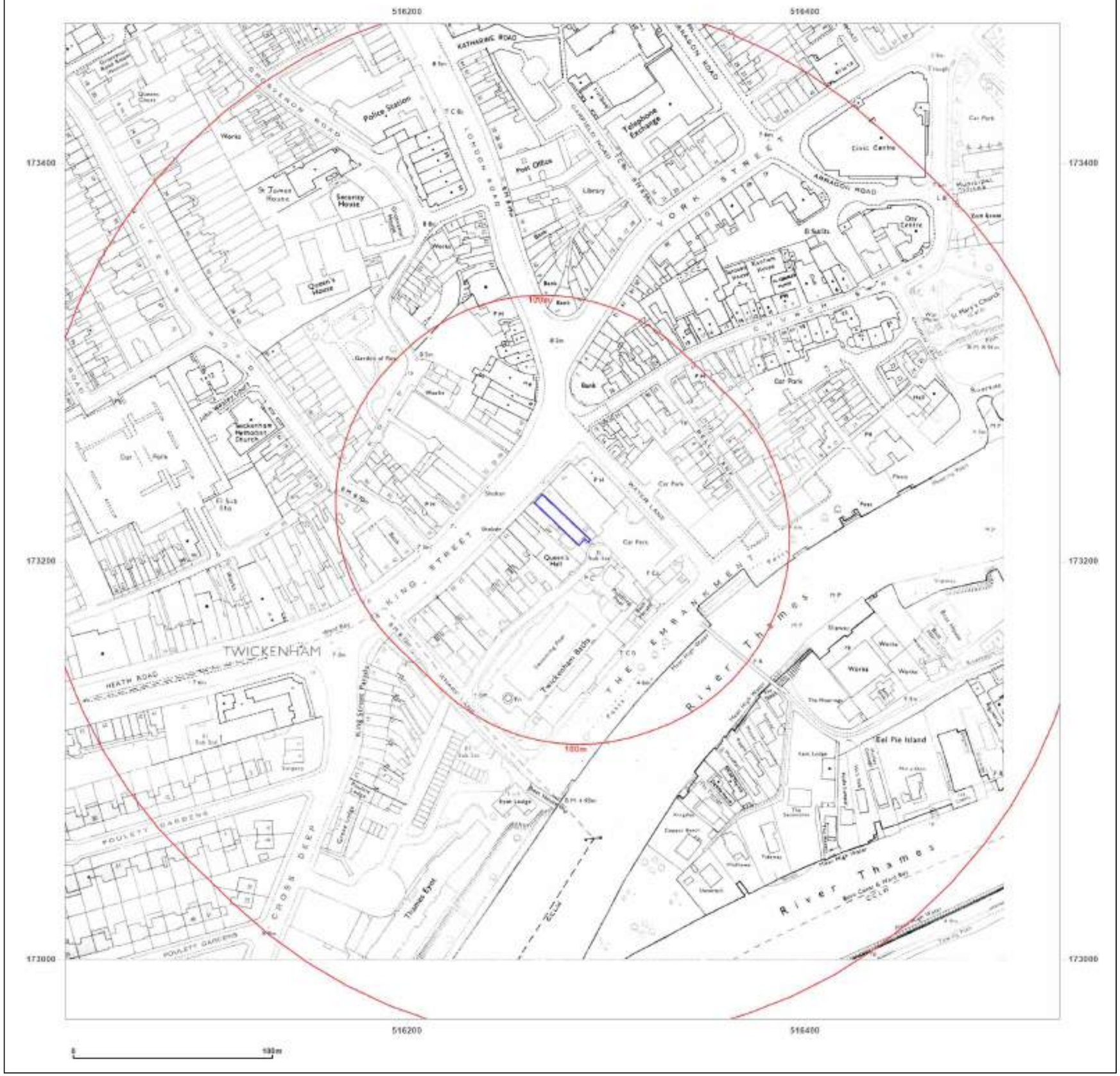

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid

Map date: **1990**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed 1957
Revised 1990
Edition N/A
Copyright 1990
Levelled 1957

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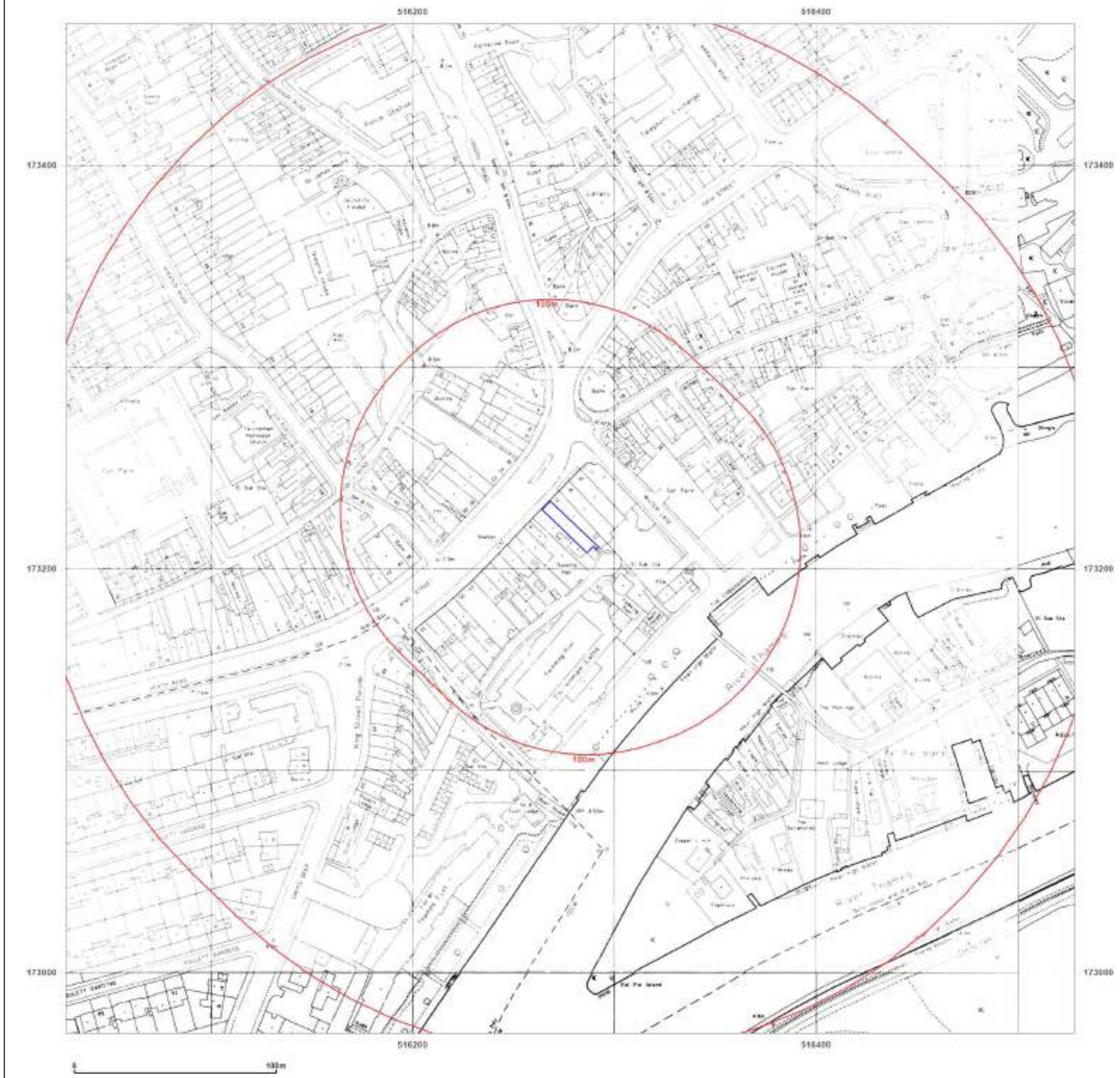

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid

Map date: **1991**

Scale: 1:1,250

Printed at: 1:2,000

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

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Site Details:

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UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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W E
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2003

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Production date: 25 October 2024

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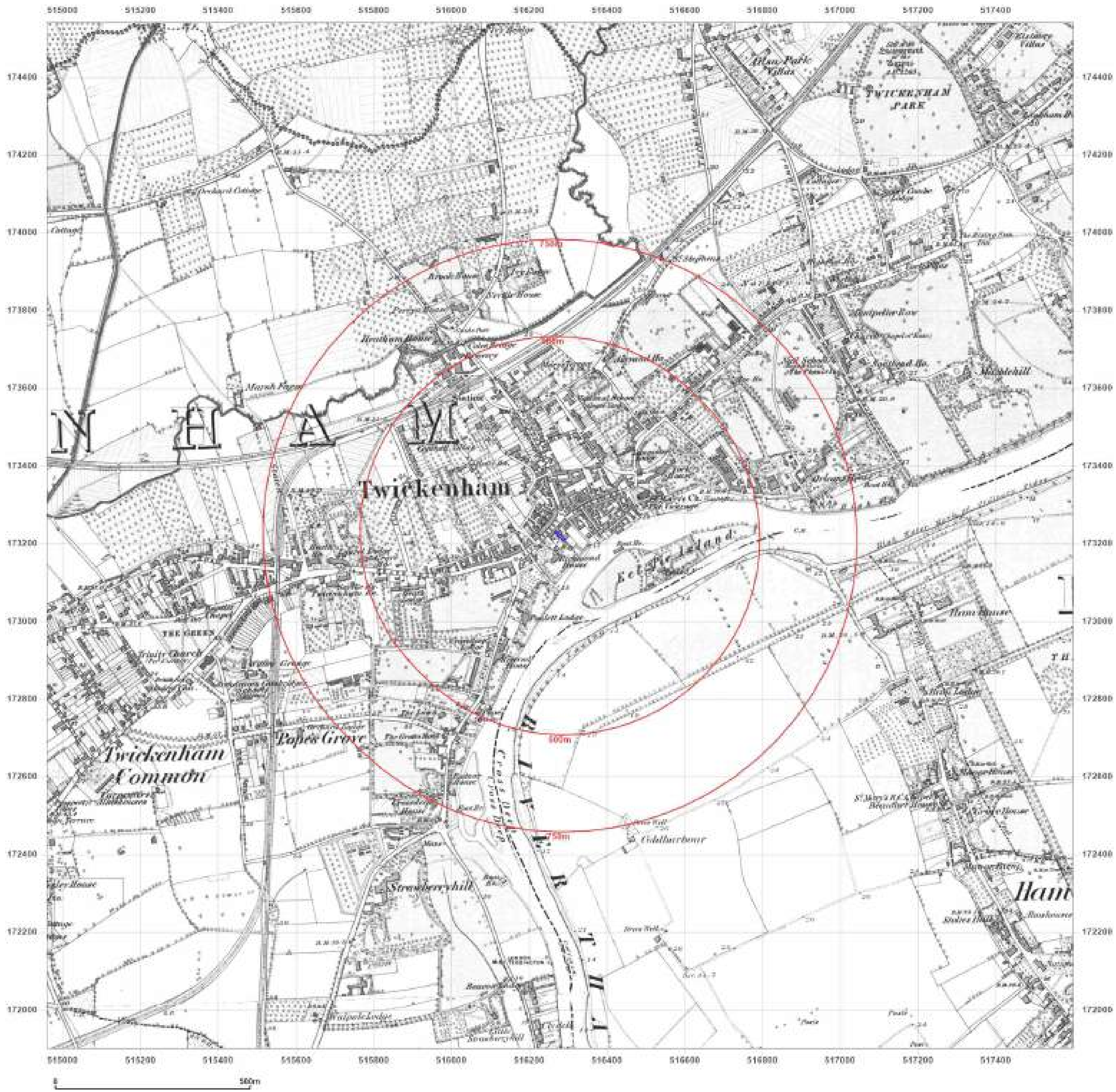

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1865-1868**

Scale: 1:10,560

Printed at: 1:10,560

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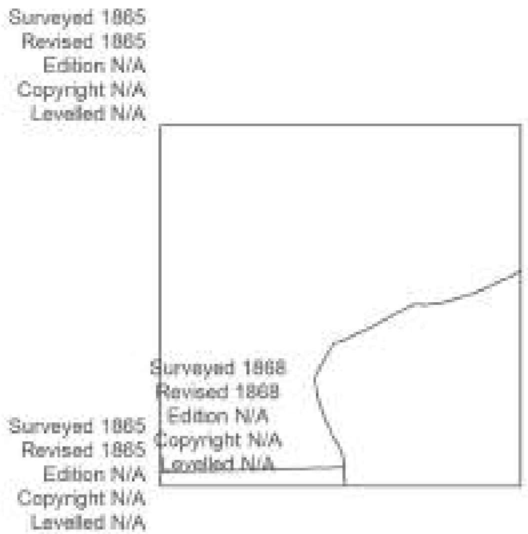

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Production date: 25 October 2024

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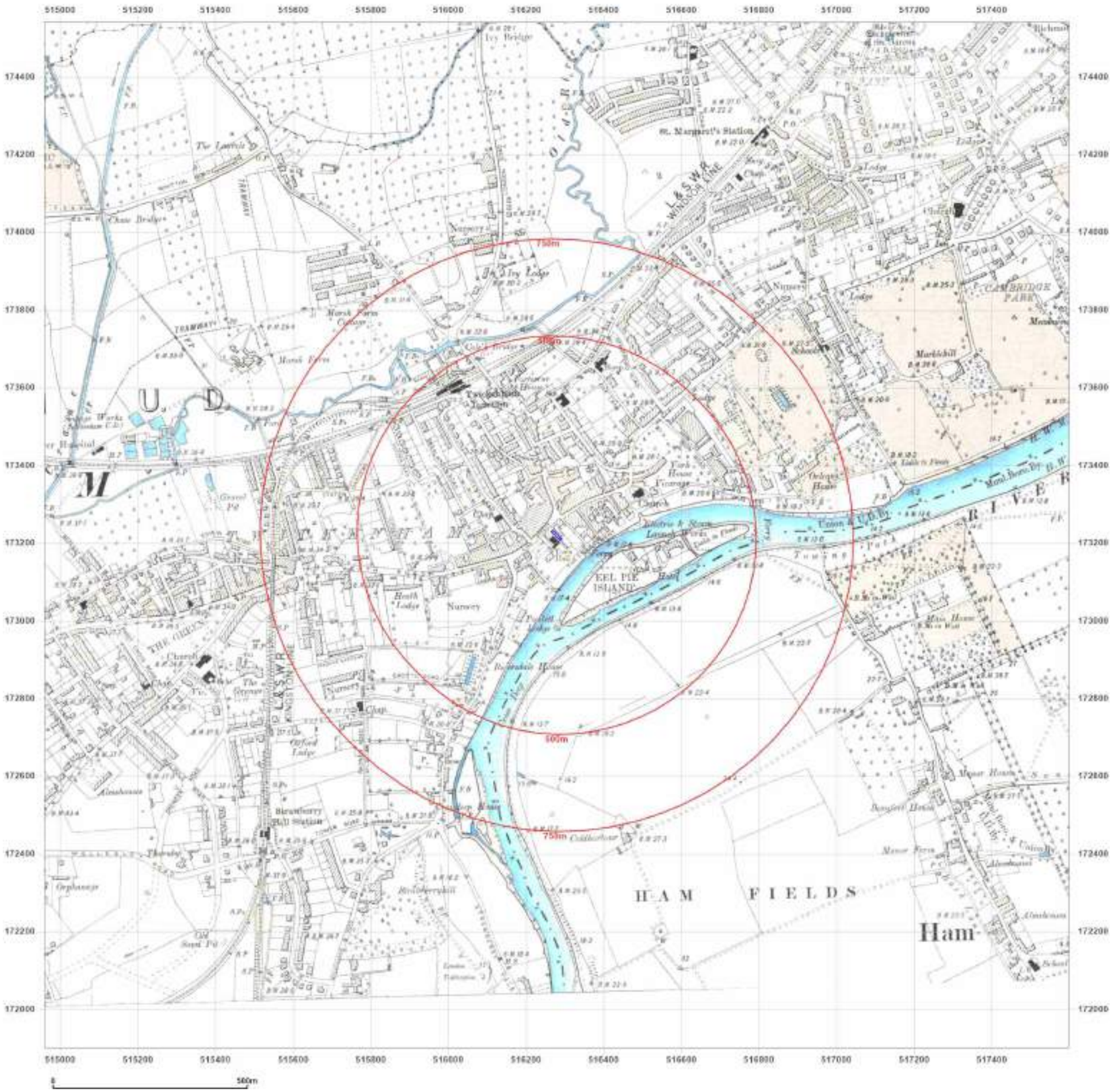

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1894**

Scale: 1:10,560

Printed at: 1:10,560

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

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Production date: 25 October 2024

Map legend available at:
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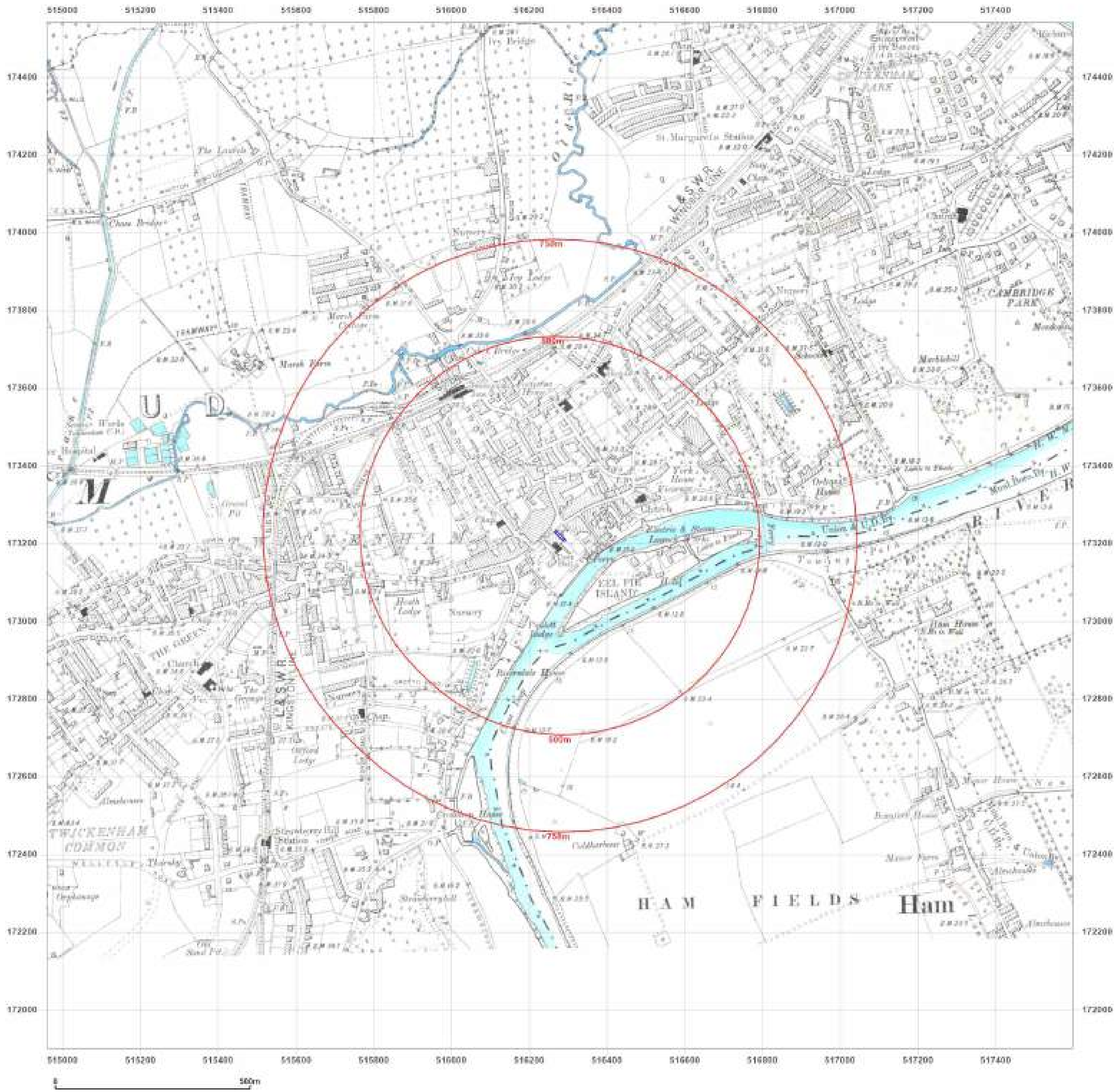

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1894**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1868
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

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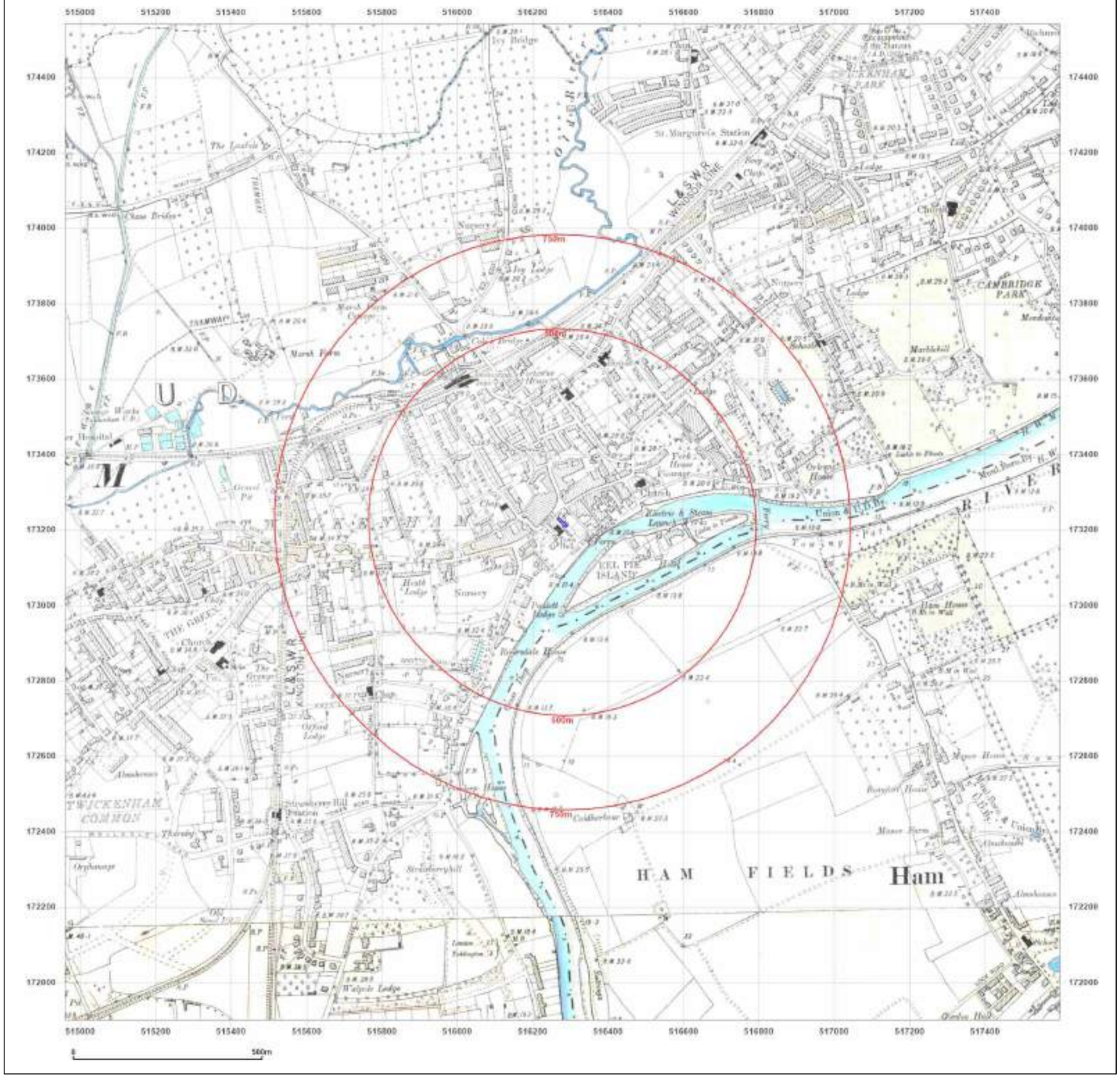

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1894-1895**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1868
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1867
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

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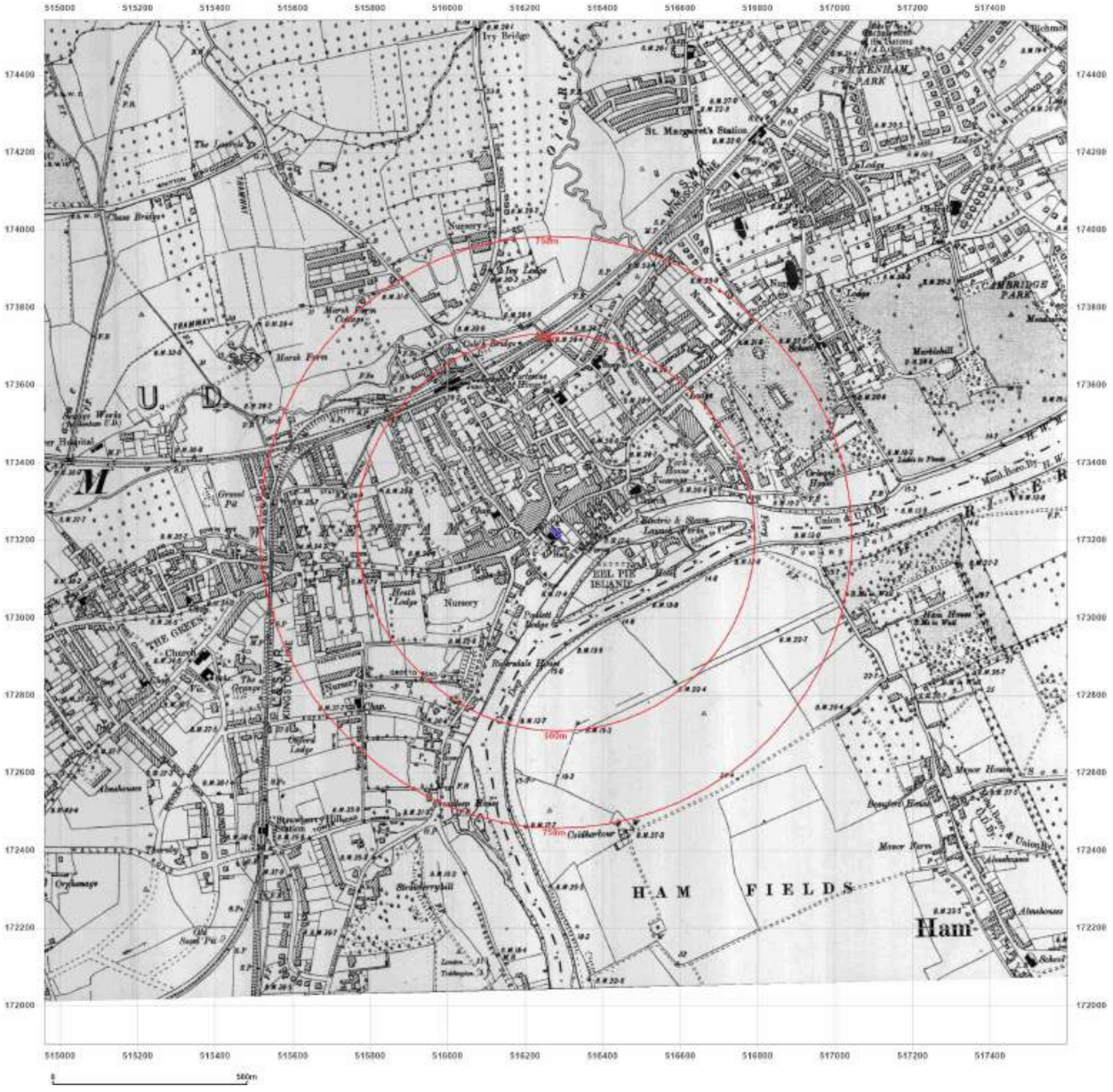

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1896**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1866
Revised 1894
Edition 1896
Copyright N/A
Levelled N/A

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Site Details:

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TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1912**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1866
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

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TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1912**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1863
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

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Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1912**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1866
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 25 October 2024

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Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1933**

Scale: 1:10,560

Printed at: 1:10,560

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

Surveyed 1867
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

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TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1934-1935**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1863
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1934
Edition N/A
Copyright N/A
Levelled N/A

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Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1866
Revised 1938
Edition N/A
Copyright N/A
Levelled 1933

Surveyed 1866
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

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Groundsure INSIGHTS

Site Details:

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TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1863
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
~~Revised 1938~~
Edition 1939
Copyright N/A
Levelled N/A

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Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1866
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 25 October 2024

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

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: Provisional
Map date: **1948**
Scale: 1:10,560
Printed at: 1:10,560

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

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E: info@groundsure.com
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Production date: 25 October 2024

Map legend available at:
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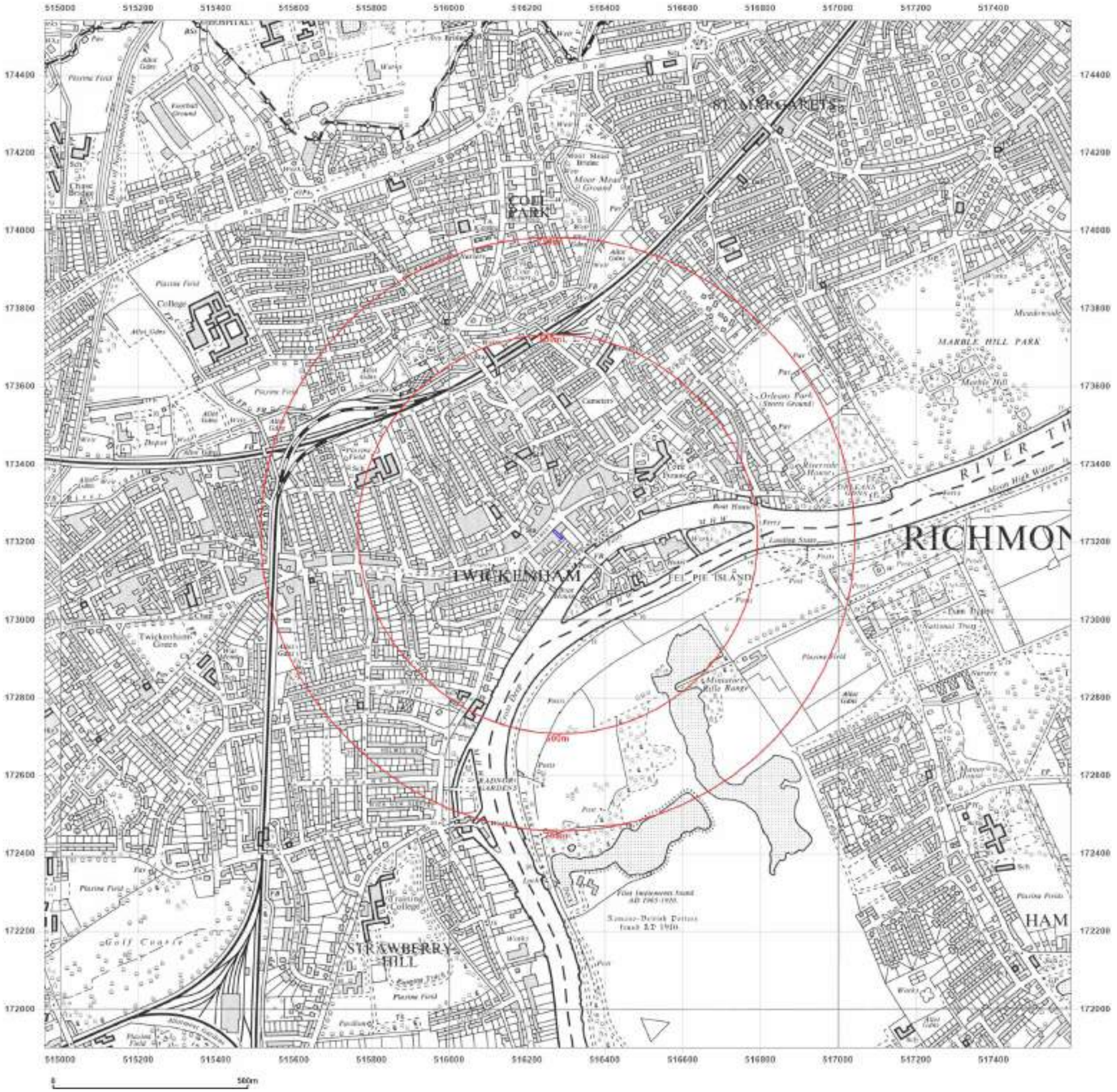

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: Provisional
Map date: **1966**
Scale: 1:10,560
Printed at: 1:10,560

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

Surveyed 1966
Revised 1966
Edition N/A
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Map legend available at:
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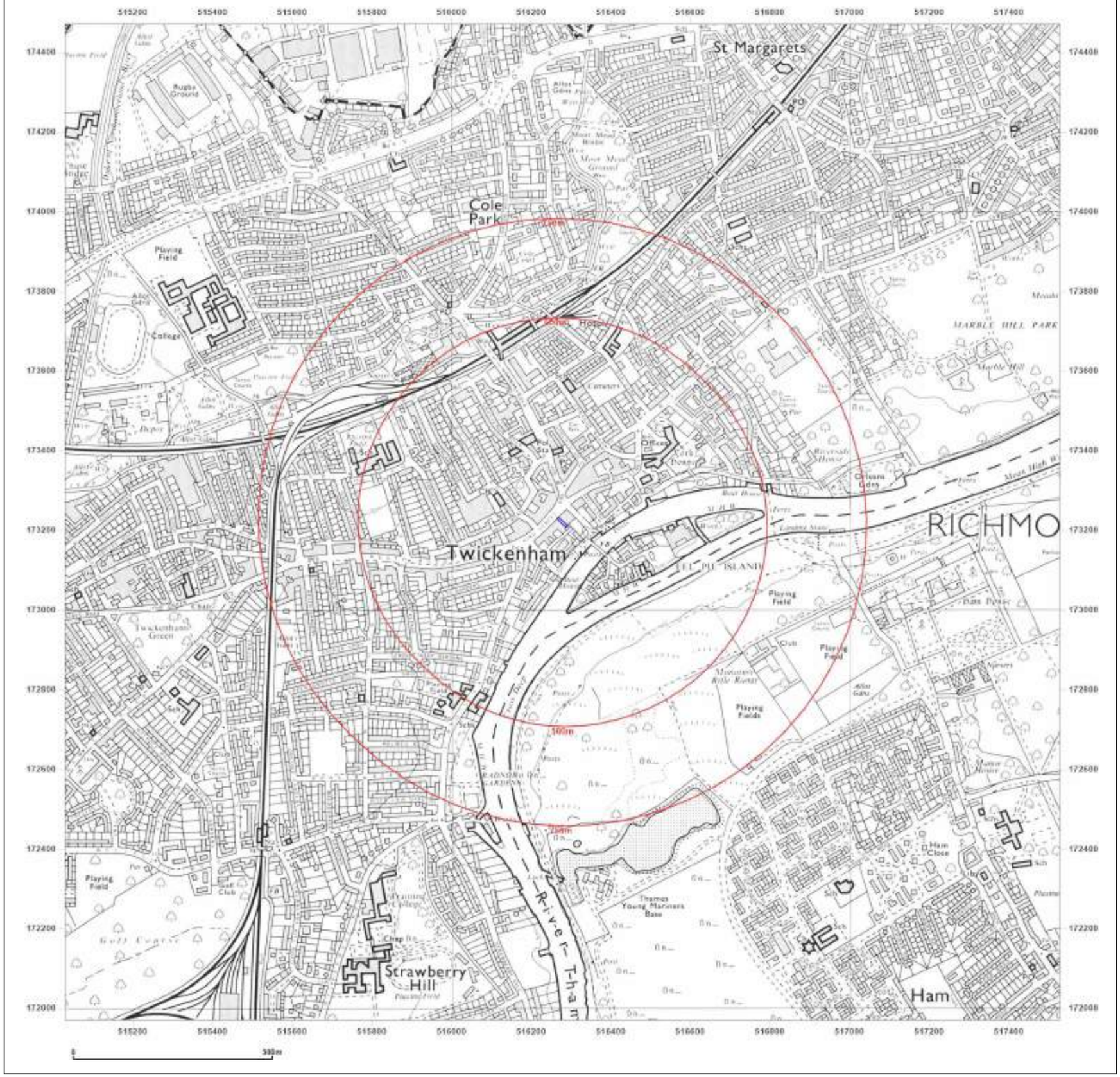

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid
Map date: **1973**
Scale: 1:10,000
Printed at: 1:10,000

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

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Map legend available at:
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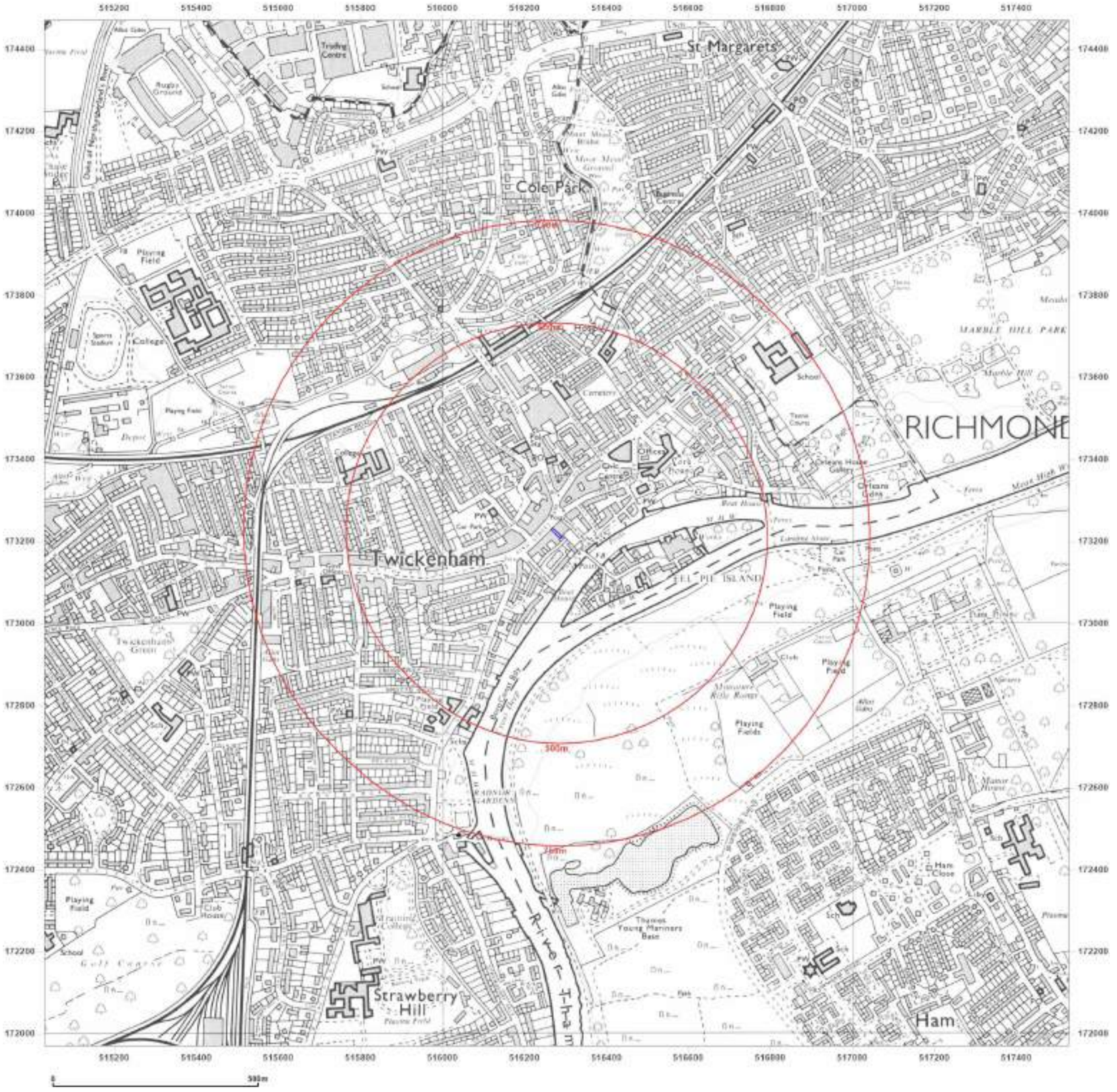

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid
Map date: **1991**
Scale: 1:10,000
Printed at: 1:10,000

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Surveyed 1988
Revised 1991
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 25 October 2024

Map legend available at:
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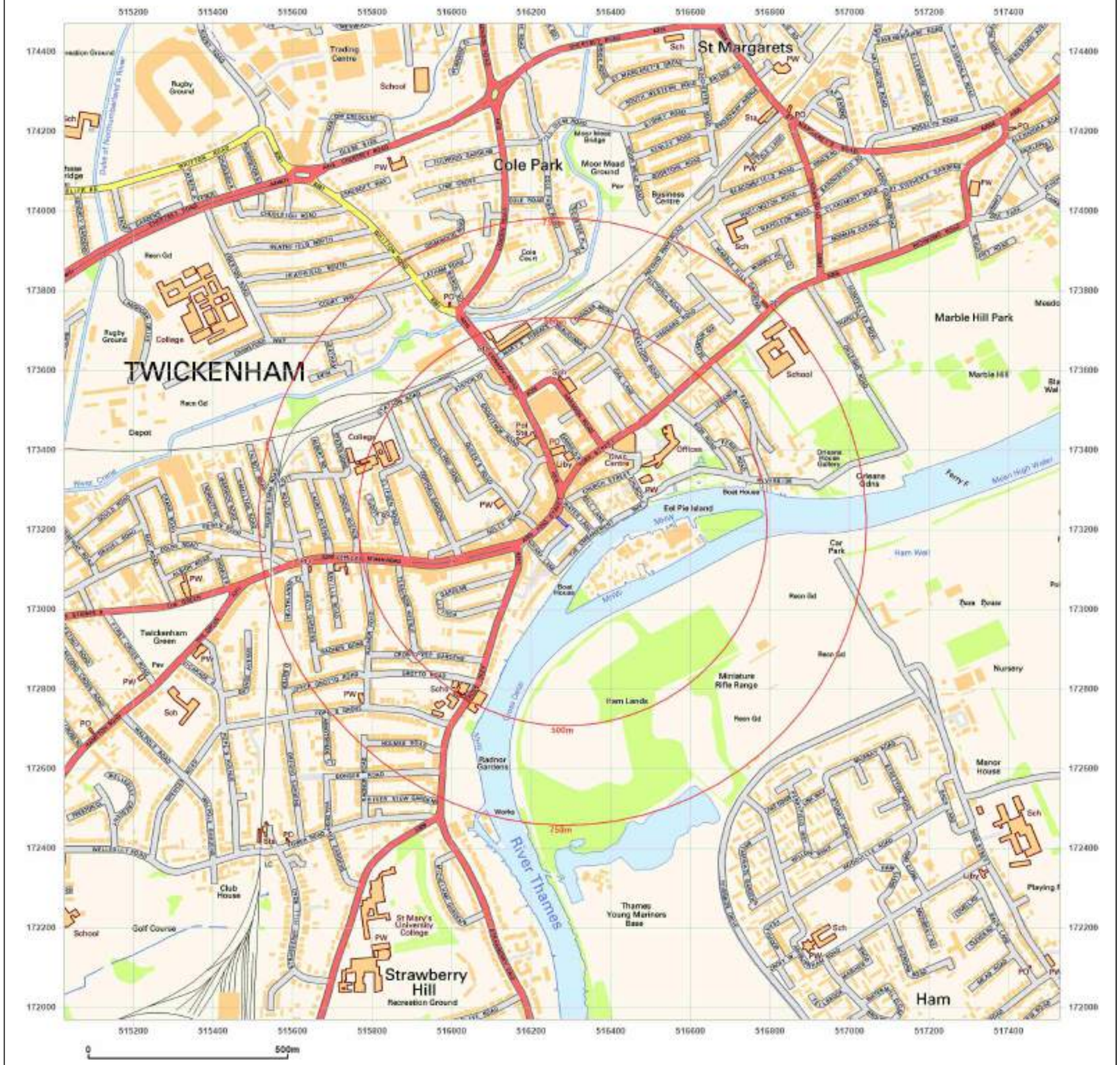

Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid
Map date: **2001**
Scale: 1:10,000
Printed at: 1:10,000

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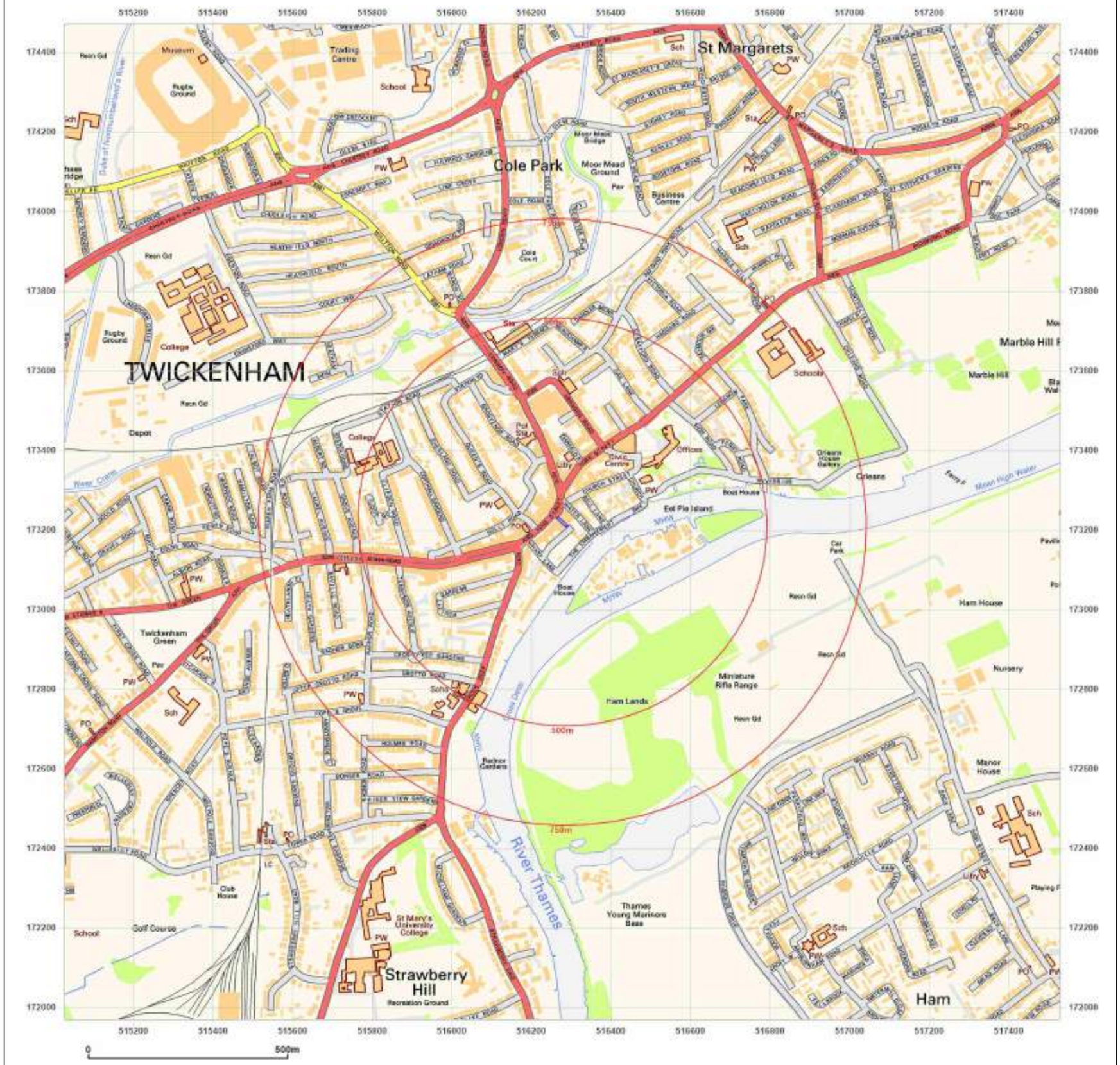
Production date: 25 October 2024

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



Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid
Map date: **2010**
Scale: 1:10,000
Printed at: 1:10,000

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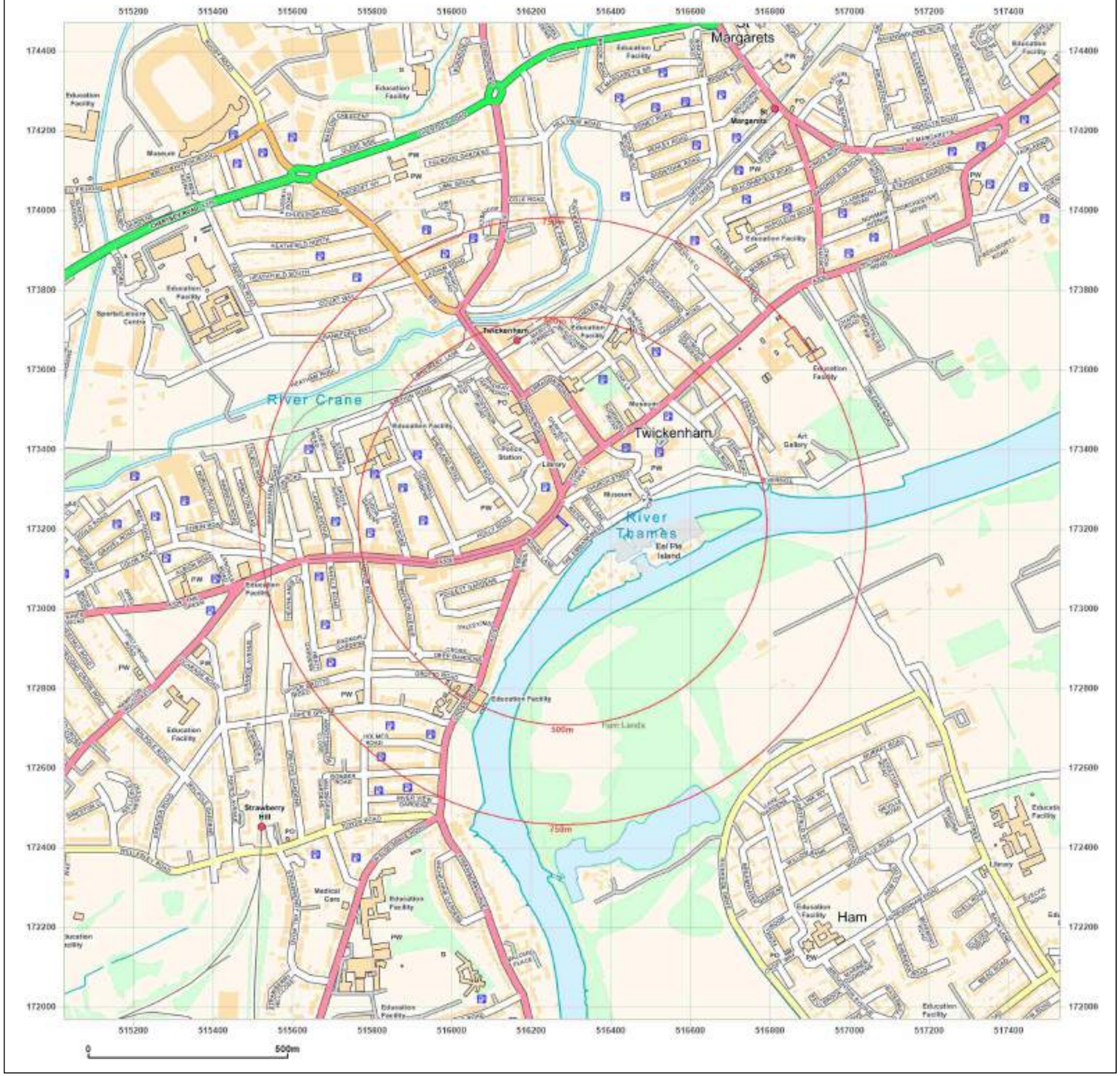
Production date: 25 October 2024

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



Groundsure INSIGHTS

Site Details:

5a KING STREET,
TWICKENHAM, RICHMOND
UPON THAMES, TW1 3SN

Client Ref: EPL035870
Report Ref: HMD-4JV-2PX-4CR-YXR
Grid Ref: 516278, 173220

Map Name: National Grid
Map date: **2024**
Scale: 1:10,000
Printed at: 1:10,000

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2024

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

Production date: 25 October 2024

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

Appendix E Extracts of Relevant BGS Borehole Records

TQ 17 SE/14-15

2 Pages 1-2

270/Misc.

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date: November

Contract Name: TWICKENHAM BATHS. Contract No.

Client: Forsyth (Ealing) Ltd.

Address: 77, Uxbridge Road, Ealing, W.5.

Address of Site: OPEN AIR SWIMMING BATHS, TWICKENHAM.

District or Town: Twickenham County: Middlesex.

Standing Water Level Ft. Ins. Below Surface Dia. of Borehole: Inches

Water Struck (1): None Ft. B.S. (2) Ft. B.S. (3) Ft. B.S. (4) Ft. B.S.

Boring Commenced: 31st October, 1949 Boring Completed: 2nd November, 1949

Special Remarks: Surface level 31.3

Jar Samples: [illegible]

Core Samples:

Special Samples: [illegible]

	DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth below Surface Feet	Depth below Surface Inches
	Clients are requested to examine the samples as the strata encountered, as the descriptions employed herein are general terms and responsibility is not accepted for their application to commercial purposes.				
	No. 4 Boring. TQ 17 SE/14				
	1632 7321				
	Fill (large flints)	3	6	3	6
	Fill (earth, stones, etc.)	5	0	8	6
	Sand and gravel	5	6	14	0
	Silty sand and gravel	0	2	14	2
	Sand and gravel	0	10	15	0
	Total Feet Bored	15	0	15	0

This form is to be returned to Head Office immediately job is finished.

Please give details of tubing left in borehole on the other side paying particular attention to sizes and depths of perforated tubing, if any.

Foreman's Signature .... Date November, 1949.

TQ17SE/14-15

2

270 TQ17SE/14-15

MISC.

GROUND EXPLORATIONS LIMITED

BOREHOLE SECTION SHEET

Date [illegible]

Contract Name: Twickenham Baths. Contract No.

Boring for: Perrys(Ealing)Ltd.,

Address: 97,Uxbridge Road,Ealing,W.5.

Address of Site: Open Air Baths, Twickenham. TQ. 17. SE.

District or Town: Twickenham County: Middlesex.

Standing Water Level: Ft. Ins. Below Surface Dia. of Borehole Inches.

Water Struck (1) none Ft. B.S. (2) Ft. B.S. (3) Ft. B.S. (4) Ft. B.S.

Boring Commenced: 2nd November,1949 Boring Completed 3rd November,1949

Special Remarks: Surface level O.D.29.7

Jar Samples: [illegible]

Core Samples:

Special Samples: [illegible]

	DESCRIPTION OF STRATA	Thickness Feet	Thickness Inches	Depth below Surface Feet	Depth below Surface Inches
	Clients are requested to examine the samples of the strata submitted, as the descriptions employed below are general terms and responsibility is not accepted for their application to commercial purposes.				
	No. 2 Boring TQ17SE/15 [illegible]				
	1633 7319				
	Fill (Earth,bricks,clinker etc)	4	0	4	0
	Fill (Gravel, sand and clay)	5	3	9	3
	Top soil	0	6	9	9
	Sand and gravel	3	9	13	6
	Total from Surface	13	6	13	

This form is to be returned to Head Office immediately job is finished.

Please give details of tubing left in borehole on the other side paying particular attention to sizes and depth of perforated tubing, if any.

Foreman's Signature .... Date .... [illegible]

TQ17SE 146

Norwest Holst Soil Engineering Ltd.

Borehole No. **E**

BOREHOLE LOG

1536 7321

Contract No. 1926
Location Twickenham
Client London Borough of Richmond
Method of Boring Percussion
Diameter of Borehole 150mm

Sheet 1 of 1
Chainage
Ground Level 1.6m m.A.O.D.
Date 22/5/83

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth in Sampling	Sampling and Coring	"N" / R.Q.D.%	Daily Progress
MADE GROUND: Dark brown clay with brick, ash glass fragments		0.55 1.55 2.30			0.55 1.55 2.30	2 9 10	
Dense yellowish-brown sandy fine medium coarse GRAVEL		3.55 4.55 5.10			3.55 4.55	40 30	
Firm yellowish-brown sandy CLAY		5.70			5.80 (80)		
Stiff greyish-brown silty CLAY		10.00			7.50 (91) 9.50 (100)		

Type of Sample

S.P.T. ■ Undisturbed
C.P.T. ✕ Vane
○ Jar ▲ Water
● Bulk Piezometer

Remarks (Observations of Ground Water etc.)

[ ] Blows required to drive undisturbed sample.
Water added to assist boring 4.1m 5.1m.
Water struck at 5.0m, rising at 5.3m.
Level rose after 20 mins to 4.25m. Borehole sealed at 6.10m.

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No. F

BOREHOLE LOG

Contract No. 85616
Location Twickenham
Client London Borough of Richmond
Method of Boring 150mm
Diameter of Borehole
Sheet 1 of 1
Chainage
Ground Level n.l.o.s. m.A.O.D.
Date 22/E/83

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	SPT N / R.Q.D.%	Daily Progress
MADE GROUND: Black ash with tarmac		0.35					
MADE GROUND : Brown clay, with brick fragments and ash		1.70			0.95	0	
					1.65	14	
Firm yellowish-brown very sandy CLAY		2.20			2.75	38	
Dense yellowish brown sandy GRAVEL		4.40			3.50	37	
		4.70					
Firm brown gravelly CLAY					5.20 (Set)		
Stiff becoming very stiff greish-brown silty CLAY					7.10 (Set)		
					8.50 1981		
		10.00			9.65	22	

Type of Sample

S.P.T.	Undisturbed
C.P.T.	Vane
Jar	Water
Bulk	Piezometer

Remarks (Observations of Ground Water etc.)

1 - 3 blows required to drive undisturbed samples.
Water struck at 2.65m, casing at 2.70m.
Level rose after 20 mins to 2.20m.
Borehole backfilled at 5.50m.
Final standing level at 2.10m.

TQ17 SE 149

Norwest Holst Soil Engineering Ltd.

(681 717)

Borehole No. **H**

BOREHOLE LOG

Contract No. 5509
Location Twickenham
Client London Borough of Richmond
Method of Boring Percussion
Diameter of Borehole 150mm

Sheet 1 of 1
Chainage
Ground Level 6.0m A.O.D.
Date 21/6/90

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth in Sampling	Sampling and Coring	"N" Value/ %C.D.D.%	Daily Progress
CONCRETE		0.20					
MADE GROUND: Greyish-brown clay with ash, brick fragments and some gravel.		1.20				-	
Medium-dense yellowish-brown clayey SAND with some gravel.		1.50			1.50	'61'	
Dense yellowish-brown sandy fine to medium coarse GRAVEL.					2.95	'40'	
					3.55	'39'	
					4.55	'47'	
		5.00			5.55	'28'	
Firm yellowish-brown sandy CLAY.		5.95			6.21 (07)	-	
Stiff greyish-brown silty CLAY.					7.75	'26'	
		10.03			9.50 (09)		

Type of Sample

S.P.T. ■ Undisturbed
C.P.T. ✕ Vane
Jar △ Water
Bulk ⊕ Piezometer

Remarks (Observations of Ground Water etc.)

(1) Blows required to drive undisturbed sampler.
Water added to assist boring 2.00m-4.30m.
Water struck at 4.90m, casing at 4.30m.
Level rose after 20mins to 4.10m.
Borehole sealed at 5.50m.
Final sounding level 4.50m.