APPENDIX 11.1
PRELIMINARY RISK ASSESSMENT

Stag Brewery, Mortlake

Preliminary Risk Assessment

For Reselton Properties

March 2022

Client Name:	Reselton Properties Limited
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Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001: 2018)

Issue	Date	Prepared by	Checked by	Approved by
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Comments

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Preliminary Risk Assessment for ground contamination risks at the proposed residential-led mixed use development of the Stag Brewery, Mortlake, SW14 7ET (the "Site").

Site Setting

Current Use	Former Brewery, decommissioned, stripped and partially demolished, with playing field in the west. Project boundary includes roadways to the south which are open and in public use.
History	Brewery use since the 15th Century, which expanded to occupy the majority of the eastern half of the Site by 1896 and the whole Site except for the playing fields by 1974. Brewery activities ceased on the Site in December 2015. Roadways within the wider project boundary were all developed by 1933.
Geology	Up to 4.6m Made Ground, then 1.7 – 5.4m of superficial deposits (Alluvium and Kempton Park Gravel Formation). Alluvium is sporadically absent across the Site. Beneath this is approximately 73m London Clay Formation, followed by 15 – 20m of Lambeth Group, 5 – 10m Thanet Formation and the Chalk Group at depth.
Controlled Waters	The Alluvium and Kempton Park Gravel Formation contain a Secondary A Aquifer, with the London Clay Formation classified as an Unproductive Stratum. The Lambeth Group and Thanet Formation are Secondary A Aquifers. The Chalk Group is a Principal Aquifer.
Ground Gas and Vapour	Historical information and findings of previous investigations indicate the Site is not at significant risk for ground gas or vapour issues.

Preliminary Conceptual Model

The following potential pollutant linkages have been identified for the Site:

- Potential exposure of construction workers and the general public to contaminated soils, groundwater, airborne dust and run-off from stockpiled soils or exposed shallow ground during the works;
- Potential for construction workers to encounter UXO during foundation works and basement excavation;
- Potential mobilisation of contamination via the two historical abstraction wells leading into the Chalk Group Principal Aquifer;
- Potential risks to shallow groundwater and the River Thames due to surface run-off from stockpiled materials via direct runoff, or the drainage system discharging to the River Thames, or mobilisation of ground contamination by rainfall infiltration after removal of hardstanding during demolition;
- Potential risks to exposed shallow soils and groundwater from introduction of new potential sources of contamination such as construction materials, fuels and other chemicals during the works;
- Potential exposure of future occupants and visitors of the proposed redevelopment to residual ground contamination via soft landscaping, and plant uptake in private gardens; and
- Potential exposure of buried structures and services to ground and groundwater contamination, leading to chemical attack.

Conclusions

Without mitigation, the overall risk rating for the Site is assessed as medium.

Recommendations

The following actions are recommended to address the potentially unacceptable risks identified:

- Further ground investigation should be completed targeting soils and groundwater at the west of the Site, where recent investigation has not been undertaken. The works should target areas where basements are not proposed as part of development works and residual soils will remain in-situ, to confirm findings of the 2015 Aecom investigation;

- Geotechnical investigation as part of design works for the development should include sampling and testing of soils to assess the risk posed by chemical attack, and inform the appropriate concrete classification for future foundations;
- Concrete used in construction, and any new water pipes installed as part of the redevelopment works should be appropriately protected against chemical attack from potential contamination in Made Ground, shallow soils and shallow groundwater underlying the Site;
- The recommendations of the UXO desk study assessments for the Site should be followed during future investigation or construction works;
- A Construction Environmental Management Plan (CEMP) should be developed for the Site, detailing measures to minimise the potential risk to the River Thames and shallow Secondary A aquifer during the demolition and construction works;
- Construction workers should be provided with and use personal protective equipment (PPE), respiratory protective equipment (RPE) and informed of good hygiene measures as protection against direct contact with contaminated Made Ground, contaminated groundwater or ground gas / vapours;
- Asbestos fibres have been identified in shallow soils beneath the Site. Works at the Site should be undertaken in line with the Control of Asbestos Regulations 2012;
- During redevelopment works, appropriate measures for managing materials, chemicals and waste should be utilised. Measures should also be taken to prevent run-off from stockpiled soils reaching the River Thames, and to supress the generation of dust;
- An environment watching brief should be undertaken throughout ground works, with additional environmental sampling undertaken where visual or olfactory contamination is suspected within the Made Ground or Kempton Park Gravel Member;
- Following removal of hardstanding across the Site post-demolition, an attempt should be made to locate the historical abstraction wells and decommission them if necessary; and
- New soft landscaping and private gardens installed at the development should be planted using an appropriate thickness of imported, certified clean cover material with a marker layer at base.

1. Introduction

1.1 Objectives

This Preliminary Risk Assessment (PRA) has been prepared by Waterman Infrastructure & Environment Limited ("Waterman") on behalf of Reselton Properties Limited ("the Applicant") in support of two linked planning applications ("the Applications") for the comprehensive redevelopment of the former Stag Brewery Site in Mortlake ("the Site") within the London Borough of Richmond upon Thames (LBRuT).

This updated report is based on a previous PRA prepared by Waterman in July 2019.

This new PRA includes an updated preliminary conceptual model for the Site, identifying potential pollutant linkages in relation to ground contamination. This will be achieved through a review of the environmental setting, history, and current uses at the Site and surrounding area.

The preliminary conceptual model will incorporate a critical review of the sources pathways and receptors inline with Land Contamination Risk Management (LCRM) guidance (Environment Agency, October 2020 (updated April 2021)).

1.2 Proposed Development

The Applications seek planning permission for:

Application A: "Hybrid application to include the demolition of existing buildings to allow for comprehensive phased redevelopment of the Site. Planning permission is sought in detail for works to the east side of Ship Lane which comprise:

a) Demolition of existing buildings (except the Maltings and the façade of the Bottling Plant and former Hotel), walls, associated structures, site clearance and groundworks

b) Alterations and extensions to existing buildings and erection of buildings varying in height from 3 to 9 storeys plus a basement of one to two storeys below ground

c) Residential apartments

d) Flexible use floorspace for:

i. Retail, financial and professional services, café/restaurant and drinking establishment uses

ii. Offices

iii. Non-residential institutions and community use

iv. Boathouse

e) Hotel / public house with accommodation

f) Cinema

g) Offices

h) New pedestrian, vehicle and cycle accesses and internal routes, and associated highway works

i) Provision of on-site cycle, vehicle and servicing parking at surface and basement level

j) Provision of public open space, amenity and play space and landscaping

k) Flood defence and towpath works

l) Installation of plant and energy equipment

Planning permission is also sought in outline with all matters reserved for works to the west of Ship Lane which comprise:

a) The erection of a single storey basement and buildings varying in height from 3 to 8 storeys

b) Residential development

c) Provision of on-site cycle, vehicle and servicing parking

d) Provision of public open space, amenity and play space and landscaping

e) New pedestrian, vehicle and cycle accesses and internal routes, and associated highways works"

Application B: "Detailed planning permission for the erection of a three-storey building to provide a new secondary school with sixth form; sports pitch with floodlighting, external MUGA and play space; and associated external works including landscaping, car and cycle parking, new access routes and other associated works."

Together, Applications A and B described above, as well as the Section 278 highways works proposed at Chalkers Corner, comprise the 'Development'.

1.3 Limitations and Constraints

The assessment was undertaken in accordance with the scope agreed between Waterman and Reselton Properties Limited, as documented in Waterman's fee letter (WIE15582-100-F-21110-EIA, dated November 2021), and with Waterman's standard Terms of Appointment.

The information contained in this report is based on a review of available historical, geological and hydrogeological sources, consultation with the regulatory authorities and observations made during a Site walkover on 16 December 2021.

Waterman has endeavoured to assess all information provided to them during this investigation but makes no guarantees or warranties as to the accuracy or completeness of this information.

The scope of this ground investigation includes an assessment of the presence of asbestos containing materials in the ground at the Site but not within buildings or structures or below ground structures (basements, buried service ducts and the like).

The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the Site.

2. Methodology

This PRA has been undertaken in general accordance with the LCRM Guidance. Land Contamination: Risk Management Guidance (LCRM: Environment Agency, October 2020, updated April 2021).

The report includes the following:

- Definition of overall Site objectives
- Collation of available current and historical information about the Site and the potential contaminants expected to be present;
- A Site walkover;
- Formulation of a preliminary Conceptual Site Model;
- Qualitative risk assessment; and
- Record of findings and recommendations for further action.

3. Hazard Identification

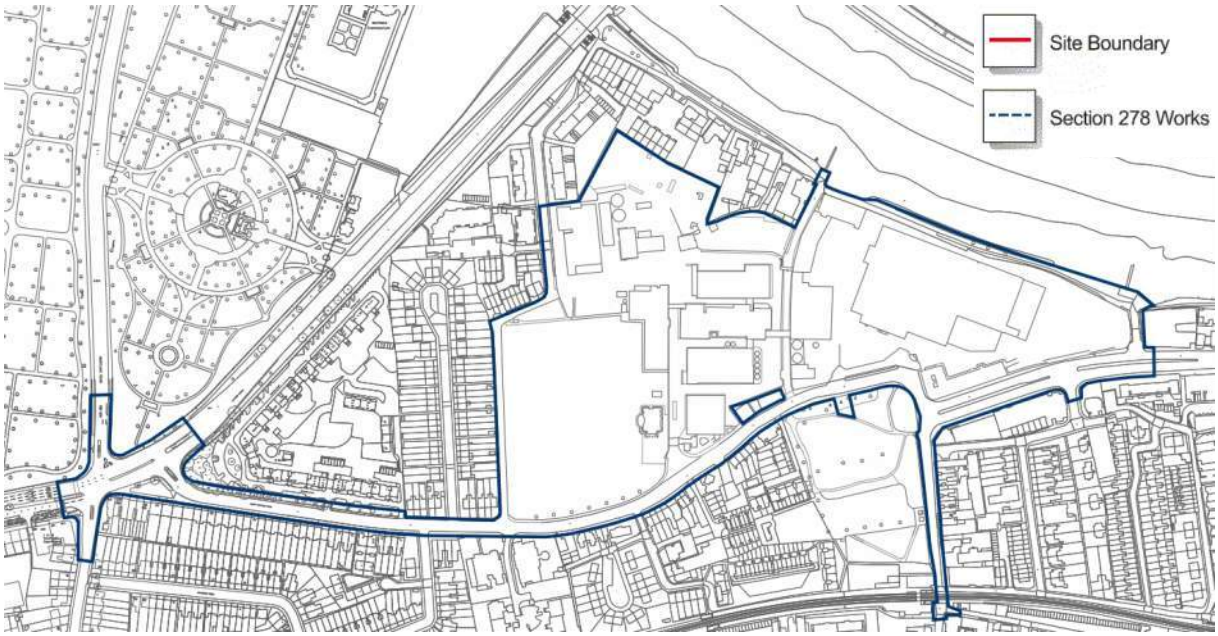
3.1 Site Description and Reconnaissance

The Stag Brewery is located at National Grid Reference 520360, 175990, in Mortlake, south-west London. The brewery comprises two adjacent land plots bisected by Ship Lane, an ‘East Zone and a ‘West Zone. The East Zone is entirely occupied by brewery buildings, with the West Zone occupied by further brewery buildings in the north and east, and a playing field in the south-west. Thames Water sewers pass beneath the Site, however, these have been decommissioned by backfilling at the Site boundary.

Brewing activities ceased in the Site in 2015. At the time of the walkover in December 2021 works had been undertaken at the Site to strip out brewery infrastructure from the buildings and external areas such as tanks and electrical cabinets. Partial demolition of the external walls of some structures in the west of the Site has been completed to facilitate removal of larger tanks and other equipment. Due to structural instability caused by the demolition and strip out works, access was not available to the brewhouse buildings at the West Zone.

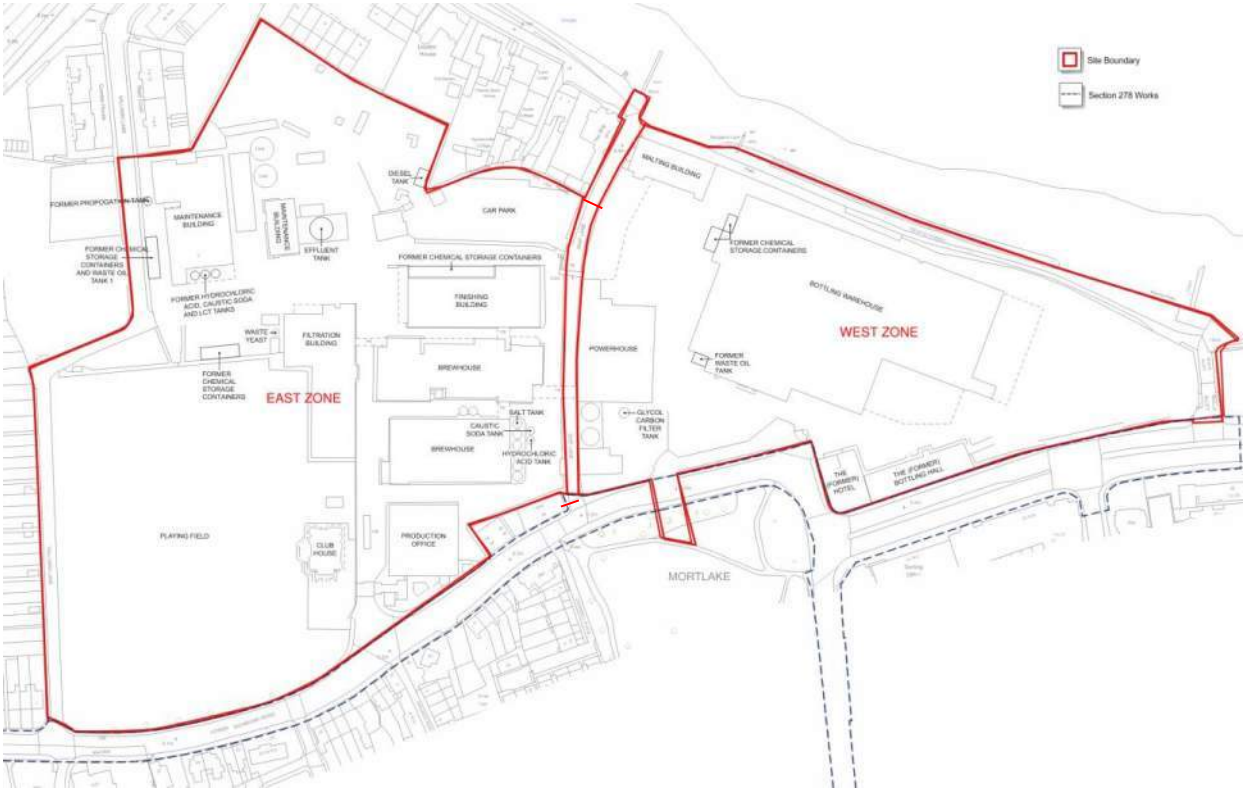
The Site comprises both the Stag Brewery and the adjacent Lower Richmond Road and Mortlake High Street to the south and west, and Sheen Lane to the south. The Site boundary plan is included in Figure 1. A pre-demolition building layout plan for the Stag Brewery area of the Site is in Figure 2.

Figure 1: Site Boundary



Source: Project Boundary Plan 2022

Figure 2: Stag Brewery Building Layout



Source: 2016 Site Plan

Stag Brewery East Zone

The East Zone is occupied by five main buildings: the Maltings; Bottling Warehouse; hotel/health centre, workshop/bar/canteen; and Energy Centre. These buildings are surrounded by hardstanding. All buildings have been internally stripped out with equipment, cabling and soft furnishings removed.

The Maltings is located at the north-west corner of the Site and is seven storeys with a single storey basement. This building has been internally stripped and is empty, however was not accessed during the walkover due to structural instability.

The centre of the Site is occupied by a large Bottling Warehouse, with a double-height ceiling at the work floor and a two-storey office integrated along the western side of the building. The warehouse and offices have been completely stripped internally, and all plant and machinery has been removed. A 3,350 litre bunded waste oil tank and pipework were formerly located in the south-west corner of the Site, however, this has since been removed. The drainage runs surrounding this former tank remain in place. An outdoor area of the building in the west of the Site under a canopy is in use for general waste storage, with two empty drip trays and pallets of building materials stored here.

The former hotel/health centre (the former Hotel Building), and workshop/bar/canteen (the former Bottling Building) are located in a single two-storey building at the southern edge of the Site. This building is internally subdivided into a medical room in the western end, and canteen with food cellar, workshop and a bar to the east. Above the workshop, bar and canteen are a series of meeting rooms, all empty.

The Energy Centre is a three-storey building with rooftop access in the west of the Site. The ground floor

contains pipework for ammonia tanks which have been removed, and four large boiler tanks with pumps which remain in place. Two large water tanks and associated pipework are present at first floor level, along with a series of glycol tanks. Remnants of an electrical substation and electrical cabinets are located at the second floor, with the majority of this equipment and cabling removed. The third floor leads to rooftop access. Four air conditioning units are located at the rooftop.

A 4,700 litre glycol carbon filter tank and pipework are located in south-west of the Energy Centre, along with two very large water tanks and a small control/storage building. A self-contained portable diesel generator is also located here, situated on hardstanding and in good condition with no evidence for leaks or drips.

Potentially contaminative activities and features identified during the walkover of the East Zone are detailed in Table 1.

Table 1: Summary of Potentially Contaminative Activities on East Zone

Potential Issue	Description	Condition
Above ground Storage Tanks (and fuel lines)	Glycerol carbon filter tank and pipework in south-west corner of the Site, approximately 4,700 litre capacity.	Appeared in good condition with no damage, corrosion or staining. Certified as decommissioned.
	Two glycol tanks and pipework at 2nd floor within energy centre, estimated capacity 10,500 litre each.	Appeared in good condition with no damage, corrosion or staining. Not known if they were empty.
Drainage	Drainage at the East Zone is combined. It is not known if there is an interceptor.	Hardstanding appeared to be in good condition, drains were clear with no evidence for overflowing. Drainage around former oil tank appeared clean with no evidence of staining or leaks from this tank.
Hazardous Materials	Portable diesel generator in south-west corner of the Site.	Generator appeared in good condition, volume of fuel on board not known. No leaks or spills to hardstanding evident.
Solid and Liquid Waste Storage	Waste oil tank formerly present at south-western corner of bottling warehouse, approximately 3,350 litre capacity.	Tank and pipework removed with bund clean, no staining evident on ground at former location.

Stag Brewery West Zone

The West Zone comprises seven main buildings surrounded by hardstanding: the Production Office Building (also referred to as POB); two Brewhouses; a Finishing Building; a Filtration Building; and Stable Court Maintenance Buildings (also referred to as packaging and processing buildings). The brewery is adjacent to a sports field in the west of the Site, which has a two-storey clubhouse. Some trees are set in hardstanding at the northern and eastern boundary of the West Zone.

The Production Office is a four-storey building with a single-level basement. Two large water tanks are situated within this basement, along with pumping infrastructure and a diesel generator with 800 litre supply tank, recorded as decommissioned. The above-ground floors contain meeting rooms with toilets and small kitchen space, which are currently in use as offices.

The Brewhouse Buildings and Finishing Building are adjacent three-storey and four-storey blocks in the east of the Site. The majority of brewery infrastructure has been removed from these buildings, with partial demolition of external walls of the brewhouses and finishing building undertaken above ground level to facilitate removal of the large brewery tanks and other infrastructure. The rest of the structure of these buildings remains in place. A former chemical storage area is located along the north of the finishing building, with six hazardous gas cylinder storage bays. These bays were formerly listed as

containing nitrogen, compressed air, helium, hydrogen and acetylene. Hardstanding to the south and east of these buildings is in use as vehicle storage. No evidence of leaks from any vehicles was noted during the inspection.

The Filtration Building is a part three, part four storey building in the centre of the Site. The main section of the building was formerly occupied by brewing infrastructure such as tanks and pipework, with a series of large vats previously in the western side of the building across all floors. The majority of this equipment has now removed, however a series of four very large Dilac tanks of unknown capacity remain present at the second floor. These tanks are marked as being emptied in June 2008. The ground floor and first floor of the filtration building are disused offices which have been cleared out. At the second floor of the Filtration building are further offices and a small laboratory for product testing. All office areas of the building are stripped and empty. HVAC equipment remains present at rooftop level.

The Stable Court Maintenance Buildings are located in the north-west corner of the Site, comprising a single storey warehouse unit to the south and adjoining two-storey office building to the north. These buildings were formerly used for storage of pump equipment, parts and tools. The internal space within the warehouse section of the building is mostly emptied, with some office equipment such as filing cabinets and chairs piled in one corner. The office section of the building is comprised of meeting rooms, which have also been stripped and emptied. Externally, three former chemical tanks and equipment present in the south of the buildings have been removed. Two former outdoor effluent tanks were formerly present to the east of the eastern maintenance building. One of these tanks has been dismantled and removed with the base remaining in place, the other tank has been recorded decommissioned and remains in place.

An approximately 1,000 litre mobile diesel storage tank is located in the north-east of the Site on hardstanding. The current volume of fuel in this tank was not known. No staining or evidence for any leaks from this tank was evident.

Adjacent to the brewery to the west is a large, open playing field, with small parking area and a two-storey clubhouse at the western boundary. This clubhouse contains meeting space with office furniture, changing rooms, toilets, a kitchen and a gas boiler cupboard. The building is surrounded by hardstanding to the south, with grass landscaping to the north.

Potentially contaminative activities and features identified during the West Zone walkover are detailed in Table 2.

Table 2: Summary of Potentially Contaminative Activities on West Zone

Potential Issue	Description	Condition
Above ground Storage Tanks (and fuel lines)	Portable diesel tank against northern boundary, estimated capacity 1,000 litres.	Appeared in good condition, previously certified as decommissioned.
Drainage	Drainage at the West Zone is combined. It is not known if there is an interceptor.	Hardstanding appeared to be in good condition, drains were clear with no evidence for overflowing.
Hazardous Materials	Dilac tanks within Filtration building	Tanks were recorded as emptied in June 2008
	Diesel generator and pipework in basement of production offices, supplied by 800 litre diesel tank on raised platform.	Appeared in good condition with no damage, corrosion, or staining.

Lower Richmond Road and Sheen Lane

The Project Boundary includes sections of nearby roads adjacent to the Stag Brewery to the south. Mortlake High Street and Lower Richmond Road run from west to east along the south boundary of the Stag Brewery and beyond to the west, up to the intersection with Mortlake Road and Clifford Avenue. Sheen Lane runs south from Stag Brewery to the nearby railway intersection. Both roads are tarmac hardstanding with block paving or tarmac pavements, and inset drainage within a predominantly residential/retail surrounding. At the time of the walkover drainage appeared clear and unblocked.

A Site location plan and Site layout plan are presented as Appendix A. A selection of photographs taken during the Site inspection is presented as Appendix B.

3.1.1 Site Surroundings

The Site is located in a predominately residential area, with some commercial, retail and light industrial buildings to the south including shops, offices and garages. A public park is adjacent to the Site to the south. The northern Site boundary abuts the River Thames, separated by a footpath. A flood defence barrier is present to the north-east of the Site, and was closed at the time of the walkover.

Ecological Areas

There are no sites of special scientific interest, special conservation areas, national nature reserves or ancient woodland within a 1km radius of the Site. Dukes Hollow, a Local Nature Reserve (LNR) is present 639m north-east.

3.1.2 Environmental Permits

As detailed in the Groundsure Report the following Environmental Permits (EP) are identified on-Site and in the surrounding area;

On-Site

- A single EP for a licensed permit application is previously registered to the Site, for combustion processes. This was revoked in February 1993;
- Three EPs for licensed industrial activities with associated Integrated Pollution Prevention and Control and licensed pollutant releases historically registered to the Stag Brewery. The earliest of these were registered in November 2005 and relates to treating of raw materials for food processes (brewing). The later of these applications was for surrender of the permit upon closure of the brewery and was submitted in March 2015. A surrender notice was issued by the EA in June 2016.

Surrounding Area

- Five historical landfills, the closest 126m north-west, named Dukes Meadow and accepting waste between 1945 and 1950. The further four landfills are between 233m and 419m north, and where recorded accepted inert and industrial waste. These landfills closed between 1934 and 1935.
- Seven active EPs for licensed pollutant release, the closest 44m east for dry cleaning activities. Further active EPs within 500m of the Site are for three petrol stations 59m south, 433m west and 491m south, a crematorium 234m north-west, and two further dry cleaners 374m south and 496m south-east.

4. Previous Environmental Assessments and Consultations

4.1 Previous Environmental Assessments

Environmental reports reviewed relating to the Site are detailed in Table 3. Findings of these reports are incorporated into this assessment where relevant.

Table 3: List of Previous Environmental Assessments and Documents Reviewed

Author	Title	Reference and Date
Aecom	Stag Brewery: Phase 1 Environmental Site Assessment	47074683; July 2015
Aecom	Stag Brewery, Mortlake: Phase 2 Environmental Site Assessment Report	47075502; September 2015
Aecom	Stag Brewery, Mortlake: Groundwater Sampling Point Decommissioning Report	60473952; February 2016
Bale Group	Tank Decommissioning Certificates	December 2015 to January 2016
Waterman	Environmental Risk Assessment: The Former Stag Brewery East Zone, Mortlake, London	WIE10667-101-R-4.2.1 RJM; February 2018

Stag Brewery, Mortlake: Phase 1 Environmental Site Assessment, July 2015

This desk study report was undertaken in July 2015. The objective of the report was to identify potential risks, liabilities and constraints to future developments. The study area comprised all brewery buildings on-Site, and the adjacent playing fields. At the time of the survey, the brewery was disused although twelve tanks were still present. These were identified as holding gas oil (x2), waste oil (x2), slat-lube, diesel (x2), hydrochloric acid, brine, caustic soda, and spent KG slurry (x2).

The desk study reviewed environmental, geological, hydrogeological data, and information from a number of previous reports for the Site, listed below:

- Dames & Moore Environmental Assessment (1995);
- CRA Baseline Soil and Groundwater Investigation (2003);
- SPMP Groundwater Monitoring Reports (2003 – 2012) and Review Report (2008);
- The asbestos risk register for the Site, drainage survey, environmental incident reports and periodic environmental inspections undertaken while the Site was in active use were also reviewed.

The Dames & Moore and CRA reports included intrusive ground investigation, with soil and groundwater sampling at a total of eighteen exploratory holes drilled to between 2.5m and 7.9m below ground level (bgl). Six monitoring wells were installed by Dames & Moore, and seven by CRA. CRA also undertook monitoring at four of the Dames & Moore wells during their investigation, bringing the total for their study to eleven.

Geology encountered during the ground investigations comprised Made Ground, then Alluvium which was found to be sporadic across the Site, and not present in many locations. Beneath this was Kempton Park Gravel Member, then London Clay Formation to maximum depth drilled. Groundwater was encountered at between 4 to 5.5m bgl within the Kempton Park Gravel Member. Locally perched groundwater was encountered at 1.2m to 2.6m bgl, due to the presence of underground voids. Groundwater was interpreted to generally flow towards the east / north-east, likely influenced by tidal cycles of the nearby River Thames.

Soil samples from the Made Ground, Alluvium and Kempton Park Gravel Member were analysed as part of both ground investigations for a range of organic and inorganic contaminants including metals, VOCs and SVOCs, and TPH. The Dames & Moore study found no exceedances of Dutch Intervention Values (DIV; applicable as soil guidance values in 1995 but superseded since) were detected. In groundwater, a single exceedance of chromium and copper above DIV was recorded in one borehole, but this was not considered to be representative of the water body as a whole.

The CRA results showed no exceedances of DIV within soil samples. In groundwater, concentrations of TPH of 51ug/l and 1,114ug/l were recorded in two boreholes, in the vicinity of the fuel oil tanks.

Dames & Moore concluded that, given the lack of evidence of significant soil or groundwater contamination at the Site, the risk to off-Site groundwater receptors was low. The CRA report concurred but noted that a potential pollution pathway existed between the tanks holding caustic soda and acid, and groundwater beneath the Site via downward migration through damaged hardstanding.

Groundwater from these wells was monitored and sampled for laboratory analytical testing on a further three occasions in December 2005, April 2007 and November 2012 as part of a Site Protection & Monitoring Programme (SPMP). Results of this monitoring found that when compared against relevant Environment Quality Standards (EQS), Environmental Standards for Discharge to Surface Waters, Drinking Water Quality Standards (DWS) or WHO guidelines for drinking water some exceedances for metals, hydrocarbons and ammoniacal nitrogen. However, this was not thought to represent widespread groundwater contamination at the Site.

Neither the Dames & Moore nor the CRA study included ground gas or vapour monitoring at the Site.

The Environmental Incident Reports provided for the Site referred to 15 spill incidents during operation of the brewery between 2009 and 2015. These included spills to drainage of brewing substances (wort, beer, grain, yeast and sugar) and mechanical fluids (lubricant, hydraulic oil, oxafoam, diesel and unidentified substances).

The Aecom desk study concluded that sources on-Site were the brewery and chemicals stored for brewing operations, effluent management and historical chemical releases. Identified pathways for potential migration of any contamination were vertical and lateral transport through shallow soils, volatisation of ground contamination resulting in vapours, and direct contact between ground contamination and human receptors. Potential receptors included construction workers, future Site residents, off-Site residents and controlled waters beneath and adjacent to the Site. The risk posed by potential contamination was assessed as low due to the low levels of contamination identified by past ground investigations. However, the report recommended further ground investigation be done to confirm no localised areas of contamination were present in areas where historically intensive industrial processes were identified.

Stag Brewery, Mortlake: Phase 2 Environmental Site Assessment Report, September 2015

Aecom conducted an intrusive ground investigation between 20 and 28 August 2015. Twenty-eight boreholes were drilled to a maximum depth of 5m bgl to collect soil samples, and three deep boreholes were drilled to between 6m and 7.6m to allow for groundwater sampling.

Exploratory hole locations were distributed across both the East and West zones of the Site, and targeted areas where the potential for localised contamination was identified in the earlier Phase 1 report. These included heavy oil storage tanks in three locations around the Site, storage areas in the northwest, the tanker cleaning pad and waste storage areas in the west, the area of a suspected historical drain leak, chemical storage areas in the west and southwest, vehicle maintenance area in the east, electrical substation, slurry tanks and engineering workshop. The remaining locations were chosen to provide

general Site coverage. The geology and groundwater depths encountered during the investigation was generally consistent with that described in geology section of this report, although the thickness of Made Ground was found to be greater than that logged by the 2003 CRA study.

In addition to the new exploratory holes, the 13 existing groundwater wells from previous ground investigations were reconditioned via desilting and pumping. Groundwater level monitoring and sampling was then undertaken at all 16 installations.

Soil samples from the Made Ground, Alluvium and Kempton Park Gravel Member were analysed for organic and inorganic contaminants including metals, polyaromatic hydrocarbons (PAH), volatile and semi-volatile organic compounds (VOCs and SVOCs), speciated total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), pH and asbestos. Results were compared against Aecom Generic Assessment Criteria for three end-use scenarios based on the anticipated development layout: residential land with gardens, residential land without gardens and commercial land.

Soil Results

Results of soil testing for 37 samples collected found that levels of arsenic exceeded GAC for a residential end-use with or without private gardens in a single location. Levels of lead exceeded GAC for commercial end-use in one location, residential end-use without private gardens in two locations and human health with private gardens in six locations. Three exceedances of coal tar above residential GAC without private gardens were also identified. Asbestos was detected in eight samples across the Site, however, this was quantified at levels less than 0.1%.

Soil sampling and testing indicated that overall contamination across the Site did not represent an unacceptable risk to human health, regardless of the end use scenario.

Groundwater Results

Groundwater samples from the Kempton Park Gravel Member shallow aquifer were tested for metals, ammoniacal nitrogen, nitrate, phosphate, sulphate, VOCs and SVOCs, TPH and pH. The results were contrasted against UK Drinking Water Standards (DWS), or Environmental Quality Standards (EQS).

During recovery of groundwater samples, no measurable free phase product, oily sheen or staining was observed and no hydrocarbon odours or significantly elevated PID readings were detected. Groundwater results found some elevated levels of metals above DWS and EQS. Three samples contained elevations of TPH, and a single sample contained phenol above EQS. The average ammoniacal nitrogen concentration from groundwater samples marginally exceeded the DWS. However, the measured concentrations were variable and in many cases were only slightly above GAC.

Ground Gas and Vapour Monitoring

Aecom did not undertake any ground gas or vapour monitoring at the installed monitoring wells, as this was not within the scope of their investigation.

The report concluded that soils and groundwater at the Site did not contain contaminant concentrations that represented a significant environmental risk to human health or controlled waters. No environmental improvement works were considered necessary at the Site.

Stag Brewery, Mortlake: Groundwater Sampling Point Decommissioning Report, February 2016

The sixteen groundwater monitoring wells drilled as part of previous investigations at the Site were decommissioned by Aecom in February 2016, as part of the closure of the brewery on-Site and surrender of Environmental Permits. Works involved filling the entire standpipe and screened section of each well with low permeability backfill (slurry) and securing the metal cover in place at the surface.

The report concluded that the sampling points had been successfully decommissioned and no pathway for any future surface contamination to reach groundwater or subsurface soils via the wells existed.

Bale Group: Tank Decommissioning Certificates

Bale Group undertook tank decommissioning and cleaning works at the Site between 2 December 2015 and 21 January 2016. The following tanks still present at the Site were drained, cleaned, degassed and tested as free of CO_2, H_2S, LEL and pH with a calibrated handheld gas detector:

East Zone

- Glycol carbon filter tank in southwest corner of the Site.
- Waste oil tank 2 located outside southwestern corner of the warehouse.

West Zone

- Diesel generator tank in Production Office basement.
- Diesel tank against northern boundary.
- Hydrochloric acid tank, bund and pipework at east side of Brewing Building.
- Caustic soda tank, bund and pipework at east side of Brewing Building.
- Effluent tank on raised platform in centre of northern part of the Site.
- Waste oil tank 1 located against western boundary wall, approximately 3,350 litres capacity.

Waterman: Environmental Risk Assessment: The Former Stag Brewery East Zone, Mortlake, London, February 2018

Waterman undertook a ground investigation at the section of the Site east of Ship Lane between 3 October and 27 October 2016. The scope included two boreholes drilled to 30m bgl and ten window sample holes to 5.5m bgl. Monitoring wells were installed in both boreholes and window sampler holes. Fieldwork was completed by Soil Consultants Limited.

Boreholes were located at opposing ends of the Site to provide the widest possible range of geotechnical conditions and variance over the total area. Four window sampler holes were situated targeting potentially contaminative former activities at the brewery, with the remainder located to provide a spread of exploratory holes across the available Site area. Monitoring wells were installed in eight of the window sample holes, and both boreholes to enable ground gas and vapour monitoring, and groundwater monitoring and sampling.

Soil samples were collected from arisings every 0.5m in the Made Ground, and every 1.0m in the natural material. Samples collected were analysed for a range of inorganic and hydrocarbon contaminants including metals, total petroleum hydrocarbons (TPH), polyaromatic hydrocarbons (PAHs) volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Samples of shallow strata were also submitted for Waste Acceptance Criteria testing. Groundwater samples were collected from all monitoring wells, and screened for metals, TPH, PAHs, VOCs and SVOCs.

Soil Results

No metal contamination was identified above residential assessment criteria. TPH exceedances were recorded across three sampling locations in the western half of the Site, close to historical tank bases and the decommissioned waste oil tank. Asbestos was not visually identified during the ground investigation works. Following laboratory microscopic analysis and quantification, chrysotile asbestos as fibre bundles was identified in some Made Ground samples.

Groundwater Results

Groundwater samples from the Kempton Park Gravel Formation identified iron, nickel and zinc contamination at BH1, in the southwest of the Site. No elevated levels of organic contamination were identified

Ground Gas and Vapour Monitoring

A single preliminary round of ground gas and vapour monitoring was completed at the Site. Based on the highest methane or carbon dioxide concentration recorded of 4% v/v and the peak flow rate of +0.4 l/hr, the Site was classified as very low risk for ground gas issues. Based on soil and groundwater sampling, and follow-up monitoring the Site was not considered at significant risk of vapour ingress.

The report concluded that whilst significant ground contamination was not identified, further investigation in areas of the Site not accessible at the time of the study was needed to confirm the ground conditions.

4.2 Consultations

As part of the previous desk study for the Site in 2016, The Environmental Health Department, Planning Department and Building Control Department at the London Borough of Richmond-upon-Thames (LBRuT) were contacted for any information held relating to the Site. A further information request was made to these bodies in 2022 for any updated information available.

4.2.1 Environmental Health

July 2016 Enquiry

THE EHO reported they held records of potentially contaminative land uses in proximity to the Site between 1899 and 2016. These included the brewery on-Site alongside electrical substations, foundries, metal recycling centres, petrol filling stations and ordnance works within the surrounding 500m.

LBRuT stated they did not hold records of any contaminated land ground investigations or remediation having taken place at the Site.

December 2021 Enquiry

An updated information request was made in December 2021. A response has not been received.

4.2.2 Planning Department

Enquiries

Information requests were made in July 2016 and December 2021. A response has not been received.

Planning Portal Information

A search of the LBRuT's planning portal (accessed online January 2022) identified multiple planning applications for the Site between 1977 and 2021. The majority of these related to tree works such as pruning and branch clearing. Several applications for minor changes to building layouts such as extensions, upgrades or erection of display hoardings are also recorded.

Applications of note include:

A planning application for construction of the Bottling Warehouse at the East Zone (reference 95/1625/FUL. This application was approved in July 1995, with no conditions relating to contaminated land. Four further applications are recorded for minor variations to this planning permission.

An application for temporary use of the brewery buildings for filming was granted in July 2021 (reference 19/3870/FUL). Condition NS20 of this planning permission related to land contamination, and required all filming activities involving storage of potentially hazardous materials or chemicals to be undertaken in line with recommendations made in Waterman's previous desk study for the Site.

Two applications for demolition and redevelopment of the east and west sides of the Site were refused permission in August 2021 (references 18/0547/FUL and 18/0548/FUL). The reasons for this refusal did not relate to land contamination.

4.2.3 Building Control Department

Enquiries

Information requests were made in July 2016 and December 2021. A response has not been received.

4.2.4 Environment Agency

In 2016 the Environment Agency provided records held relating to pollution incidents identified during operation of Stag Brewery. A single pollution incident to surface water is listed originating from the Site in April 1996, involving a spill yeast at Stag Brewery. The spill was recorded as a Category 3 (minor incident).and had a minimal impact to the tidal Thames.

A further two Category 2 (significant incident) spills are recorded at Ship Lane, which runs between the East Zone and the West Zone. The most recent incident, reported in July 1994 involved a discharge of brown foaming trade effluent discharged directly to the River Thames from a surface water outfall due to incorrect plumbing. A CCTV survey was undertaken and the situation rectified. A local effect to the tidal Thames was recorded. The earlier incident occurred in May 1989 and comprised discharge of contaminated water to the River Thames. The cause was identified as a broken sewer on-Site allowing effluent to enter surface water drainage. The discharge was stopped on discovery and the sewer repaired.

No further pollution incidents are identified relating to the Site in the intervening period since 2016.

5. Environmental Site Setting

5.1 History

A summary historical potential contamination sources at the Site and surrounding areas as obtained from Groundsure historical mapping is included in Table 4.

Table 4: Site History

Source	Site [a]	Surroundings [a]
Surrey, Middlesex, Maps 1868*, 1870*, 1871*, 1896 (1:2,500) London Map 1895 (1:1,056) Surrey Maps 1865-1868, 1873*, 1871-1874 (1:10,560)	A ***brewery*** occupies the eastern half of the Site. The western half of the Site is playing fields.	***Smithy*** directly adjacent to the Site to the east. ***Railway station*** and ***railway lines*** 150m to the south. Majority of the area surrounding the Site is residential, playing fields and a farm.
London Maps 1896 (1:2,500), 1896, 1898-1899 (1:10,560)	No significant changes.	***Coal wharf*** 100m east. ***Drainage works*** 750m northwest.
Insurance Plans (1907) 1:480 Surrey Maps 1913, 1914-1915*, 1919* (1;2,500), 1920 (1:10,560)	No significant changes.	***Bus garage*** present 300m southeast. ***Clay works*** 500m west. ***Electricity works*** 350m east. ***Electricity works*** 350m east are no longer present. ***Sewage works*** adjacent to ***drainage works*** 700m northwest.
Surrey Maps 1933, 1938* (1:10,560) Surrey Maps 1934-1935 (1;2,500), 1933 (1:10,560)	Large, unnamed commercial structures have been built in the western half of the Site. Clifford Avenue intersection has been constructed at the western end of the project boundary	***Incinerator*** 500m northwest Further warehouses have been built 100m-350m east.
OS Plan 1940-1958 (1:10,000) Historical Aerial Photography 1946 (1;1,250)	No significant changes.	***Incinerator*** is now a ***works***.
OS Plans 1952-1953 (1;2,500) OS Plan 1952-1960 (1;1,250) OS Plan 1953-1961, 1968* (1:2,500) Additional SIMs 1952-1953* (1:2,500)	Large commercial structure in the western part of the Site is listed as a ***garage***.	***Engine works*** 20m south ***Garages*** 40m and 140m south. The ***coal wharf*** 100m east is now a ***foundry***. ***Corporation depot*** 420m east. ***Coal bunker*** 350m east.
Additional SIMs 1953-1961*, 1952-1977 (1:2,500)	No significant changes.	The ***smithy, foundry*** and ***coal bunker*** are no longer listed. ***Electrical substations*** are listed 60m southeast, 400m southeast, 120m south and 240m south of the Site.

Source	Site [a]	Surroundings [a]
OS Plan 1974*, 1961-1978* (1:1,250) 1962-1966, 1966-1967*, 1975-1976* (1:10,000) Additional SIMs 1965-1978* (1:1,250)	Structures in the western half of the Site have been demolished or reduced in size. The ***garage*** is no longer listed. Six ***tanks*** are present in the southern half of the Site.	The ***corporation depot*** and ***works*** are no longer listed.
Additional SIMs 1978-1988*, 1987*, (1:1,250) London Map 1985 (1:25,000) National Grid Data 1991 (1:1,250)	No significant changes.	The ***engine works*** has expanded with additional buildings. The ***garage*** 40m south is no longer listed. A ***scrap yard*** is present 40m south.
National Grid Data 1991-1992*, 1991-1994, 1992-1995* (1:1,250) OS Plan 1992* (1:10,000)	Two large ***tanks*** in the northwest corner of the Site, and three smaller ***tanks*** in the west of the Site.	***Bus depot*** is no longer present.
Historic Aerial Photography 1999 (1:1,250) Raster mapping 1999, 2006 (1:10,000) LandLine mapping 2003 (1:10,000) National Grid mapping 2010 (1:10,000)	Part of one of the brewery buildings in the centre of the Site is no longer present.	The ***engine works*** and ***scrap yard*** are no longer listed.
Vector Map 2016 (1:10,000) National Grid mapping 2010 (1:10,000)	No significant changes.	No significant changes.

5.2 Unexploded Ordnance

There is a risk unexploded bombs, anti-aircraft projectiles and/or incendiary bombs fell unnoticed and unrecorded within the Site boundary. A Preliminary Unexploded Ordnance Risk Assessment for the Site produced by Groundsure identifies an overall medium risk classification for the Site. Historical records indicate the Richmond area sustained a high density of bombing during WWII, and bomb risk maps have identified several high explosive bombs as having fallen on parts of the Site.

As part of the October 2016 ground investigation works at the Stag Brewery East Zone, a further preliminary UXO study was undertaken for the area by Soil Consultants Limited. This identified a significant UXO risk across the Stag Brewery and recommended a UXO specialist be present for any intrusive ground works undertaken. A UXO specialist attended Site throughout the Soil Consultants works.

5.3 Geology

Site geology has been established from previous ground investigations by Dames and Moore (1995), CRA (2003), Aecom (2015) and Soil Consultants (2016), alongside British Geological Survey 1:50,000 map sheet 270 (South London, Solid and Drift Edition) and BGS borehole records TQ27/NW-596 and TQ27/NW-597 (accessed online December 2021). Geology for the Site is summarised in Table 5.

Table 5: Site Geology

Stratum	Area Covered	Estimated Thickness	Typical Description
Hardstanding.	Entire Site excluding the playing fields.	0.25 - 0.8	Tarmac or reinforced concrete floor slab at surface level. Encountered as two or three separate layers up to 0.5 m thick, each separated by up to 0.5 m Made Ground in eastern area.
Made Ground	Entire Site	0.4 – 4.6m, typically 1.0 – 3.0m across the main Site area	Predominantly coarse sand and gravel, including pieces of brick and minor amounts of black clinker.
Alluvium	Sporadic across entire Site area	0.35 – 1.5	Soft brown grey slightly gravelly clay with occasional roots
Kempton Park Gravel Member	Entire Site	1.2 – 5.9m, generally thicker towards the east	Clayey, silty sand with varying gravel content with areas of soft, brown, sandy clay.
London Clay Formation	Entire Site	73	Stiff grey to brown clay, with occasional pockets of silt and sand.
Lambeth Group	Entire Site	15 – 20	Light to dark brown clay, some silty or sandy, with bands of sands and gravels.
Thanet Formation	Entire Site	5 – 10	Fine grained sand that can be clayey and glauconitic. Flints at the base of the formation.
Chalk Group	Entire Site	Not proven	White chalk with occasional flints.

5.3.1 Ground Stability

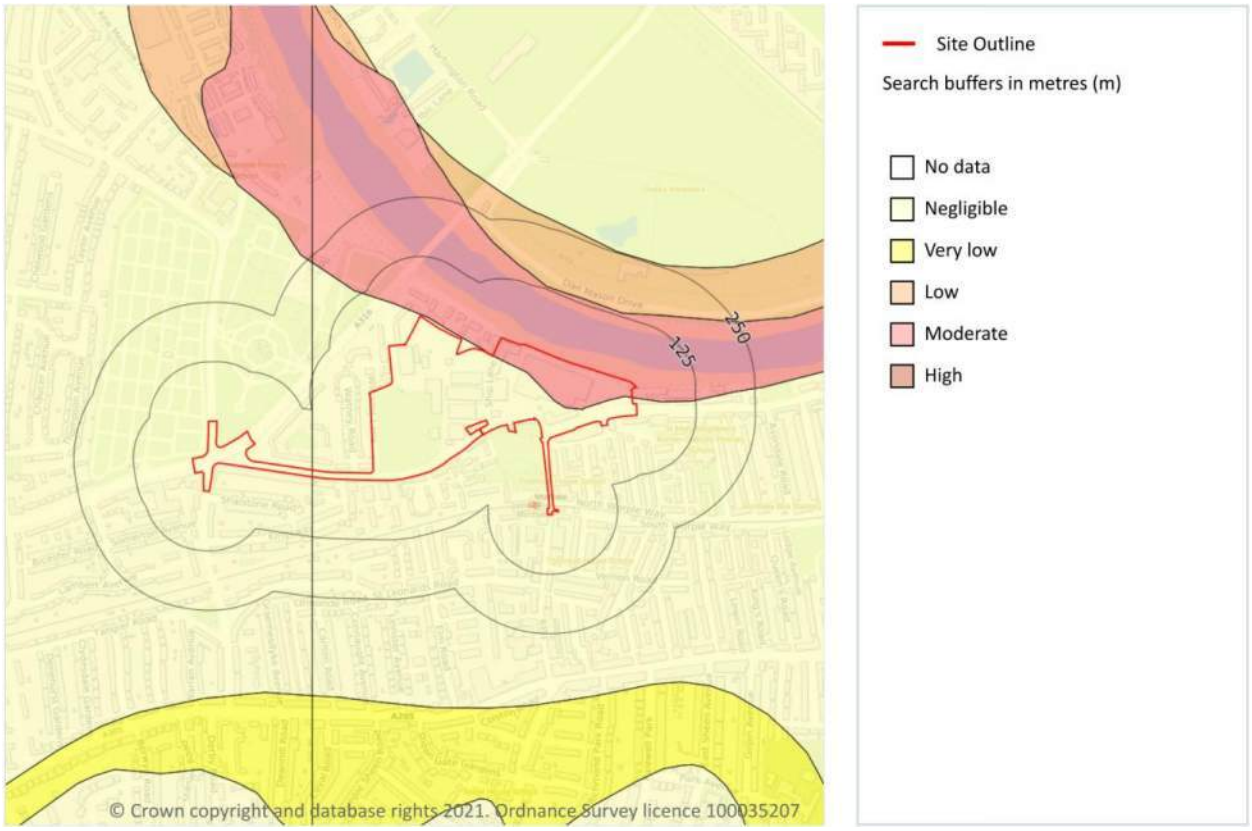
The Groundsure Report has identified the following geological hazards as set out in Table 6.

Table 6: Geological Hazard Risk to the Site

Geological Hazard	Risk
Shrinking or swelling clay	Moderate potential risk at the northern half of the Site, with the remainder of the Site assessed as negligible risk.
Landslides	Very low
Ground dissolution of soluble rocks	Negligible
Compressible deposits	Negligible
Collapsible deposits	Negligible
Running sands	Very low

The section of the Site identified as having potential for natural ground subsidence due to shrinking or swelling clays is set out in Figure 3.

Figure 3: Ground Stability risk due to Shrink-Swell Clays



Source: 2021 Groundsure Insight

BGS mapping information does not identify any significant structural, geomorphological or geochemical features on or within 500m of the Site.

The Site is not in an area identified as potentially affected by coal, metalliferous or other sub-surface mining activity.

5.4 Radon

Information recovered from the Groundsure Report, BGS, and Public Health England indicates the Site is not in an area of high radon levels, with less than 1% of properties above the action level. Correspondingly, it is not anticipated that radon protective measures would be required at the proposed development.

5.5 Ground Gas

Ground Gas Assessment Methodology

As identified in the CL:AIRE 2012 RB17 guidance document and CIRIA C665 ground gases only pose a risk to developments when the following can be satisfied, which is in line with source – pathway – receptor model followed by LCRM.

- An accumulation of a large volume of gas in the ground in or near the buildings (source).

- A pathway that allows gas to migrate through and/or out of the ground into a building or other structure sufficiently quickly to allow it to build up inside the building (pathway).
- A confined space within the building or structure where gas can build up to unacceptable levels (receptor).

In order for a risk from ground gases a source – pathway – receptor linkage needs to be present. This requires a sufficient quantity of gas to pose a hazard and one or more pathways by which it may cause significant harm to people. For sustained gas migration to occur gas must be replenished at the source to negate the effects of attenuating factors such as oxidation of the methane/carbon dioxide to oxygen in the aerobic zone or low permeability soils decreasing the migration potential. Therefore, sustained high levels of gas generation are required for ground gas to migrate via advective or diffusive flow and cause high ground gas concentrations at the surface/within built structures. The volume of ground gas is therefore the principal factor which should be considered rather than the ground gas concentration and not the gas concentration present in the ground (or monitoring well) which is commonly mistaken as posing a risk to future Site users.

Site-Specific Ground Gas Information

There are five records for historical landfills within 500m of the Site, relating to the Duke's Meadow area. This area extends from the north bank of the River Thames adjacent to the Site, and continues further north. The presence of the River Thames between the former landfill area and the Site will prevent the migration of ground contamination, ground gas and vapours to the Site.

Whilst Made Ground up to 4.6m thick and Alluvium up to 1.5m thick has been recorded by ground investigations at the Site, this material was not found to have consistently elevated organic content by laboratory testing. Furthermore, all of this material was emplaced prior to development of the current brewery buildings circa 1991. Due to the greater than thirty year time period elapsed since significant deposition of Made Ground at the Site, it is considered the potential for production of ground gas has been exhausted.

A preliminary round of ground gas monitoring as part of the most recent 2016 ground investigation did not identify significantly elevated levels of methane or carbon dioxide. Preliminary classification of the Site was "Characteristic Situation 1" (Very Low Risk) with no protective measures required.

Considering this information, the potential for ground gas has been further assessed according to the Waterman Ground Gas Assessment Tool, with results reproduced in Appendix C. Following assessment, the Site is considered a very low risk for ground gas issues. Based on the sensitivity of the end-use receptor, no further ground gas investigation or assessment is considered necessary.

5.6 Vapour

Land uses with the potential to result in ground contamination with vapour risks have been identified on-Site, including diesel and waste oil tanks. These tanks were all formerly located in buildings or on hardstanding, reducing the potential for any leaks or spills to reach the underlying soils. All tanks associated with former brewing activities have been decommissioned and are no longer in use, mitigating their potential to cause future contamination before or during redevelopment. Where portable diesel tanks and generators remain at the Site, these are in good condition with no evidence for leaks or staining.

The Groundsure dataset does not record any pollution incidents relating to oils or fuels within 500m of the Site. The results of soil and groundwater sampling and follow-up vapour monitoring undertaken during the 2016 ground investigation did not identify any evidence for a vapour source.

Considering the lack of significant sources, there is not considered to be a potential vapour risk to the Site

or future redevelopments.

5.7 Controlled Waters

5.7.1 Surface Waters

The nearest surface water to the Site is the River Thames, directly adjacent to the north. The Ecological Potential of the River Thames has been assessed as 'Moderate' under the Water Framework Directive, with the Chemical Potential assessed as 'Failing'. This classification was last reviewed in 2019.

Abstractions and Discharges

The Groundsure report does not identify any active surface water abstractions within 1km of the Site.

There are no active Environmental Permits for discharges to surface water recorded within 500m radius of the Site. Three historical discharges to the River Thames are identified within 500m, the closest 67m north-east involving release of cooling water. Further records are for cooling water and miscellaneous discharges 105m north and 424m east. All discharges were revoked between 1990 and 1991. On-Site sewer records indicate that some areas of the Site currently drain to the Thames Water surface water sewer network, ultimately discharging to the River Thames.

Pollution Incidents

The Groundsure dataset identifies two pollution incidents within 500m of the Site, occurring in 2002 and 2003 respectively. The closest of these, occurring 252m north of the Site involved an unknown pollutant release with a Category 3 (minor) impact to controlled waters. The further incident is listed 482m north-west with no impact to waters.

As detailed in Section 4.2.4, the EA records three pollution incidents relating to the Site, involving spillages of yeast, trade effluent and contaminated water to the River Thames. In all instances the effects to the river did not extend further than the local area.

Environmental Incident Reports provided for the Site to Aecom referred to 15 spill incidents during operation of the brewery between 2009 and 2015. These included spills to drainage of brewing substances (wort, beer, grain, yeast and sugar) and mechanical fluids (lubricant, hydraulic oil, oxafoam, diesel and unidentified substances). Whether the spills were cleaned up, or the clean-up methodology used for each spill is not recorded.

5.7.2 Groundwater

According to EA online data, the geological deposits underlying the Site are classified as per Table 7.

Table 7: Summary of Hydrogeological Properties of the Main Geological Strata

Stratum	EA Classification	Hydrogeological Significance
Made Ground	Not classified	Likely to be sufficiently permeable to allow the migration of surface water to underlying strata.
Superficial Deposits (Alluvium and Kempton Park Gravel Member)	Secondary A Aquifer	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 strata are likely to be in hydraulic continuity with the adjacent River Thames.
London Clay Formation	Unproductive Stratum	Rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Stratum	EA Classification	Hydrogeological Significance
Lambeth Group	Secondary A Aquifer	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.
Thanet Formation	Secondary A Aquifer	
Chalk Group	Principal Aquifer	Layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage.

The Site is not located within a groundwater Source Protection Zone. Based on available information, it is anticipated that shallow groundwater in the Alluvium and Kempton Park Gravel Member is in hydraulic continuity with the tidal River Thames directly adjacent to the Site.

Abstractions and Discharges

BGS information records two historical groundwater wells within the Site boundary, references TQ27/NW-596 and TQ27/NW-597. These wells were drilled in 1836, and later extended to 101m and 121m below ground level in 1858 to abstract groundwater from the Chalk Group Aquifer. Details of abstraction volumes are not recorded. It is not known if these wells have been decommissioned or remain present at the Site.

The Groundsure dataset records a further two groundwater abstractions within a 1km radius of the Site. The closest of these is located 219m north at Dukes Meadow Golf Club, drawing 8,000 litres of groundwater per year from the Chalk Group aquifer for irrigation of the playing green. The further abstraction is located 643m north-east, also for irrigation purposes at Dukes Meadow Golf Club and drawing a further 5,000 litres per year.

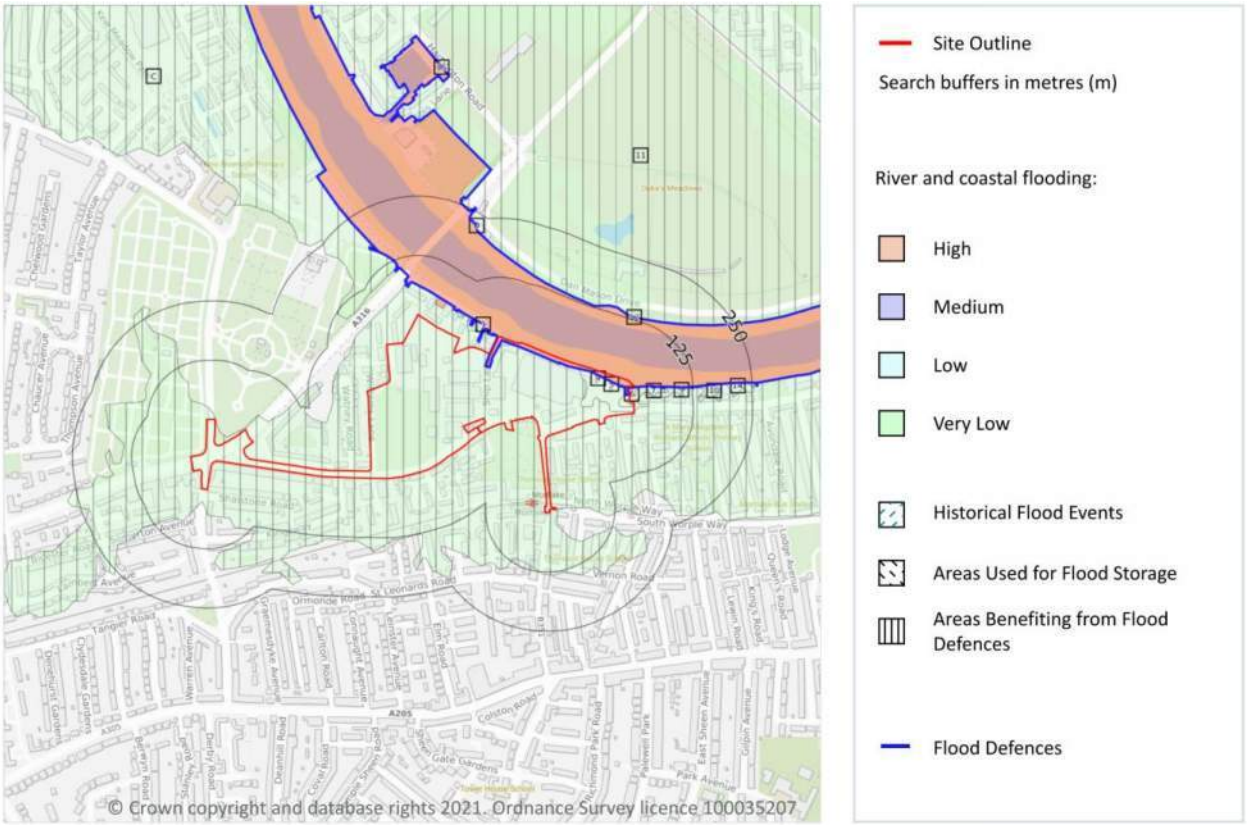
There are no Environmental Permits for discharges to groundwater recorded within 1km of the Site.

5.7.3 Flood Risk

EA indicative flooding data and the Groundsure dataset indicate the Site is located in a Flood Zone 3, with a 1 in 100 risk of flooding. The risk of flooding from rivers is identified as low, due to the Site benefitting from flood defences. Flood risk from rivers is detailed in Figure 4.

During a previous walkover of the Site by Waterman in 2016, Ship Lane and the off-site footpath to the north of the brewery were flooded.

Figure 4: Rivers and Coastal Flooding Risk



Source: 2021 Groundsure Insight

6. Hazard Assessment and Preliminary Conceptual Model

The Preliminary Conceptual Model for the Site is presented in Table 9 and graphically in Appendix A. The risk ratings included in Table 9 has been assessed qualitatively using the criteria given in Appendix F and the potential receptors identified using the criteria given in Appendix G.

6.1 Contaminants of Concern

Contaminants of concern identified at the Site are summarised in Table 8. The potential contaminants associated with former and current land uses are informed by DoE Industry Profiles (1995) where applicable.

Table 8: Contaminants of Concern

Source	Associated Contaminants
On-Site (current)	
Electrical substations	Metals, PCBs, transformer oils
Diesel tanks and generators	Diesel fuel
On-Site (historic)	
Brewery	Diesel fuel, waste oil, lubricant oils, hydrochloric acid, caustic soda, slurry, asbestos
Off-Site (current within 250m)	
Garages and petrol filling stations	Metals and metalloids, fuels, TPH, PAH, organic solvents, asbestos
Off-Site (historic within 250m)	
Smithy	Metals and metalloids, organic solvents, asbestos
Railway station and railway lines	Metals and metalloids, TPH, PAH
Coal wharf	Metals and metalloids, sulphates, sulphides, cyanides
Electricity works and electrical substations	Metals and metalloids, PCBs, bitumen, detergents, organic solvents, TPH, mineral oil, asbestos

Table 9: Outline Conceptual Site Model

Potential Source	Linkage	Receptor	Risk	Justification / Mitigation	Residual Risk
Human Health					
Contamination in Made Ground and shallow soils from on-Site and adjacent off-Site land uses. Contamination in perched groundwater, and the shallow Secondary A Aquifer in the Alluvium and Kempton Park Gravel Member.	Dermal contact and inhalation of dust from contaminated soils. Ingestion of contamination via plant uptake in private gardens.	Future Site Users	Low	The brewery has been decommissioned, with all known contamination sources removed. Therefore, it is unlikely that any contamination will arise from the remaining buildings and plant. Historically, ground contamination may have occurred during operation of the brewery or close to the Site from nearby activities such as the coal depot, garages or electrical substations. Previous ground investigations at the brewery between 1995 and 2016 found some organic and inorganic contamination is present in Made Ground beneath the Site, when compared against relevant assessment criteria. However, in the majority of samples no significantly elevated contamination concentrations were identified. A basement is proposed beneath the East Zone, with a smaller basement beneath the West Zone. This will excavate out and remove a volume of Made Ground, lowering the potential for residual contamination to remain beneath the completed development. The extent of hardstanding cover from new buildings and paved surfaces across the majority of the Site is anticipated to prevent future Site users contacting any residual contamination in these areas. At the roadways included within the wider project boundary, the presence of hardstanding entirely across these areas will prevent road and footpath users contacting any ground contamination. The development design includes for private gardens at Blocks 20 and 21 at the West Zone, with managed soft landscaping across the remainder of the development. Use of appropriate thicknesses of imported clean topsoil for these features with a marker layer installed at the base will prevent future Site users' exposure to ground contamination. Ground investigation has been undertaken across the east of the Site by Waterman in 2016. Further ground investigation should be completed at the West Zone targeting soils and groundwater in the areas outside of proposed basement, where residual soils will remain in-situ to confirm findings of the previous Aecom investigation in this area.	Low

Potential Source	Linkage	Receptor	Risk	Justification / Mitigation	Residual Risk
Ground gas arising from Made Ground and Alluvium and vapours from hydrocarbon contamination in shallow groundwater.	Accumulation in confined spaces, leading to inhalation.	Future Site users within structures	Low	Geological information for the Site from previous ground investigations indicates approximately 0.7m – 4.6m Made Ground and Alluvium beneath the majority of the Site. Due to this limited thickness present, the time elapsed since the material was emplaced, and considering basement excavation will remove a significant volume of this material, it is not considered likely to represent a ground gas risk to the future development. Previous ground investigations found that soil and groundwater samples did not indicate extensive hydrocarbon contamination in soils, or in groundwater from the Secondary A Aquifer. Groundwater sampling at the East Zone by Aecom in 2015 did not detect visual or olfactory evidence for hydrocarbon contamination. Three samples contained minor elevations of TPH, and a single sample recorded phenol above EQS. However this was not identified as sufficient to represent a vapour source. Further sampling by Waterman in 2016 at the east of the Site did not encounter evidence for hydrocarbon groundwater contamination. Ground gas and vapour are not considered to present a potential risk to future development. This should be confirmed by soil and groundwater sampling as part of additional ground investigation outside the proposed basement areas at the west side of the Site.	Low
Contamination in Made Ground and shallow soils.	Windborne, potentially contaminated construction dust. Runoff from stockpiled soils.	Off-Site residents / users	Medium	A Construction Environmental Monitoring Plan (CEMP) should be prepared for the works, including measures to minimise runoff from stockpiled soils, manage groundwater in excavations and suppress the generation of dust. Construction materials brought on-Site as part of works will be appropriately stored to prevent spills and leaks. This should prevent potentially contaminated material reaching off-Site residents.	Low

Potential Source	Linkage	Receptor	Risk	Justification / Mitigation	Residual Risk
Contamination in Made Ground, shallow soils, and shallow groundwater.	Dermal contact and ingestion. Dust inhalation. Ground gas and vapour Accumulation in trenches and confined spaces, leading to inhalation followed by asphyxiation and risk of explosion.	Construction Workers	Medium	Construction workers should be provided with personal protective equipment (PPE) and respiratory protective equipment (RPE) where appropriate. Workers should be aware of good hygiene measures as protection against direct contact with contaminated Made Ground, contaminated groundwater, ground gas, vapours and dust inhalation. Asbestos fibres were identified in shallow soils by previous ground investigation works. Development works should be undertaken in accordance with the Control of Asbestos Regulations 2012.	Low
Property					
Contamination in Made Ground, shallow soils, and shallow groundwater.	Direct contact with building foundations and buried services leading to chemical attack.	Future on-Site structures	Medium	Geotechnical investigation as part of future foundation design works for the development should include sampling and testing of soils to assess the risk posed by chemical attack. If required, appropriately designed buried concrete and barrier water supply pipes should be used at the development.	Low
Ground gas and vapours.	Accumulation in confined spaces, leading to risk of explosion.	Future on-Site structures	Low	Identified geology and hydrogeology at the Site, alongside findings of previous ground investigations indicate there is not a significant risk of ground gas or vapours impacting the completed development. Soil and groundwater sampling as part of further ground investigation at the west of the Site should confirm this approach.	Low
Contamination in Made Ground, shallow soils, and shallow groundwater.	Direct contact with building foundations and buried services leading to chemical attack.	Off-Site structures	Low	No significant contamination elevations were identified in soils and groundwater during previous investigations at the Site. Where elevated levels were encountered, it was not thought to represent a significant contamination risk to off-site structures.	Low

Potential Source	Linkage	Receptor	Risk	Justification / Mitigation	Residual Risk
Ecological Receptors					
Contamination in Made Ground, shallow soils, and shallow groundwater.	Direct contact of roots.	Soft landscaping	Low	All soft landscaping and private gardens at the completed development should be situated in an appropriate thickness of imported, certified clean cover material with a marker layer at the base. This will prevent plants at the completed development contacting any ground contamination beneath the Site.	Low
Contamination in Made Ground, shallow soils, and shallow groundwater.	Windborne, potentially contaminated construction dust. Runoff from stockpiled soils.	River Thames	Medium	A CEMP should be prepared for the demolition and construction works on-Site, detailing measures to minimise the potential risk to the River Thames from stockpiled soils during below-ground works such as basement excavation. Construction materials brought on-Site as part of works will be appropriately stored to prevent spills and leaks. This should prevent potentially contaminated material reaching the River Thames.	Low
Controlled Waters					
Contamination in Made Ground, shallow soils, and shallow groundwater.	Migration through granular deposits and via sewer bedding materials to the River Thames. Runoff from stockpiled soils.	The River Thames	Medium	Previous ground investigations found that soil and groundwater samples did not indicate extensive contamination present beneath the Site. Therefore, the potential for contamination mobilisation is assessed as low. On-Site sewer records indicate that some areas of the Site currently drain to the Thames Water surface water sewer network, ultimately discharging to the River Thames. Measures should be undertaken during demolition and construction works to minimise runoff from stockpiled soils, and prevent contamination reaching the River Thames via Site drainage.	Low
Construction materials stored on-Site as part of development works.	Spills to ground, and the River Thames.	Shallow soils, and the River Thames	Medium	A CEMP should be prepared for the demolition and construction works on-Site, detailing measures to minimise the potential risk to controlled waters. Construction materials brought on-Site as part of works should be appropriately stored to prevent spills and leaks. This should prevent potentially contaminated material reaching the River Thames.	Low

Potential Source	Linkage	Receptor	Risk	Justification / Mitigation	Residual Risk
Contamination in Made Ground and shallow soils.	Remobilisation of contamination by rainfall infiltration following removal of hardstanding during construction works.	Shallow Secondary A aquifer in the Alluvium and Kempton Park Gravel Member	Low	The CEMP should include measures to minimise rainwater infiltration to exposed ground, or the potential for construction spills during the demolition and construction works. Rainwater infiltration via soft landscaping and private gardens is possible at the completed development. However, this is likely to be limited as the majority of the Site will be covered by buildings and hardstanding. Previous ground investigations did not identify significant contamination in Made Ground or shallow soils, and there are unlikely to be significant impacts from any mobilisation when limited to landscaping areas.	Low
Contamination in shallow groundwater.	Migration via historical abstraction wells.	Deep Secondary A aquifers in the Lambeth Group and Thanet Formation Principal Aquifer in the Chalk Group	Medium	The Site is underlain by about 73m of London Clay Formation, which is considered to present an impermeable barrier against the migration of contaminants to the deep Secondary A and Principal Aquifers. The proposed development will comprise mid-rise buildings, whose foundations will not penetrate this layer. Two redundant historical abstraction wells are recorded on-Site, which could act as a pathway for contamination migration to the Principal Aquifer in the Chalk Group. Before commencing excavation works these should be located and decommissioned.	Low

7. Conclusions

Without mitigation, the overall risk rating for the Site is assessed as **medium**.

Potential Risks

The following potential pollutant linkages have been identified for the Site:

- Potential exposure of construction workers and the general public to contaminated soils, groundwater, airborne dust and run-off from stockpiled soils or exposed shallow ground during the works;
- Potential for construction workers to encounter UXO during foundation works and basement excavation;
- Potential mobilisation of contamination via the two historical abstraction wells leading into the Chalk Group Principal Aquifer;
- Potential risks to shallow groundwater and the River Thames due to surface run-off from stockpiled materials via direct runoff, or the drainage system discharging to the River Thames, or mobilisation of ground contamination by rainfall infiltration after removal of hardstanding during demolition;
- Potential risks to exposed shallow soils and groundwater from introduction of new potential sources of contamination such as construction materials, fuels and other chemicals during the works; and
- Potential exposure of future occupants and visitors of the proposed redevelopment to residual ground contamination via soft landscaping, and plant uptake in private gardens; and
- Potential exposure of buried structures and services to ground and groundwater contamination, leading to chemical attack.

The recommendations of this report outline preliminary remedial and mitigation measures that require confirmation through additional works. However, once successfully implemented the risks are anticipated to be **low**. Therefore, the NPPF requirement that on completion the Site can no longer be captured under the Part IIA regime is expected to be met.

8. Recommendations

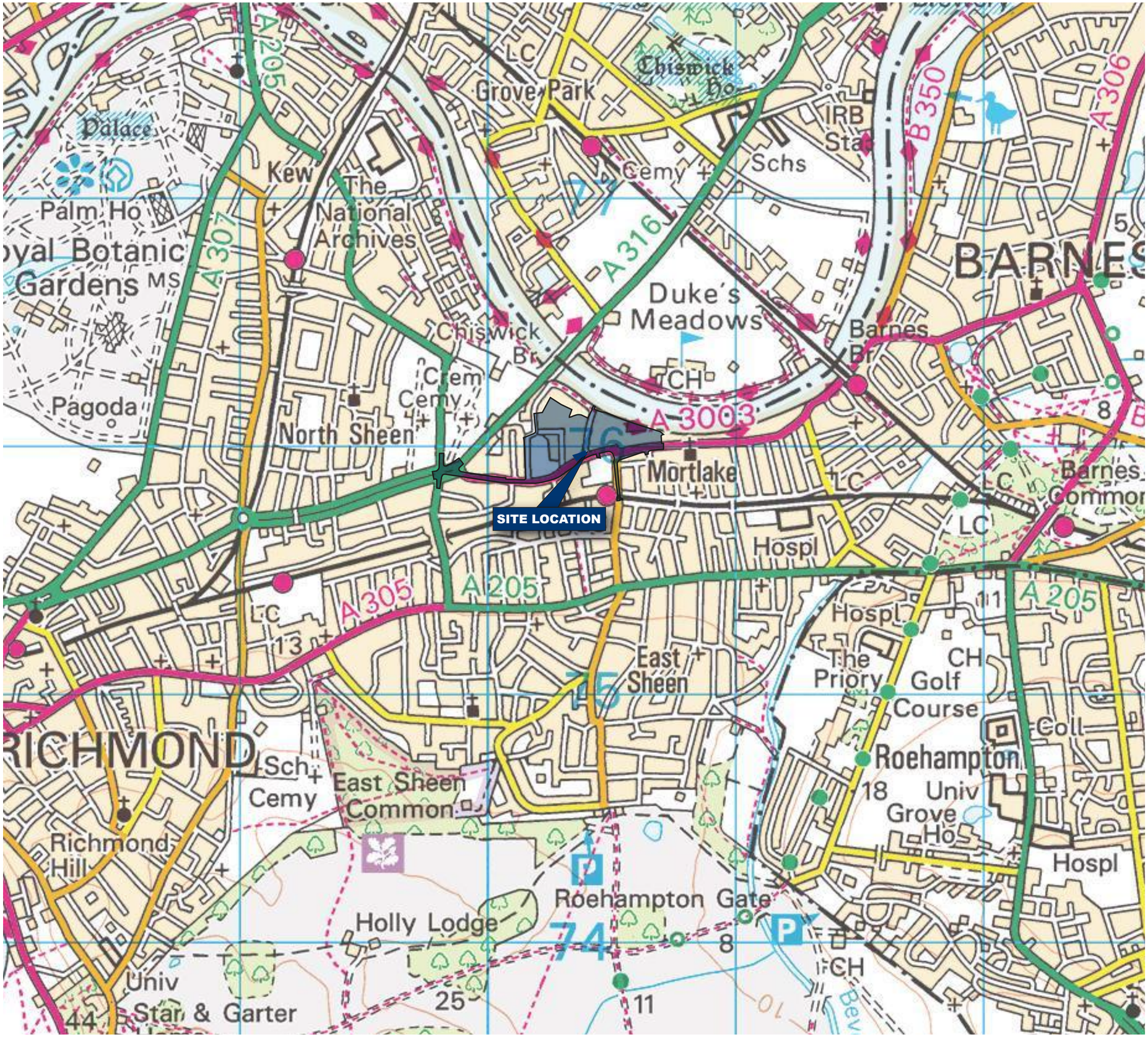
The following actions are recommended to address the potentially unacceptable risks identified:

- Further ground investigation should be completed targeting soils and groundwater at the west of the Site, where recent investigation has not been undertaken. The works should target areas where basements are not proposed as part of development works and residual soils will remain in-situ, to confirm findings of the 2015 Aecom investigation;
- Geotechnical investigation as part of design works for the development should include sampling and testing of soils to assess the risk posed by chemical attack, and inform the appropriate concrete classification for future foundations;
- Concrete used in construction, and any new water pipes installed as part of the redevelopment works should be appropriately protected against chemical attack from potential contamination in Made Ground, shallow soils and shallow groundwater underlying the Site;
- The recommendations of the UXO desk study assessments for the Site should be followed during future investigation or construction works;
- A Construction Environmental Management Plan (CEMP) should be developed for the Site, detailing measures to minimise the potential risk to the River Thames and shallow Secondary A aquifer during the demolition and construction works;
- Construction workers should be provided with and use personal protective equipment (PPE), respiratory protective equipment (RPE) and informed of good hygiene measures as protection against direct contact with contaminated Made Ground, contaminated groundwater or ground gas / vapours;
- Asbestos fibres have been identified in shallow soils beneath the Site. Works at the Site should be undertaken in line with the Control of Asbestos Regulations 2012;
- During redevelopment works, appropriate measures for managing materials, chemicals and waste should be utilised. Measures should also be taken to prevent run-off from stockpiled soils reaching the River Thames, and to supress the generation of dust;
- An environment watching brief should be undertaken throughout ground works, with additional environmental sampling undertaken where visual or olfactory contamination is suspected within the Made Ground or Kempton Park Gravel Member;
- Following removal of hardstanding across the Site post-demolition, an attempt should be made to locate the historical abstraction wells and decommission them if necessary; and
- New soft landscaping and private gardens installed at the development should be planted using an appropriate thickness of imported, certified clean cover material with a marker layer at base.

APPENDICES

A. Site Plans

- **Site Location Plan**
- **Project Boundary Plan**
- **Stag Brewery Site Plan**
- **Conceptual Site Model**



Project Details	WIE18671-100: Stag Brewery, Mortlake
Figure Title	Figure A1: Site Location Plan
Figure Ref	WIE18671-100_GR_PERA_A1A
Date	January 2022
File Location	\\s-lncs\wiel\projects\wie18671\100\graphics\pera\issued figures

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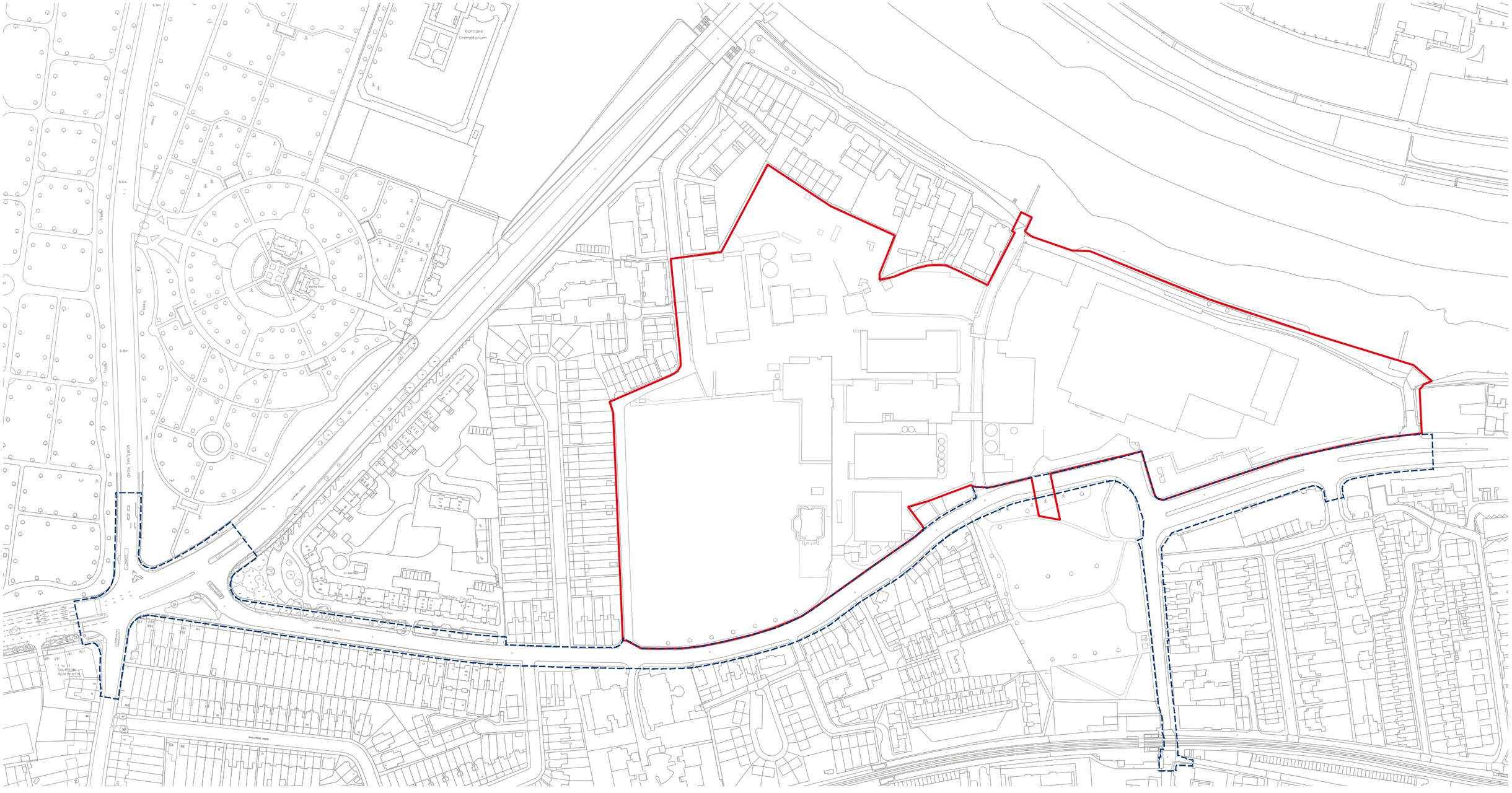
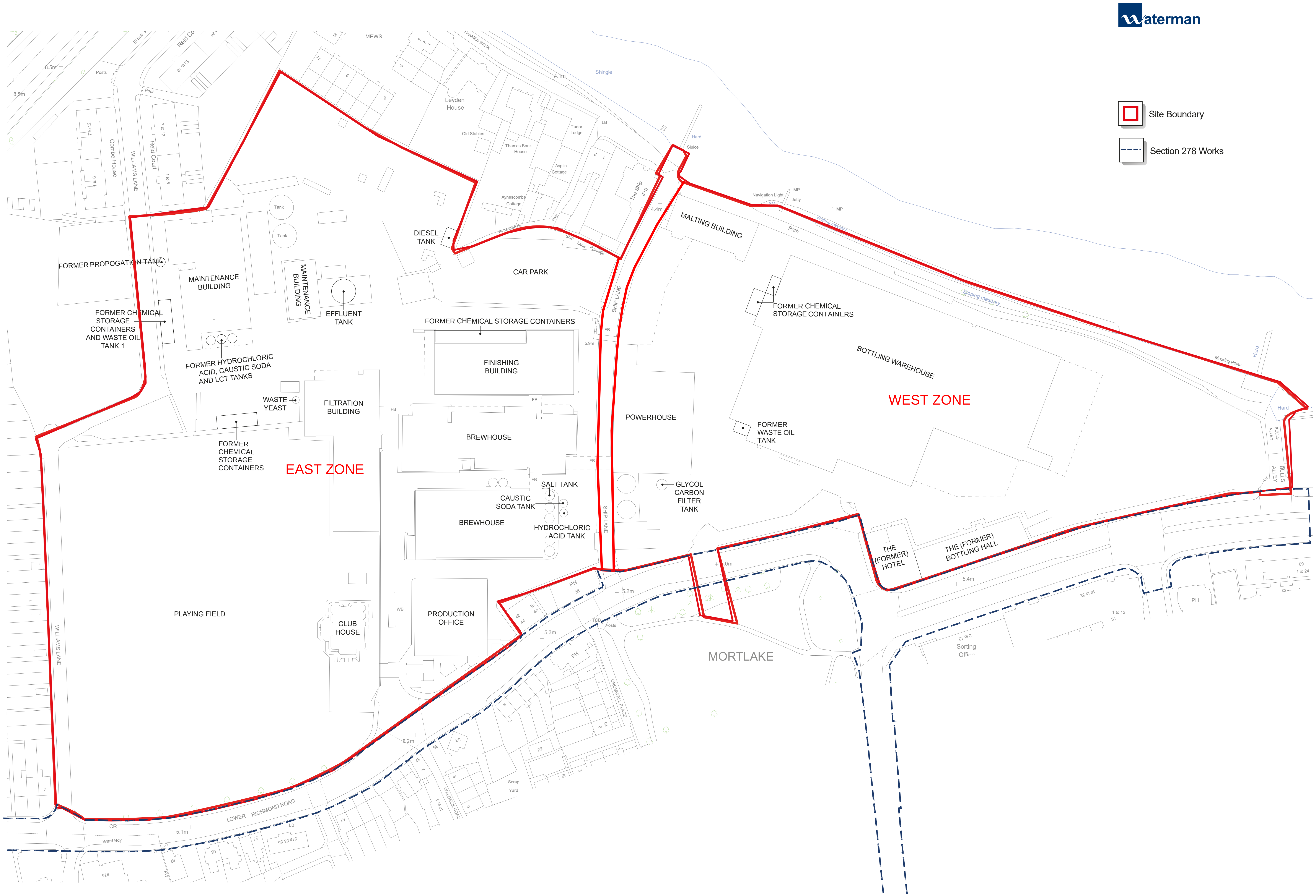


━ Site Boundary

- - - Section 278 Works

Project Details	WIE18671-100: Stag Brewery, Mortlake
Figure Title	Figure A2: Project Boundary Plan
Figure Ref	WIE18671-100_GR_PERA_A2A
Date	January 2022
File Location	\\s-lncs\wiel\projects\wie18671\100\graphics\pera\issued figures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Site Boundary
Section 278 Works
WEST ZONE
EAST ZONE
MALTING BUILDING
FORMER CHEMICAL STORAGE CONTAINERS
BOTTLING WAREHOUSE
FORMER WASTE OIL TANK
POWERHOUSE
GLYCOL CARBON FILTER TANK
THE (FORMER) HOTEL
THE (FORMER) BOTTLING HALL
DIESEL TANK
CAR PARK
FORMER PROPOGATION TANK
MAINTENANCE BUILDING
MAINTENANCE BUILDING
EFFLUENT TANK
FORMER CHEMICAL STORAGE CONTAINERS AND WASTE OIL TANK 1
FORMER HYDROCHLORIC ACID, CAUSTIC SODA AND LCT TANKS
FORMER CHEMICAL STORAGE CONTAINERS
FINISHING BUILDING
WASTE YEAST
FILTRATION BUILDING
BREWHOUSE
FORMER CHEMICAL STORAGE CONTAINERS
SALT TANK
CAUSTIC SODA TANK
BREWHOUSE
HYDROCHLORIC ACID TANK
PLAYING FIELD
CLUB HOUSE
PRODUCTION OFFICE
SHIP LANE
WILLIAMS LANE
LOWER RICHMOND ROAD
MORTLAKE
BULLS ALLEY
Leyden House
Thames Bank House
Tudor Lodge
Asplin Cottage
Aynescombe Cottage
Old Stables
The Ship (PH)
Reid Court
Combe House
Shingle
Sloping masonry
Navigation Light
Mooring Posts
Hard
Sluice
Sorting Office
CROMWELL PLACE
WALDECK ROAD

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S

N

THE STAG BREWERY

MORTLAKE HIGH STREET,
SHEEN LANE AND
LOWER RICHMOND ROAD

HARDSTANDING COVER
OVER ROADWAYS AND FOOTPATHS
PREVENTS FUTURE USERS
CONTACTING ANY POTENTIAL
GROUND CONTAMINATION

WINDBOURNE DUST PREVENTED
BY DUST SUPRESSION

SOILS STOCKPILED
DURING CONSTRUCTION
WORKS

SHIP LANE

LIMITED MADE GROUND &
ALLUVIUM THICKNESS NOT
CONSIDERED SUFFICENT FOR
GROUND GAS GENERATION

BUILDING FOUNDATIONS
APPROPRIATELY PROTECTED
AGAINST CHEMICAL ATTACK

RUN-OFF PROVENTED BY
APPROPRIATE CONSTRUCTION
TECHNIQUES SET OUT IN
CEMP

PERCHED GROUNDWATER

RIVER THAMES

GROUND CONDITIONS OUTSIDE PROPOSED
BASEMENTS CONFIRMED BY ADDITIONAL
FURTHER GI IN WEST OF THE SITE

BASEMENTS REMOVE
POTENTIALLY CONTAMINATED
SHALLOW SOILS

CLEAN IMPORTED MATERIAL
PREVENTS FUTURE SITE
USERS CONTACTING
CONTAMINATION VIA
CONTACT WITH SOILS OR
PLANT UPTAKE IN PRIVATE
GARDENS

SECONDARY A AQUIFER

BUILDING FOUNDATIONS NOT ANTICIPATED
TO PENETRATE LONDON CLAY FORMATION
PREVENTING PATHWAY FORMING TO
DEEPER AQUIFERS

HISTORICAL ABSTRACTION
WELL SEALED TO PREVENT
GROUNDWATER MIGRATION

MADE GROUND AND ALLUVIUM

KEMPTON PARK GRAVEL MEMBER

LONDON CLAY FORMATION

Project Details	WIE18671-100: Stag Brewery, Mortlake
Figure Title	Figure A3: Conceptual Site Model
Figure Ref	WIE18671-100_GR_PERA_A3A
Date	January 2022
File Location	\\s-lncs\wiel\projects\wie18671\100\graphics\pera\issued figures

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B. Site Photographs

Clubhouse building at brewery West Site

Playing field west of the brewery

West Site brewery entrance and Production Offices

Decommissioned diesel tank in Production Office basement

Vehicle storage south of buildings at West Site

Remaining decommissioned water and chemical tanks east of brewery buildings at west site

Project Details	WIE18671-100: Stag Brewery, Mortlake
Figure Title	Figure B1: Site Photographs
Figure Ref	WIE18671-100_GR_PERA_B1A
Date	January 2022
File Location	\\s-lncs\wiel\projects\wie18671\100\graphics\pera\issued figures

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Partial demolition of West Site brewery structures as part of tank removal

Remains of former brewing tanks, tanks removed and building partially demolished

Residual former Dilac tanks at west site, empty but not yet removed

Portable diesel tank at north boundary of brewery West Site

Former effluent tank and adjacent tank base at brewery Wesrt Site

Remaining tanke south of Energy Centre at brewery East Site

Project Details	WIE18671-100: Stag Brewery, Mortlake
Figure Title	Figure B2: Site Photographs
Figure Ref	WIE18671-100_GR_PERA_B2A
Date	January 2022
File Location	\\s-lncs\wiel\projects\wie18671\100\graphics\pera\issued figures

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Portable diesel tank south of Energy Centre

Residual electrical cabinets following strip out of Energy Centre

Remaining boiler tanks at ground floor in Energy Centre

Bund for former oil tank at East Site bottling building, now removed from Site

Stripped interior of Bottling Building at East Site

Former hotel and canteen building at brewery West Site

Project Details	WIE18671-100: Stag Brewery, Mortlake
Figure Title	Figure B3: Site Photographs
Figure Ref	WIE18671-100_GR_PERA_B3A
Date	January 2022
File Location	\\s-lncs\wiel\projects\wie18671\100\graphics\pera\issued figures

The (former) Hotel cellar used as the staff canteen

Stripout completed at eastern area canteen builidng

North Project Boundary with River Thames

Wider Project Boundary - Sheen Lane

Off-site existing flood defence east of the Site

Wider Project Boundary - Lower Richmond Road

Project Details	WIE18671-100: Stag Brewery, Mortlake
Figure Title	Figure B4: Site Photographs
Figure Ref	WIE18671-100_GR_PERA_B4A
Date	January 2022
File Location	\\s-lncs\wiel\projects\wie18671\100\graphics\pera\issued figures

C. Ground Gas Risk Assessment

Table C.1:Waterman Ground Gas Risk Assessment Tool

Parameter	Select parameter	Assessment score	Impact on ground gas risk to completed development	Reasoning	Supporting guidance and reference
Is there an existing Ground Investigation report for the Site?	Yes	0	*Review the GI information if available*	*An existing ground investigation may include information such as proven geology, groundwater levels and ground gas monitoring which allows for more accurate assessment of the ground gas regime.*	
Is the Site within 20m of an area of former coal mining or landfilling?	No	0	*Reduces risk*	*The absence of coal mining or landfills close to the Site removes a significant potential source of ground gas risk.*	The Coal Authority: Risk Based Approach to Development Management, Guidance for Developers (2017) [Section 2.2, Page 7] CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Section 3, Page 3] EPG: Ground Gas Information Sheet 3 Screening approach for landfill gas migration
Is the Site in an area at risk of radon?	No	0	*No impact on risk*	*The proposed development is unlikely to include any radon protective measures that could also mitigate ground gas risk*	Building Research Establishment: BRE 211 Radon - Guidance on protective measures for new buildings [Section 5 Page 6]
Primary soil type assessed	Made Ground with low organic content (i.e. bricks, demolition material, crushed concrete sub-base)	1	*No increase in risk*	*Where organic matter is unlikely to comprise a significant component of Made Ground the methane generation potential is relatively low as material such as brick, glass, concrete and demolition waste (except wood) does not putrefy.*	CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Section 3, Page 3] EPG: A pragmatic approach to ground gas risk assessment for the 21st Century (2011) [Page 2]
Secondary soil type assessed (if assessing multiple strata)	Alluvium	1	*No increase in risk*	*Although Alluvium may contain thin bands of peaty material, in general the majority constituent is silts and silty sands with limited potential for putrification and methane generation.*	CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Section 3, Page 3] EPG: A pragmatic approach to ground gas risk assessment for the 21st Century (2011) [Page 2]
Thickness of Made Ground (if present on-Site)	Under 5m (with average of less than 3m)	0	*Reduces risk*	*Made Ground of this volume is not likely to have sufficient organic material present to generate significant volumes of methane, unless it has a significantly high organic content. Also Made Ground of this thickness is likely to be accurately characterised by trial pitting alone, which will determine the gas risk.*	CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Section 3: Page 4]
Period since Made Ground emplaced (if present on-Site)	Not applicable	0	*Reduces risk*	*Absence of Made Ground reduces risk of petrogenic material beneath the Site*	CL:AIRE: Research Bulletin RB17 A Pragmatic Approach to Ground Gas Risk Assessment (November 2012) [Appendix A, Page 10]
Building type	Construction of new buildings	-3	*Reduces risk*	*Construction of new buildings offers an opportunity to incorporate gas protection measures directly into the strucure at the design stage, offering greater flexibility and reliability than retrofitting an existing structure.*	CIRIA: C665 Assessing Risks Posed by Hazardous Ground Gases to Buildings (2007) [Table 8.6, Page 90] British Standard: BS8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (2015) [Table 86 Page 90]
Development type	Type B: Residential (flats) or public buildings such as hospitals, schools, leisure centres, hotels etc	1	*Increases risk*	*Developments of this type are more likely to have active ventilation systems, but also more likely to contain sensitive receptors present within the structure for extended periods of time.*	British Standard: BS8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (2015) [Section 7, Page 21]
Ground floor slab construction details	Not known	0	*Does not reduce risk*	*Does not reduce risk*	CIRIA: C665 Assessing Risks Posed by Hazardous Ground Gases to Buildings (2007) [Table 8.6, Page 90] British Standard: BS8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (2015) [Section 7.2, Page 23]
Development includes a basement?	Yes, no specific ventilation	0	*Does not reduce risk*	*Where no specific air circulation has been designed into the development the potential for ground gas accumulation is increased.*	British Standard: BS8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (2015) [Annex A Page 36] CIEH: The Local Authority Guide to Ground Gas (September 2008) [Section 7 Page 101]
If a basement is present, is this structure in contact with groundwater-bearing strata?	Basement in contact with groundwater	-1	*Reduces risk*	*A basement is in contact with groundwater-bearing strata it is likely to be waterproofed, which may provide protection againt both dissolved methane in groundwater and in the unsaturated zone. This should be confirmed via as-built plans if available.*	EPG: Dissolved methane monitoring for ground gas risk assessment (September 2018) [Page 1]
Presence of off-Site sources with potential pathway to Site?	No	0	*Does not increase risk*	*Where no potential off-Site sources exist, or where there is no direct pathway for these gases to migrate to the Site no risk exists.*	

In consideration of the above details the development is considered to be at	**Very Low Risk**	**for ground gas issues.**
Based on the sensitivity of the end-use receptor	**no further ground gas investigation or assessment required.**	

When reviewing previous ground investigation results for a site, it should be noted gas concentrations from the well headspace are not necessarily representative of the ground gas regime due to the potential influences of a variety of factors. Caution should therefore be taken when relying solely on ground gas results from well headspace. Instead, as undertaken throughout contaminated land, a lines of evidence approach should be used whereby the results are interrogated along with the potential sources, proposed development use, geology, and hydrogeology at the site.

D. Consultation Information

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo
Insight

THE STAG BREWERY, LOWER RICHMOND ROAD, MORTLAKE, LONDON, SW14 7ET

Order Details

Date: 07/12/2021

Your ref: WIE18671_Stag_Brewery_POREQ113587

Our Ref: WTM1-8385348

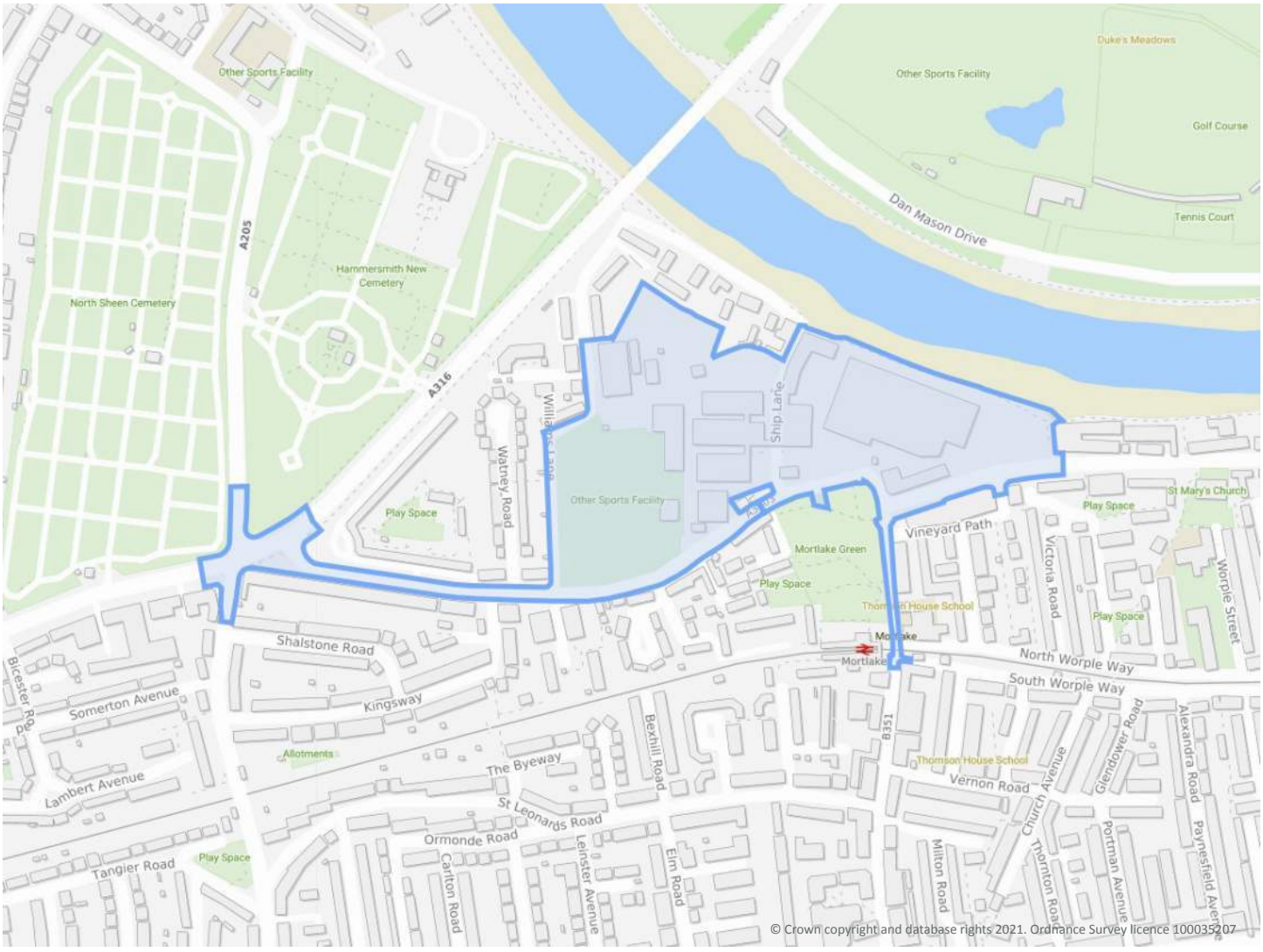
Client: Waterman Infrastructure & Environment Limited

Site Details

Location: 520275 175997

Area: 11.57 ha

Authority: London Borough of Richmond upon Thames



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

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	36	16	16	68	-
19	1.2	Historical tanks	17	1	3	6	-
20	1.3	Historical energy features	3	4	9	20	-
22	1.4	Historical petrol stations	0	0	1	0	-
22	1.5	Historical garages	2	4	9	14	-
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	44	26	19	106	-
32	2.2	Historical tanks	40	1	4	8	-
34	2.3	Historical energy features	3	11	35	39	-
37	2.4	Historical petrol stations	0	0	2	0	-
38	2.5	Historical garages	3	5	14	19	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
40	3.1	Active or recent landfill	0	0	0	0	-
40	3.2	Historical landfill (BGS records)	0	0	0	0	-
41	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
41	3.4	Historical landfill (EA/NRW records)	0	0	2	3	-
42	3.5	Historical waste sites	2	4	0	6	-
44	3.6	Licensed waste sites	0	0	0	7	-
46	3.7	Waste exemptions	0	6	13	5	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
49	4.1	Recent industrial land uses	12	17	22	-	-
52	4.2	Current or recent petrol stations	0	0	3	2	-
53	4.3	Electricity cables	6	0	6	9	-
55	4.4	Gas pipelines	0	0	0	0	-
55	4.5	Sites determined as Contaminated Land	0	0	0	0	-

55	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
55	4.7	Regulated explosive sites	0	0	0	0	-
56	4.8	Hazardous substance storage/usage	0	0	0	0	-
56	**4.9**	**Historical licensed industrial activities (IPC)**	1	0	0	0	-
56	**4.10**	**Licensed industrial activities (Part A(1))**	3	0	0	0	-
57	**4.11**	**Licensed pollutant release (Part A(2)/B)**	0	1	4	6	-
58	4.12	Radioactive Substance Authorisations	0	0	0	0	-
59	**4.13**	**Licensed Discharges to controlled waters**	0	0	2	1	-
59	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
59	4.15	Pollutant release to public sewer	0	0	0	0	-
60	4.16	List 1 Dangerous Substances	0	0	0	0	-
60	4.17	List 2 Dangerous Substances	0	0	0	0	-
60	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	0	2	-
60	4.19	Pollution inventory substances	0	0	0	0	-
61	4.20	Pollution inventory waste transfers	0	0	0	0	-
61	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
62	**5.1**	**Superficial aquifer**	Identified (within 500m)				
64	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
65	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
66	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
67	5.5	Groundwater vulnerability- local information	None (within 0m)				
68	**5.6**	**Groundwater abstractions**	0	0	1	0	7
71	5.7	Surface water abstractions	0	0	0	0	0
71	5.8	Potable abstractions	0	0	0	0	0
71	5.9	Source Protection Zones	0	0	0	0	-
71	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
72	**6.1**	**Water Network (OS MasterMap)**	2	1	2	-	-

73	6.2	Surface water features	0	0	0	-	-
73	6.3	WFD Surface water body catchments	1	-	-	-	-
74	6.4	WFD Surface water bodies	0	1	0	-	-
74	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
75	7.1	Risk of flooding from rivers and the sea	High (within 50m)				
76	7.2	Historical Flood Events	0	0	0	-	-
76	7.3	Flood Defences	1	0	7	-	-
77	7.4	Areas Benefiting from Flood Defences	4	1	5	-	-
77	7.5	Flood Storage Areas	0	0	0	-	-
78	7.6	Flood Zone 2	Identified (within 50m)				
79	7.7	Flood Zone 3	Identified (within 50m)				
Page	Section	Surface water flooding					
80	8.1	Surface water flooding	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
82	9.1	Groundwater flooding	High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
83	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	1
84	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
84	10.3	Special Areas of Conservation (SAC)	0	0	0	0	1
84	10.4	Special Protection Areas (SPA)	0	0	0	0	0
85	10.5	National Nature Reserves (NNR)	0	0	0	0	1
85	10.6	Local Nature Reserves (LNR)	0	0	0	0	10
86	10.7	Designated Ancient Woodland	0	0	0	0	0
86	10.8	Biosphere Reserves	0	0	0	0	0
86	10.9	Forest Parks	0	0	0	0	0
86	10.10	Marine Conservation Zones	0	0	0	0	0
86	10.11	Green Belt	0	0	0	0	0
87	10.12	Proposed Ramsar sites	0	0	0	0	0

87	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
87	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
87	10.15	Nitrate Sensitive Areas	0	0	0	0	0
88	**10.16**	**Nitrate Vulnerable Zones**	0	0	0	0	2
89	**10.17**	**SSSI Impact Risk Zones**	1	-	-	-	-
90	**10.18**	**SSSI Units**	0	0	0	0	4
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
93	11.1	World Heritage Sites	0	0	0	-	-
94	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
94	11.3	National Parks	0	0	0	-	-
94	**11.4**	**Listed Buildings**	0	8	10	-	-
96	**11.5**	**Conservation Areas**	3	0	2	-	-
96	11.6	Scheduled Ancient Monuments	0	0	0	-	-
96	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
97	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
98	12.2	Open Access Land	0	0	0	-	-
98	12.3	Tree Felling Licences	0	0	0	-	-
98	12.4	Environmental Stewardship Schemes	0	0	0	-	-
98	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
99	**13.1**	**Priority Habitat Inventory**	1	7	15	-	-
100	13.2	Habitat Networks	0	0	0	-	-
101	13.3	Open Mosaic Habitat	0	0	0	-	-
101	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
102	**14.1**	**10k Availability**	Identified (within 500m)				
103	**14.2**	**Artificial and made ground (10k)**	0	0	2	3	-
105	**14.3**	**Superficial geology (10k)**	3	0	0	4	-

106	14.4	Landslip (10k)	0	0	0	0	-
107	**14.5**	**Bedrock geology (10k)**	2	0	0	0	-
108	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
109	**15.1**	**50k Availability**	Identified (within 500m)				
110	**15.2**	**Artificial and made ground (50k)**	0	0	2	3	-
111	15.3	Artificial ground permeability (50k)	0	0	-	-	-
112	**15.4**	**Superficial geology (50k)**	2	0	0	2	-
113	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
113	15.6	Landslip (50k)	0	0	0	0	-
113	15.7	Landslip permeability (50k)	None (within 50m)				
114	**15.8**	**Bedrock geology (50k)**	1	0	0	0	-
115	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
115	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
116	**16.1**	**BGS Boreholes**	24	6	19	-	-
Page	Section	Natural ground subsidence					
119	**17.1**	**Shrink swell clays**	Moderate (within 50m)				
120	**17.2**	**Running sands**	Low (within 50m)				
122	**17.3**	**Compressible deposits**	High (within 50m)				
123	**17.4**	**Collapsible deposits**	Very low (within 50m)				
124	**17.5**	**Landslides**	Low (within 50m)				
126	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
128	18.1	Natural cavities	0	0	0	0	-
129	18.2	BritPits	0	0	0	0	-
129	**18.3**	**Surface ground workings**	13	9	5	-	-
130	18.4	Underground workings	0	0	0	0	0
130	18.5	Historical Mineral Planning Areas	0	0	0	0	-

130	18.6	Non-coal mining	0	0	0	0	0
131	18.7	Mining cavities	0	0	0	0	0
131	18.8	JPB mining areas	None (within 0m)				
131	18.9	Coal mining	None (within 0m)				
131	18.10	Brine areas	None (within 0m)				
131	18.11	Gypsum areas	None (within 0m)				
132	18.12	Tin mining	None (within 0m)				
132	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
133	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
134	**20.1**	**BGS Estimated Background Soil Chemistry**	8	1	-	-	-
134	**20.2**	**BGS Estimated Urban Soil Chemistry**	30	18	-	-	-
136	**20.3**	**BGS Measured Urban Soil Chemistry**	0	1	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
138	21.1	Underground railways (London)	0	0	0	-	-
138	21.2	Underground railways (Non-London)	0	0	0	-	-
139	21.3	Railway tunnels	0	0	0	-	-
139	**21.4**	**Historical railway and tunnel features**	11	0	1	-	-
140	21.5	Royal Mail tunnels	0	0	0	-	-
140	21.6	Historical railways	0	0	0	-	-
140	**21.7**	**Railways**	3	2	9	-	-
141	21.8	Crossrail 1	0	0	0	0	-
141	21.9	Crossrail 2	0	0	0	0	-
141	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 29/06/2019

Site Area: 11.57ha

Recent site history - 2015 aerial photograph

Capture Date: 20/04/2015

Site Area: 11.57ha

Recent site history - 2011 aerial photograph

Capture Date: 30/09/2011

Site Area: 11.57ha

Recent site history - 2008 aerial photograph

Capture Date: 21/09/2008

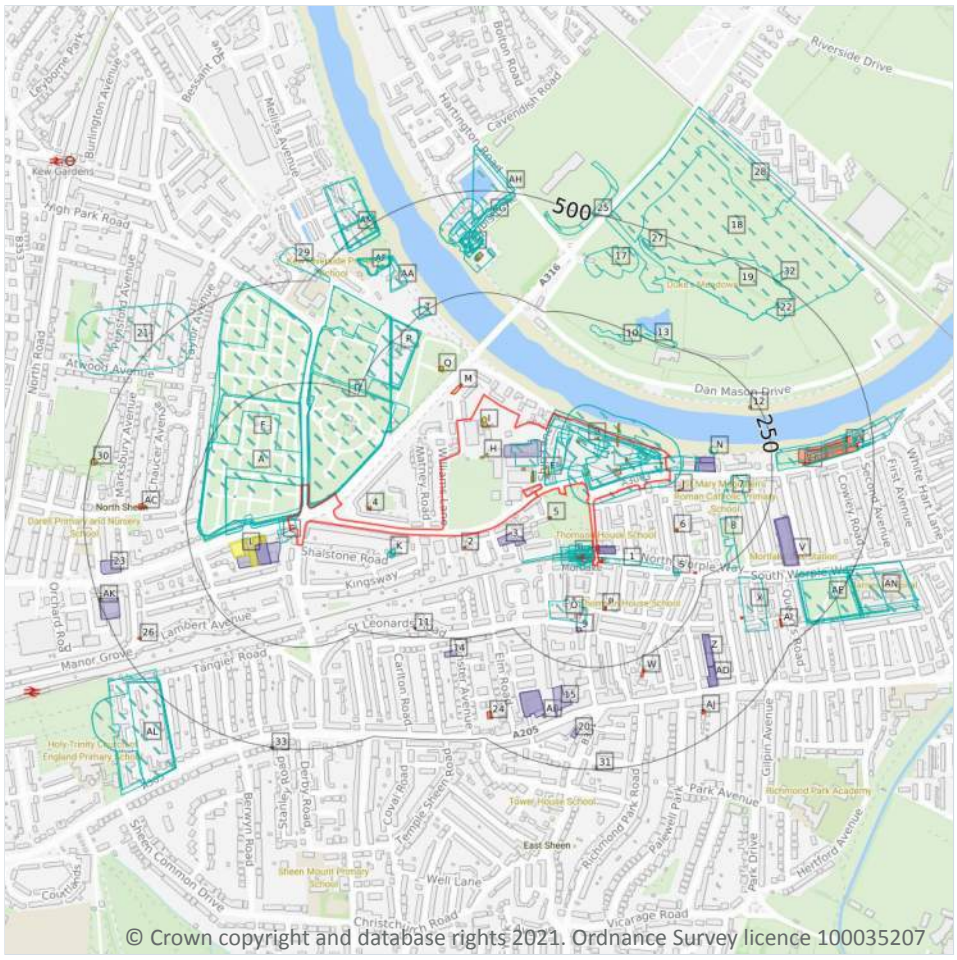
Site Area: 11.57ha

Recent site history - 1999 aerial photograph

Capture Date: 04/09/1999

Site Area: 11.57ha

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	136

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 13**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Railway Buildings**	**1987**	**2163407**

ID	Location	Land use	Dates present	Group ID
A	On site	Cemetery	1961	2196069
A	On site	Cemetery	1948	2213741
A	On site	Cemetery	1933	2221038
A	On site	Cemetery	1910	2251895
A	On site	Cemetery	1920	2254383
A	On site	Cemetery	1938	2261672
B	On site	Railway Sidings	1910	2128611
B	On site	Malthouse	1866	2147810
B	On site	Brewery	1898	2172523
B	On site	Railway Sidings	1938	2178002
B	On site	Brewery	1866	2179335
B	On site	Brewery	1958	2182364
B	On site	Railway Sidings	1910	2187822
B	On site	Brewery	1894	2200102
B	On site	Brewery	1947	2203544
B	On site	Brewery	1893	2222701
B	On site	Railway Sidings	1920	2226804
B	On site	Brewery	1920 - 1962	2237980
B	On site	Brewery	1967 - 1987	2244704
B	On site	Brewery	1910	2246727
B	On site	Brewery	1933	2247211
B	On site	Brewery	1911	2252291
B	On site	Railway Sidings	1920	2264046
B	On site	Railway Sidings	1938	2275159
C	On site	Fire Clay Works	1920	2132343
C	On site	Fire Clay Works	1910	2152510
D	On site	Cemetery	1961	2171866
D	On site	Cemetery	1966 - 1987	2243985

ID	Location	Land use	Dates present	Group ID
D	**On site**	**Cemetery**	**1974**	**2252243**
E	**On site**	**Unspecified Tanks**	**1987**	**2143790**
E	**On site**	**Brewery**	**1974 - 1987**	**2182363**
E	**On site**	**Unspecified Tanks**	**1974 - 1987**	**2206599**
F	**On site**	**Cemetery**	**1966**	**2230757**
F	**On site**	**Cemetery**	**1987**	**2231993**
F	**On site**	**Cemetery**	**1974**	**2248439**
G	0m W	Railway Station	1920 - 1987	2169762
D	1m NW	Cemetery	1933	2175414
G	1m W	Railway Station	1893	2254797
D	2m E	Cemetery	1948	2281003
D	2m E	Cemetery	1933	2185039
G	3m N	Railway Building	1893	2148354
G	3m W	Railway Station	1933	2255998
G	4m W	Railway Station	1866	2290335
G	5m W	Railway Station	1911	2268026
G	5m W	Railway Station	1898	2196734
G	5m W	Railway Station	1947	2291000
G	7m W	Railway Station	1910	2203608
G	8m W	Railway Station	1894	2222172
K	36m S	Unspecified Pit	1893	2274224
K	40m S	Unspecified Pit	1911	2247710
K	44m S	Unspecified Pit	1894	2286036
O	96m S	Unspecified Works	1958 - 1962	2254577
N	98m E	Unspecified Wharf	1967	2157195
7	135m E	Grave Yard	1866	2145669
8	155m SE	Gravel Pit	1866	2138962
R	160m NW	Crematorium	1967	2172698

ID	Location	Land use	Dates present	Group ID
R	160m NW	Crematorium	1962	2245914
R	162m NW	Crematorium	1947	2263691
R	162m NW	Crematorium	1958	2185266
R	167m NW	Crematorium	1974 - 1987	2259610
S	176m E	Railway Building	1987	2148355
S	177m E	Railway Building	1938	2212392
S	177m E	Railway Building	1920	2287673
10	213m N	Unspecified Heaps	1947	2160755
T	235m NW	Boat Houses	1962 - 1967	2183489
T	238m NW	Boat Houses	1958	2235463
13	244m N	Unspecified Ground Workings	1893 - 1894	2279649
U	260m E	Unspecified Works	1958 - 1962	2269745
U	261m E	Unspecified Commercial/Industrial	1933	2130754
X	291m SE	Burial Ground	1866	2142006
Y	299m N	Boat House	1938	2236362
Y	327m N	Boat Houses	1962	2170794
AA	329m NW	Unspecified Ground Workings	1962	2133355
Y	330m N	Boat Houses	1967 - 1974	2237150
Y	332m N	Boat Houses	1987	2273360
AA	334m NW	Unspecified Heaps	1958	2160756
Y	337m N	Boat Houses	1893 - 1958	2262414
Y	340m N	Boat Houses	1987	2139378
U	346m E	Electricity Works	1920	2206553
Y	347m N	Boat House	1920 - 1938	2243776
U	348m E	Electricity Works	1910	2171594
Y	349m N	Boat Houses	1894 - 1962	2239091
Y	349m N	Boat Houses	1898 - 1911	2190244
17	349m N	Unspecified Heaps	1947	2160753

ID	Location	Land use	Dates present	Group ID
Y	352m N	Boat House	1967 - 1987	2285296
Y	355m N	Boat House	1947	2234837
18	360m NE	Gravel and Ballast Works	1947	2163213
Y	366m N	Boat House	1910	2181627
Y	368m N	Boat Houses	1898 - 1911	2190243
Y	377m N	Dock	1958	2202329
Y	377m N	Dock	1967	2212266
Y	382m N	Boat House	1910	2211544
19	386m NE	Refuse Heap	1947	2158813
AE	389m SE	Cemetery	1898 - 1911	2214883
AE	390m SE	Cemetery	1920 - 1962	2219760
AE	391m SE	Cemetery	1893 - 1894	2175422
AE	391m SE	Cemetery	1910	2209930
AF	392m NW	Unspecified Pit	1933	2125227
AF	393m NW	Refuse Heap	1961	2292602
AF	394m NW	Refuse Heap	1933	2234685
AF	395m NW	Refuse Heap	1948	2288355
Y	397m N	Dock	1962	2169427
AE	406m SE	Cemetery	1967 - 1987	2257055
AG	411m N	Unspecified Ground Workings	1938	2202382
AG	411m N	Unspecified Ground Workings	1920	2209374
21	417m NW	Nursery	1866	2161424
AH	419m N	Unspecified Ground Workings	1933	2253842
22	420m NE	Unspecified Heap	1947	2136602
U	428m E	Fire Engine Station	1910	2215774
AH	431m N	Unspecified Pit	1910	2204325
AH	431m N	Unspecified Pit	1933	2283740
25	439m NE	Unspecified Ground Workings	1962	2133359

ID	Location	Land use	Dates present	Group ID
U	451m E	Fire Engine Station	1958 - 1962	2262885
AE	453m SE	Cemetery	1866	2198819
27	456m N	Unspecified Heap	1947	2136604
28	459m N	Railway Sidings	1947	2225129
29	461m NW	Unspecified Heap	1910	2136605
AL	462m SW	Nursery	1920	2169617
AM	466m NW	Unspecified Commercial/Industrial	1966	2130755
AM	469m NW	Unspecified Depot	1987	2147020
U	472m E	Fire Engine Station	1938	2222861
U	472m E	Fire Engine Station	1920	2224847
AL	472m SW	Nursery	1895 - 1913	2268407
AL	475m SW	Nursery	1893	2283943
AL	477m SW	Nursery	1899	2248023
AM	478m NW	Refuse Destructor	1933	2175167
AM	480m NW	Unspecified Works	1961	2177601
AM	481m NW	Corporation Refuse Destructor	1948	2142685
AM	481m NW	Works	1948	2238869
AN	483m SE	Hospital	1920 - 1962	2266342
AN	483m SE	Hospital	1910	2274682
AN	487m SE	Hospital	1898 - 1911	2248357
AN	489m SE	Hospital	1893	2213526
32	494m NE	Unspecified Heap	1947	2136603
AN	499m SE	Hospital	1967 - 1987	2273174

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	27

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 13**

ID	Location	Land use	Dates present	Group ID
B	**On site**	**Unspecified Tank**	**-**	**358946**
B	**On site**	**Unspecified Tank**	**1869**	**363358**
B	**On site**	**Unspecified Tank**	**1973**	**363359**
B	**On site**	**Unspecified Tank**	**1940**	**363360**
B	**On site**	**Unspecified Tank**	**1869**	**385958**
B	**On site**	**Unspecified Tank**	**1965 - 1995**	**393564**
B	**On site**	**Unspecified Tank**	**1951**	**399026**
B	**On site**	**Unspecified Tank**	**1951**	**399469**
E	**On site**	**Tanks**	**1987 - 1995**	**385788**
E	**On site**	**Tanks**	**1987 - 1991**	**386125**
E	**On site**	**Tanks**	**1991**	**395348**
E	**On site**	**Tanks**	**1987 - 1995**	**406691**
H	**On site**	**Unspecified Tank**	**1991 - 1992**	**407462**
H	**On site**	**Tanks**	**1991 - 1992**	**410734**
I	**On site**	**Unspecified Tank**	**1991 - 1992**	**380784**
I	**On site**	**Unspecified Tank**	**1991**	**385552**
I	**On site**	**Unspecified Tank**	**1992**	**405301**
B	10m N	Unspecified Tank	1933	363355
Q	115m NW	Unspecified Tank	1992	386585
Q	116m NW	Unspecified Tank	1991	399423
12	227m NE	Unspecified Tank	1916	363356

ID	Location	Land use	Dates present	Group ID
Y	328m N	Unspecified Tank	1992	393045
Y	329m N	Unspecified Tank	1991	389405
Y	334m N	Unspecified Tank	1991	363363
30	486m W	Unspecified Tank	1940	363361
AK	494m W	Unspecified Tank	1973 - 1994	387404
31	494m S	Unspecified Tank	1916	363199

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**36**

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 13**

ID	Location	Land use	Dates present	Group ID
B	**On site**	**Electricity Substation**	**1951**	**243804**
G	**On site**	**Electricity Substation**	**1982 - 1994**	**265981**
G	**On site**	**Electricity Substation**	**1968**	**268147**
2	28m S	Electricity Substation	1992 - 1995	284086
J	31m SE	Electricity Substation	1968 - 1991	266571
4	35m N	Electricity Substation	1988 - 1991	261156
J	35m SE	Electricity Substation	1994	243805
M	58m NW	Electricity Substation	1991	292422
5	58m SE	Electricity Substation	1987 - 1995	286575
M	58m NW	Electricity Substation	1976 - 1992	289365
O	93m SW	Electricity Substation	1987 - 1995	274553
P	103m S	Electricity Substation	1968 - 1991	261431

ID	Location	Land use	Dates present	Group ID
P	104m S	Electricity Substation	1994	259466
6	120m S	Electricity Substation	1951 - 1994	287876
S	224m E	Electricity Substation	1968 - 1994	280342
11	226m S	Electricity Substation	1987 - 1995	286895
W	280m SE	Electricity Substation	1991	271376
W	281m SE	Electricity Substation	1972	278149
U	316m E	Electricity Works	1972	256710
16	326m E	Electricity Depot	1951	249921
U	336m E	Electricity Works	1951 - 1966	263449
AC	349m W	Electricity Substation	1994	252569
U	350m E	Electricity Works	1913 - 1919	264480
V	353m SE	Electricity Substation	1982 - 1991	287702
V	354m SE	Electricity Substation	1968	259138
AC	361m W	Electricity Substation	1973	255561
V	364m SE	Electricity Substation	1994	243806
X	364m E	Electricity Substation	1968 - 1994	282666
AB	382m S	Electricity Substation	1982 - 1991	258178
AI	434m SE	Electricity Substation	1982 - 1991	264366
AI	435m SE	Electricity Substation	1968 - 1994	272534
AJ	436m SE	Electricity Substation	1991	279619
24	437m SW	Electricity Substation	1951 - 1991	281333
AJ	439m SE	Electricity Substation	1951 - 1972	275117
26	445m SW	Electricity Substation	1994	242904
33	499m S	Electricity Substation	1973 - 1991	274916

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 13**

ID	Location	Land use	Dates present	Group ID
L	64m W	Filling Station	1988 - 1991	4454

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	29

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 13**

ID	Location	Land use	Dates present	Group ID
E	**On site**	**Garage**	**1951**	**73227**
G	**On site**	**Garage**	**1951 - 1968**	**81300**
G	2m E	Garage	1982 - 1991	80386
G	4m E	Garage	1994	77533
3	29m SE	Garages	1951	74150
L	39m SW	Garage	1988	78826
N	61m E	Garage	1982 - 1991	85727
N	62m E	Garage	1968 - 1994	85580
L	64m W	Garage	1959	81397
L	64m W	Garage	1960	78494

ID	Location	Land use	Dates present	Group ID
N	65m E	Garage	1973	79877
N	76m E	Garage	1991	75088
L	94m W	Garage	1960	76132
L	94m W	Garage	1959	84182
9	157m S	Garage	1951	73228
V	273m E	Garage	1913	73223
V	276m E	Omnibus Garage	1919	74019
14	281m S	Garage	1951	73229
Z	301m SE	Garage	1982 - 1991	82640
Z	301m SE	Garage	1968 - 1994	83869
15	306m S	Garages	1951	74149
AB	334m SW	Motor Repair Works	1968	74052
AB	334m SW	Garages	1951 - 1968	86007
AD	363m SE	Garage	1951	75470
AD	364m SE	Garage	1972	76735
AD	364m SE	Garage	1991	79501
20	399m S	Garages	1951	74148
23	425m W	Garage	1973 - 1994	83713
AK	453m W	Garage	1973 - 1994	85988

This data is sourced from Ordnance Survey / Groundsure.

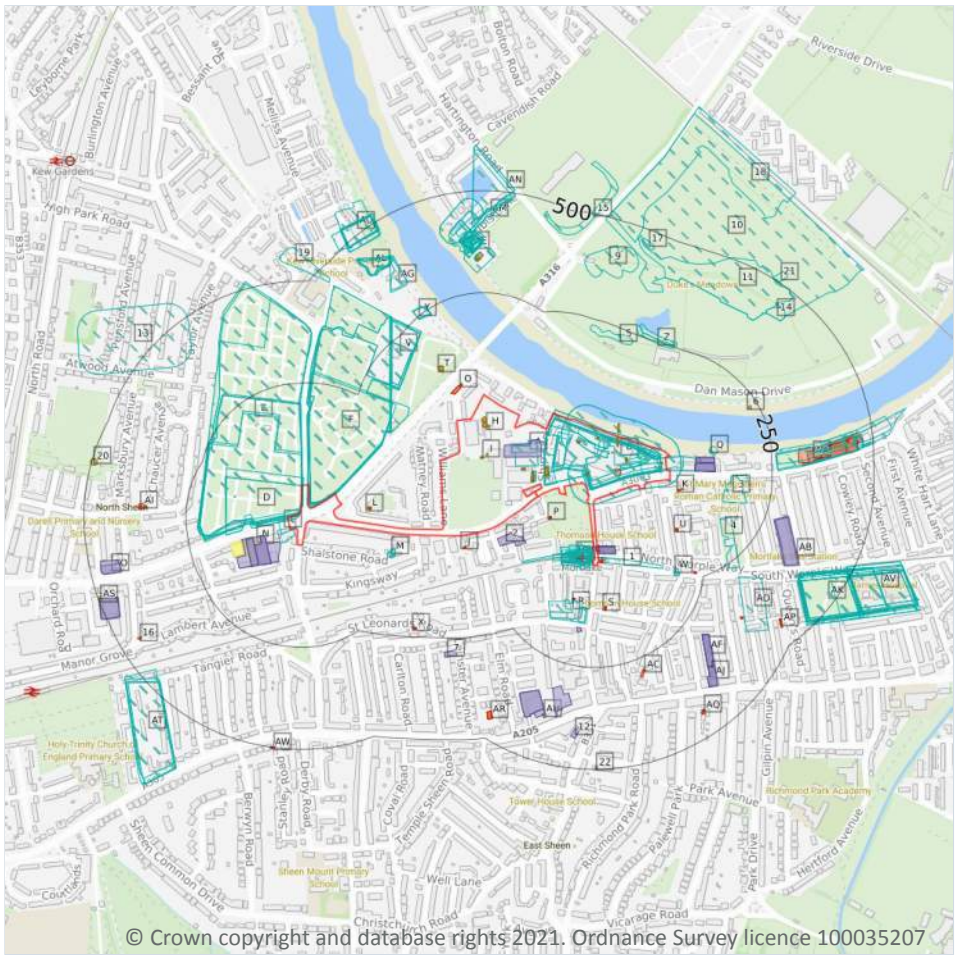
1.6 Historical military land

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	195

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	**On site**	**Railway Buildings**	**1987**	**2163407**
A	**On site**	**Brewery**	**1987**	**2182363**
A	**On site**	**Unspecified Tanks**	**1987**	**2143790**

ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Tanks	1987	2206599
A	On site	Brewery	1974	2182363
A	On site	Unspecified Tanks	1974	2206599
B	On site	Brewery	1933	2247211
B	On site	Railway Sidings	1910	2128611
B	On site	Brewery	1910	2246727
B	On site	Railway Sidings	1910	2187822
B	On site	Brewery	1894	2200102
B	On site	Brewery	1866	2179335
B	On site	Malthouse	1866	2147810
B	On site	Brewery	1947	2203544
B	On site	Brewery	1958	2182364
B	On site	Brewery	1962	2237980
B	On site	Brewery	1911	2252291
B	On site	Brewery	1933	2237980
B	On site	Brewery	1898	2172523
B	On site	Railway Sidings	1920	2226804
B	On site	Railway Sidings	1920	2264046
B	On site	Brewery	1920	2237980
B	On site	Railway Sidings	1938	2275159
B	On site	Brewery	1938	2237980
B	On site	Railway Sidings	1938	2178002
B	On site	Brewery	1893	2222701
B	On site	Brewery	1987	2244704
B	On site	Brewery	1974	2244704
B	On site	Brewery	1967	2244704
C	On site	Fire Clay Works	1910	2152510
C	On site	Fire Clay Works	1920	2132343

ID	Location	Land Use	Date	Group ID
D	**On site**	**Cemetery**	**1920**	**2254383**
D	**On site**	**Cemetery**	**1938**	**2261672**
D	**On site**	**Cemetery**	**1948**	**2213741**
D	**On site**	**Cemetery**	**1948**	**2213741**
D	**On site**	**Cemetery**	**1961**	**2196069**
D	**On site**	**Cemetery**	**1933**	**2221038**
D	**On site**	**Cemetery**	**1933**	**2221038**
D	**On site**	**Cemetery**	**1910**	**2251895**
E	**On site**	**Cemetery**	**1987**	**2231993**
E	**On site**	**Cemetery**	**1974**	**2248439**
E	**On site**	**Cemetery**	**1966**	**2230757**
F	**On site**	**Cemetery**	**1974**	**2252243**
F	**On site**	**Cemetery**	**1966**	**2243985**
G	0m W	Railway Station	1958	2169762
F	1m NW	Cemetery	1933	2175414
G	1m W	Railway Station	1893	2254797
G	1m W	Railway Station	1962	2169762
F	2m E	Cemetery	1948	2281003
F	2m E	Cemetery	1948	2281003
F	2m E	Cemetery	1933	2185039
G	3m N	Railway Building	1893	2148354
F	3m NW	Cemetery	1987	2243985
F	3m NW	Cemetery	1961	2171866
G	3m W	Railway Station	1933	2255998
G	3m W	Railway Station	1987	2169762
G	3m W	Railway Station	1974	2169762
G	3m W	Railway Station	1967	2169762
G	4m W	Railway Station	1866	2290335

ID	Location	Land Use	Date	Group ID
G	5m W	Railway Station	1911	2268026
G	5m W	Railway Station	1898	2196734
G	5m W	Railway Station	1947	2291000
G	7m W	Railway Station	1933	2169762
G	7m W	Railway Station	1910	2203608
G	8m W	Railway Station	1894	2222172
G	9m W	Railway Station	1920	2169762
G	9m W	Railway Station	1938	2169762
M	36m S	Unspecified Pit	1893	2274224
M	40m S	Unspecified Pit	1911	2247710
M	44m S	Unspecified Pit	1894	2286036
R	96m S	Unspecified Works	1958	2254577
Q	98m E	Unspecified Wharf	1967	2157195
R	99m S	Unspecified Works	1962	2254577
3	135m E	Grave Yard	1866	2145669
4	155m SE	Gravel Pit	1866	2138962
V	160m NW	Crematorium	1962	2245914
V	162m NW	Crematorium	1947	2263691
V	162m NW	Crematorium	1967	2172698
V	162m NW	Crematorium	1958	2185266
V	167m NW	Crematorium	1987	2259610
V	167m NW	Crematorium	1974	2259610
W	176m E	Railway Building	1987	2148355
W	177m E	Railway Building	1920	2287673
W	177m E	Railway Building	1938	2212392
5	213m N	Unspecified Heaps	1947	2160755
Y	235m NW	Boat Houses	1962	2183489
Y	236m NW	Boat Houses	1967	2183489

ID	Location	Land Use	Date	Group ID
Y	238m NW	Boat Houses	1958	2235463
Z	244m N	Unspecified Ground Workings	1894	2279649
Z	250m N	Unspecified Ground Workings	1893	2279649
AA	260m E	Unspecified Works	1962	2269745
AA	261m E	Unspecified Works	1958	2269745
AA	261m E	Unspecified Commercial/Industrial	1933	2130754
AD	291m SE	Burial Ground	1866	2142006
AE	299m N	Boat House	1938	2236362
AE	327m N	Boat Houses	1962	2170794
AG	329m NW	Unspecified Ground Workings	1962	2133355
AE	330m N	Boat Houses	1974	2237150
AE	330m N	Boat Houses	1967	2237150
AE	332m N	Boat Houses	1987	2273360
AG	334m NW	Unspecified Heaps	1958	2160756
AE	337m N	Boat Houses	1893	2262414
AE	340m N	Boat Houses	1987	2139378
AA	346m E	Electricity Works	1920	2206553
AE	347m N	Boat House	1920	2243776
AE	347m N	Boat House	1938	2243776
AA	348m E	Electricity Works	1910	2171594
AE	349m N	Boat Houses	1962	2239091
AE	349m N	Boat Houses	1898	2190244
AE	349m N	Boat Houses	1894	2239091
9	349m N	Unspecified Heaps	1947	2160753
AE	352m N	Boat House	1987	2285296
AE	352m N	Boat House	1974	2285296
AE	352m N	Boat House	1967	2285296
AE	355m N	Boat Houses	1958	2262414

ID	Location	Land Use	Date	Group ID
AE	355m N	Boat House	1947	2234837
AE	356m N	Boat House	1933	2243776
AE	357m N	Boat Houses	1911	2190244
10	360m NE	Gravel and Ballast Works	1947	2163213
AE	363m N	Boat House	1920	2243776
AE	366m N	Boat House	1933	2243776
AE	366m N	Boat House	1910	2181627
AE	368m N	Boat Houses	1898	2190243
AE	371m N	Boat House	1938	2243776
AE	372m N	Boat House	1933	2243776
AE	377m N	Boat Houses	1911	2190243
AE	377m N	Dock	1967	2212266
AE	377m N	Dock	1958	2202329
AE	382m N	Boat House	1933	2243776
AE	382m N	Boat House	1910	2211544
11	386m NE	Refuse Heap	1947	2158813
AK	389m SE	Cemetery	1911	2214883
AK	390m SE	Cemetery	1958	2219760
AK	390m SE	Cemetery	1947	2219760
AK	391m SE	Cemetery	1893	2175422
AK	391m SE	Cemetery	1933	2219760
AK	391m SE	Cemetery	1910	2209930
AK	391m SE	Cemetery	1894	2175422
AL	392m NW	Unspecified Pit	1933	2125227
AL	393m NW	Refuse Heap	1961	2292602
AK	393m SE	Cemetery	1933	2219760
AL	394m NW	Refuse Heap	1933	2234685
AK	395m SE	Cemetery	1898	2214883

ID	Location	Land Use	Date	Group ID
AL	395m NW	Refuse Heap	1948	2288355
AL	395m NW	Refuse Heap	1948	2288355
AE	397m N	Dock	1962	2169427
AK	397m SE	Cemetery	1962	2219760
AK	399m SE	Cemetery	1920	2219760
AK	399m SE	Cemetery	1938	2219760
AK	406m SE	Cemetery	1987	2257055
AK	406m SE	Cemetery	1974	2257055
AK	406m SE	Cemetery	1967	2257055
AM	411m N	Unspecified Ground Workings	1920	2209374
AM	411m N	Unspecified Ground Workings	1938	2202382
13	417m NW	Nursery	1866	2161424
AN	419m N	Unspecified Ground Workings	1933	2253842
14	420m NE	Unspecified Heap	1947	2136602
AA	428m E	Fire Engine Station	1910	2215774
AN	431m N	Unspecified Pit	1933	2283740
AN	431m N	Unspecified Pit	1910	2204325
15	439m NE	Unspecified Ground Workings	1962	2133359
AA	451m E	Fire Engine Station	1958	2262885
AA	452m E	Fire Engine Station	1962	2262885
AK	453m SE	Cemetery	1866	2198819
17	456m N	Unspecified Heap	1947	2136604
18	459m N	Railway Sidings	1947	2225129
19	461m NW	Unspecified Heap	1910	2136605
AT	462m SW	Nursery	1920	2169617
AU	466m NW	Unspecified Commercial/Industrial	1966	2130755
AU	469m NW	Unspecified Depot	1987	2147020
AA	472m E	Fire Engine Station	1920	2224847

ID	Location	Land Use	Date	Group ID
AA	472m E	Fire Engine Station	1938	2222861
AT	472m SW	Nursery	1913	2268407
AT	475m SW	Nursery	1895	2268407
AT	477m SW	Nursery	1899	2248023
AU	478m NW	Refuse Destructor	1933	2175167
AU	478m NW	Refuse Destructor	1933	2175167
AU	480m NW	Unspecified Works	1961	2177601
AU	481m NW	Works	1948	2238869
AU	481m NW	Corporation Refuse Destructor	1948	2142685
AV	483m SE	Hospital	1933	2266342
AV	483m SE	Hospital	1910	2274682
AV	487m SE	Hospital	1958	2266342
AV	487m SE	Hospital	1947	2266342
AV	487m SE	Hospital	1911	2248357
AV	489m SE	Hospital	1893	2213526
AV	490m SE	Hospital	1933	2266342
AV	490m SE	Hospital	1898	2248357
AV	493m SE	Hospital	1920	2266342
AV	493m SE	Hospital	1938	2266342
AV	494m SE	Hospital	1962	2266342
21	494m NE	Unspecified Heap	1947	2136603
AV	499m SE	Hospital	1987	2273174
AV	499m SE	Hospital	1974	2273174
AV	499m SE	Hospital	1967	2273174

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	53

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
A	On site	Tanks	1987	386125
A	On site	Tanks	1987	385788
A	On site	Tanks	1987	406691
A	On site	Tanks	1992	406691
A	On site	Tanks	1991	385788
A	On site	Tanks	1991	386125
A	On site	Tanks	1991	406691
A	On site	Tanks	1995	406691
A	On site	Tanks	1991	395348
A	On site	Tanks	1991	406691
A	On site	Tanks	1991	385788
A	On site	Tanks	1995	406691
A	On site	Tanks	1995	385788
B	On site	Unspecified Tank	1951	399469
B	On site	Unspecified Tank	1951	399026
B	On site	Unspecified Tank	1951	399469
B	On site	Unspecified Tank	1951	399026
B	On site	Unspecified Tank	1965	393564
B	On site	Unspecified Tank	1951	399469
B	On site	Unspecified Tank	1973	363359
B	On site	Unspecified Tank	1869	385958
B	On site	Unspecified Tank	1992	393564
B	On site	Unspecified Tank	1991	393564

ID	Location	Land Use	Date	Group ID
B	**On site**	**Unspecified Tank**	**1940**	**363360**
B	**On site**	**Unspecified Tank**	**1995**	**393564**
B	**On site**	**Unspecified Tank**	**1869**	**363358**
B	**On site**	**Unspecified Tank**	**1869**	**385958**
B	**On site**	**Unspecified Tank**	**1991**	**393564**
B	**On site**	**Unspecified Tank**	**1995**	**393564**
B	**On site**	**Unspecified Tank**	**-**	**358946**
H	**On site**	**Unspecified Tank**	**1992**	**405301**
H	**On site**	**Unspecified Tank**	**1992**	**380784**
H	**On site**	**Unspecified Tank**	**1992**	**380784**
H	**On site**	**Unspecified Tank**	**1991**	**385552**
H	**On site**	**Unspecified Tank**	**1991**	**380784**
H	**On site**	**Unspecified Tank**	**1991**	**380784**
I	**On site**	**Unspecified Tank**	**1992**	**407462**
I	**On site**	**Tanks**	**1992**	**410734**
I	**On site**	**Tanks**	**1991**	**410734**
I	**On site**	**Unspecified Tank**	**1991**	**407462**
B	10m N	Unspecified Tank	1933	363355
T	115m NW	Unspecified Tank	1992	386585
T	116m NW	Unspecified Tank	1991	399423
T	116m NW	Unspecified Tank	1991	399423
6	227m NE	Unspecified Tank	1916	363356
AE	328m N	Unspecified Tank	1992	393045
AE	329m N	Unspecified Tank	1991	389405
AE	329m N	Unspecified Tank	1991	389405
AE	334m N	Unspecified Tank	1991	363363
20	486m W	Unspecified Tank	1940	363361
AS	494m W	Unspecified Tank	1973	387404

ID	Location	Land Use	Date	Group ID
AS	494m W	Unspecified Tank	1994	387404
22	494m S	Unspecified Tank	1916	363199

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m **88**

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
B	**On site**	**Electricity Substation**	**1951**	**243804**
G	**On site**	**Electricity Substation**	**1968**	**268147**
G	**On site**	**Electricity Substation**	**1994**	**265981**
G	1m N	Electricity Substation	1982	265981
G	1m N	Electricity Substation	1991	265981
J	28m S	Electricity Substation	1992	284086
J	28m S	Electricity Substation	1995	284086
J	29m S	Electricity Substation	1995	284086
K	31m SE	Electricity Substation	1982	266571
K	31m SE	Electricity Substation	1991	266571
K	31m SE	Electricity Substation	1968	266571
L	35m N	Electricity Substation	1988	261156
K	35m SE	Electricity Substation	1994	243805
L	36m N	Electricity Substation	1991	261156
O	58m NW	Electricity Substation	1991	292422
O	58m NW	Electricity Substation	1991	292422
P	58m SE	Electricity Substation	1987	286575
P	58m SE	Electricity Substation	1992	286575

ID	Location	Land Use	Date	Group ID
P	58m SE	Electricity Substation	1991	286575
P	58m SE	Electricity Substation	1995	286575
P	58m SE	Electricity Substation	1991	286575
P	58m SE	Electricity Substation	1995	286575
O	58m NW	Electricity Substation	1976	289365
O	58m NW	Electricity Substation	1992	289365
R	93m SW	Electricity Substation	1987	274553
R	93m SW	Electricity Substation	1992	274553
R	93m SW	Electricity Substation	1991	274553
R	94m SW	Electricity Substation	1995	274553
R	94m SW	Electricity Substation	1991	274553
R	94m SW	Electricity Substation	1995	274553
S	103m S	Electricity Substation	1982	261431
S	103m S	Electricity Substation	1991	261431
S	103m S	Electricity Substation	1968	261431
S	104m S	Electricity Substation	1994	259466
U	120m S	Electricity Substation	1982	287876
U	120m S	Electricity Substation	1991	287876
U	121m S	Electricity Substation	1968	287876
U	121m S	Electricity Substation	1951	287876
U	121m S	Electricity Substation	1994	287876
W	224m E	Electricity Substation	1982	280342
W	224m E	Electricity Substation	1991	280342
W	225m E	Electricity Substation	1994	280342
W	226m E	Electricity Substation	1968	280342
X	226m S	Electricity Substation	1995	286895
X	226m S	Electricity Substation	1991	286895
X	226m S	Electricity Substation	1995	286895

ID	Location	Land Use	Date	Group ID
X	227m S	Electricity Substation	1987	286895
X	227m S	Electricity Substation	1992	286895
X	227m S	Electricity Substation	1991	286895
AC	280m SE	Electricity Substation	1991	271376
AC	281m SE	Electricity Substation	1972	278149
AA	316m E	Electricity Works	1972	256710
AA	326m E	Electricity Depot	1951	249921
AA	336m E	Electricity Works	1966	263449
AI	349m W	Electricity Substation	1994	252569
AA	350m E	Electricity Works	1913	264480
AB	353m SE	Electricity Substation	1982	287702
AB	353m SE	Electricity Substation	1991	287702
AB	354m SE	Electricity Substation	1968	259138
AA	355m E	Electricity Works	1951	263449
AA	355m E	Electricity Works	1951	263449
AA	355m E	Electricity Works	1951	263449
AA	355m E	Electricity Works	1951	263449
AI	361m W	Electricity Substation	1973	255561
AB	364m SE	Electricity Substation	1994	243806
AD	364m E	Electricity Substation	1982	282666
AD	364m E	Electricity Substation	1991	282666
AD	365m E	Electricity Substation	1994	282666
AD	365m E	Electricity Substation	1968	282666
AH	382m S	Electricity Substation	1984	258178
AH	382m S	Electricity Substation	1982	258178
AH	382m S	Electricity Substation	1991	258178
AA	385m E	Electricity Works	1919	264480
AP	434m SE	Electricity Substation	1982	264366

ID	Location	Land Use	Date	Group ID
AP	434m SE	Electricity Substation	1991	264366
AP	435m SE	Electricity Substation	1968	272534
AP	435m SE	Electricity Substation	1994	272534
AQ	436m SE	Electricity Substation	1991	279619
AR	437m SW	Electricity Substation	1968	281333
AR	437m SW	Electricity Substation	1951	281333
AR	437m S	Electricity Substation	1984	281333
AR	437m S	Electricity Substation	1982	281333
AR	437m S	Electricity Substation	1991	281333
AQ	439m SE	Electricity Substation	1972	275117
AQ	439m SE	Electricity Substation	1951	275117
16	445m SW	Electricity Substation	1994	242904
AW	499m S	Electricity Substation	1991	274916
AW	499m S	Electricity Substation	1973	274916

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m **2**

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
N	64m W	Filling Station	1991	4454
N	95m W	Filling Station	1988	4454

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	41

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'.

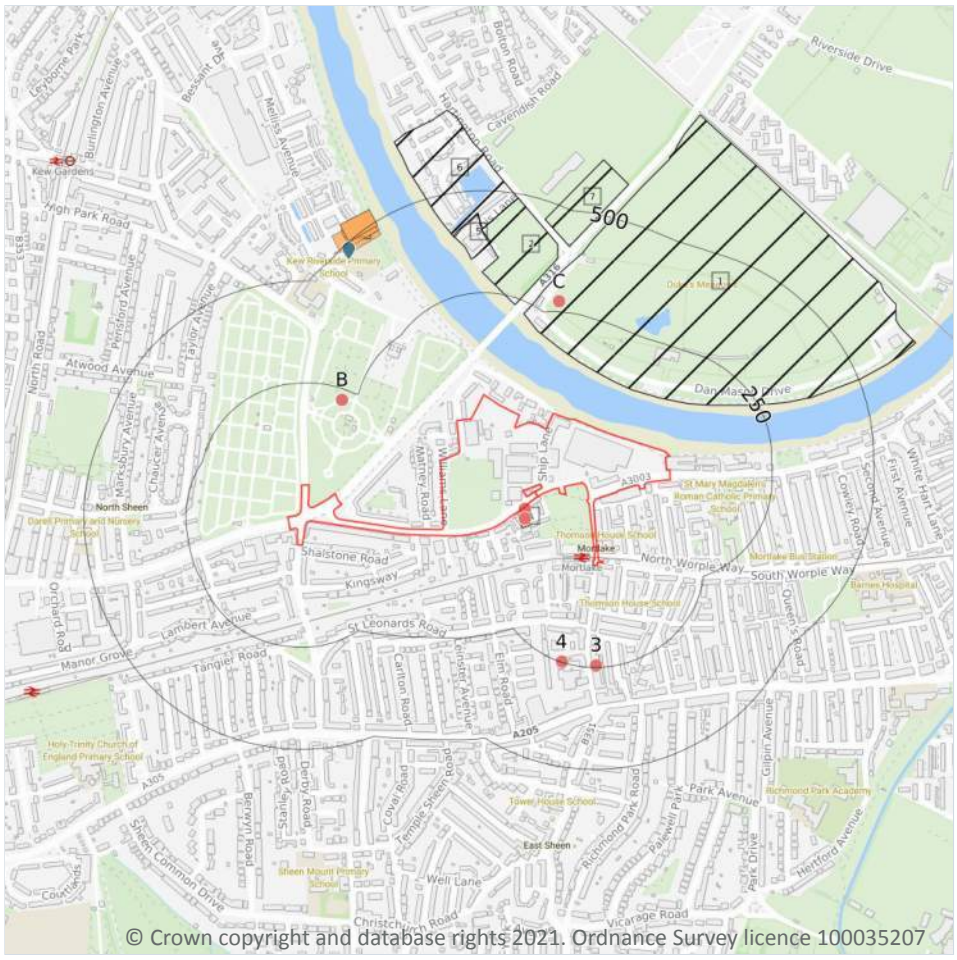
Features are displayed on the Past land use - un-grouped map on **page 24**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Garage**	**1951**	**73227**
G	**On site**	**Garage**	**1968**	**81300**
G	**On site**	**Garage**	**1951**	**81300**
G	2m E	Garage	1982	80386
G	2m E	Garage	1991	80386
G	4m E	Garage	1994	77533
2	29m SE	Garages	1951	74150
N	39m SW	Garage	1988	78826
Q	61m E	Garage	1982	85727
Q	61m E	Garage	1991	85727
Q	62m E	Garage	1994	85580
Q	62m E	Garage	1968	85580
N	64m W	Garage	1959	81397
N	64m W	Garage	1959	81397
N	64m W	Garage	1960	78494
Q	65m E	Garage	1973	79877
Q	66m E	Garage	1993	85580
Q	76m E	Garage	1991	75088
N	94m W	Garage	1960	76132
N	94m W	Garage	1959	84182
N	94m W	Garage	1959	84182
R	157m S	Garage	1951	73228
AB	273m E	Garage	1913	73223

ID	Location	Land Use	Date	Group ID
AB	276m E	Omnibus Garage	1919	74019
7	281m S	Garage	1951	73229
AF	301m SE	Garage	1982	82640
AF	301m SE	Garage	1991	82640
AF	301m SE	Garage	1994	83869
AF	302m SE	Garage	1968	83869
8	306m S	Garages	1951	74149
AH	334m SW	Motor Repair Works	1968	74052
AH	334m SW	Garages	1951	86007
AJ	363m SE	Garage	1951	75470
AJ	364m SE	Garage	1972	76735
AJ	364m SE	Garage	1991	79501
AH	373m S	Garages	1968	86007
12	399m S	Garages	1951	74148
AO	425m W	Garage	1973	83713
AO	425m W	Garage	1994	83713
AS	453m W	Garage	1973	85988
AS	454m W	Garage	1994	85988

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	5

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.

Features are displayed on the Waste and landfill map on **page 40**

ID	Location	Details		
1	119m N	Site Address: Dukes Meadow, Great Chertsey Road, London Licence Holder Address: -	Waste Licence: - Site Reference: 8HO040 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Ham River Grit Licence Holder: London Borough of Hounslow First Recorded 31/12/1945 Last Recorded: 31/12/1950
2	233m N	Site Address: Hartington Road Sports Ground, Hartington Road Licence Holder Address: -	Waste Licence: - Site Reference: 8HO041 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Ham River Grit Licence Holder: - First Recorded - Last Recorded: 31/12/1934
5	334m N	Site Address: Ibis Rowing Club, Grove Park, Chiswick, Hounslow, London Licence Holder Address: -	Waste Licence: - Site Reference: 8HO063 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded - Last Recorded: -
6	394m N	Site Address: Cubitts Basin, Grove Park, Chiswick, Hounslow, London Licence Holder Address: -	Waste Licence: - Site Reference: 8HO046 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded - Last Recorded: -

ID	Location	Details		
7	412m N	Site Address: Hartington Road Sports Ground, Hartington Road Licence Holder Address: -	Waste Licence: - Site Reference: 8HO041 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Ham River Grit Licence Holder: - First Recorded - Last Recorded: 31/12/1935

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

3.5 Historical waste sites

Records within 500m	**12**

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

Features are displayed on the Waste and landfill map on **page 40**

ID	Location	Address	Further Details	Date
A	**On site**	**Site Address: N/A**	**Type of Site: Scrap Yard** **Planning application reference: N/A** **Description: N/A** **Data source: Historic Mapping** **Data Type: Polygon**	**1991**
A	**On site**	**Site Address: N/A**	**Type of Site: Scrap Yard** **Planning application reference: N/A** **Description: N/A** **Data source: Historic Mapping** **Data Type: Polygon**	**1995**
A	16m SE	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1995
A	17m SE	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1987
A	17m SE	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1992

ID	Location	Address	Further Details	Date
A	17m SE	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1991
D	466m NW	Site Address: N/A	Type of Site: Refuse Disposal Depot Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1974
D	477m NW	Site Address: N/A	Type of Site: Refuse Destructor Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1933
D	479m NW	Site Address: N/A	Type of Site: Refuse Destructor Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1940
D	490m NW	Site Address: N/A	Type of Site: Corporation Refuse Destructor Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1940
D	490m NW	Site Address: N/A	Type of Site: Corporation Refuse Destructor Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1940
D	490m NW	Site Address: N/A	Type of Site: Corporation Refuse Destructor Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1940

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

3.6 Licensed waste sites

Records within 500m	7

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

Features are displayed on the Waste and landfill map on **page 40**

ID	Location	Details		
D	485m NW	Site Name: Townmead Road Cas, Kew, Tw9 Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Kew, Surrey, TW9 4EL Correspondence Address: Richmond Upon Thames London B C, """Contract Services Dept, Regal House""", London Road, Twickenham, Middx, TW1 3QB	Type of Site: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: - Operator: Richmond Upon Thames London B C Waste Management licence No: 83208 Annual Tonnage: 109200	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
D	485m NW	Site Name: Townmead C A S Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Off Mortlake Road, Kew, Surrey, TW9 4EL Correspondence Address: Richmond Upon Thames London B C, Richmond Upon Thames L B C, London Road, Twickenham, Middx, TW1 3QB	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: - Operator: Richmond Upon Thames London B C Waste Management licence No: 83208 Annual Tonnage: 109200	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
D	485m NW	Site Name: Townmead Road Cas, Kew, Tw9 Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Kew, Surrey, TW9 4EL Correspondence Address: Richmond Upon Thames London B C, Contract Services Dept, Regal House, London Road, Twickenham, Middx, TW1 3QB	Type of Site: Household, Commercial & Industrial Waste T Stn Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: - Operator: Richmond Upon Thames London B C Waste Management licence No: 83208 Annual Tonnage: 109200	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
D	485m NW	Site Name: Townmead Road Cas, Kew, Tw9 Site Address: Richmond Upon Thames London B C, Townmead Civic Amenity Site, Townmead Road, Kew, Surrey, TW9 4EL Correspondence Address: Richmond Upon Thames London B C, Contract Services Dept, Regal House, London Road, Twickenham, Middx, TW1 3QB	Type of Site: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC002 EPR reference: - Operator: Richmond Upon Thames London B C Waste Management licence No: 83209 Annual Tonnage: 107018	Issue Date: 05/12/1996 Effective Date: - Modified: 08/05/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
D	485m NW	Site Name: Townmead C A S Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Off Mortlake Road, Kew, Surrey, TW9 4EL Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: BP3890EF/V002 Operator: Richmond Upon Thames London Borough Council Waste Management licence No: 83208 Annual Tonnage: 109200	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
D	485m NW	Site Name: Townmead C A S Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Off Mortlake Road, Kew, Surrey, TW9 4EL Correspondence Address: -	Type of Site: Household Waste Amenity Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: EA/EPR/BP3890EF/V002 Operator: Richmond Upon Thames London Borough Council Waste Management licence No: 83208 Annual Tonnage: 109200	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired

ID	Location	Details		
D	485m NW	Site Name: Townmead C A S Site Address: Richmond upon Thames London BC, Townmead Civic Amenity Site, Townmead Road, Off Mortlake Road, Kew, Surrey, TW9 4EL Correspondence Address: -	Type of Site: Household Waste Amenity Site Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RIC001 EPR reference: EA/EPR/BP3890EF/V002 Operator: Richmond Upon Thames London Borough Council Waste Management licence No: 83208 Annual Tonnage: 109200	Issue Date: 25/05/1994 Effective Date: - Modified: 12/11/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired

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

3.7 Waste exemptions

Records within 500m **24**

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 40**

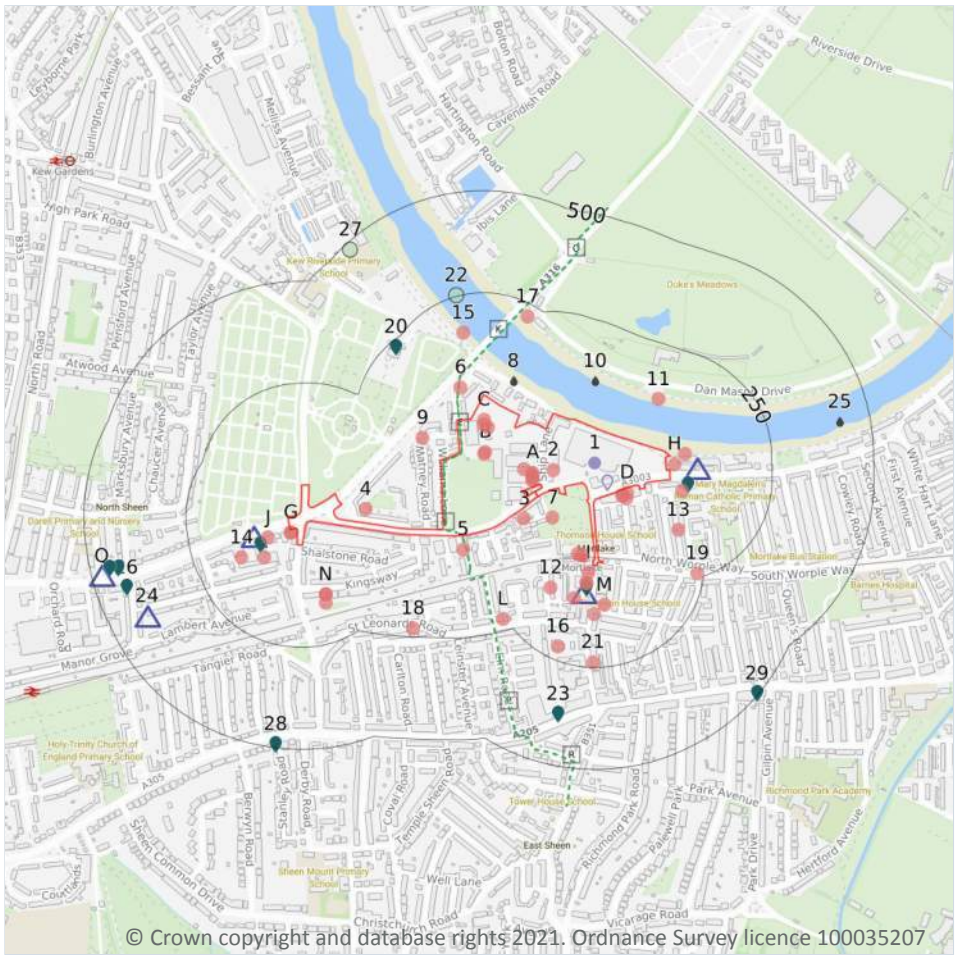
ID	Location	Site	Reference	Category	Sub-Category	Description
A	5m SE	29-31 Lower Richmond Road London SW14 7EZ	EPR/XH0514QD/A001	Treating waste exemption	Non-Agricultural Waste Only	Recovery of scrap metal
A	5m SE	29-31 Lower Richmond Road LONDON SW14 7EZ	EPR/BF0633ZU/A001	Treating waste exemption	Non-Agricultural Waste Only	Recovery of scrap metal
A	22m SE	29-31, LOWER RICHMOND ROAD, LONDON, SW14 7EZ	WEX195693	Treating waste exemption	Not on a farm	Recovery of scrap metal
A	22m SE	29-31, LOWER RICHMOND ROAD, LONDON, SW14 7EZ	WEX195693	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	22m SE	29-31, LOWER RICHMOND ROAD, LONDON, SW14 7EZ	WEX030597	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	22m SE	29-31, LOWER RICHMOND ROAD, LONDON, SW14 7EZ	WEX030597	Treating waste exemption	Not on a farm	Recovery of scrap metal

ID	Location	Site	Reference	Category	Sub-Category	Description
B	223m N	-	WEX231000	Using waste exemption	Not on a farm	Spreading waste on non-agricultural land to confer benefit
B	223m N	-	WEX231000	Using waste exemption	Not on a farm	Use of mulch
B	223m N	-	WEX231000	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	223m N	-	WEX231000	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment
B	223m N	-	WEX231011	Using waste exemption	Not on a farm	Spreading waste on non-agricultural land to confer benefit
B	223m N	-	WEX231011	Using waste exemption	Not on a farm	Use of mulch
B	223m N	-	WEX231011	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	223m N	-	WEX231011	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment
B	223m N	-	WEX083951	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment
B	223m N	-	WEX083951	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	223m N	-	WEX083951	Using waste exemption	Not on a farm	Spreading waste on non-agricultural land to confer benefit
B	223m N	-	WEX083951	Using waste exemption	Not on a farm	Use of mulch
3	246m S	113 Sheen Lane LONDON SW14 8AE	EPR/TF0709GE/A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
4	250m S	70, SHEEN LANE, LONDON, SW14 8LP	WEX271262	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal

ID	Location	Site	Reference	Category	Sub-Category	Description
C	274m N	Entrance on Dan Mason Way opposite Tideway Scullers School, near Chiswick Bridge.	WEX267277	Using waste exemption	Not on a farm	Spreading waste on agricultural land to confer benefit
C	274m N	Entrance on Dan Mason Way opposite Tideway Scullers School, near Chiswick Bridge.	WEX267277	Using waste exemption	Not on a farm	Spreading waste on non-agricultural land to confer benefit
C	274m N	Entrance on Dan Mason Way opposite Tideway Scullers School, near Chiswick Bridge.	WEX267277	Using waste exemption	Not on a farm	Use of mulch
C	274m N	Entrance on Dan Mason Way opposite Tideway Scullers School, near Chiswick Bridge.	WEX267277	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment

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

4 Current industrial land use



4.1 Recent industrial land uses

Records within 250m	51

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 49**

ID	Location	Company	Address	Activity	Category
2	**On site**	**Chimney**	**Greater London, SW14**	**Chimneys**	**Industrial Features**
A	**On site**	**Silo**	**Greater London, SW14**	**Hoppers and Silos**	**Farming**
A	**On site**	**Silo**	**Greater London, SW14**	**Hoppers and Silos**	**Farming**
A	**On site**	**Silo**	**Greater London, SW14**	**Hoppers and Silos**	**Farming**

ID	Location	Company	Address	Activity	Category
A	**On site**	**Silo**	**Greater London, SW14**	**Hoppers and Silos**	**Farming**
A	**On site**	**Silo**	**Greater London, SW14**	**Hoppers and Silos**	**Farming**
A	**On site**	**Silo**	**Greater London, SW14**	**Hoppers and Silos**	**Farming**
B	**On site**	**Tank**	**Greater London, SW14**	**Tanks (Generic)**	**Industrial Features**
B	**On site**	**Tank**	**Greater London, SW14**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Greater London, SW14**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Greater London, SW14**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Tank**	**Greater London, SW14**	**Tanks (Generic)**	**Industrial Features**
G	8m S	webuyanycar.com	179-181, Lower Richmond Road, Richmond, Greater London, TW9 4LN	Secondhand Vehicles	Motoring
G	8m S	Sterling Luxury Limousines Ltd	Diamond House 179-181, Lower Richmond Road, Richmond, Greater London, TW9 4LN	Vehicle Hire and Rental	Hire Services
D	11m S	Low Cost Minicab	Room 108 Mortlake Business Centre, 20 Mortlake High Street, London, Greater London, SW14 8JN	Airlines and Airline Services	Transport, Storage and Delivery
D	15m S	Global Pharma	20, Mortlake High Street, London, Greater London, SW14 8JN	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
D	15m S	Norstone UK	Mortlake Business Centre 20, Mortlake High Street, London, Greater London, SW14 8JN	Construction Completion Services	Construction Services
H	19m NE	Holly Andrews Cakes Ltd	Flat 9 Boatrace Court, 69 Mortlake High Street, Richmond Upon Thames, London, Greater London, SW14 8HL	Baking and Confectionery	Foodstuffs
3	22m SE	Sullivans of Mortlake Ltd	29-31, Lower Richmond Road, London, Greater London, SW14 7EZ	Scrap Metal Merchants	Recycling Services
I	22m SW	Classic Chrome Ltd	12, Sheen Lane, London, Greater London, SW14 8LN	Vehicle Repair, Testing and Servicing	Repair and Servicing
D	25m S	R J Communications & Media Ltd	39, Vineyard Path, London, Greater London, SW14 8EL	Published Goods	Industrial Products
I	31m NW	Mortlake Rail Station	Greater London, SW14	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure

ID	Location	Company	Address	Activity	Category
4	34m N	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
5	34m S	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
H	38m E	Mooring Posts	Greater London, SW14	Moorings and Unloading Facilities	Water
H	40m SE	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
I	41m W	Rubbish Clearance Unlimited	10-12, Sheen Lane, London, Greater London, SW14 8LL	Waste Storage, Processing and Disposal	Infrastructure and Facilities
I	47m S	Mfg Mortlake	16-26, Sheen Lane, London, Greater London, SW14 8LW	Vehicle Cleaning Services	Personal, Consumer and Other Services
I	47m S	Esso	26, Sheen Lane, London, Greater London, SW14 8LW	Petrol and Fuel Stations	Road and Rail
J	58m W	Richmond Landrover	193-195, Lower Richmond Road, Richmond, Greater London, TW9 4LN	Secondhand Vehicles	Motoring
6	59m NW	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
7	62m S	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
9	71m NW	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
J	87m W	Big Yellow Self Storage Company Ltd	197, Lower Richmond Road, Richmond, Greater London, TW9 4LN	Container and Storage	Transport, Storage and Delivery
I	92m SW	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
M	99m S	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
11	117m N	Outfall	Greater London, W4	Waste Storage, Processing and Disposal	Infrastructure and Facilities
12	119m SW	Woodart	Flat 23 Moore Close, Little St. Leonards, London, Greater London, SW14 7LU	General Construction Supplies	Industrial Products
M	120m S	P C & Fone	65, Sheen Lane, London, Greater London, SW14 8AD	Electrical Equipment Repair and Servicing	Repair and Servicing

ID	Location	Company	Address	Activity	Category
13	125m S	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
N	133m SE	Alfacraft	Rear Of 129, Kingsway, London, Greater London, SW14 7HN	Vehicle Repair, Testing and Servicing	Repair and Servicing
N	133m SE	B A Autos	129, Kingsway, London, Greater London, SW14 7HN	Vehicle Repair, Testing and Servicing	Repair and Servicing
14	137m SW	Electricity Sub Station	Greater London, TW9	Electrical Features	Infrastructure and Facilities
N	153m S	Auto Diagnostic Centre	Rear of 129, Kingsway, London, Greater London, SW14 7HN	Vehicle Repair, Testing and Servicing	Repair and Servicing
15	160m N	Outfall	Greater London, SW14	Waste Storage, Processing and Disposal	Infrastructure and Facilities
16	217m SW	Works	Greater London, SW14	Unspecified Works Or Factories	Industrial Features
17	219m NE	Slipway	Greater London, W4	Moorings and Unloading Facilities	Water
L	221m S	Cookie Crumbles	64, St. Leonards Road, London, Greater London, SW14 7NE	Baking and Confectionery	Foodstuffs
18	229m S	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
19	234m E	Electricity Sub Station	Greater London, SW14	Electrical Features	Infrastructure and Facilities
21	238m S	Sheen Mobility	111, Sheen Lane, London, Greater London, SW14 8AE	Disability and Mobility Equipment	Consumer Products

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m **5**

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 49**

ID	Location	Company	Address	LPG	Status
H	67m E	OBSOLETE	77, Mortlake High Street, Mortlake, London, Outer London, SW14 8HS	Not Applicable	Obsolete

ID	Location	Company	Address	LPG	Status
I	71m S	ESSO	16-26, Sheen Lane, Mortlake, London, Outer London, SW14 8LW	No	Open
J	93m W	TOTAL	205, Lower Richmond Road, North Sheen, Richmond, Outer London, TW9 4LN	Not Applicable	Obsolete
24	408m SW	OBSOLETE	293, Lower Richmond Road, Manor Gardens, North Sheen, Richmond, Outer London, TW9 4LU	Not Applicable	Obsolete
Q	476m W	SHELL	22-24, Lower Richmond Road, Nitan Road, Richmond, Outer London, TW9 4LJ	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m **21**

High voltage underground electricity transmission cables.

Features are displayed on the Current industrial land use map on **page 49**

ID	Location	Cable Set	Cable Route	Details	
E	**On site**	**SOUTH (BICC) CABLE SECT 40**	**WIMBLEDON - WILLESDEN**	**Cable Make: BICC 275KV OIL Cable Type: A/C Operating Voltage (kV): 275**	**Year of installation: 1967 Cable in tunnel? No**
E	**On site**	**-**	**-**	**Cable Make: - Cable Type: PILOT Operating Voltage (kV): -**	**Year of installation: Not specified Cable in tunnel? Not specified**
E	**On site**	**-**	**-**	**Cable Make: - Cable Type: PILOT Operating Voltage (kV): -**	**Year of installation: Not specified Cable in tunnel? Not specified**
F	**On site**	**SOUTH (BICC) CABLE SECT 39**	**WIMBLEDON - WILLESDEN**	**Cable Make: BICC 275KV OIL Cable Type: A/C Operating Voltage (kV): 275**	**Year of installation: 1967 Cable in tunnel? No**
F	**On site**	**-**	**-**	**Cable Make: - Cable Type: PILOT Operating Voltage (kV): -**	**Year of installation: Not specified Cable in tunnel? Not specified**
F	**On site**	**-**	**-**	**Cable Make: - Cable Type: PILOT Operating Voltage (kV): -**	**Year of installation: Not specified Cable in tunnel? Not specified**
K	73m NW	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified

ID	Location	Cable Set	Cable Route	Details	
K	73m NW	SOUTH (BICC) CABLE SECT 41	WIMBLEDON - WILLESDEN	Cable Make: BICC 275KV OIL Cable Type: A/C Operating Voltage (kV): 275	Year of installation: 1967 Cable in tunnel? No
K	74m NW	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified
L	86m S	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified
L	86m S	SOUTH (BICC) CABLE SECT 38	WIMBLEDON - WILLESDEN	Cable Make: BICC 275KV OIL Cable Type: A/C Operating Voltage (kV): 275	Year of installation: 1967 Cable in tunnel? No
L	87m S	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified
O	272m NE	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified
O	273m NE	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified
O	275m NE	SOUTH (BICC) CABLE SECT 42	WIMBLEDON - WILLESDEN	Cable Make: BICC 275KV OIL Cable Type: A/C Operating Voltage (kV): 275	Year of installation: 1967 Cable in tunnel? No
P	317m S	SOUTH (BICC) CABLE SECT 37	WIMBLEDON - WILLESDEN	Cable Make: BICC 275KV OIL Cable Type: A/C Operating Voltage (kV): 275	Year of installation: 1967 Cable in tunnel? No
P	317m S	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified
P	317m S	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified
R	457m S	SOUTH (BICC) CABLE SECT 36	WIMBLEDON - WILLESDEN	Cable Make: BICC 275KV OIL Cable Type: A/C Operating Voltage (kV): 275	Year of installation: 1967 Cable in tunnel? No
R	458m S	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified

ID	Location	Cable Set	Cable Route	Details	
R	458m S	-	-	Cable Make: - Cable Type: PILOT Operating Voltage (kV): -	Year of installation: Not specified Cable in tunnel? Not specified

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	1

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.

Features are displayed on the Current industrial land use map on **page 49**

ID	Location	Details	
1	**On site**	**Operator: Scottish and Newcastle UK Ltd** **Address: Lower Richmond Road, Mortlake, London, SW14 7ET** **Process: Combustion Processes** **Permit Number: AF4275**	**Original Permit Number: IPCAPP** **Date Approved: 12-2-1993** **Effective Date: 12-2-1993** **Status: Revoked**

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	3

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

Features are displayed on the Current industrial land use map on **page 49**

ID	Location	Details	
D	**On site**	**Operator: BUDWEISER STAG BREWING CO LTD** **Installation Name: THE STAG BREWERY** **EPR/BS9784IK** **Process: ANIMAL VEGETABLE AND FOOD; TREATING ETC VEGETABLE RAW MATERIALS FOR FOOD >300T/D** **Permit Number: BS9784IK** **Original Permit Number: BS9784IK**	**EPR Reference: -** **Issue Date: 09/11/2005** **Effective Date: 09/11/2005** **Last date noted as effective: 01/07/2021** **Status: SUPERCEDED**

ID	Location	Details	
D	**On site**	**Operator: BUDWEISER STAG BREWING COMPANY LIMITED** **Installation Name: THE STAG BREWERY** **EPR/BS9784IK** **Process: ANIMAL VEGETABLE AND FOOD TREATING ETC VEGETABLE** **Permit Number: FP3037RD** **Original Permit Number: BS9784IK**	**EPR Reference: -** **Issue Date: -** **Effective Date: 10/05/2016** **Last date noted as effective: 30/01/2020** **Status: SURRENDER EFFECTIVE**
D	**On site**	**Operator: BUDWEISER STAG BREWING COMPANY LIMITED** **Installation Name: THE STAG BREWERY** **EPR/BS9784IK** **Process: ANIMAL VEGETABLE AND FOOD TREATING ETC VEGETABLE** **Permit Number: FP3037RD** **Original Permit Number: BS9784IK**	**EPR Reference: -** **Issue Date: -** **Effective Date: 10/05/2016** **Last date noted as effective: 01/07/2021** **Status: SURRENDER EFFECTIVE**

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

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

Records within 500m **11**

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 49**

ID	Location	Address	Details	
H	44m E	BM Lifestyle, 64 Mortlake High Street, London, SW14 8HR	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
I	59m S	Texaco, Pace Mortlake, Mortlake Service Station, 16-26 Sheen Lane, East Sheen, SW14 8LW	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
I	59m S	KPR Service Station, Sheen Lane, SW14 8LW	Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
J	81m SW	Fina, Prospect Service Station, 199 Lower Richmond Road, Richmond, TW9 4LN	Process: Petrol Vapour Recovery Status: Revoked Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

ID	Location	Address	Details	
20	234m NW	Mortlake Crematorium, Kew Meadow Path, Richmond, Surrey, TW9 4EN	Process: Crematoria Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
23	374m S	Express Dry Cleaners, 282 Upper Richmond Road West, East Sheen, SW14 7JE	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
26	426m W	Richmond Motor Centre, 293 Lower Richmond Road, Richmond, TW9 4LY	Process: Petrol Vapour Recovery Status: Revoked Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
Q	433m W	Richmond Service Station, 22-24 Popham Gardens, Lower Richmond Road, Richmond, TW9 4LJ	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
Q	453m W	Petropolis UK, Popham Gardens, TW9 4LJ	Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
28	491m S	East Sheen Service Station, 567 Upper Richmond Road Wst, London, SW14 7ED	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
29	496m SE	Hamlyns, 197 Upper Richmond Road West, East Sheen, London, SW14 8QT	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**0**

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	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 49**

ID	Location	Address	Details	
8	67m NE	MORTLAKE, LONDON, MORTLAKE LONDON	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CPLP.0059 Permit Version: 1 Receiving Water: THAMES	Status: REVOKED - UNSPECIFIED Issue date: 14/09/1972 Effective Date: 14/09/1972 Revocation Date: 05/03/1991
10	105m N	RICHMOND ROAD, MORTLAKE, SURREY, RICHMOND ROAD MORTLAKE SURREY	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CTMR.0305 Permit Version: 1 Receiving Water: THAMES	Status: REVOKED - UNSPECIFIED Issue date: 29/06/1976 Effective Date: 29/06/1976 Revocation Date: 26/04/1990
25	424m E	121 MORTLAKE HIGH STREET, MORTLAKE, 121 MORTLAKE HIGH STREET MORTLA, KE LONDON SW14	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2358 Permit Version: 1 Receiving Water: RIVER THAMES	Status: REVOKED - UNSPECIFIED Issue date: 05/05/1988 Effective Date: 05/05/1988 Revocation Date: 06/06/1991

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	2

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 49**

ID	Location	Details	
22	252m N	Incident Date: 19/08/2002 Incident Identification: 101321 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
27	482m NW	Incident Date: 03/04/2003 Incident Identification: 148411 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) 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.

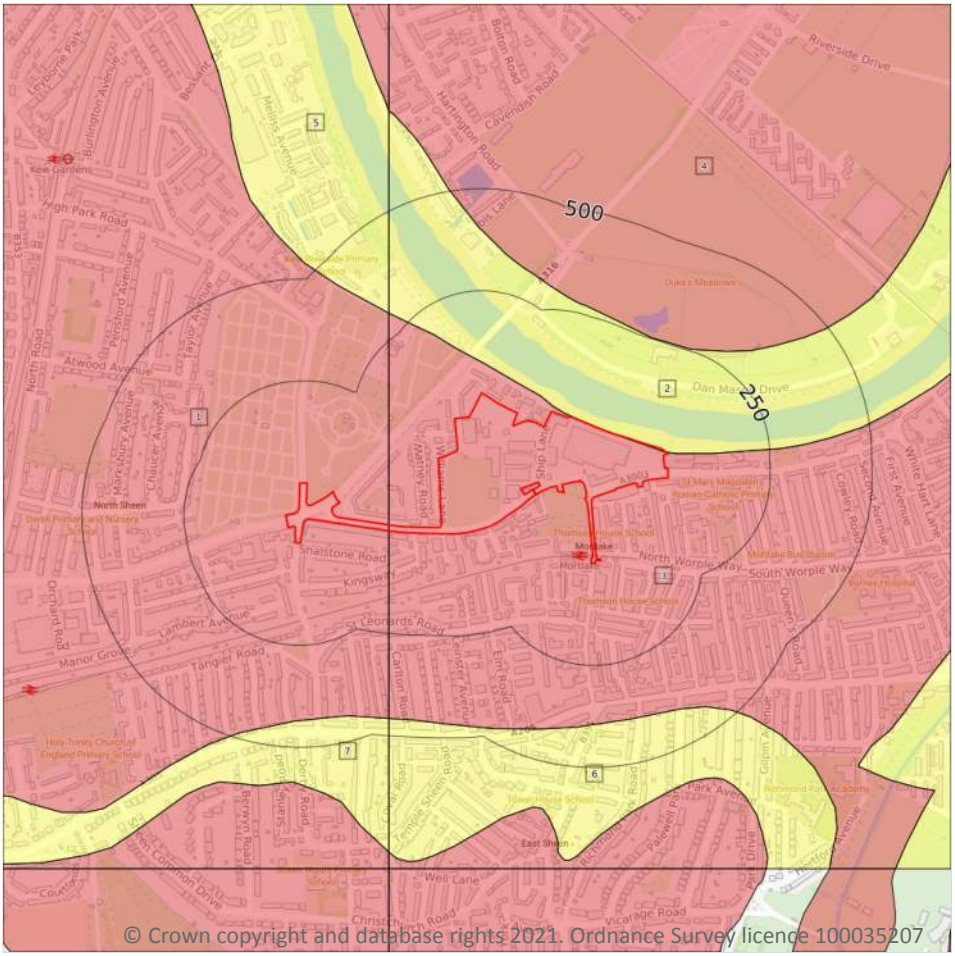
4.21 Pollution inventory radioactive waste

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



5.1 Superficial aquifer

Records within 500m	7

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 62**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

ID	Location	Designation	Description
3	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
4	253m N	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
5	300m NW	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
6	391m S	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
7	432m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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

Bedrock aquifer

Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	2

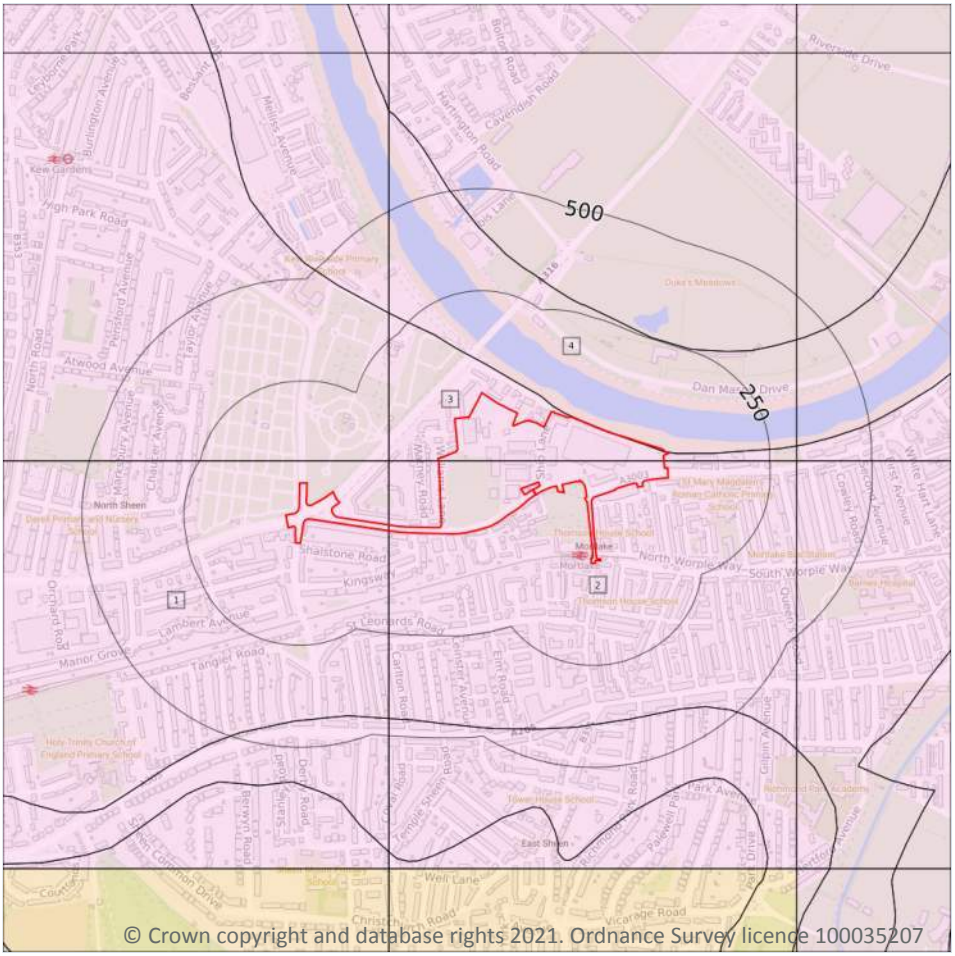
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 64**

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	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	4

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 65**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
2	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
3	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
4	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary 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.

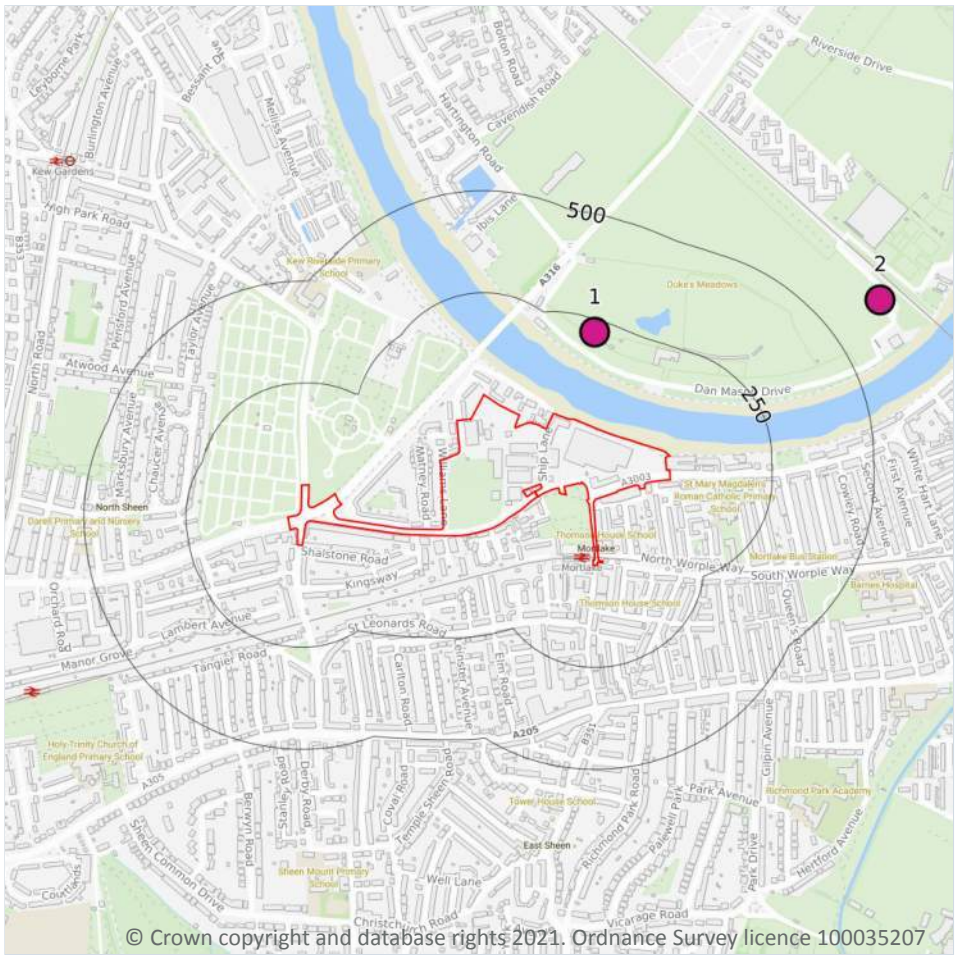
5.5 Groundwater vulnerability- local information

Records on site	0

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.

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	8

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 68**

ID	Location	Details	
1	219m N	Status: Active Licence No: 28/39/39/0180 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: DUKES MEADOW GOLF CLUB, LONDON - BOREHOLE Data Type: Point Name: D & D LEISURE SPORTS LTD Easting: 520500 Northing: 176320	Annual Volume (m^3): 8,000 Max Daily Volume (m^3): 55 Original Application No: - Original Start Date: 04/09/1997 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
2	643m NE	Status: Historical Licence No: 28/39/39/0174 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: DUKES MEADOW, CHISWICK - BOREHOLE Data Type: Point Name: RIVERSIDE RACQUETS CLUB LTD Easting: 521200 Northing: 176400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 08/12/1993 Expiry Date: - Issue No: 100 Version Start Date: 08/12/1993 Version End Date: -
-	1286m NW	Status: Active Licence No: TH/039/0035/002 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: WELL 2 AT THE NATIONAL ARCHIVES, KEW, RICHMOND, SURREY Data Type: Point Name: Mark Newman Easting: 519490 Northing: 177220	Annual Volume (m^3): 10,000 Max Daily Volume (m^3): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 2 Version Start Date: 09/07/2020 Version End Date: -
-	1286m NW	Status: Active Licence No: TH/039/0035/002 Details: Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: WELL 2 AT THE NATIONAL ARCHIVES, KEW, RICHMOND, SURREY Data Type: Point Name: Mark Newman Easting: 519490 Northing: 177220	Annual Volume (m^3): 10,000 Max Daily Volume (m^3): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 2 Version Start Date: 09/07/2020 Version End Date: -

ID	Location	Details	
-	1324m NW	Status: Active Licence No: TH/039/0035/002 Details: Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: WELL 1 AT THE NATIONAL ARCHIVES. KEW, RICHMOND,SURREY Data Type: Point Name: Mark Newman Easting: 519480 Northing: 177260	Annual Volume (m^3): 10,000 Max Daily Volume (m^3): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 2 Version Start Date: 09/07/2020 Version End Date: -
-	1324m NW	Status: Active Licence No: TH/039/0035/002 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: WELL 1 AT THE NATIONAL ARCHIVES. KEW, RICHMOND,SURREY Data Type: Point Name: Mark Newman Easting: 519480 Northing: 177260	Annual Volume (m^3): 10,000 Max Daily Volume (m^3): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 2 Version Start Date: 09/07/2020 Version End Date: -
-	1337m SE	Status: Active Licence No: TH/039/0040/004 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT ROEHAMPTON CLUB Data Type: Point Name: Roehampton Club Limited Easting: 521784 Northing: 175197	Annual Volume (m^3): 34,960 Max Daily Volume (m^3): 264 Original Application No: - Original Start Date: 03/10/2017 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 03/10/2017 Version End Date: -
-	1959m W	Status: Active Licence No: 28/39/35/0009 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: GRAVEL AT RICHMOND ATHLETICS GROUND, KEW FOOT ROAD, RICHMOND Data Type: Point Name: RICHMOND ATHLETICS ASSOC LTD Easting: 517800 Northing: 175650	Annual Volume (m^3): 15,911 Max Daily Volume (m^3): 75 Original Application No: - Original Start Date: 25/03/1992 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	0

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

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

5.8 Potable abstractions

Records within 2000m	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.

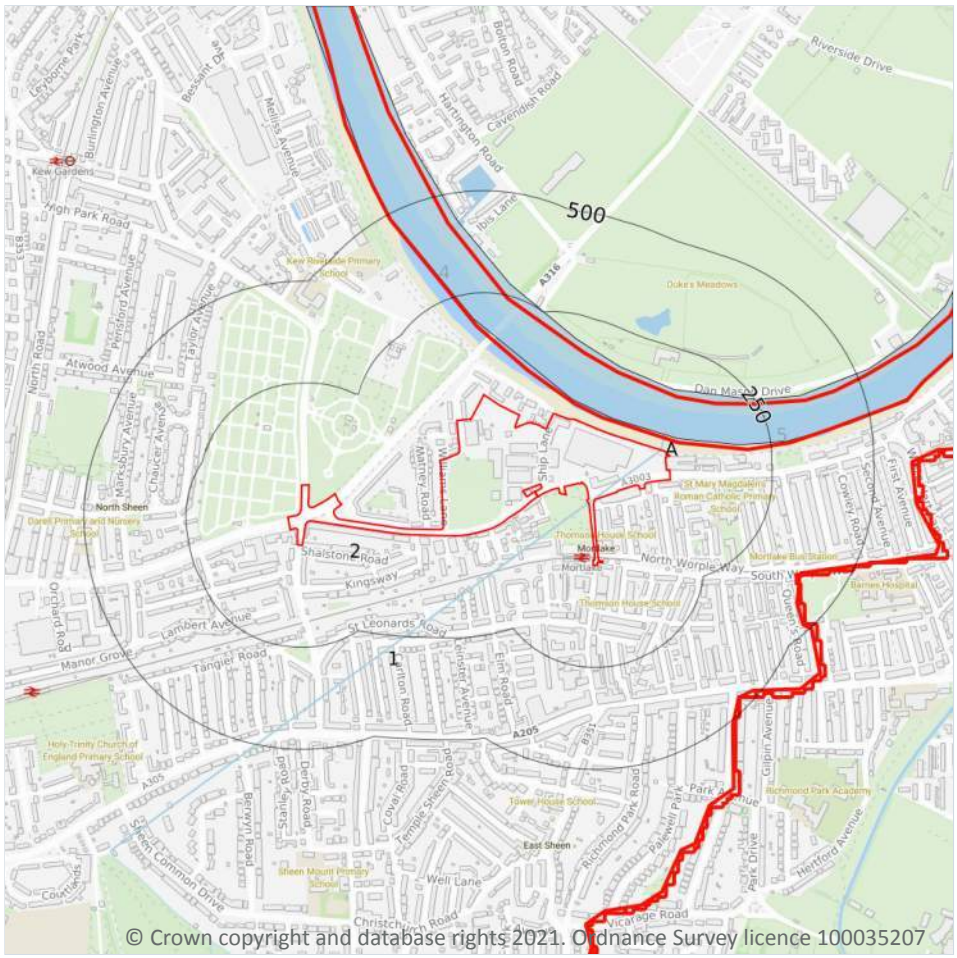
5.10 Source Protection Zones (confined aquifer)

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	**5**

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 72**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	**On site**	**Inland river not influenced by normal tidal action.**	**Not provided**	**Watercourse contains water year round (in normal circumstances)**	**-**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	**On site**	**Inland river not influenced by normal tidal action.**	**Not provided**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	44m N	Tidal river or stream.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
4	67m N	Tidal river or stream.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Thames
5	73m N	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 72**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	**On site**	**Coastal Catchment**	**Not part of a river WB catchment**	**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 72**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
3	37m N	Transi	THAMES UPPER	GB530603911403	Moderate	Fail	Moderate	2019

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

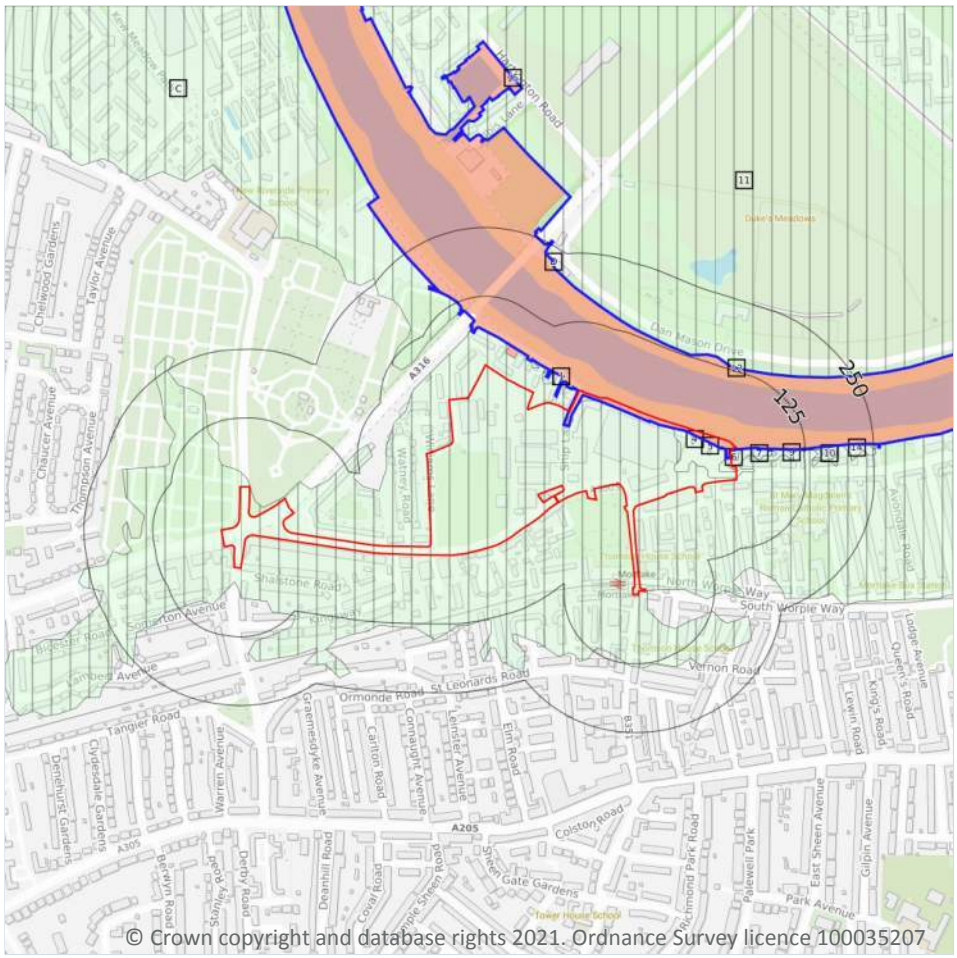
6.5 WFD Groundwater bodies

Records on site	0

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.

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

7 River and coastal flooding



7.1 Risk of flooding from rivers and the sea

Records within 50m	4

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 75**

Distance	Flood risk category
On site	**High**
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	**8**

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 75**

ID	Location	Update
1	**On site**	**01/09/2021**
12	128m N	01/09/2021
D	226m NE	01/09/2021
D	226m NE	01/09/2021
D	226m NE	01/09/2021
D	231m NE	01/09/2021
15	231m NE	01/09/2021
D	231m NE	01/09/2021

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	10

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 75**

ID	Location	
4	**On site**	**Area benefiting from flood defences**
5	**On site**	**Area benefiting from flood defences**
6	**On site**	**Area benefiting from flood defences**
A	**On site**	**Area benefiting from flood defences**
7	29m E	Area benefiting from flood defences
9	81m E	Area benefiting from flood defences
C	94m NW	Area benefiting from flood defences
10	126m E	Area benefiting from flood defences
11	128m N	Area benefiting from flood defences
14	202m E	Area benefiting from flood defences

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

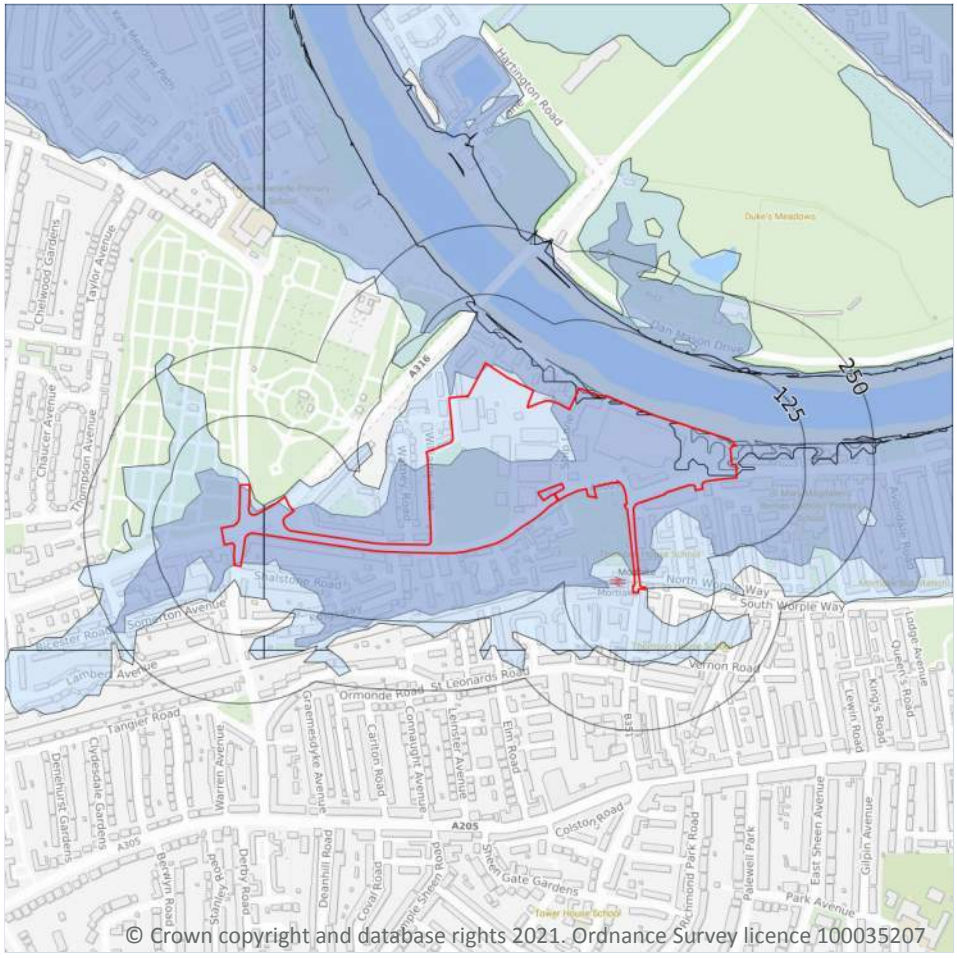
7.5 Flood Storage Areas

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 75**

Location	Type
On site	**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

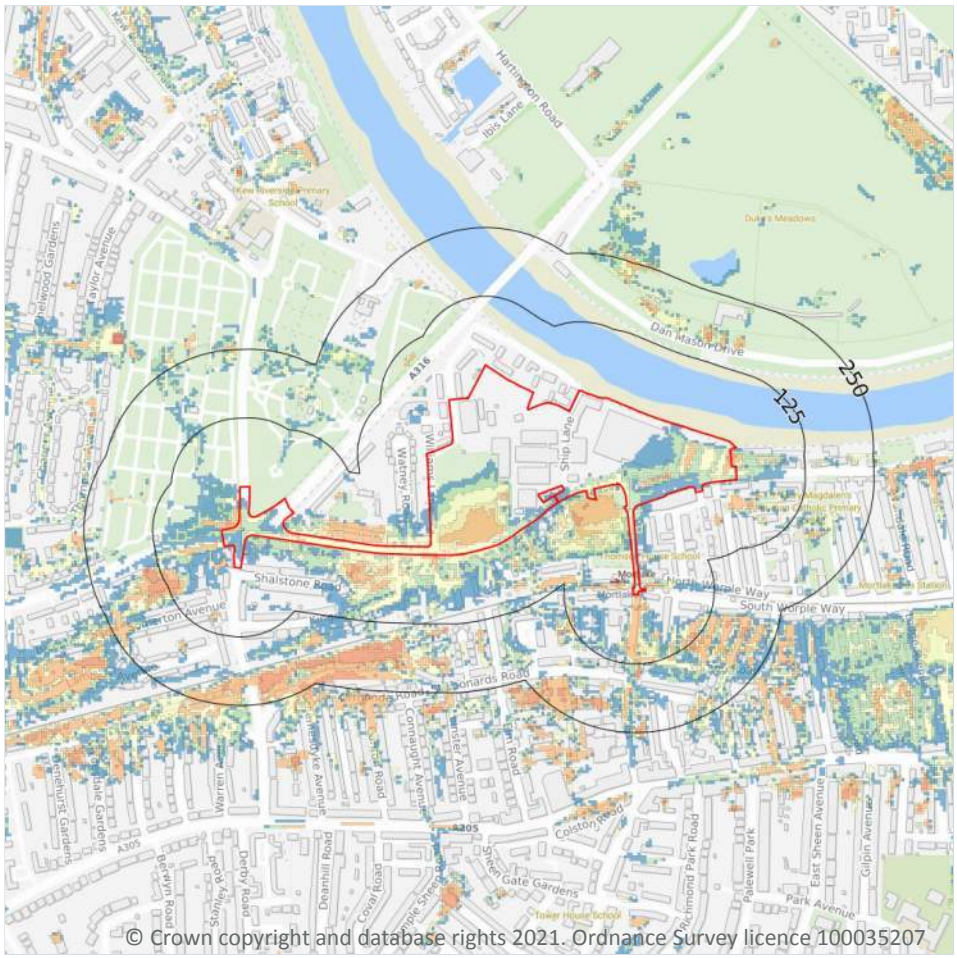
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 75**

Location	Type
On site	**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 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

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

Features are displayed on the Surface water flooding map on **page 80**

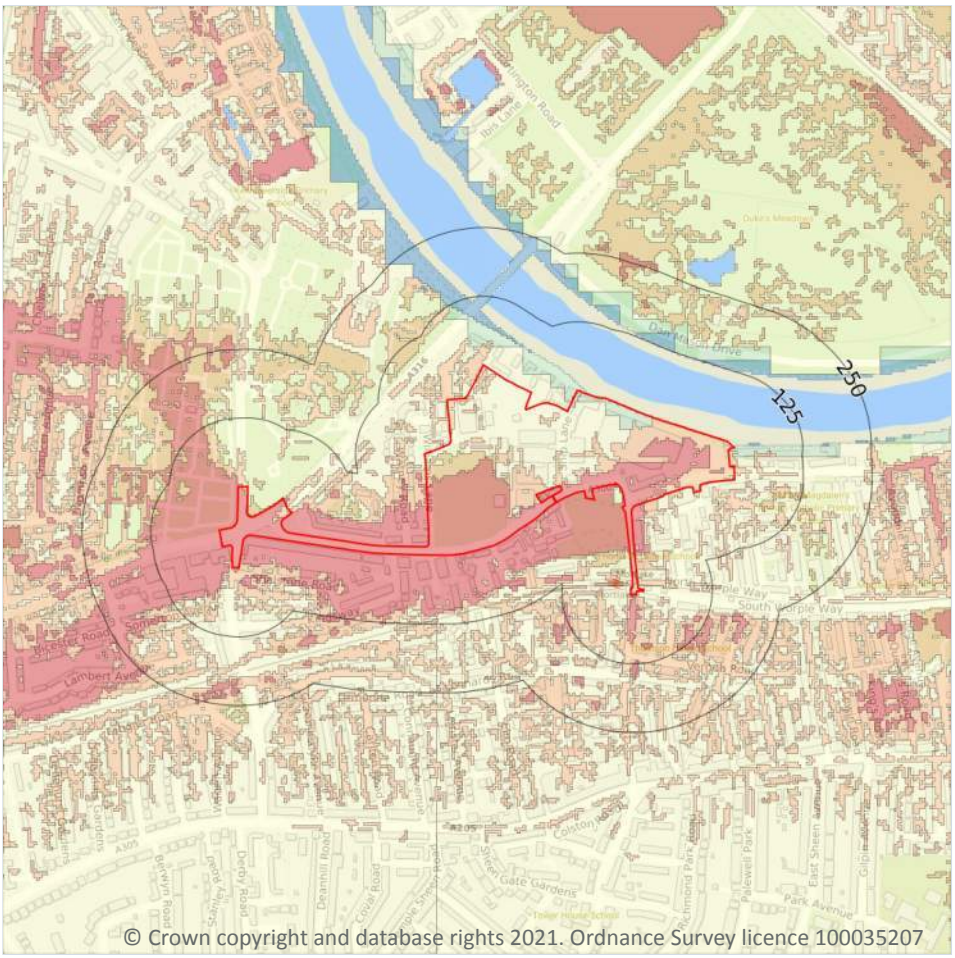
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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

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

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	**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 82**

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 83**

ID	Location	Name	Data source
A	1214m S	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 83**

ID	Location	Name	Features of interest	Habitat description	Data source
A	1214m S	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 83**

ID	Location	Name	Data source
A	1214m S	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	10

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 83**

ID	Location	Name	Data source
1	639m NE	Duke's Hollow	Natural England
2	1164m E	Barnes Common	Natural England
3	1292m E	Barnes Common	Natural England
-	1331m E	Barnes Common	Natural England
-	1350m E	Barnes Common	Natural England
6	1399m NE	Leg of Mutton Reservoir	Natural England
-	1497m E	Barnes Common	Natural England
-	1586m E	Barnes Common	Natural England
-	1814m E	Barnes Common	Natural England
-	1823m E	Barnes Common	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	2

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.

Location	Name	Type	NVZ ID	Status
829m S	Beverley Brook (Motspur Park to Thames) and Pyl Brook at West Barnes NVZ	Surface Water	S455	Existing
1100m E	Beverley Brook (Motspur Park to Thames) and Pyl Brook at West Barnes NVZ	Surface Water	S455	Existing

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	1

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

Features are displayed on the SSSI Impact Zones and Units map on **page 89**

ID	Location	Type of developments requiring consultation
1	On site	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures. Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. 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. 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	**4**

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 89**

ID: 14
Location: 1214m S
SSSI name: Richmond Park
Unit name: White Lodge Plantation To Sheen Cross Wood
Broad habitat: Acid Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

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

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

ID: 15
Location: 1222m S
SSSI name: Richmond Park
Unit name: Extensive Grassland
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

ID: A
Location: 1229m S
SSSI name: Richmond Park
Unit name: Teck Plantation
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

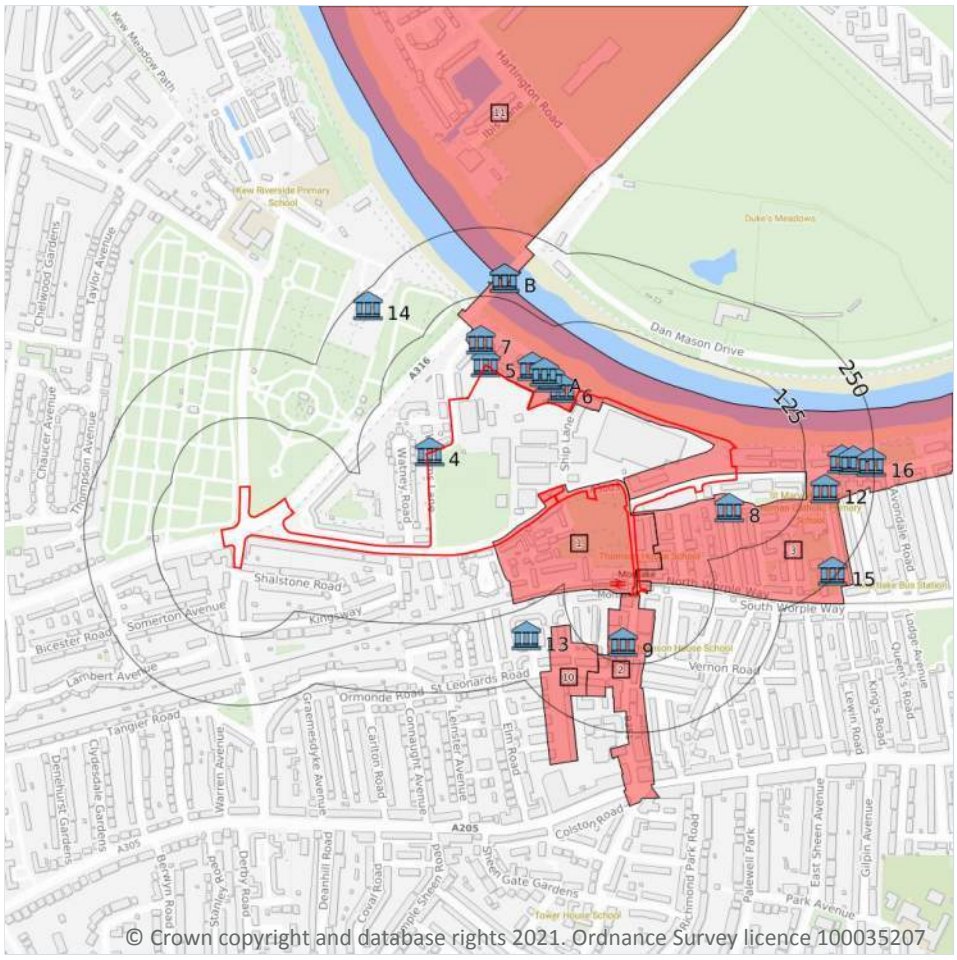
Feature name	Feature condition	Date of assessment
Lowland dry acid grassland (U4/20)	Favourable	01/10/2010
S1083 Stag beetle, Lucanus cervus	Unfavourable - Recovering	11/05/2010

ID: -
Location: 1782m S
SSSI name: Richmond Park
Unit name: Pond Slade
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



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	18

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 93**

ID	Location	Name	Grade	Reference Number	Listed date
4	2m NW	Gateway, Formerly To Cromwell House, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1417979	16/02/2007
5	5m N	Garden Wall To East Of Number 1 To 8 Riverside House And Extending Behind Numbers 1 To 24 Reid Court, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1261445	22/07/1987
6	29m NW	Thames Cottage, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1261996	25/10/1951

ID	Location	Name	Grade	Reference Number	Listed date
A	40m NE	Tudor Lodge, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1252970	25/05/1983
A	42m NE	Leyden House, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1252972	25/10/1951
A	42m NE	Thames Bank House, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1252971	25/10/1951
7	47m N	Riverside House, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1254107	22/07/1987
8	49m S	44 And 46, Victoria Road, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1253022	25/05/1983
9	87m S	28, Sheen Lane, East Sheen, Richmond Upon Thames, London, SW14	II	1254175	08/08/1988
12	161m E	Parish Church Of St Mary, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II*	1357705	25/10/1951
B	163m N	Chiswick Bridge And Attached Balustrades, Chiswick Riverside, Hounslow, London, SW14	II	1031877	26/09/2002
B	163m N	Chiswick Bridge And Attached Balustrades, Chiswick Riverside, Hounslow, London, SW14	II	1390737	04/09/2003
13	173m S	Air Raid Shelter, East Sheen, Richmond Upon Thames, London, SW14	II	1395422	29/10/2010
C	194m E	Acacia House, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1065426	26/10/1951
C	213m E	117, High Street Sw14, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1065427	25/10/1951
14	227m NW	Mortlake Crematorium, Kew, Richmond Upon Thames, London, TW9	II	1400834	05/05/2011
15	241m SE	Mausoleum Of Sir Richard And Lady Burton, Churchyard Of St Mary Magdalen, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II*	1065392	30/10/1973
16	246m E	Suthrey House With Attached Railings, Mortlake And Barnes Common, Richmond Upon Thames, London, SW14	II	1286039	25/10/1951

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

11.5 Conservation Areas

Records within 250m	5

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 93**

ID	Location	Name	District	Date of designation
1	**On site**	**Mortlake Green**	**Richmond upon Thames**	**14/06/1988**
2	**On site**	**Sheen Lane (Mortlake)**	**Richmond upon Thames**	**13/01/2004**
3	**On site**	**Mortlake**	**Richmond upon Thames**	**07/09/1982**
10	112m SW	Model Cottages	Richmond upon Thames	07/09/1982
11	152m N	Grove Park, Chiswick	Hounslow	11/01/2002

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

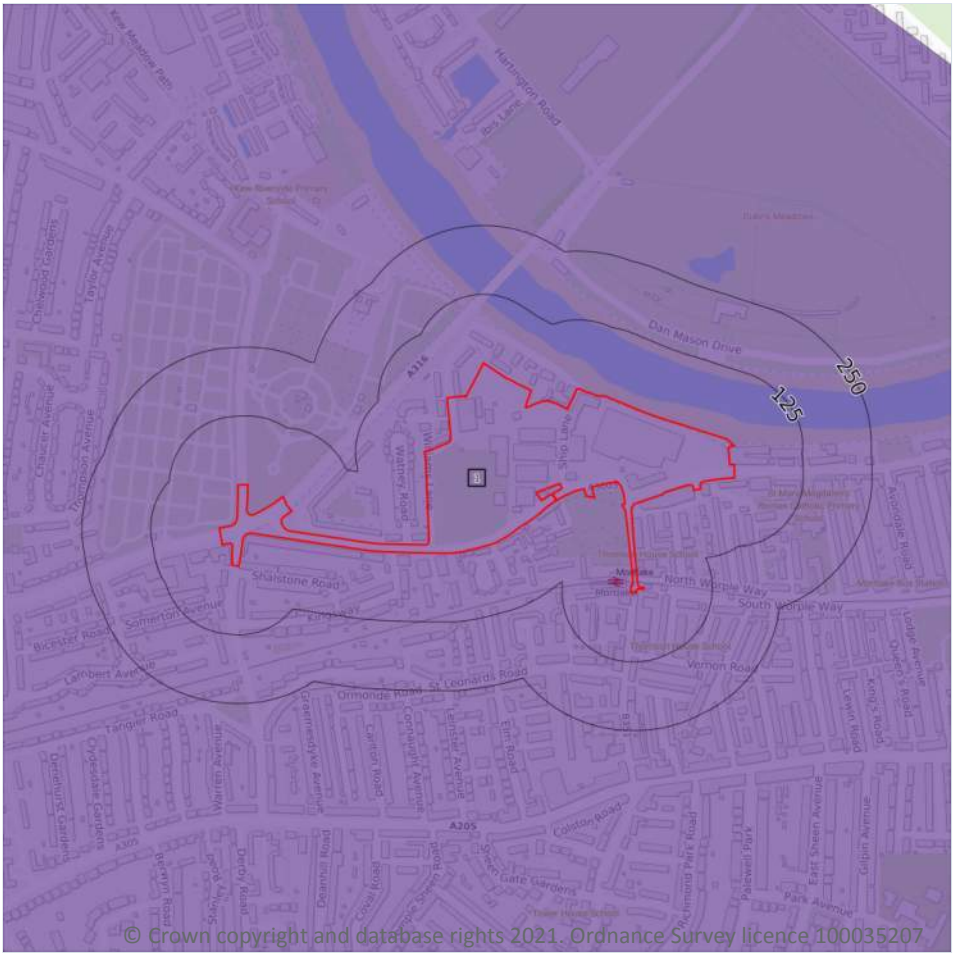
11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

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

12.1 Agricultural Land Classification

Records within 250m	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 97**

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

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

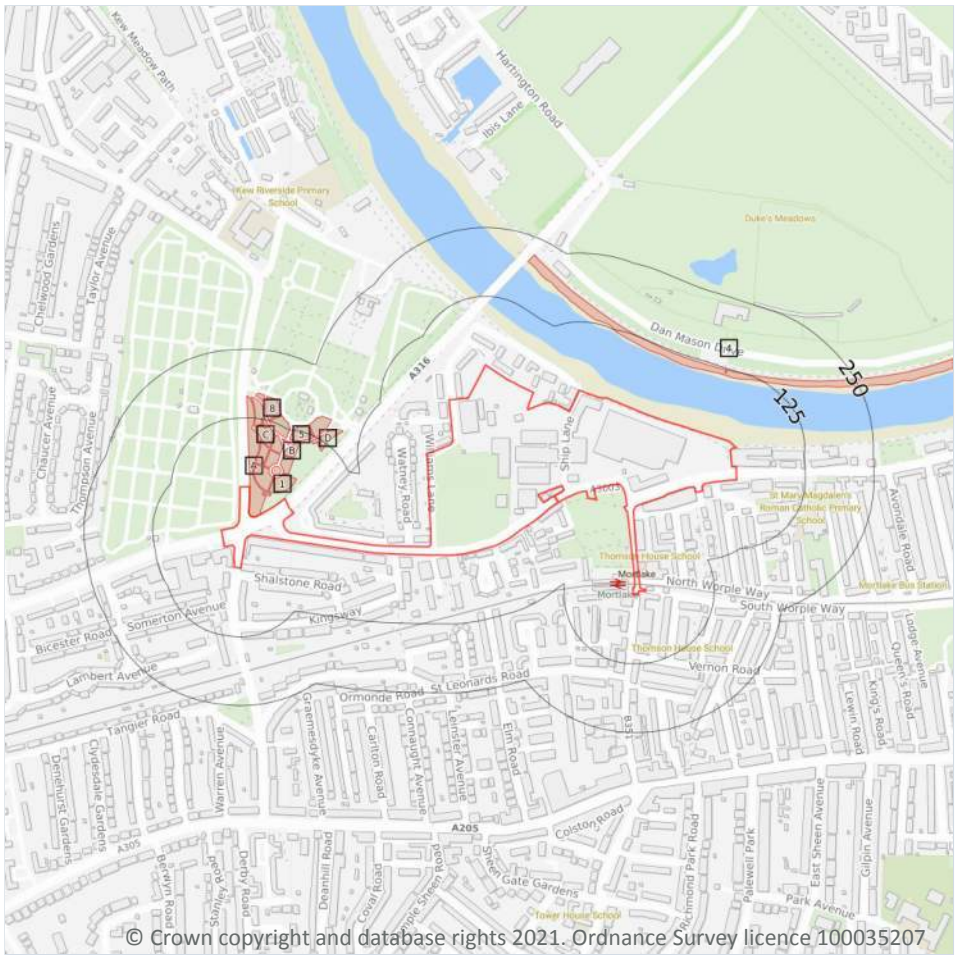
12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations



13.1 Priority Habitat Inventory

Records within 250m	23

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 99**

ID	Location	Main Habitat	Other habitats
A	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
1	13m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	16m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	20m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
A	44m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	44m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	45m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	46m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
B	77m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
B	79m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
C	80m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
B	98m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
B	100m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	107m N	Mudflats	Main habitat: MUDFL (INV > 50%)
5	107m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
D	108m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	110m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
C	110m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
D	111m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
C	113m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	124m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	126m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
9	155m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	**0**

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

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

This data is sourced from Natural England.

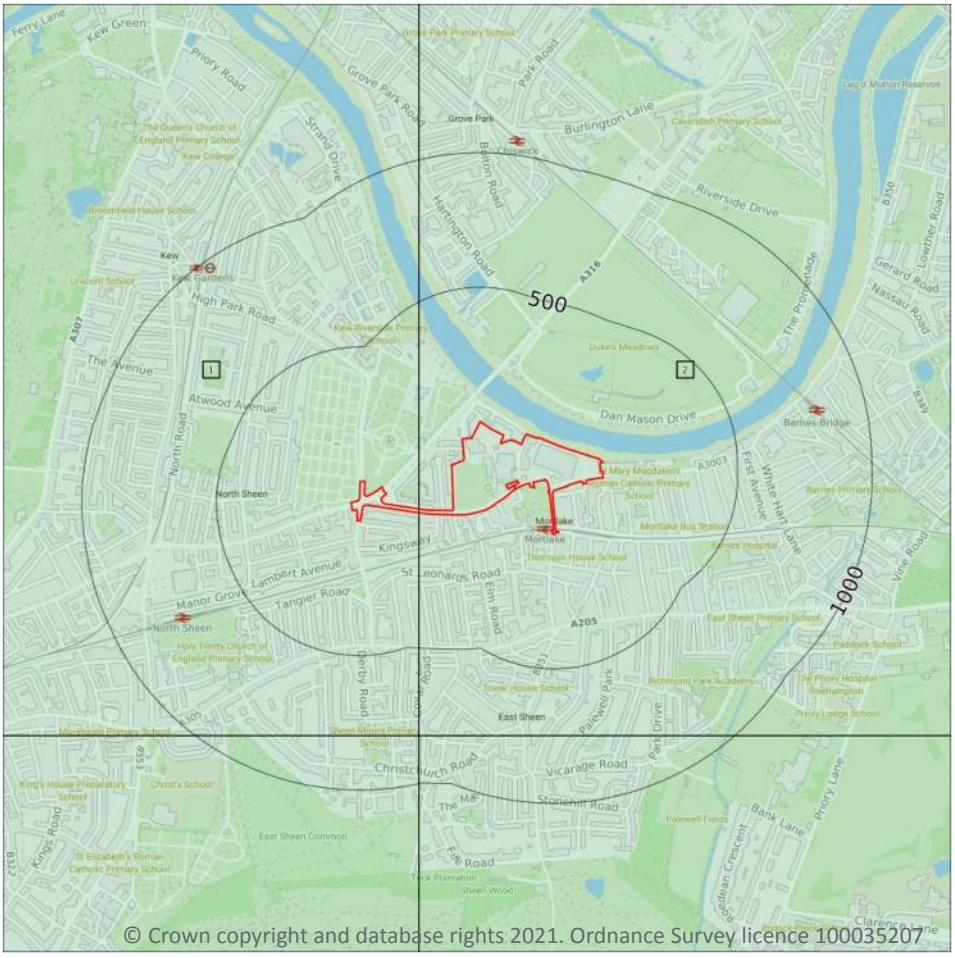
13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	2

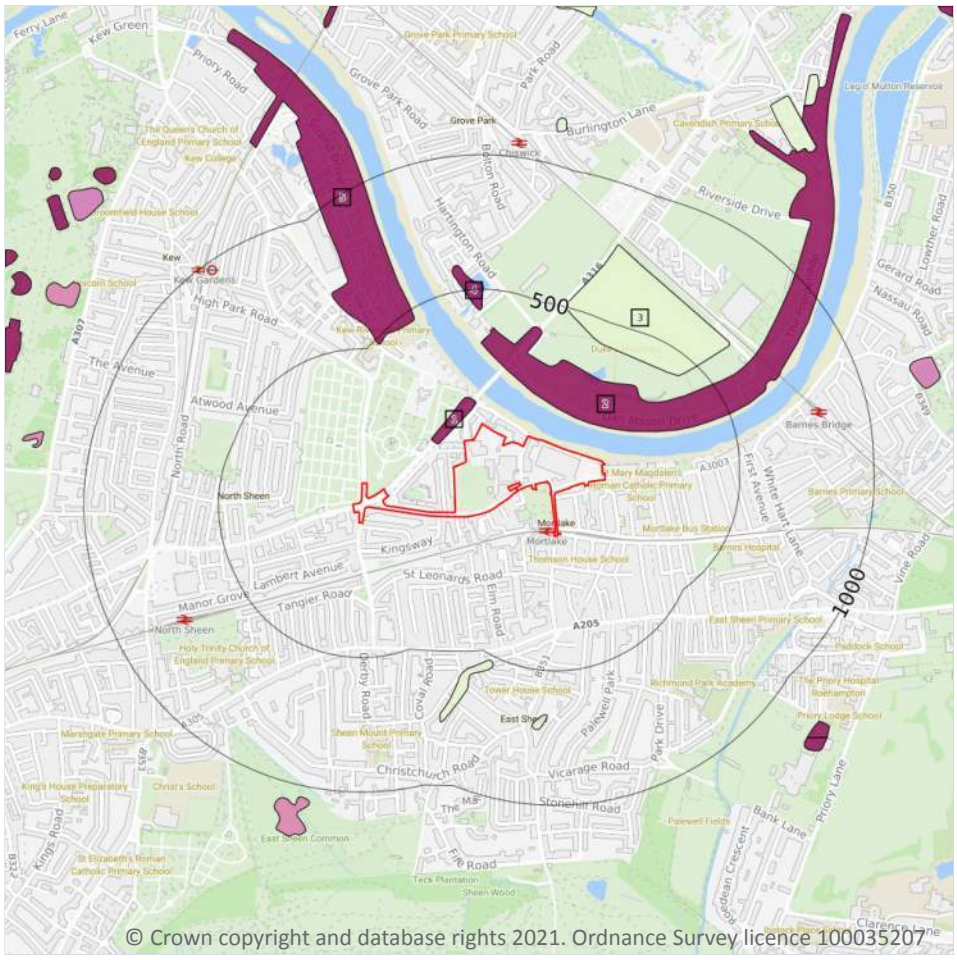
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 102**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**TQ17NE**
2	**On site**	**Full**	**Full**	**Full**	**No coverage**	**TQ27NW**

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 **5**

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.

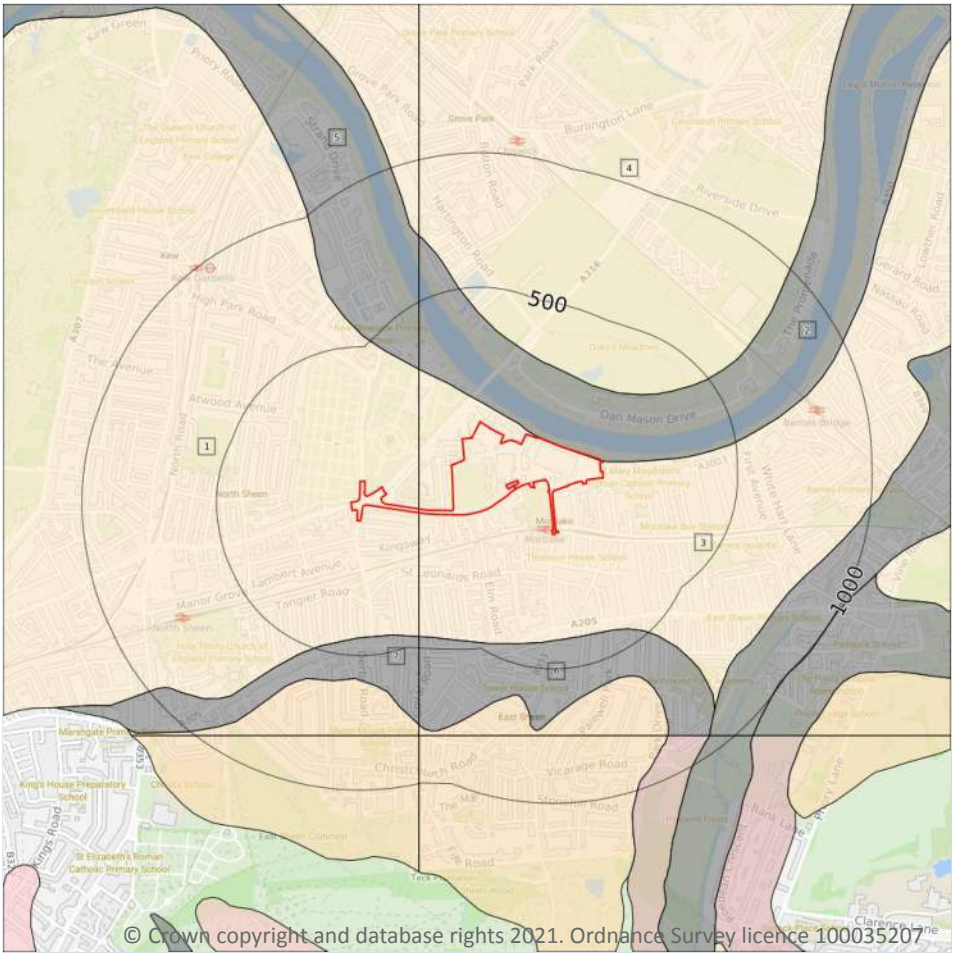
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 103**

ID	Location	LEX Code	Description	Rock description
1	61m NW	MGR-UKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry
2	120m N	MGR-UKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry
3	400m NE	WMGR-UKNOWN	Infilled Ground	Unknown/unclassified Entry
4	424m N	MGR-UKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry

ID	Location	LEX Code	Description	Rock description
5	461m NW	MGR-UKNOWN	Made Ground (Undivided)	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 **7**

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 105**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**KPGR-XSV**	**Kempton Park Gravel Formation - Sand And Gravel**	**Sand And Gravel**
2	**On site**	**ALV-Z**	**Alluvium - Silt (unlithified Deposits Coding Scheme)**	**Silt**
3	**On site**	**KPGR-XSV**	**Kempton Park Gravel Formation - Sand And Gravel**	**Sand And Gravel**
4	252m N	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel

ID	Location	LEX Code	Description	Rock description
5	300m NW	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt
6	390m S	HEAD-C	Head - Clay (unlithified Deposits Coding Scheme)	Clay
7	432m S	HEAD-C	Head - Clay (unlithified Deposits Coding Scheme)	Clay

This data is sourced from the British Geological Survey.

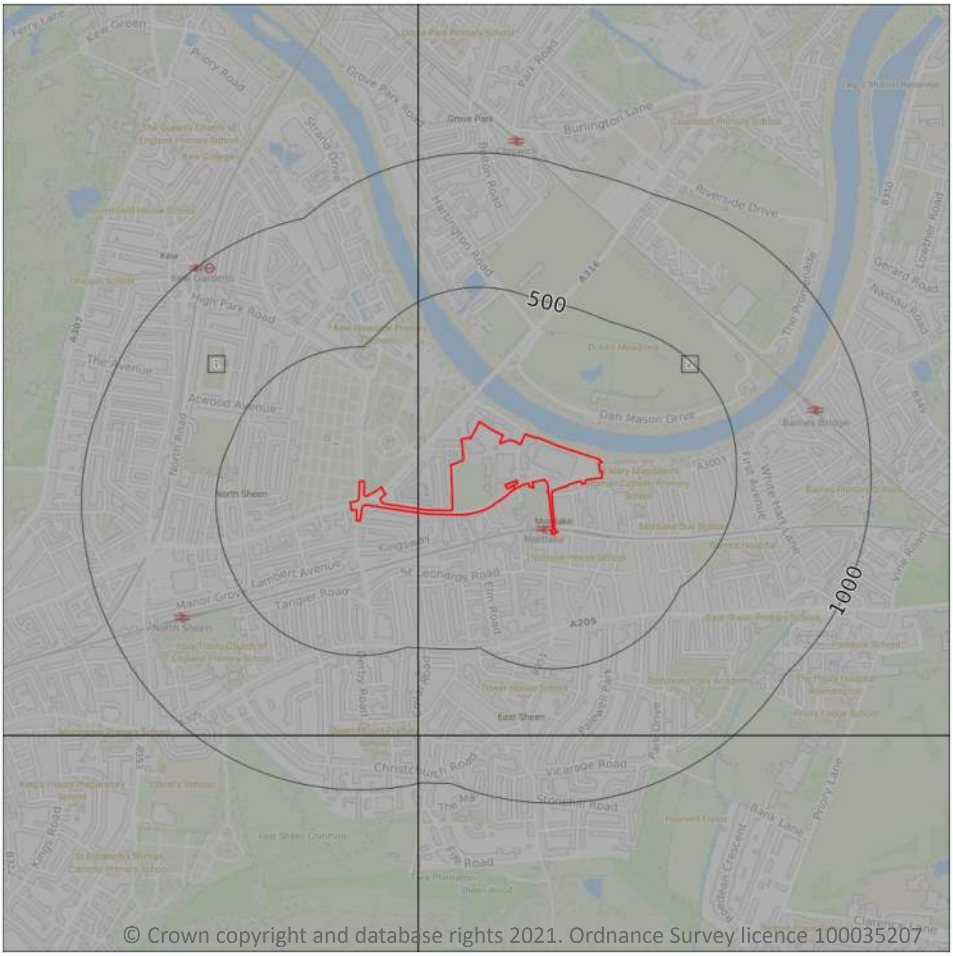
14.4 Landslip (10k)

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	2

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 107**

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

This data is sourced from the British Geological Survey.

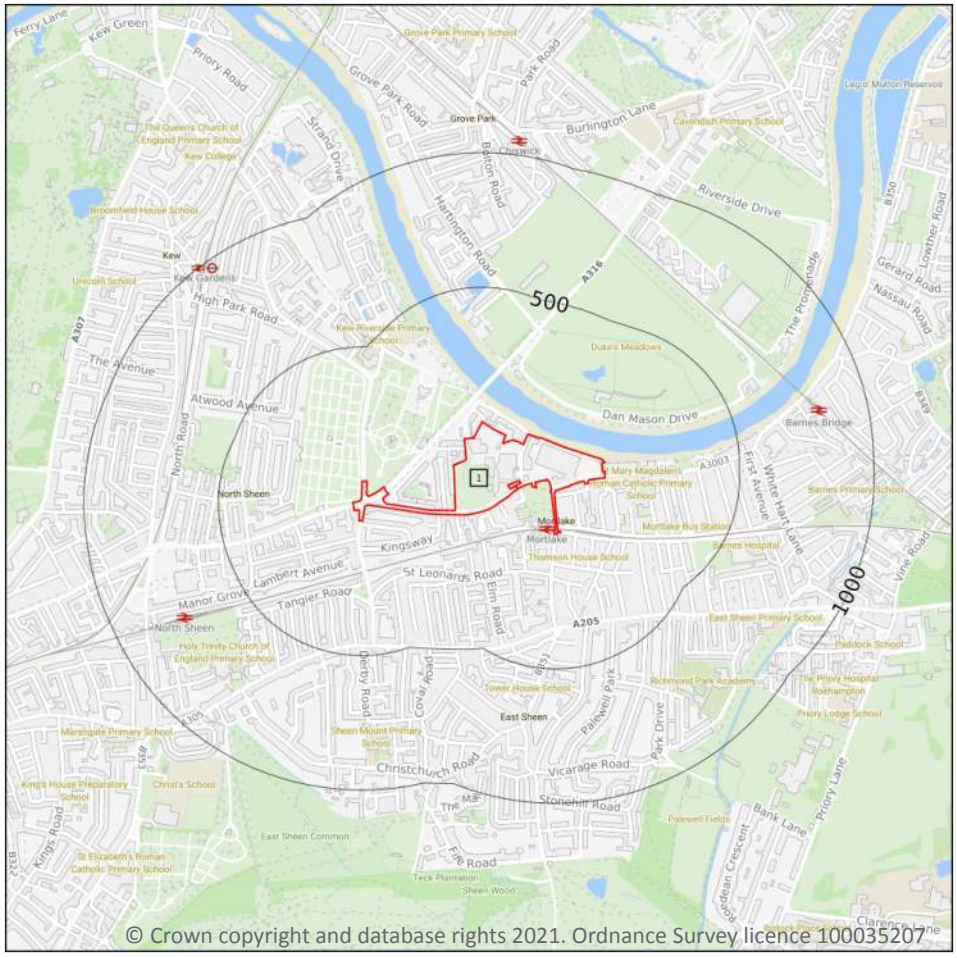
14.6 Bedrock faults and other linear features (10k)

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

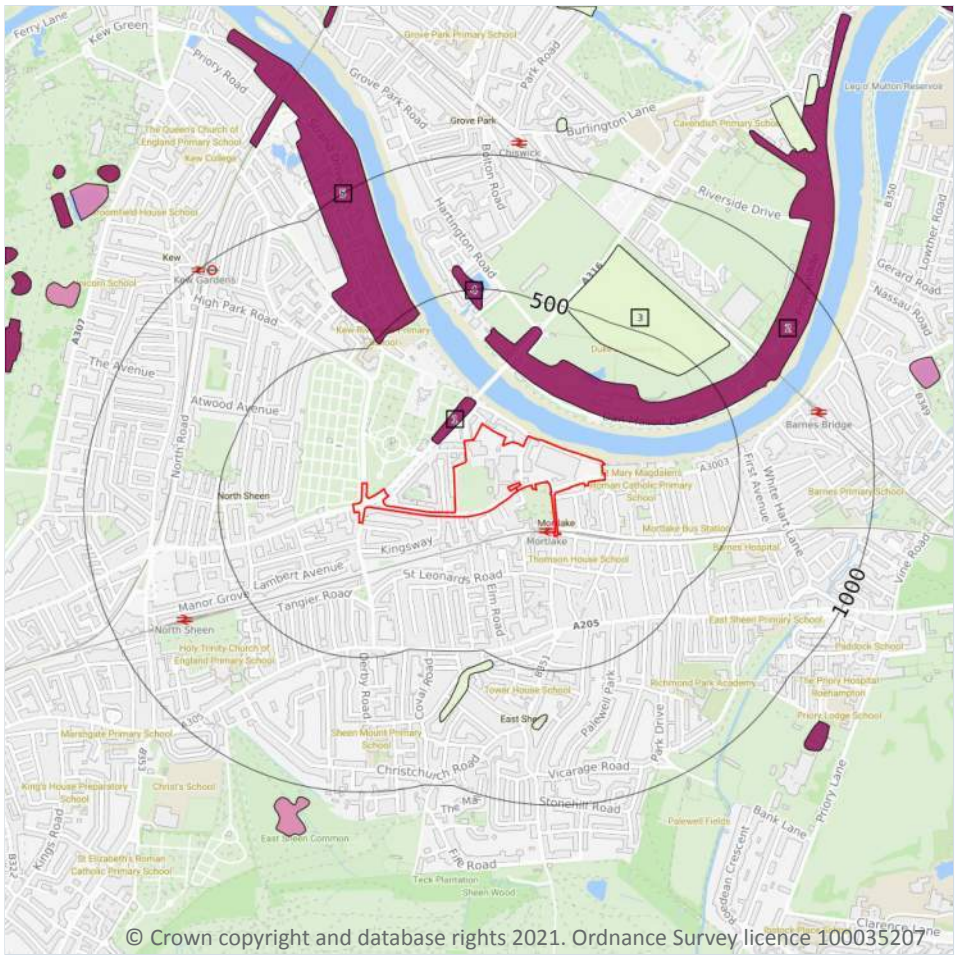
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 109**

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	5

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 110**

ID	Location	LEX Code	Description	Rock description
1	61m NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	158m N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	400m NE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
4	423m N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

ID	Location	LEX Code	Description	Rock description
5	461m NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

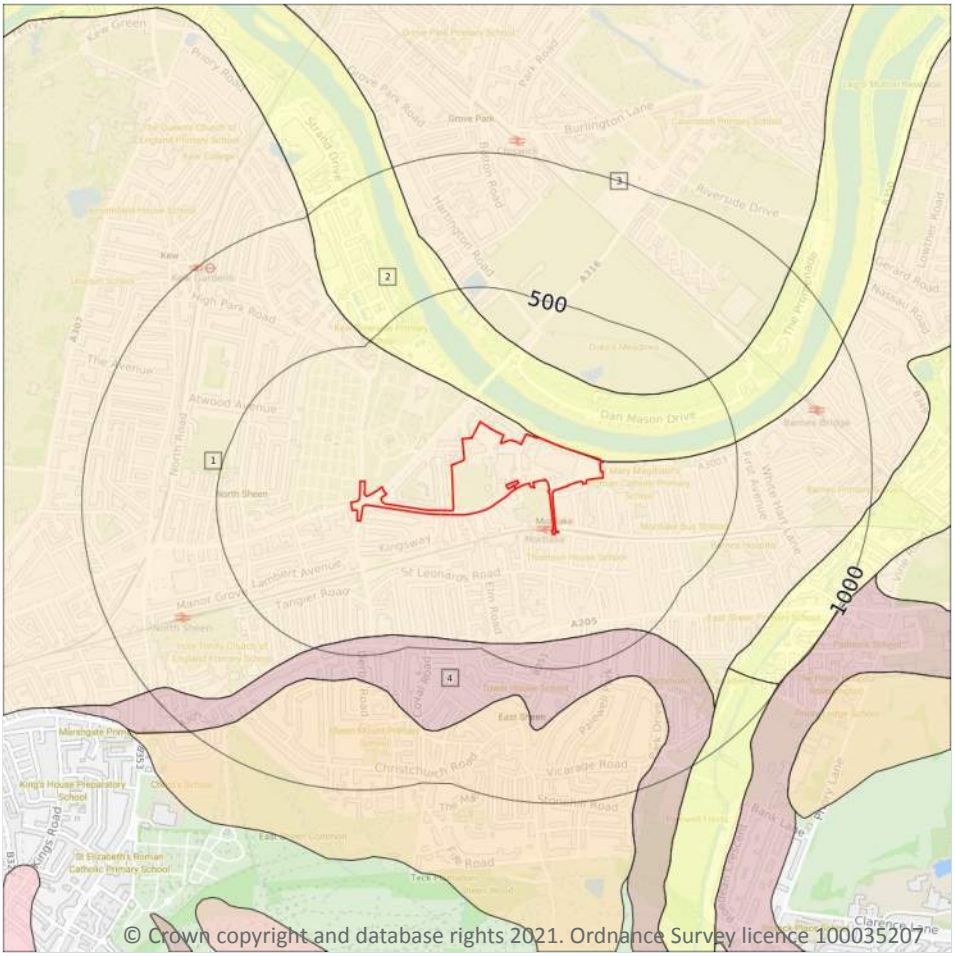
15.3 Artificial ground permeability (50k)

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 112**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**KPGR-XSV**	**KEMPTON PARK GRAVEL MEMBER**	**SAND AND GRAVEL**
2	**On site**	**ALV-XCZSP**	**ALLUVIUM**	**CLAY, SILT, SAND AND PEAT**
3	253m N	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	391m S	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	**3**

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	**Intergranular**	**Very High**	**High**
On site	**Intergranular**	**Very High**	**High**
On site	**Intergranular**	**Moderate**	**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.

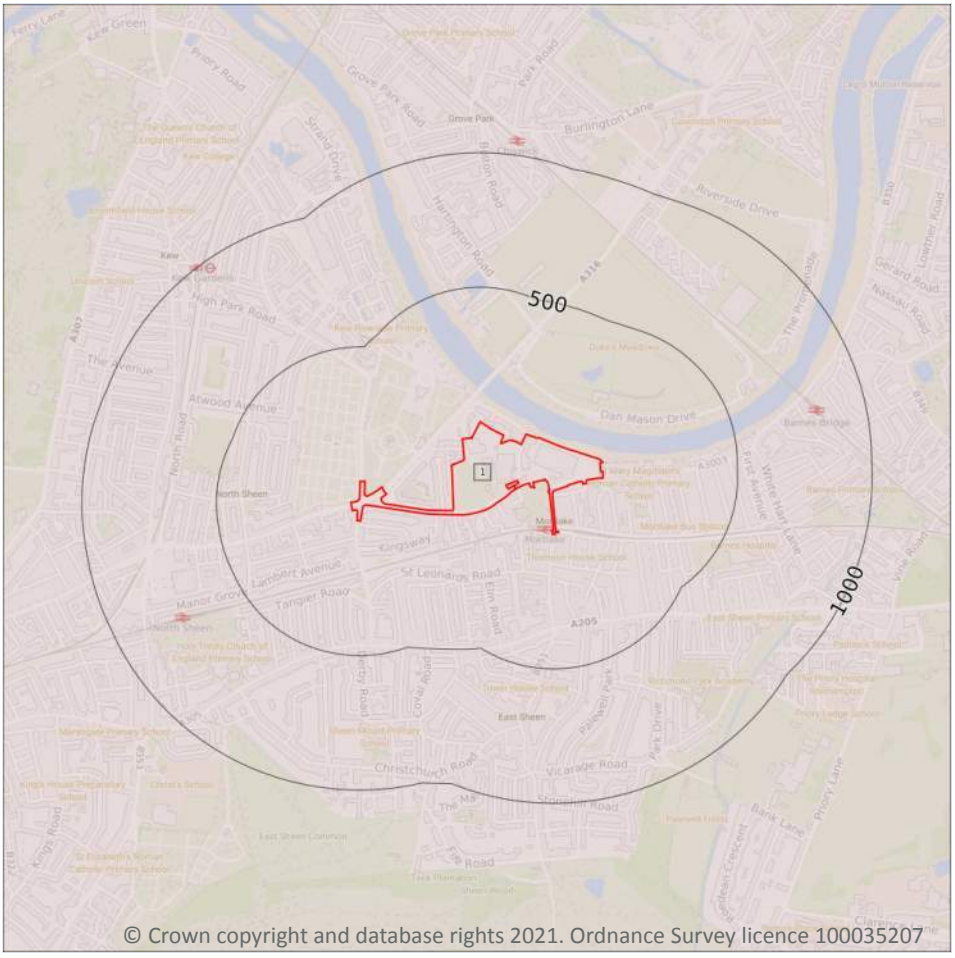
15.7 Landslip permeability (50k)

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 114**

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	2

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**
On site	**Mixed**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

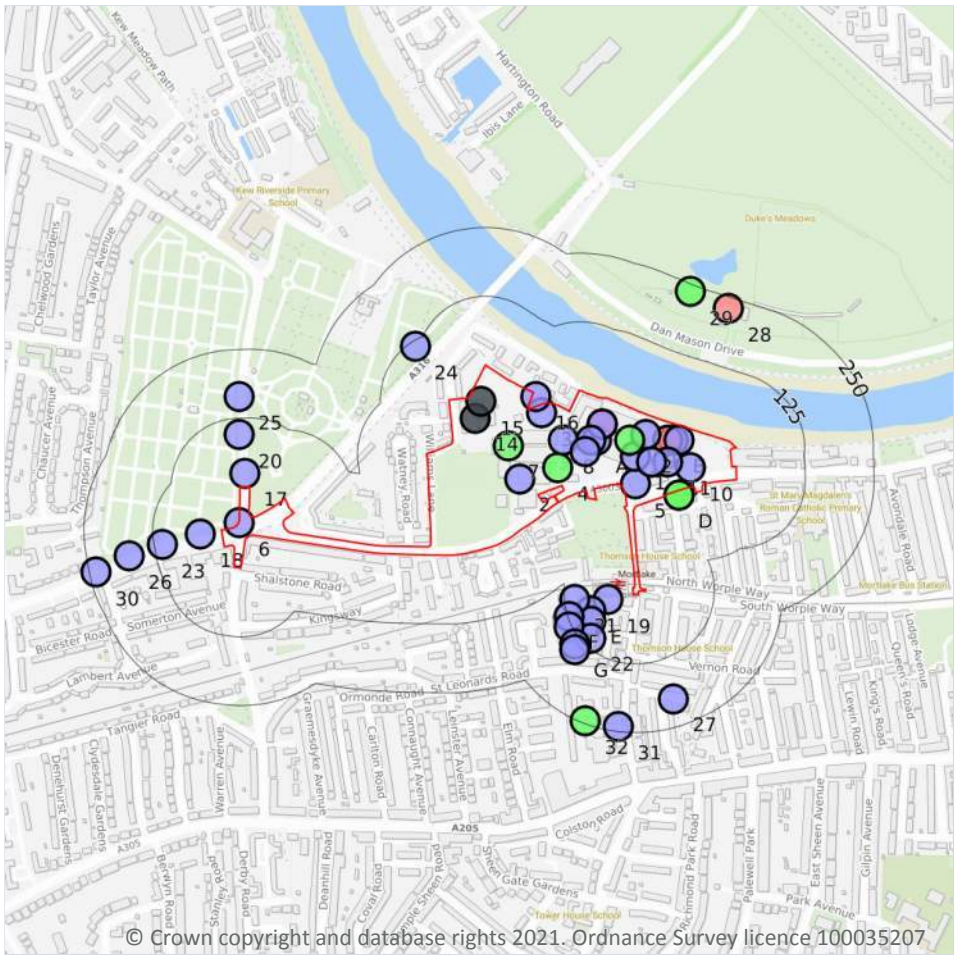
15.10 Bedrock faults and other linear features (50k)

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



16.1 BGS Boreholes

Records within 250m	49

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 116**

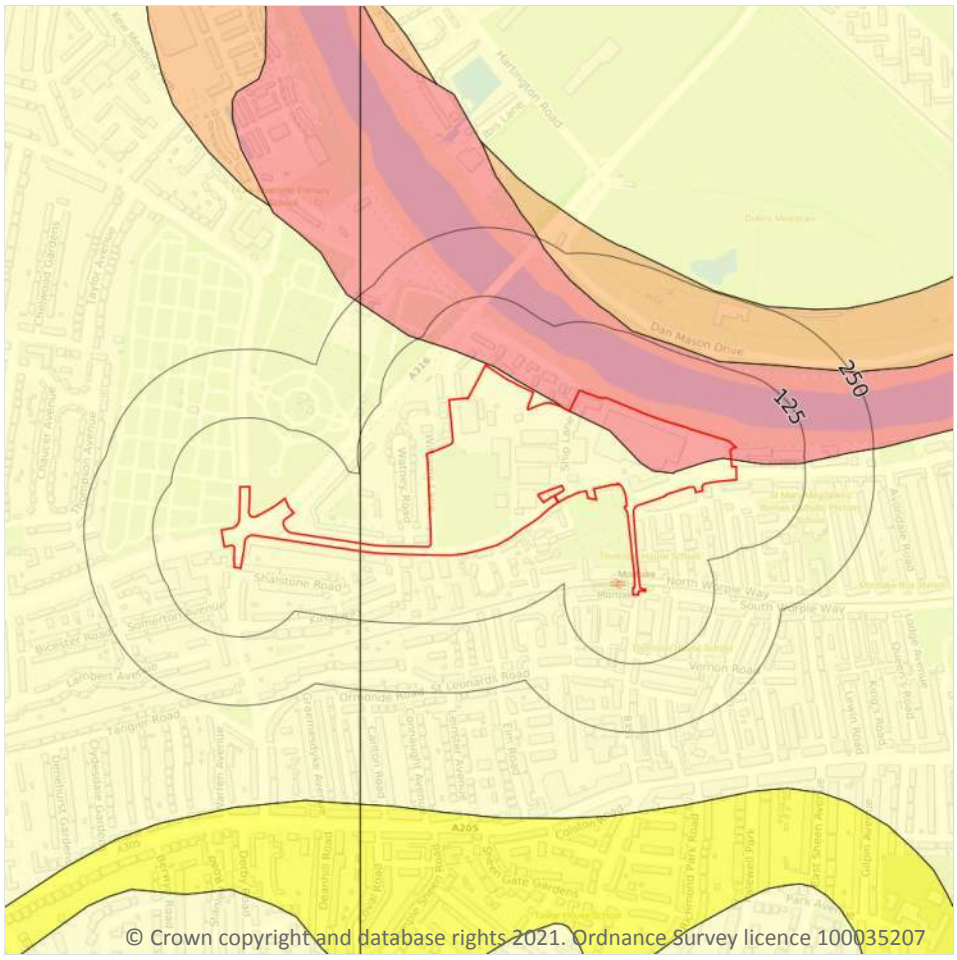
ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	520500 176000	MORTLAKE TP3	2.1	N	18464323
2	On site	520290 175960	MORTLAKE DEVELOPMENT BH1	10.0	N	586986
3	On site	520330 176080	MORTLAKE DEVELOPMENT BH4	10.0	N	586989

ID	Location	Grid reference	Name	Length	Confidential	Web link
4	**On site**	**520360 175980**	**MORTLAKE DEVELOPMENT BH6**	**15.0**	**N**	**586991**
5	**On site**	**520500 175950**	**WATNEY'S BREWERY, MORTLAKE**	**9.14**	**N**	**587169**
6	**On site**	**519780 175880**	**MAIN DRAINAGE RICHMOND 63**	**6.7**	**N**	**580578**
7	**On site**	**520270 176020**	**MORTLAKE DEVELOPMENT BH2**	**20.0**	**N**	**586987**
8	**On site**	**520370 176030**	**MORTLAKE DEVELOPMENT BH7**	**10.0**	**N**	**586994**
9	**On site**	**520520 176040**	**MORTLAKE TP4**	**1.1**	**N**	**18464324**
10	**On site**	**520600 175980**	**MORTLAKE TP1**	**2.0**	**N**	**18464321**
11	**On site**	**520560 175990**	**MORTLAKE TP2**	**1.5**	**N**	**18464322**
12	**On site**	**520490 176030**	**MORTLAKE 3**	**15.0**	**N**	**18464318**
13	**On site**	**520530 175990**	**MORTLAKE 2**	**8.0**	**N**	**18464317**
14	**On site**	**520210 176070**	**MORTLAKE BREWERY 2**	**-**	**Y**	**N/A**
15	**On site**	**520220 176100**	**MORTLAKE BREWERY 1**	**-**	**Y**	**N/A**
A	**On site**	**520430 176030**	**MORTLAKE DEVELOPMENT BH5**	**10.0**	**N**	**586990**
A	**On site**	**520420 176030**	**MORTLAKE TP5**	**1.1**	**N**	**18464325**
A	**On site**	**520410 176010**	**MORTLAKE 1**	**8.0**	**N**	**18464316**
B	**On site**	**520570 176030**	**WATNEY'S BREWERY, MORTLAKE**	**121.92**	**N**	**587192**
B	**On site**	**520570 176030**	**WATNEY'S BREWERY, MORTLAKE**	**101.19**	**N**	**587191**
B	**On site**	**520560 176030**	**MORTLAKE BREWERY**	**121.9**	**N**	**587001**
B	**On site**	**520580 176030**	**MORTLAKE 5**	**8.0**	**N**	**18464320**
C	**On site**	**520440 176060**	**MORTLAKE BREWERY**	**111.25**	**N**	**587000**
C	**On site**	**520440 176060**	**MORTLAKE 4**	**8.0**	**N**	**18464319**
16	7m E	520320 176110	MORTLAKE DEVELOPMENT BH3	10.0	N	586988
D	9m S	520580 175930	AMORTLAKE HIGH ST MORTLAKE	20.0	N	586658
D	9m S	520580 175930	MORTLAKE HIGH ST MORTLAKE	20.0	N	586659
17	25m N	519790 175970	MAIN DRAINAGE RICHMOND 64	7.0	N	580579
18	38m W	519710 175860	MAIN DRAINAGE RICHMOND 62	6.4	N	580577
19	47m W	520450 175740	LITTLE ST LEONARDE BH3	6.0	N	587117
E	81m W	520420 175720	LITTLE ST LEONARDS ROAD MORTLAKE 2	7.19	N	18208132

ID	Location	Grid reference	Name	Length	Confidential	Web link
E	91m SW	520420 175700	LITTLE ST LEONARDS ROAD MORTLAKE 4	6.88	N	18208148
20	95m N	519780 176040	MAIN DRAINAGE RICHMOND 65	7.3	N	580580
21	107m W	520390 175740	LITTLE ST LEONARDE BH2	6.0	N	587116
22	110m SW	520420 175670	LITTLE ST LEONARDS ROAD MORTLAKE 6	5.97	N	18208154
23	111m W	519640 175840	MAIN DRAINAGE RICHMOND 61	7.2	N	580576
24	115m NW	520100 176200	RICHMOND MAIN DRAINAGE HOLES MORTLAKE	4.57	N	586602
F	123m W	520380 175710	LITTLE ST LEONARDS ROAD MORTLAKE 1	9.14	N	18208130
F	130m SW	520380 175690	LITTLE ST LEONARDS ROAD MORTLAKE 3	9.14	N	18208145
G	138m SW	520390 175660	LITTLE ST LEONARDS ROAD MORTLAKE 5	6.4	N	18208152
G	145m SW	520390 175650	LITTLE ST LEONARDE 1	6.0	N	587115
25	165m N	519780 176110	MAIN DRAINAGE RICHMOND 66	8.2	N	580581
26	173m W	519580 175820	MAIN DRAINAGE RICHMOND 60	6.2	N	580575
27	199m S	520570 175560	MILTON ROAD, BARNES	7.16	N	587207
28	230m N	520670 176270	DUKES MEADOWS CHISWICK	167.64	N	587020
29	237m N	520600 176300	DUKES MEADOW GOLF CLUB	12.0	N	587071
30	238m W	519520 175790	MAIN DRAINAGE RICHMOND 59	6.3	N	580574
31	240m S	520470 175510	RICHMOND MUNICIPAL OFFICES 1	7.5	N	18208863
32	244m S	520410 175520	RICHMOND MUNICIPAL OFFICES 2	10.95	N	18208867

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

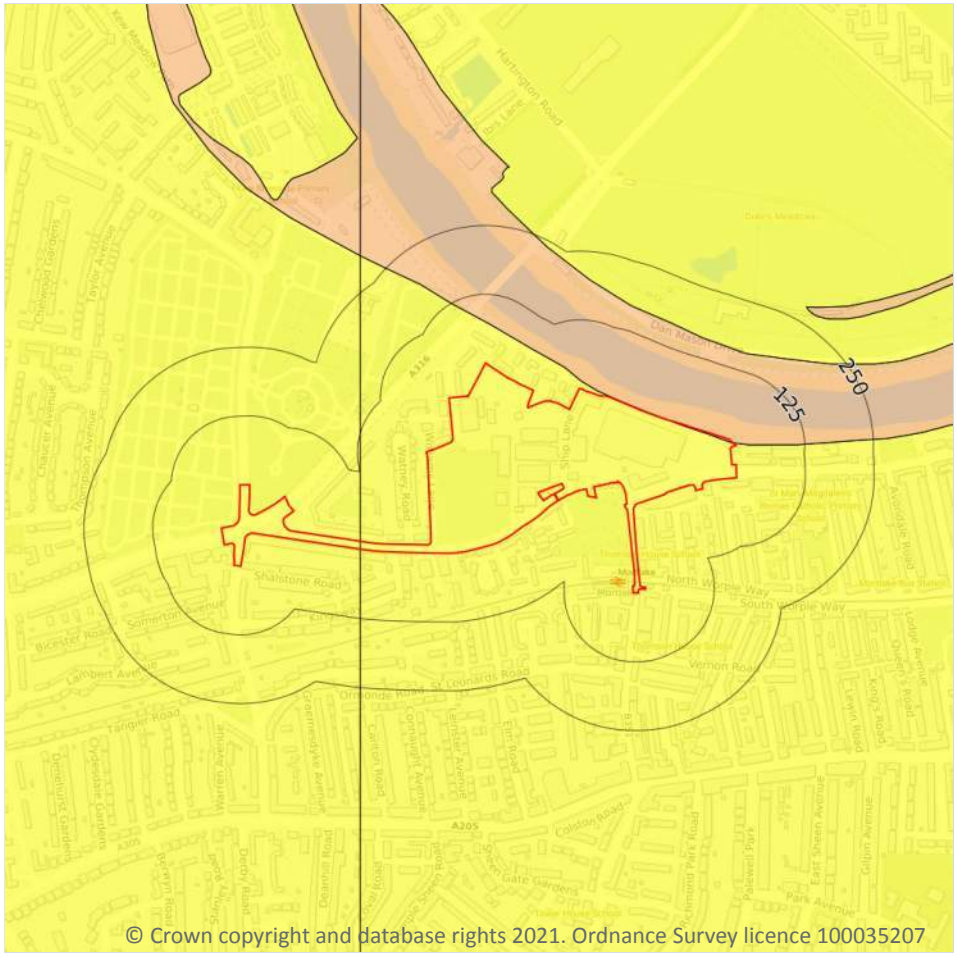
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 119**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**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	2

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.

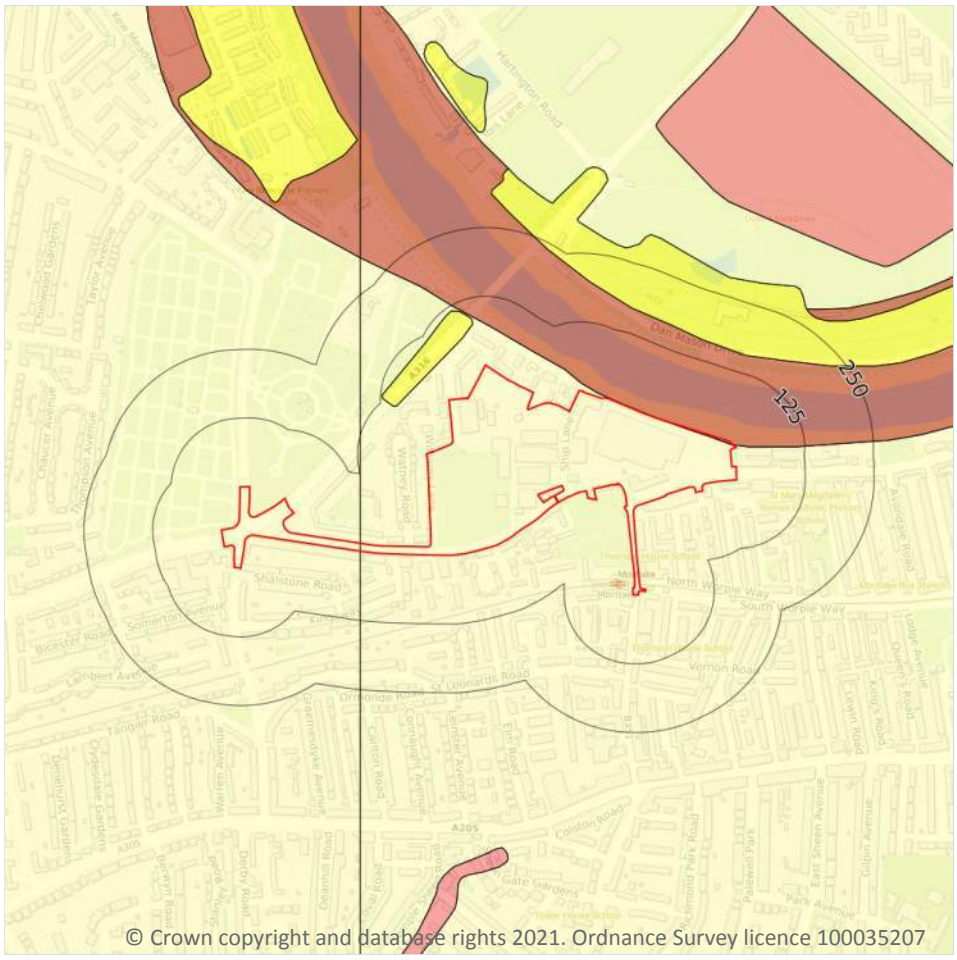
Features are displayed on the Natural ground subsidence - Running sands map on **page 120**

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

Location	Hazard rating	Details
On site	**Low**	**Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.**

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	2

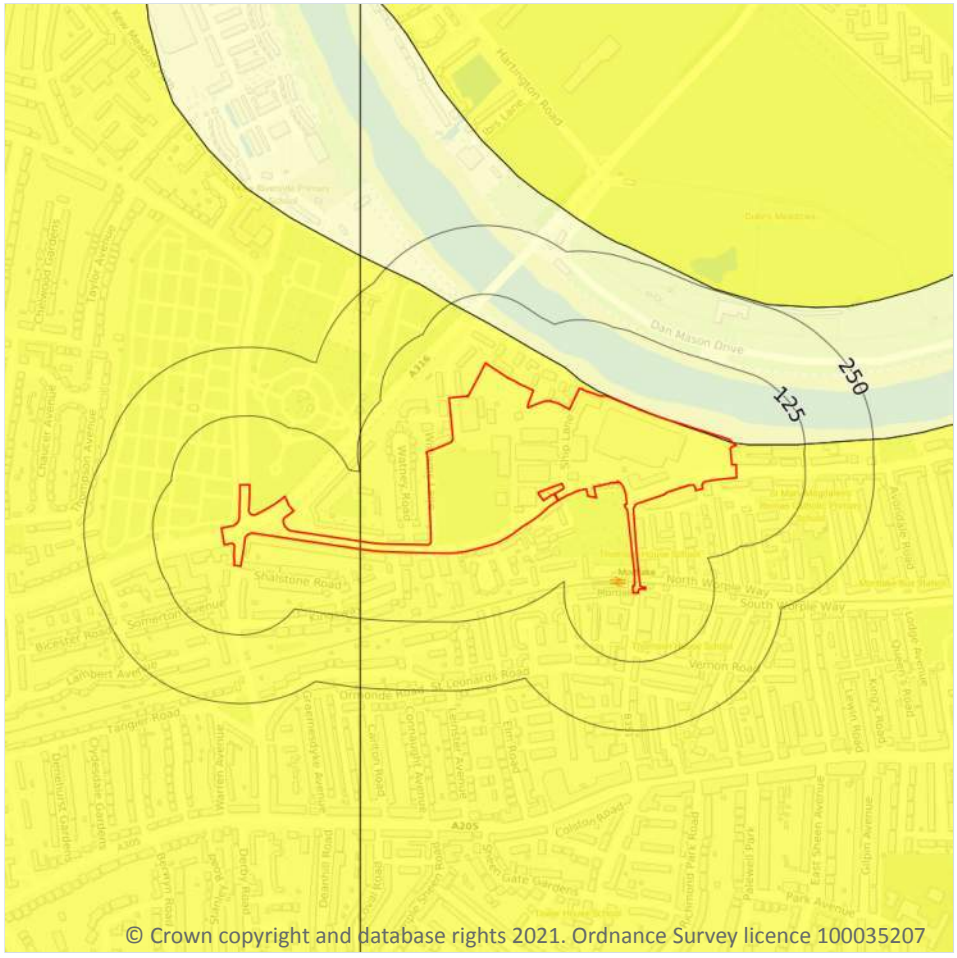
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 122**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
On site	**High**	**Highly compressible strata present. Significant constraint on land use depending on thickness.**

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	2

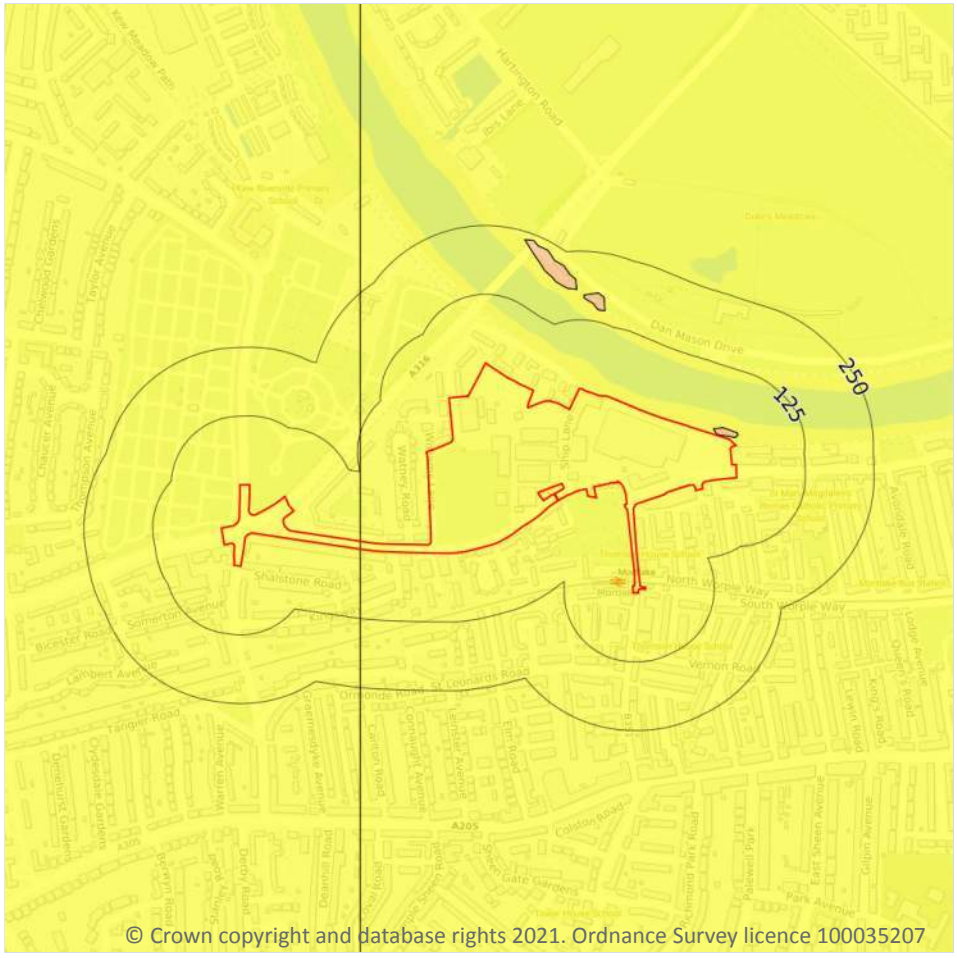
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 123**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**
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	2

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.

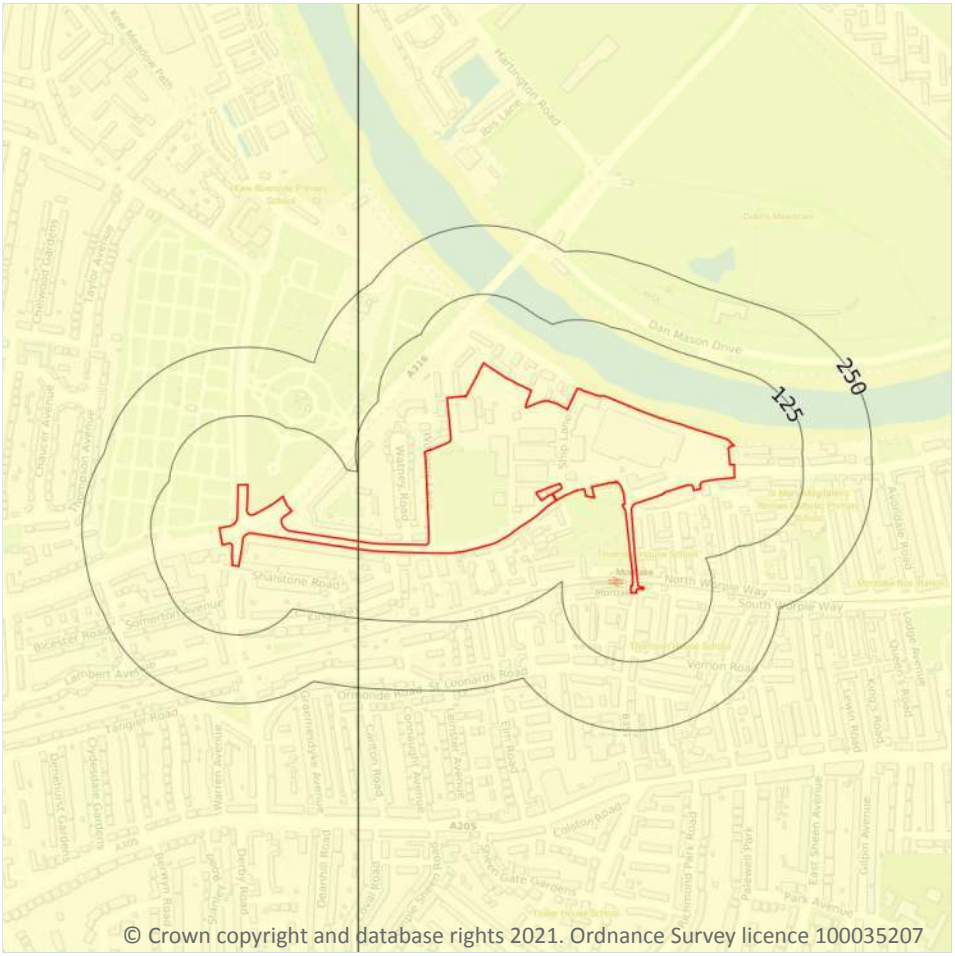
Features are displayed on the Natural ground subsidence - Landslides map on **page 124**

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.**

Location	Hazard rating	Details
2m N	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

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

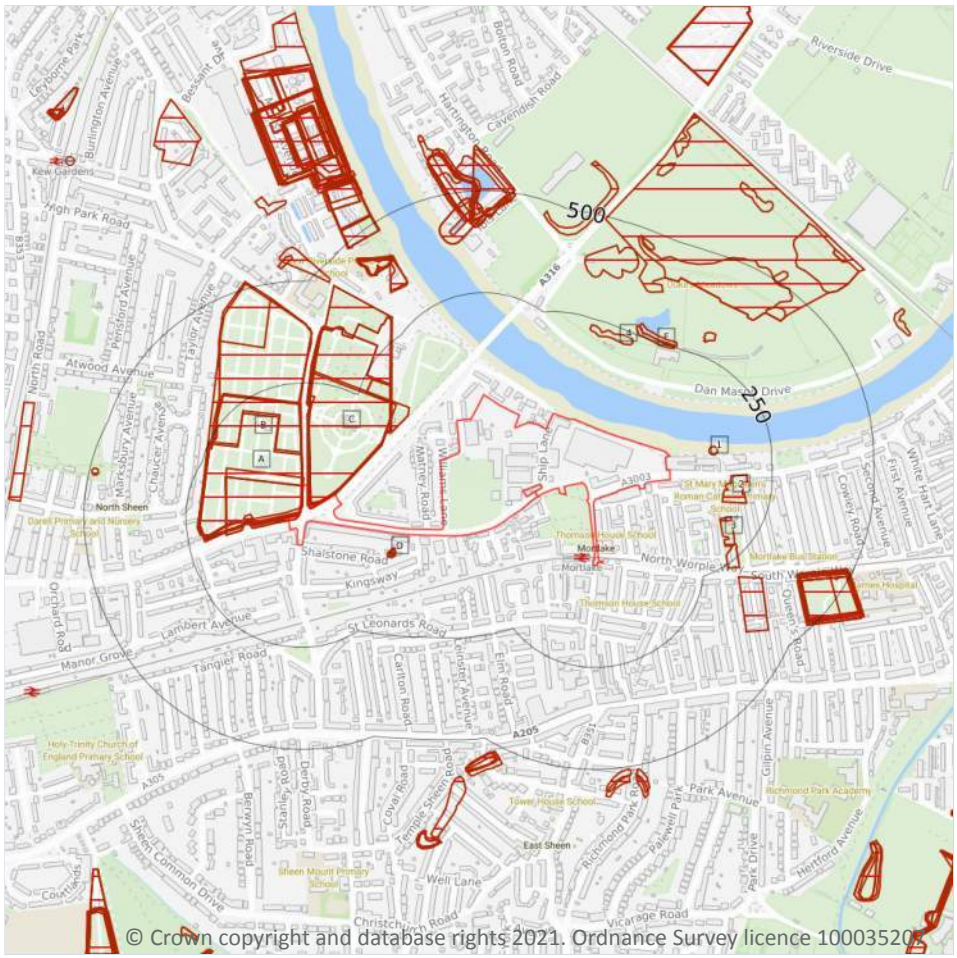
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 126**

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

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities

Non Coal Mining

- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	27

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 128**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Cemetery**	**1961**	**1:10560**
A	**On site**	**Cemetery**	**1920**	**1:10560**
A	**On site**	**Cemetery**	**1938**	**1:10560**
A	**On site**	**Cemetery**	**1933**	**1:10560**
A	**On site**	**Cemetery**	**1910**	**1:10560**
A	**On site**	**Cemetery**	**1948**	**1:10560**
A	**On site**	**Cemetery**	**1948**	**1:10560**
A	**On site**	**Cemetery**	**1933**	**1:10560**
B	**On site**	**Cemetery**	**1966**	**1:10560**
B	**On site**	**Cemetery**	**1987**	**1:10000**
B	**On site**	**Cemetery**	**1974**	**1:10000**
C	**On site**	**Cemetery**	**1966**	**1:10560**
C	**On site**	**Cemetery**	**1974**	**1:10000**
C	1m NW	Cemetery	1933	1:10560
C	2m E	Cemetery	1948	1:10560
C	2m E	Cemetery	1948	1:10560
C	2m E	Cemetery	1933	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
C	3m NW	Cemetery	1961	1:10560
C	3m NW	Cemetery	1987	1:10000
D	36m S	Unspecified Pit	1893	1:10560
D	40m S	Unspecified Pit	1911	1:10560
D	44m S	Unspecified Pit	1894	1:10560
1	98m E	Unspecified Wharf	1967	1:10560
2	135m E	Grave Yard	1866	1:10560
3	155m SE	Gravel Pit	1866	1:10560
4	213m N	Unspecified Heaps	1947	1:10560
E	244m N	Unspecified Ground Workings	1894	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 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.

18.5 Historical Mineral Planning Areas

Records within 500m	**0**

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	**0**

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

This data is sourced from the British Geological Survey.

18.7 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.

18.8 JPB mining areas

Records on site	0

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

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

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

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

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

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

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

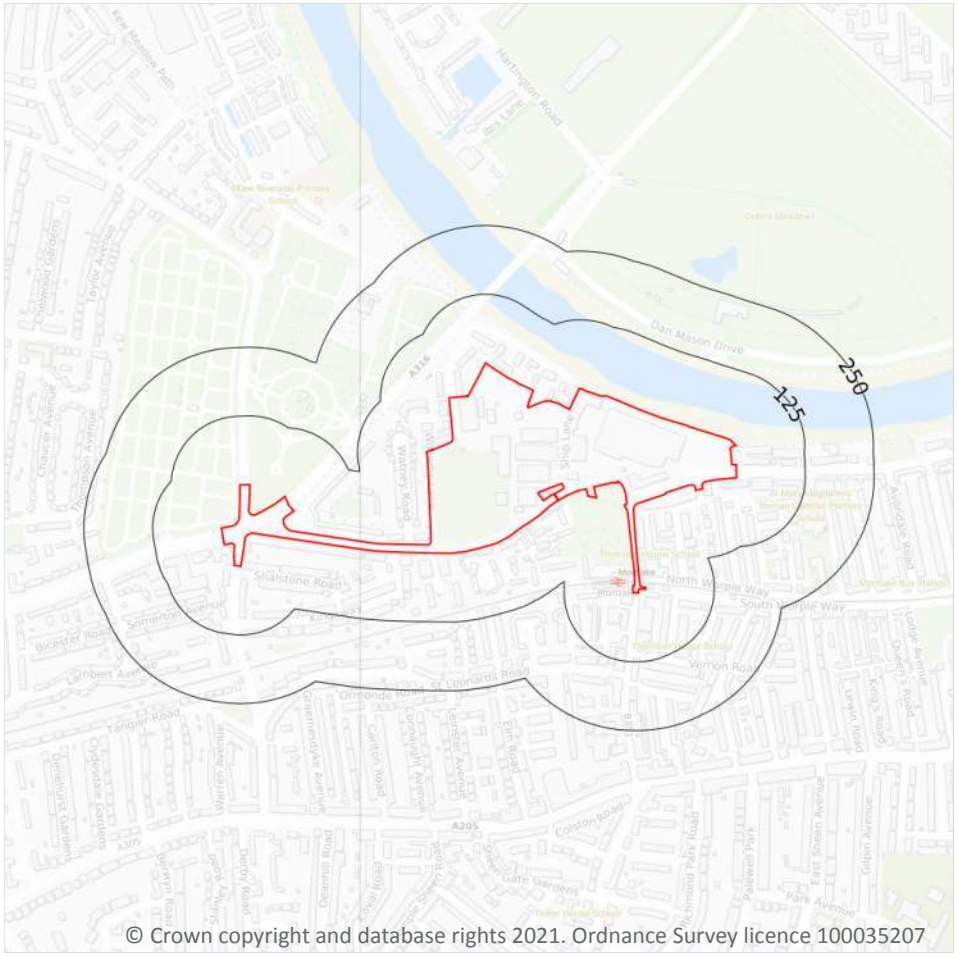
18.13 Clay mining

Records on site	0

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

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

19 Radon



Site Outline

Search buffers in metres (m)

Greater than 30%

Between 10% and 30%

Between 5% and 10%

Between 3% and 5%

Between 1% and 3%

Less than 1%

19.1 Radon

Records on site	1

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

Features are displayed on the Radon map on **page 133**

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

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

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	**9**

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**
On site	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**	**No data**
1m N	No data	No data	No data	No data	No data	No data	No data

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	**48**

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	13	2.3	189	130	0.7	63	52	19	23
On site	13	2.3	171	117	0.5	61	44	18	21
On site	13	2.3	166	114	0.5	61	44	18	21
On site	13	2.3	177	122	0.7	66	51	20	23
On site	13	2.3	332	228	0.6	61	50	21	21
On site	13	2.3	116	80	2.4	91	53	23	14
On site	14	2.5	219	150	0.6	61	51	20	22
On site	14	2.5	166	114	1.2	72	55	21	20
On site	14	2.5	151	104	1.6	80	57	22	18
On site	14	2.5	143	98	1.9	84	57	23	17
On site	14	2.5	235	161	0.8	65	63	22	25
On site	14	2.5	217	149	1.1	70	66	23	24
On site	14	2.5	373	256	0.7	58	52	22	19
On site	14	2.5	206	142	1.4	74	66	23	22
On site	14	2.5	221	152	0.6	60	50	20	22
On site	15	2.6	271	186	0.6	61	56	22	22
On site	15	2.6	317	218	0.7	63	67	23	26
On site	15	2.6	294	202	0.6	60	56	22	21
On site	15	2.6	345	237	0.7	58	58	23	20
On site	16	2.8	350	240	0.7	63	66	24	23
On site	16	2.8	354	243	0.7	61	62	24	22
On site	16	2.8	384	264	0.8	63	81	24	29
On site	17	3	402	276	0.8	64	82	25	27
On site	17	3	434	298	0.7	61	65	25	22
On site	17	3	442	304	0.7	63	71	26	23
On site	17	3	482	331	0.7	60	66	26	22
On site	18	3.2	574	394	0.6	63	75	27	24

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	**18**	**3.2**	**509**	**350**	**0.8**	**65**	**81**	**28**	**24**
On site	**18**	**3.2**	**452**	**311**	**0.8**	**65**	**81**	**27**	**26**
On site	**19**	**3.3**	**728**	**500**	**0.6**	**63**	**78**	**29**	**25**
13m NE	19	3.3	672	462	0.6	65	82	29	25
16m E	18	3.2	525	361	0.7	61	71	27	23
17m SW	13	2.3	126	87	2.2	87	54	23	15
17m E	20	3.5	804	552	0.6	64	82	30	25
20m W	14	2.5	253	174	0.9	65	68	22	26
21m SW	13	2.3	165	113	0.5	61	44	18	22
21m W	14	2.5	201	138	0.8	65	56	20	23
21m W	14	2.5	213	146	1	69	63	22	24
22m SW	13	2.3	172	118	0.8	66	50	20	22
25m S	13	2.3	167	115	0.5	61	45	18	22
28m SW	13	2.3	150	103	1.4	76	54	22	18
33m N	18	3.2	412	283	1	64	92	27	30
35m E	15	2.6	345	237	0.8	57	57	23	20
43m NW	17	3	408	280	0.9	62	88	25	32
47m NE	20	3.5	923	634	0.5	65	85	31	26
48m W	14	2.5	165	113	1.8	82	62	24	18
49m SE	13	2.3	412	283	0.7	60	51	22	19
49m SE	13	2.3	365	251	0.8	65	57	22	25

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

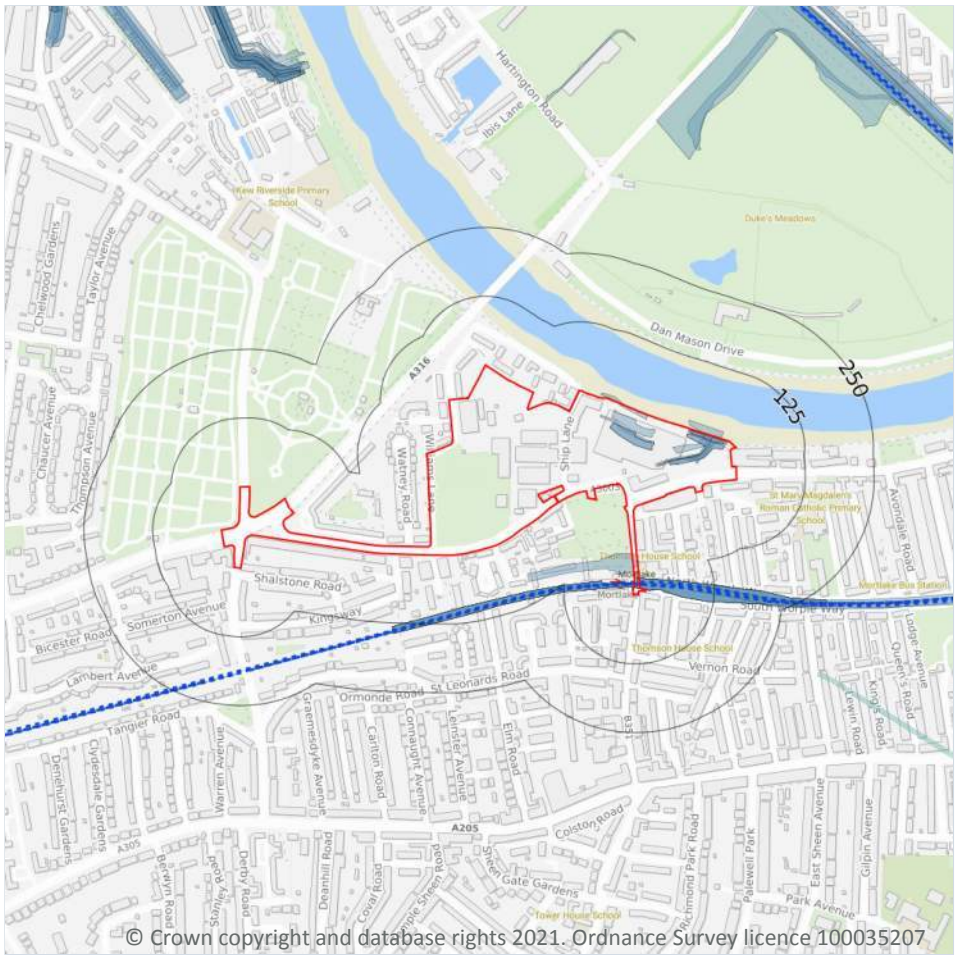
Records within 50m	**1**

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.

Location	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Lead (mg/kg)	Tin (mg/kg)	Sample Type
38m SW	12.5	0.5	60.4	43.4	17.7	163.1	21.5	Topsoil

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



21.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	12

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

Features are displayed on the Railway infrastructure and projects map on **page 138**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1913**	**2500**
On site	**Railway Sidings**	**1919**	**2500**
On site	**Railway Sidings**	**1933**	**2500**
On site	**Railway Sidings**	**1896**	**2500**
On site	**Railways**	**1866**	**-**
On site	**Railways**	**1898**	**-**
On site	**Railways**	**1913**	**-**
On site	**Railways**	**1935**	**-**
On site	**Railway Sidings**	**1910**	**10560**
On site	**Railway Sidings**	**1920**	**10560**
On site	**Railway Sidings**	**1938**	**10560**
84m E	Railways	1919	-

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	14

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

Features are displayed on the Railway infrastructure and projects map on **page 138**

Location	Name	Type
On site	**Waterloo to Reading Line**	**rail**
On site	**Waterloo to Reading Line**	**rail**
On site	**Not given**	**Multi Track**
3m E	Not given	Multi Track
15m NW	Not given	Multi Track
56m E	Waterloo to Reading Line	rail
73m W	Waterloo to Reading Line	rail
92m W	Not given	Multi Track
103m S	Not given	Multi Track
140m S	Not given	Multi Track
190m S	Not given	Multi Track
218m S	Waterloo to Reading Line	rail

Location	Name	Type
222m E	Not given	Multi Track
232m S	Not given	Multi Track

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 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.

21.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

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

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