Tesco, Osterley, Syon Lane, Isleworth, TW7 5NZ

Geo-Environmental Assessment

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Executive Summary

Objectives

Waterman Infrastructure & Environment Limited was instructed by St Edward Homes Limited to undertake a Geo-Environmental Assessment for the proposed redevelopment of land comprising Tesco Extra, Osterley, Syon Lane, TW7 5NZ , a section of MacFarlane Lane, a vacant plot of land west of the Tesco Extra and parkland to the north of the Tesco Extra store.

Site Setting

Current Use	Tesco store, car park, petrol filling station (PFS), public open space and a vacant plot of land.
History	Imperial Biscuit Works, potential air rail shelters and a nursery.
Ground Conditions	Tarmac (absent in soft landscaping) over Made Ground up to about 0.95m thick where proven, then Langley Silt Member (locally absent) up to 2.0m thick where proven, over Taplow Gravel Member up to 4.8m thick where proven, over London Clay Formation at least 26m thick.
Controlled Waters	The Taplow Gravel Member is classified as a Principal Aquifer. Langley Silt Member and London Clay Formation are classified as unproductive strata. The closest significant surface water body is the River Brent approximately 600m north-east.
Ground Gas Regime	Preliminary ground gas monitoring results indicate the Site would be classified as a Characteristic Situation 2 (CS-2) – Low risk with basic ground gas protection measures being required. However, this is due to one potentially anomalous carbon dioxide result. Further ground gas monitoring is required to confirm this result is anomalous and the Site could be classified as a CS-1 site with no gas protection measures required. Soils, vapour and groundwater analysis indicate a significant vapour regime is not present across the Site.

Conceptual Model

Potential contaminant linkages identified which may require mitigation include: future site users' potential direct contact, inhalation and ingestion with residual elevated concentrations of speciated PAHs (polycyclic aromatic hydrocarbons) and TPHs (total petroleum hydrocarbons) in Made Ground. Disturbance of asbestos containing materials and inhalation of fibres in Made Ground by future site users. Direct contact, inhalation and ingestion of contaminants (including asbestos) in soils by construction workers. Inhalation of ground gas and vapours by construction workers within confined spaces, risk of asphyxiation and explosions. Inhalation of potentially contaminated dust by off-site users during construction works. Direct contact and chemical attack by contamination on buried services and structures. Contamination of drinking water supply.

Conclusions

On the basis of the information obtained from the intrusive investigation the Site is considered to represent a **medium** risk.

The risk rating is based on the following:

- Widespread significant contamination of soils and groundwater has not been identified. However, collection of soil and groundwater data in the footprint of the Tesco store, delivery yard, PFS forecourt and store access roads has not been possible. Therefore, it cannot be discounted contamination exists in soils and groundwater in these areas and requirement for remediation of groundwater and soil also cannot be ruled out;
- Slightly elevated concentrations of metals were reported in soils at several exploratory hole locations. Residual locations of elevated speciated TPH and speciated PAHs were also reported. However, a certified clean capping layer or hardstanding would break the potential contaminant linkages between these contaminants and future Site users;
- Asbestos was reported at the microscopic level in Made Ground sampled from four exploratory hole locations (WS2, HP2, HP6 and TP11). Asbestos fragments were also observed in Made Ground at four exploratory hole locations (HP1, HP2, HP5 and TP11). Areas of soft landscaping would require removal of asbestos impacted soils and/or clean capping layers and potentially anti-dig layers to break potential contaminant pathways between future site users and asbestos; and
- Chemical analysis indicates residual inorganic contamination in groundwater at the Site. Concentrations of speciated TPH and PAH above the laboratory limit of detection were also reported in a groundwater samples recovered from BH1, BH2A and BH11.

The potential pollutant linkages can be managed by design of appropriate mitigation measures during the redevelopment of the Site. Following the implementation of the recommendations, post development, the Site would be of low risk and should not be

capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990 and the requirements of the NPPF would be met.

Earthworks and Construction Considerations

- Buried obstructions may be widespread across the Site and are likely to consist of relic footings and foundations of previous Site uses (Imperial Biscuit Works and a nursery) and the existing foundations of the Tesco store, petrol interceptors, the PFS and associated tanks, tank bases, fuel lines and fuel pumps;
- Uncontaminated concrete may be recovered for reuse on-Site subject to compliance with the WRAP Quality Protocol for Production of Aggregates from Inert Waste or recovered as inert waste subject to acceptance at an appropriately permitted facility;
- Soils in locations where samples reported speciated TPH concentrations >1000mg/kg, including soil samples at WS7A WS8, HP5, HP6, BH11, BH12 and TP11 may be hazardous for waste disposal purposes. Sampling and assessment of waste soils in accordance with EA guidance documentation will be required to confirm this;
- Where hydrocarbon contamination in groundwater is present, this will need to be appropriately managed during excavation works. Where dewatering of excavations is required, pockets of water may require treatment to lower hydrocarbon concentrations if disposal to sewer under a discharge consent is to be undertaken;
- Removal of soils from the Site can be minimised by their reuse on Site to facilitate filling where required provided they are chemically and geotechnically suitable. Any re-use of soils on Site should be in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP), subject to appropriate sampling and testing, risk assessment and compliance with the requirements of the DoWCoP;
- All site works will need to be managed to prevent contamination or pollution of the Taplow Gravel Member Principal Aquifer. Measures should include containment of fuels, oils and other hazardous substances in suitably bunded facilities, monitoring of these facilities, control of refuelling activities, spill response procedures, control of all discharges, management of run off from work areas and compounds;
- A Foundation Works Risk Assessment (FWRA) may be required by the local planning authority/ Environment Agency to demonstrate mitigation measures to protect underlying groundwater from any residual contamination in soils and groundwater from piling activities;
- Potential risks to construction workers and ground workers can be mitigated by the use of standard health and safety measures including PPE and if necessary RPE and conformance with the Confined Space Regulations 1997, Construction, Design and Management (CDM) Regulations 2015, Control of Substances Hazardous to Health (COSHH) Regulations 2002 and Control of Asbestos Regulations 2012;
- The potential for UXO at the Site cannot be discounted. A detailed UXO desk study should be undertaken and its findings and recommendations considered during subsequent intrusive Site works;
- Fuel and hazardous substance storage should be in accordance with the Control of Pollution (Oil Storage Regulations (England) 2001 and COSHH Regulations 2002 respectively. Bulk storage of fuel should only be permitted in double skinned tanks (integrally bunded).

Asbestos Containing Materials

Asbestos in Made Ground is not unexpected for post-industrial sites. The source of asbestos in Made Ground is typically historical demolition of buildings constructed before 1999 when the Asbestos (Prohibitions) (Amendment) Regulations 1999 came into force;

Asbestos was reported in soils at four exploratory hole locations. Reported concentrations ranged from <0.001% (below the laboratory limit of quantification) to 0.393%. Asbestos visible to the naked eye was also observed in soils at four exploratory hole locations. The hazardous waste threshold for the presence of asbestos in soils (where asbestos is not visible to the naked eye) is 0.1%. Although only one sample (TP11 – 2.20m bgl) exceeds this threshold, soils containing visible fragments of asbestos would be classified hazardous for waste disposal and the waste regarded as a mixed waste. The asbestos fragments would be classified as hazardous waste and the soil matrix classified either as non-hazardous or hazardous;

Visible asbestos debris in waste soils, if present in discreet pockets, could be managed by hand picking to potentially reduce disposal costs by separating asbestos from the soil matrix. This will allow waste soil to have its own waste classification. This task could be non-licensed or licensed depending on the type of asbestos and its condition;

Construction workers should be asbestos awareness trained and an asbestos management plan, in accordance with Control of Asbestos Regulations (CAR) 2012, prepared. This should include detailed risk assessments, provision of appropriate PPE and RPE, mitigation measures for dust generation and asbestos air monitoring.

Preliminary Geotechnical Assessment

As this development comprises multi-storey buildings and basements, it is recommended a pile foundation solution be considered with the loads being transmitted to the London Clay Formation. Indicative resistances of a single bored pile at varying depths and diameters in the London Clay Formation, based on previous sites in similar conditions, is given below but should not be relied upon for design.

Estimated Pile Resistance (bored pile) kN				
Pile Length (m below cut-off level)	750mm	900mm	1050mm	1200mm
5	425	550	700	850
10	825	1000	1250	1500
20	1850	2300	2800	3300
30	3250	4000	4800	5600
40	3850	5550	7200	8400

- These estimates should be confirmed upon completion of final Ground Investigation and suitable suite of geotechnical laboratory testing including BRE SD1 testing as the London Clay Formation is well known to contain pyrite;
- The final design of the piles will be the responsibility of the piling contractor. The carrying capacity of the actual pile groups will in part depend on the number, type and size of pile chosen by the contractor and the quality of workmanship. The piles should be designed based on the requirements of Eurocode 7;
- The type of pile selected, and method of installation, requires careful consideration in relation to the potential to create a contamination pathway between shallow and deep aquifers, and may need agreement with the Environment Agency;
- Due to the anticipated depth of the basements (circa 4m to 5m bgl) it is likely that ground bearing floor slabs can be adopted in the design as they will be founded on a blinding layer on either the Taplow Gravel or London Clay. This should be considered in conjunction with the wider foundation design strategy, accounting for the likelihood of piled foundations. The design of the slabs should only be finalised on completion of a gas monitoring assessment in order to allow for the incorporation of gas protection measures (if any);
- Groundwater has been recorded at a minimum depth of 1.21m bgl in BH3. It is possible perched water may be present, and that groundwater levels are likely to fluctuate dependent on the time of year and prevailing weather conditions. Until additional monitoring data is received, groundwater level for design purposes is considered to be 1.20m bgl. However, this level is subject to revision on receipt of further data;
- Given the basement excavation depths groundwater control may be required during construction and permanent design works to maintain a dry and stable environment. Appropriate dewatering measures employed should be in accordance with relevant guidance such as CIRIA Report C750, Groundwater control: design and practice, second edition (2016);
- Groundwater inflow to excavations may promote instability and temporary works measures should include an allowance for groundwater control. In addition, pockets of perched groundwater and unstable materials in other areas of the Site which have not been investigated cannot be entirely discounted. In line with BS:6031 (2009), all excavations should be examined daily by a competent person to ensure that they remain safe and stable;
- Where the sides cannot be graded back to a safe angle, as approved by a competent and experienced person, their continued stability should not be taken for granted. All excavations of greater than 1.2m depth requiring man entry must be provided with a suitably designed shoring support system. For excavations of over 1.20m depth, groundwater control in the form of excavation of sumps and pumping to agreed discharge points may be required.

Recommendations

Environmental

- The presence of asbestos in soils should be included in the Site's asbestos register;
- Consideration should be given to inaccessible areas of the Site during the ground investigation and uncertainties pertaining to the contamination status in these areas;
- Consideration should be given to potentially widespread buried obstructions across the Site, likely to consist of relic footings and foundations of previous Site uses and the existing foundations of the Tesco store, petrol interceptors, the PFS and associated tanks, tank bases and fuel lines;
- The potential for some soils to be classified as hazardous for waste disposal purposes due to TPH and asbestos should be considered. This should also include areas not accessible for the investigation, such as the PFS forecourt;
- Contingency should be made for management of asbestos contaminated soils during construction works and subsequent mitigation measures for the development;
- Retention of groundwater and ground gas monitoring wells installed as part of this ground investigation to enable future monitoring of ground gas and groundwater;
- Detailed environmental and geotechnical ground investigation should be undertaken once the design of proposed development has been finalised. This should target areas of the Site not accessible during this ground investigation, including the footprint of the Tesco store, delivery yard, PFS forecourt, and store access roads. The presence of buried obstructions should also be investigated;
- Waste classification assessment of likely waste soil arisings should be undertaken as part of the detailed environmental and geotechnical ground investigation. Exploratory holes should target proposed basement excavation areas and where Site levels are to be reduced;
- Further environmental and geotechnical ground investigation should also include ground gas, vapour and groundwater monitoring and sampling of groundwater in monitoring wells;
- Monitoring and assessment of the Site's ground gas and vapour regime should be in accordance with guidance CIRIA C665, CIRIA C682, BS8485: 2015 and BS8576: 2013 and will be required once further details of the proposed development are known including: final Site layout and land uses, locations of basements, room sizes at ground floor level and in basements. Monitoring would likely comprise six visits over a period of 12 weeks, including monitoring during periods of low and falling pressure;
- A detailed UXO desk study should be undertaken and its findings and recommendations considered during subsequent intrusive Site works;
- Preparation of a Remediation Strategy, based on the findings of the Geo-Environmental Assessment report, detailing how potentially unacceptable risks to identified receptors will be mitigated at part of the development and a Verification Report confirming the implementation of the mitigation measures. Both documents should be suitable for submission for planning;
- Imported topsoil/subsoil should be assessed for its suitability for use. In order to assess the suitability of imported soil the full range of analysis specified in BS3882: 2015 and BS8601:2013 should be undertaken by an appropriately qualified specialist. Imported topsoil should also be protective of human health;
- A Foundation Works Risk Assessment (FWRA) should be undertaken to assess risks to the Principal Aquifer from the preferred foundation solution.

Geotechnical

As the preliminary ground investigation provided limited geotechnical information, and the proposed development involves multi-storey buildings, additional ground condition information such as shear strength, groundwater level and porewater pressure is required.

To establish this information, a further ground investigation is required comprising boreholes to depths in the region of 40m bgl with associated in-situ testing, standpipe and piezometer installation; and geotechnical laboratory testing of recovered samples. Geotechnical interpretative reporting should include:

- Identification of suitable piling depths and founding stratum for shallow foundations;
- Geotechnical parameters for foundation and pavement design;
- Indicative bored pile estimates must be confirmed upon completion of final ground investigation;
- Establish aggressivity of the soils/bedrock in relation to buried concrete; and

Establish groundwater levels and potential impact on foundations design and temporary works.

1. Introduction

1.1 Objectives

Waterman Infrastructure & Environment Limited (Waterman) was instructed by St Edward Homes Limited (hereafter "the Client") to undertake a Geo-Environmental Assessment for the proposed acquisition and redevelopment of land comprising Tesco Extra, Osterley, Syon Lane, CR8 2HA, a section of MacFarlane Lane, a vacant plot of land west of the Tesco Extra and parkland to the north of the Tesco Extra store (hereafter termed "the Site").

The information contained in this report is based on the observations made on-Site, the data obtained from an intrusive ground investigation undertaken by Geotechnical Engineering Limited in October and November 2018, a supplementary ground investigation undertaken by RSK in March 2019 and publicly available environmental data.

The objective of this assessment is to identify significant contaminative risk attached to the Site. The assessment considers the UK's regulatory regime in relation to contaminated land, and additional external factors which may affect this risk. A preliminary assessment of the geotechnical conditions on-Site, as informed by the ground investigation, is also presented.

1.2 Site and Surrounding Environment

The Site is currently a Tesco Extra supermarket with associated delivery yard, customer car parking, car hand wash area, a petrol filling station (PFS) and automated car wash. Perimeter soft landscaping is situated in the south along Syon Lane, in the west along MacFarlane Lane to the immediate north of the Tesco Extra store and the east along Grant Way. Tree pits and shrubs are also situated sporadically across the customer car park.

The Site comprises a section of MacFarlane Lane to the west of the Tesco Extra store, a vacant plot of land beyond MacFarlane Lane and parkland to the north of the Tesco Extra store connecting MacFarlane Lane to Grant Way.

The Site is in an area of mixed uses. Commercial and industrial uses are mainly to the north and east. Residential properties are to the south beyond Syon Lane and to the west beyond MacFarlane Lane. Open space is present to the north-west.

1.3 Proposed Development

The Site would be comprehensively redeveloped to deliver a residential-led, mixed-use scheme set within a landscaped perimeter. The proposed development would include residential, retail, commercial and community floorspace within buildings up to 17 storeys high.

Outline planning permission with all matters reserved except access will be sought for:

"demolition of existing building and car park and erection of buildings to provide residential homes, plus flexible non-residential space comprising commercial, business and service space, and/or learning and non-residential institution space, and/or local community space, and/or public house/drinking establishment, and/or a mobility hub, along with associated access, bus turning, car and cycle parking, and landscaping arrangements."

The proposed development is defined by parameter plans, development specifications and a design code committed to deliver the following:

- Demolition the existing Tesco Store and petrol filling station;
- Up to 1,677 new homes;
- Up to 5,000 m^2 (GIA) of non-residential floorspace, including commercial, business and service space, and/or learning and non-residential institution space, and/or local community space, and/or public house/drinking establishment, and/or a mobility hub;
- A bus turning facility located off Grant Way, to include bus stand spaces and welfare facilities for drivers;
- Up to 400 car parking spaces, including car club bays and comprising of both on-street and off-street provision;
- A minimum of 10 car club bays;
- A minimum of 20% active electric vehicle charging points, with remaining car parking spaces to be passive electric vehicle charging points;
- Long stay and short stay cycle parking in line with Intend to Publish London Plan standards;
- Retention of a minimum of 24 trees;
- A minimum of 300 new trees planted;
- A minimum of 20,000 m^2 of publicly accessible open space, including new public open space areas;
- A minimum of 8,000 m^2 of communal amenity space at podium and roof level; and
- A minimum of 5,000 m^2 play space split between public ground floor area and communal podium/roof levels;
- A minimum of 4,000 m^2 of biodiverse roofs;
- A new public route through the retained and enhanced Water Gardens;
- Nine development parcels, with nine blocks ranging in height from two to 17 storeys; and
- A commitment to implement a construction environmental management plan (CEMP) during the demolition and construction stage. A framework for the CEMP is presented in ES Chapter 5: Demolition and Construction Environmental Management of the Environmental Statement.

Development proposals do not include private gardens.

Basements are proposed below each building. The maximum depth of any basement will be 19.3m AOD (about 4 to 5m below existing Site levels of about 23 to 24.5m AOD). The parameter plans allow for a basement below Block F to provide cycle parking. For all other blocks, there is allowance for basement plant only.

Due to its multi-storey nature, and consequent large structural loads, the proposed development is likely to use piled foundations.

The proposed layout is included in Appendix A.

1.4 Regulatory Context

The National Planning Policy Framework (NPPF) 2019 sets out Government planning policy for England and how this is expected to be applied to development. Paragraph 118 of Section 11 – Making effective

use of land and paragraphs 170, 178, 179 and 183 of Section 15 – Conserving and enhancing the natural environment of the NPPF relate to contaminated land matters and state the following:

118. Planning policies and decisions should:

c) give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land;

170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

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

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

178. Planning policies and decisions should ensure that:

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

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

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

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

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

To assess the contamination status of the Site, with respect to the proposed end use, it is necessary to assess whether the Site could potentially be classified as “Contaminated Land”, as defined in Part IIA of the Environmental Protection Act 1990 and Contaminated Land Statutory Guidance 2012. This is assessed by the identification and assessment of potential contaminant linkages. The linkage between the potential sources and potential receptors identified needs to be established and evaluated.

To fall within this definition, it is necessary that, as a result of the condition of the land, substances may be present in, on or under the land such that:

a) significant harm is being caused or there is a significant possibility of such harm being caused; or

b) significant pollution of controlled waters is being caused, or there is significant possibility of such pollution being caused.

It should be noted that DEFRA has advised (Ref. Section 4, DEFRA Contaminated Land Statutory Guidance 2012) Local Authorities that land should not be designated as "Contaminated Land" where:

a) the relevant substance(s) are already present in controlled waters;

b) entry into controlled waters of the substance(s) from land has ceased; and

c) it is not likely that that further entry will take place.

These exclusions do not necessarily preclude regulatory action under the Environmental Permitting (England and Wales) Regulations 2016, which make it a criminal offence to cause or knowingly permit a water discharge of any poisonous, noxious or polluting matter to controlled waters. In England and Wales, under The Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009, a works notice may be served by the regulator requiring appropriate investigation and clean-up.

1.5 Limitations

The assessment was undertaken in accordance with the scope agreed between Waterman and St Edward Homes Limited.

Information contained in this report is based on the findings and data from the intrusive ground investigation and observations made on-Site.

Constraints to the investigation include:

- Exploratory holes could not be advanced in the footprint of the Tesco Extra store associated delivery yard in the north-east, PFS forecourt and store access roads. An objective of the investigation was to minimise disruption to the Tesco Extra store's operations;
- Exploratory holes were not advanced on MacFarlane Lane for health and safety reasons;
- Boreholes could not be drilled in soft landscaping to the immediate south of the PFS due to buried services, presence of shrubbery and uneven surfaces;
- Borehole core loss and no recovery was reported in the following boreholes:
  - BH2A 5.75 – 6.50m bgl (core loss) and 6.50 – 7.00m bgl (no recovery); and
  - BH3 1.50 – 2.20m bgl (no recovery) and 2.30 – 3.20m bgl (no recovery).

Therefore, the nature of material at these locations and depths could not be recorded.

The ground conditions reported relate only to the point of excavation and do not necessarily guarantee a continuation of the ground conditions throughout the non-inspected area of the site. Whilst such exploratory holes would usually provide a reasonable indication as to the general ground conditions, these cannot be determined with complete certainty.

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 investigation includes an assessment of the presence of asbestos containing materials (ACMs) 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. Procedures

This Generic Quantitative Environmental Risk Assessment has been undertaken in general accordance with the Model Procedures for Management of Land Contamination (Contaminated Land Report 11 – Environment Agency, September 2004).

The report includes the following:

- outline Conceptual Model for the Site;
- results of Intrusive Ground Investigation;
- confirmation of Generic Assessment Criteria used to assess risks;
- assessment of results against Generic Assessment Criteria;
- formulation of a new Conceptual Model for the Site;
- identification of potentially unacceptable risks; and
- recommendations for further action.

This report forms a decision record for the contaminant linkages identified, the generic assessment criteria used to assess risks, the unacceptable risks identified and the proposed next steps in relation to the site. The report also provides an explanation of the refinement of the outline conceptual model following the ground investigation, the selection of criteria and assumptions, the evaluation of potential risks and the basis for the decision on what happens next.

3. Outline Conceptual Model

The outline conceptual model is summarised below. Information sources include:

- Groundsure reports (Enviro Insight and Geo Insight) presented in Appendix D;
- Groundsure historical map packs presented in Appendix D;
- London Borough of Hounslow Land Quality Team records presented in Appendix D;
- British Geological Survey (BGS) mapping Sheet 270 – South London, Bedrock and Superficial Edition;
- BGS online borehole records accessed 22 October 2018;
- DEFRA's MAGIC online geographical dataset accessed 22 October 2018;
- Site reconnaissance undertaken 22 October 2018;
- London Borough of Hounslow online planning records accessed 30 June 2020.

3.1 Anticipated Ground Conditions and Hydrogeological Significance

The likely ground conditions at the Site have been established from British Geological Survey (BGS) mapping Sheet 270 – South London, Bedrock and Superficial Edition and online BGS borehole logs TQ17NE136, TQ17NE140 and TQ17NE427 (accessed online 22/10/2018). Hydrogeological significance of the strata has been established from MAGIC online geographical dataset (accessed online 22/10/2018).

The likely ground conditions and hydrogeological significance are summarised in Table 1.

Table 1: Anticipated ground conditions at the Site

Stratum	Anticipated Nature	Estimated Thickness (m)	Aquifer Designation / Groundwater Comments
Made Ground	Bituminous/concrete hardstanding over variable fill material. Likely to comprise sand, gravel, clay and silt of varying proportions with brick and concrete.	1m	Non-Aquifer. May contain residual pockets of water.
Langley Silt Member – Clay and Silt	CLAY and SILT with some sand and gravel.	1m	Unproductive Strata - Low permeability and negligible significance for water supply or river base flow.
Taplow Gravel Member - Sand and Gravel	Slightly silty SAND and GRAVEL.	3m	Principal Aquifer - High permeability and/or provide a high level of water storage. May support water supply and/or river base flow on a strategic scale
London Clay Formation	Silty CLAY with claystone.	80m	Unproductive Strata - - Low permeability and negligible significance for water supply or river base flow.

According to the Groundsure Enviro Insight Report (ref: WTM1-5538639), the are no groundwater abstractions with 1km of the Site.

There are no potable groundwater abstractions within 2km of the Site. The Site is not within a source protection zone (SPZ).

3.1.1 Ground Stability

Ground stability information presented in the Groundsure Geo Insight Report (ref. WTM1-5538640) reports the following ground stability hazard ratings at the Site:

- Moderate for shrink-swell clays;
- Very low for landslides;
- Negligible for ground dissolution of soluble rocks;
- Negligible for compressible deposits;
- Low for collapsible deposits;
- Very low for running sands.

The Site is not in an area that could be affected by coal mining activity.

The Geo Insight Report indicates several areas of ground workings with 500m of the Site. The nearest is recorded 428m south-west at Spring Grove Brick Fields for extraction of clay and shale. Workings are detailed as ceased.

3.1.2 Radon Gas

Radon is a colourless and odourless radioactive gas, formed from the decay of naturally occurring uranium within soils and rocks. The radioactive elements formed by the decay of radon may be inhaled, entering the lungs, and potentially leading to localised damage, and lung cancer.

Current Building Regulations, endorsed by Public Health England (PHE) detail that all new buildings or extensions require radon protective measures where the development is in an area of high radon.

Information recovered from the Geo Insight Report shows that the Site is not in an area of high radon levels. Correspondingly, no protective measures will be required in the proposed development.

In 2009 the Health Protection Agency ((HPA), now Public Health England) recommended that radon protection measures be built into all new occupied buildings in the UK, whether or not they were situated in radon sensitive area as identified by British Geological Survey (BGS) maps. The Building Regulations Advisory Committee supported the HPA's proposal. However, the then Government rejected this recommendation and the current Building Regulations (2013) do not include it.

This approach should be confirmed with the Building Control Officer.

3.2 Hydrology

The closest significant surface water body to the Site is the River Brent approximately 600m north-east at its closest point. The River Brent flows south-east and into the River Thames approximately 2km south-east of the Site. The River Thames is approximately 1.8 km south-east of the Site at its closest point. A golf course surface water feature is 500m north.

Groundwater in the area is likely to flow east towards the River Brent and River Thames.

There are two surface water abstractions within 1km of the Site. The closest is recorded 611m north and is registered to Canal and River Trust for dust suppression. The source is detailed as Thames Surface Water – Non Tidal.

3.3 Potential Contamination Sources

Potential current and historical contamination sources have been identified following a review of available information sources and site reconnaissance undertaken 22 October 2018. A summary of potential contamination sources is presented below.

3.3.1 Historical Potential Sources of Contamination

The Site

- 1930s to 1980s – Imperial Biscuit Works, later denoted as MacFarlane-Lang then as a factory in the north and east;
- 1960s to 1970s – Potential air raid shelters in the west;
- 1960s – Road haulage depots, taxi garages, vehicle depots denoted in Hounslow Land Quality records;
- 1980s to 2000s – Nursery in the west.

Site Surroundings

- 1860s to present – Railways 430m south-east and 430m north-east;
- 1890s to present – Railways 430m north-west;
- 1930s to 1940s – Isleworth Winery and later Allied Breweries 250m south-east;
- 1930s to 1950s – Solder manufacture 150m south-east;
- 1930s to 1960s – Folding boats manufactory (later denoted as a factory) 330m north-east;
- 1930s to 1960s – Laundry building and adjacent tank 120m north-east;
- 1930s – 1960s – Paper manufactory 130m east;
- 1930s to 1980s – Works and Syon Hill Garage 200m south-east;
- 1930s to 1980s – Imperial Biscuit Works (later denoted as MacFarlane-Lang) immediately north and potential ancillary buildings adjacent east and railway sidings;
- 1930s to 1980s – Rubber tyre manufactory (later denoted as a factory), adjacent cylindrical tanks and railways 350m east;
- 1940s – Mineral workings indicated 50 to 100m east in the Hounslow Land Quality records;
- 1940s to 1950s - Gerrard Industries (electrical fittings) 100m east;
- 1940s to 1970s – Industrial area 100 to 250m east and north-east comprising numerous works and factories (dairy, drill makers, boiler engineers, gear engineering, fire drum manufacture, electrical, food and non-food storage);
- 1950s to 1960s – Hospitals 75m west;
- 1960s to 1970s – Petrol filling stations 110m and 200m south-east;
- 1960s to 2000s – Factory and several unspecified works buildings 250m to 500m south-east;

- 1960s to 2000s – Depot 190m north-east;
- 1960s to present – Factory (former European headquarters of Gillette) 50m east;
- 1960s to 1980s – Unspecified factory 90m east;
- 1970s to 1990s – Tank 90m east;
- 1980s to 1990s – Electricity sub-station and adjacent cooling tower 60m east;
- 1980s to 1990s – Electricity sub-stations 100m north-east and 120m north;
- 1980s to present – Waste transfer station 490m north-east; and
- 2000s to present – Warehouse 350m north.

The Enviro Insight Report indicates numerous areas of potentially infilled land near the Site. The closest is an area of unspecified ground workings 131m north, shown on mapping of 1948.

The Enviro Insight Report includes several records of historical landfill sites within 1km. The closest is recorded 437m west at Jersey Gardens, Osterley. The waste type is listed as inert and the site is indicated as operational between 1895 and 1951.

3.3.2 Current Potential Sources of Contamination

The Site

- Made Ground;
- Car parking;
- PFS (Part B Environmental Permit) in the south-east for unloading of petrol into storage at service stations, associated fuel tanks, fuel lines, pumps and potential spillages of fuel;
- Car washes to the immediate west of the PFS and in the east;
- Evidence of petrol interceptors in the south-east, centre and north-west;
- Electricity sub-station to the north-east of the Tesco Extra store;
- Record of a pollution incident in August 2001 at the PFS, involving petrol.

Site Surroundings

- Railways 430m south-east, 430m north-east and 430m north-west;
- Dry cleaners (Part B Environmental Permit) 82m south-east;
- PFS (Part B Environmental Permit) 150m south-east for unloading of petrol into storage at service stations;
- Non-hazardous waste incineration (Part A1 Environmental Permit) 273m north-east;

The Enviro Insight Report includes twelve records of licensed waste sites within 1km. The closest is 497m east, registered to Rentokil Initial Services Limited for a household, commercial and industrial waste transfer station.

The Enviro Insight Report also lists numerous current potentially contaminative land uses within 250m. The closest potentially contaminative land use is listed as a tank 87m east. Other land uses listed include electricity sub-stations, construction services, business parks and estates, unspecified works and factories.

3.4 Contaminants of Concern

Contaminants of concern associated with the above activities are summarised in Table 2.

Table 2: Contaminants of concern

Source	Associated Contaminants
On-Site (current)	
Made Ground	Potentially contains asbestos and metal/metalloids, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs) volatile organic compounds (VOCs) / semi-volatile organic compounds (SVOCs). Ground gases – carbon dioxide, methane, hydrogen sulphide
Car washes	Soaps/detergents and chemicals, oils/fuels (TPH, PAH, VOCs/SVOCs), antifreeze (ethylene glycol, glycerol)
Petrol interceptors	TPH, PAHs, BTEX
PFS	Metal/metalloids, TPH, PAHs, BTEX (benzene, toluene, ethyl-benzene, xylenes), VOCs/SVOCs
Car park	TPH, PAHs, BTEX
Electricity sub-station	Asbestos, polychlorinated biphenyls (PCBs)
On-Site (historic)	
Imperial Biscuit Works	Asbestos, metal/metalloids, TPH, BTEX, PAHs, VOCs, SVOCs
Nursery	Asbestos, herbicides, pesticides
Potential air raid shelters	Asbestos
Off-site (current)	
Railways	Asbestos, metal/metalloids, PAHs, TPH and VOCs/SVOCs, herbicides, PCBs, invasive species (Japanese Knotweed)
Dry Cleaners	VOCs, SVOCs
PFS	Asbestos, metal/metalloids, TPH, PAHs, BTEX, VOCs/SVOCs
Non-hazardous waste incineration	Metals/metalloids, TPH, PAHs, BTEX, VOCs/SVOCs, PCBs,
Waste transfer station - household, commercial and industrial waste	Asbestos, metal/metalloids, TPH, PAHs, BTEX, VOCs/SVOCs, PCBs
Unspecified tank	TPH, PAHs, BTEX, VOCs, SVOCs
Electricity sub-stations	Asbestos, transformer oil containing PCBs
Unspecified works and factories	Asbestos, metal/metalloids, TPH, BTEX, PAHs, VOCs, SVOCs
Off-site (historic)	
Railways and railway sidings	Asbestos, metal/metalloids, PAHs, TPH and VOCs/SVOCs, herbicides, polychlorinated biphenyls (PCBs), invasive species (Japanese Knotweed)
Laundry building and adjacent tank	Asbestos, TPH, BTEX, PAHs, VOCs, SVOCs
Rubber tyre manufactory	Asbestos, metals/metalloids, TPH, BTEX, PAHs, VOCs, SVOCs, PCBs, cyanides, phenols

Source	Associated Contaminants
Paper manufactory	Asbestos, metal/metalloids, TPH, BTEX, PAHs, VOCs, SVOCs, PCBs, phenols, sulphur, sulphates, sulphides, sulphites, phosphates, chlorates
Folding boats manufactory	Asbestos, metal/metalloids, TPH, BTEX, PAHs, VOCs, SVOCs
Garages	Asbestos, metal/metalloids, TPH, PAHs, BTEX, VOCs/SVOCs
Unspecified tanks	TPH, PAHs, BTEX, VOCs, SVOCs
Electrical substations	Asbestos, transformer oil containing PCBs
Unspecified depots, warehouses, works and factories	Asbestos, metal/metalloids, TPH, BTEX, PAHs, VOCs, SVOCs, PCBs
Historical landfills and infilled land	Asbestos, contaminated leachate containing - metal/metalloids, TPH, BTEX, PAHs, VOCs, SVOCs, PCBs. Ground gases – carbon dioxide, methane, hydrogen sulphide

3.5 Outline Conceptual Model

Following assessment of data gathered from the review of historical maps, ground investigation data and details of the proposed development, an outline conceptual model has been produced and is summarised in Table 3.

Table 3: Outline conceptual model

Receptor	Potential Sources	Pathways	Preliminary Risk
Human Health			
Future Site Users	Contaminated shallow soils and groundwater	Direct contact, inhalation and ingestion	Medium
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater.	Ingress into structures, accumulation, inhalation, risk of asphyxiation and potential for explosion.	Medium
Off-site residents/users	Contaminated Made Ground	Dust generation during ground works, inhalation by off-site users.	Low to Medium
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater	Off-site migration of contaminants via groundwater flow through permeable strata, ingress of vapours into off-site structures. Off-site migration of ground gas through permeable strata, ingress of ground gases into off-site structures. Inhalation, risk of asphyxiation and potential for explosion.	Medium
Construction workers	Contaminated shallow soils and groundwater	Direct contact inhalation and ingestion.	Medium
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater	Inhalation within confined spaces, risk of asphyxiation and explosions.	Medium
Property			
On-Site structures	Contaminated soils and groundwater	Direct contact. Chemical attack on buried services and structures. Contamination of drinking water supply.	Medium
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater	Ground gas/vapour ingress and accumulation within structures, leading to potential explosion.	Medium
Off-site structures	Contaminated groundwater	Off-site migration of contamination by groundwater flow resulting in direct contact with off-site structures.	Medium
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater	Off-site migration of contaminants via groundwater flow through permeable strata, ingress of vapours into off-site structures. Off-site migration of ground gas through permeable strata, ingress of ground gases into off-site structures. Risk of explosion.	Medium

Receptor	Potential Sources	Pathways	Preliminary Risk
Ecological Systems			
Soft landscaping	Contaminants in soils and shallow groundwater	Direct contact. Root uptake	Medium
Controlled Waters			
Taplow Gravel Formation - Principal Aquifer	Historical and current on-Site and off-site land uses. Leachable contaminants in Made Ground.	Leaching into groundwater. Lateral migration. Preferential pathways created by piling activities.	Medium

4. Rationale and Specific Objectives

The objective of this investigation is to characterise the ground conditions and identify significant contaminative risks attached to the Site, which may impact upon the proposed development.

The Development comprises a residential-led scheme.

Specific objectives include:

- Assess ground conditions and contaminants and determine whether contamination exists in the soils and groundwater, from current and historical Site uses;
- Undertake a Generic Quantitative Risk Assessment for contaminant linkages;
- Preliminary characterisation of the ground gas and vapour regime and determine whether ground gas and vapours pose a potential risk to future Site users and buildings;
- Assess the potential for third party liabilities from potential contamination in soils and groundwater.

5. Methodology

The intrusive investigation was undertaken in general accordance with Eurocode 7, the Code of Practice for Ground Investigations BS 5930 (2015) and the Code of Practice for the Investigation of Potentially Contaminated Sites and its Investigation BS 10175 (2011+A2: 2017).

5.1 Design of the Investigation

Sampling locations were selected to characterise the features identified in the conceptual model and to target, as far as possible, potentially contaminated areas identified.

A summary of the investigation locations and features investigated is presented in Tables 4 and 5.

Table 4: Ground investigation strategy

Layer / Target feature	Exploratory Holes	Groundwater and Gas Monitoring Wells
Establish shallow ground conditions in the vicinity of the operational PFS on-Site.	BH2A, WS4, WS5, WS6, HP1, HP3	BH2A – Targeting Langley Silt Member and Taplow Gravel Member. Response zone 1.00 – 6.00m bgl. WS4 – Targeting Made Ground and upper horizons of the Langley Silt Member. Response zone 0.50 – 2.24m bgl.
Establish shallow ground conditions at the perimeter of the Site, triangulate groundwater flow direction and groundwater quality flowing onto and off Site.	BH1, BH2A, BH3	BH1 – Targeting Langley Silt Member and Taplow Gravel Member. Response zone 1.80 – 5.00m bgl BH2A – As above BH3 – Targeting probable Langley Silt Member and Taplow Gravel Member. Response zone 1.80 – 4.00m bgl
Establish shallow ground conditions in the historical location of the Imperial Biscuit Works.	BH3, WS6, WS7A, WS8, HP4	BH3 – As above WS7A – Targeting Langley Silt Member. Response zone 0.50 – 1.56m bgl. WS8 – Targeting Langley Silt Member and upper horizons of the Taplow Gravel Member. Response zone 0.50 – 1.92m bgl.
Establish shallow ground conditions adjacent to the existing delivery yard.	WS8	WS8 – As above
Establish shallow ground conditions in the historical location of the nursery in the west of the Site.	HP5, HP6	N/A
Establish shallow ground conditions in the vicinity of existing petrol interceptors.	WS6, WS7A, BH3	BH3 – As above WS7A – As above
Establish shallow ground conditions in areas likely to comprise soft landscaping as part of redevelopment	HP2, HP4, HP5, HP6	N/A

Layer / Target feature	Exploratory Holes	Groundwater and Gas Monitoring Wells
Establish shallow ground conditions in the vicinity of car washes	WS8, WS4	WS4 – As above WS8 – As above
Advance borehole to 30m to confirm deep ground conditions on-Site	BH2A	BH2A – As above
Additional Site coverage	WS1, WS3	WS1 – Targeting Langley Silt Member and upper horizons and the Taplow Gravel Member. Response zone 0.50 – 1.54m bgl. WS3- Targeting Langley Silt Member and upper horizons and the Taplow Gravel Member. Response zone 0.40 – 2.00m bgl.

Table 5: Supplementary ground investigation strategy

Layer / Target feature	Exploratory Holes	Groundwater and Gas Monitoring Wells
Establish shallow ground conditions in the vicinity of the operational PFS on-Site, delineate hydrocarbon contamination in groundwater at BH1 and BH2A	BH11, BH12, BH13	BH11 – Targeting Taplow Gravel Member. Response zone 4.00 – 5.50m bgl BH12 – Targeting Taplow Gravel Member. Response zone 2.00 – 4.50m bgl
Delineation of soil identified containing asbestos fibres and ACMs in HP1, HP2, HP5 and HP6	TP11, TP12, TP13, HP11, HP12, HP13, HP14, HP15, HP16, HP17, HP18, HP19	N/A

5.2 Quality Control

A Waterman Geo-Environmental Engineer monitored (on a visiting basis) the performance, quality of work and health and safety compliance throughout the investigation period.

Samples were despatched in batches on a daily basis under a chain of custody procedure to i2 Analytical UK Ltd who are a UKAS accredited laboratory, for subsequent chemical analysis. Where appropriate, samples were stored within cool boxes containing ice packs.

All contractors, including laboratories, used during this project have been approved by Waterman as a part of in-house Integrated Management System (BS ISO 9001, BS ISO 14001) procedure. This requires all third parties to demonstrate competence and a high standard of work during a regular audit scheme.

6. Site Activities

The works were procured to various contractors, which, along with the main activities and supervision, are shown in chronological order in Table 6:

Table 6: Summary of fieldwork activities

Phase of Work.	Activity	Contractor	Date	Supervision
Service Clearance of Exploratory Hole Locations	Scanning of exploratory hole locations and tracing service runs	Geotechnical Engineering Ltd	25-26 October 2018	Geotechnical Engineering Ltd
Ground Investigation	Six hand dug pits to 1.20m bgl max. depth. Soil sampling and logging	Geotechnical Engineering Ltd	25 October – 7 November 2018	Geotechnical Engineering Ltd / Waterman
	Seven window sample hole locations to a maximum depth of 2.24m bgl		26 October – 31 October 2018	
	Three borehole locations to a maximum depth of 29.95 m bgl		25 October – 15 November 2018	
	UXO clearance of exploratory hole locations by specialist clearance engineer.	1st Line Defence	25 October – 15 November 2018	Geotechnical Engineering Ltd
Monitoring Well Installation	Installation of ground gas and groundwater monitoring wells.	Geotechnical Engineering Ltd	25 October – 15 November 2018	Geotechnical Engineering Ltd / Waterman
Groundwater Level and Ground Gas/Vapour Monitoring	Ground gas and vapour monitoring, groundwater level monitoring and sampling on one occasion.	Waterman	20-21 November 2018	N/A
2019 Supplementary Ground Investigation				
Service Clearance of Exploratory Hole Locations	Scanning of exploratory hole locations and tracing service runs	EMF Detection & Surveys Ltd	4 March 2019	RSK
Ground Investigation	Three trial pit locations to a maximum depth of 3.5m bgl max. depth. Soil sampling and logging	RSK	4 March 2019	RSK
	Nine hand dug pits to 1.20m bgl max. depth. Soil sampling and logging		4-5 March 2019	
	Three borehole locations to a maximum depth of 6.00m bgl. Soil sampling and logging		6-8 March 2019	
Monitoring Well Installation	Installation of ground gas and groundwater monitoring wells.	RSK	6-8 March 2019	RSK
Groundwater Level and Ground Gas/Vapour Monitoring	Ground gas and vapour monitoring, groundwater level monitoring and sampling on one occasion.	Waterman	14 March 2019	N/A

Note: m bgl = metres below ground level

6.1 Design of Investigation

Each exploratory hole location was cleared for services using ground penetrating radar (GPR) and a cable avoidance tool (CAT scanner). Inspection covers were lifted and drainage runs traced.

Hand pits were dug at each of the borehole and window sample hole locations prior to the commencement of drilling.

The rationale behind exploratory hole locations is detailed in Tables 4 and 5 and the exploratory hole locations are shown in Appendix A. Site photographs are shown in Appendix B.

6.2 2018 Ground Investigation

6.2.1 Boreholes

Three boreholes were advanced using dynamic sampling and rotatory techniques to a maximum depth of 29.95m bgl.

6.2.2 Window Sample Holes

Seven window sample holes were advanced to a maximum depth of 2.24m bgl. All window sample locations were advanced using a tracked window sample rig. Proposed window sample location WS5 could not be drilled due to buried services and space constraints. Therefore, WS5 was replaced with a hand-dug pit (HP3) to gather shallow soil samples at this location.

6.2.3 Hand Dug Pits

A total of six hand-dug pits (HP1 – HP6) were excavated to a maximum depth of 1.2m bgl. Upon completion, hand-dug pits were backfilled with compacted arisings placed in the same order as encountered.

6.3 2019 Supplementary Ground Investigation

6.3.1 Boreholes

Two boreholes were advanced using dynamic sampling techniques to a maximum depth of 6.0m bgl. BH13 was abandoned after three attempts due to concrete obstructions in the hand dug pits.

6.3.2 Trial Pits

Three trial pits were advanced using a mechanical excavator to a maximum depth of 3.5m bgl. Upon completion, the trial pits were backfilled with compacted arisings placed in the same order as encountered.

6.3.3 Hand Dug Pits

A total of nine hand-dug pits (HP11 – HP19) were excavated to a maximum depth of 1.2m bgl. Upon completion, hand-dug pits were backfilled with compacted arisings placed in the same order as encountered.

6.4 Soil Sampling

Exploratory holes were logged and sampled for environmental purposes.

Representative environmental soil samples were obtained from the exposed strata and sealed in one litre plastic tubs with airtight lids, phials and glass jars. The environmental soil samples taken were subject to headspace screening by a photo ionisation detector (PID).

Standard Penetration Tests (SPTs) were undertaken at regular intervals in boreholes and window sample holes for geotechnical purposes.

Scheduling of soils laboratory analysis was informed by the contaminants of concern identified in Table 2, observations of visual and olfactory evidence of contamination made on-Site and, in the case of the 2019 supplementary ground investigation, chemical analysis from the 2018 investigation. Determinands tested for are detailed below with the number of tested shown in brackets:

- Soil Properties (pH, moisture content, soil organic matter (SOM)) (52);
- Metals (arsenic, barium, beryllium, water soluble boron, cadmium, chromium, chromium VI, copper, mercury, lead, nickel, selenium, vanadium, zinc and molybdenum) (39);
- Speciated TPH (C5-C44) (41);
- BTEX (41),
- MTBE (Methyl tert-butyl ether) (41);
- 17-Speciated PAHs (38);
- PCBs (2);
- VOCs and tentatively identified compounds (TICs) (19);
- SVOCs and TICs (19);
- Glycols (2);
- Asbestos (34);
- Herbicides (1);
- Pesticides (2).

In addition to the above, four samples of suspected ACMs were submitted for asbestos identification.

6.5 Monitoring Wells

On completion of drilling, a 50mm diameter slotted HDPE standpipe with gas tap and bung was installed in five of the boreholes (BH1, BH2A, BH3, BH11 and BH12) and five of the window sample holes (WS1, WS3, WS4, WS7A, and WS8) to enable future ground gas, vapour and groundwater monitoring and sampling. The response zone of the wells was within the lower horizons of Made Ground, Langley Silt Member and Taplow Gravel Member.

The intake section comprised a slotted pipe surrounded by a granular response zone and the plain sections of pipe surrounded by a bentonite seal. The monitoring wells are sealed by a rubber bung and kept secure by a lockable flush cover at ground level.

6.6 Groundwater Monitoring and Sampling

Two rounds of groundwater sampling were undertaken using low flow sampling techniques following the completion of the intrusive element of the ground investigations. Groundwater monitoring was undertaken on the 20 November 2018 and 14 March 2019.

During the first monitoring visit, access to WS1 and WS7A was not possible on 20 November due to parked vehicles. WS1 and WS7A were returned to the following day (21 November 2018). WS7A was accessed. WS1 remained inaccessible due to a parked vehicle.

During the second monitoring visit, access to WS1 and WS3 was not possible due to parked vehicles. Additionally, BH2A was waterlogged upon opening of the cover. For these reasons, collection of ground gas and groundwater monitoring data from WS1 and WS3 and collection of ground gas monitoring data from BH2A was not possible.

During the sampling event the presence of hydrocarbon free product was investigated using a dedicated disposal bailer at each monitoring well. Free product was not observed. No visual or olfactory evidence of contamination was noted during groundwater sampling. Groundwater levels were recorded using a dip meter. Monitoring wells WS3 (first visit), WS4, WS7A and WS8 were dry during the monitoring visits.

The collected water samples were sealed into bottles with pre-measured fixatives where necessary, as supplied by the specialist laboratory, and transported in cool boxes to the testing laboratory.

Scheduling of groundwater laboratory analysis was informed by the contaminants of concern identified in Table 2, observations of visual and olfactory evidence of contamination in groundwater, results of soils laboratory analysis and, in the case of the 2019 supplementary ground investigation, groundwater chemical analysis from the 2018 investigation.

6.7 Ground Gas and Vapour Monitoring

Two rounds of ground gas and vapour monitoring were undertaken across 20 and 21 November 2018 and on 14 March 2019. All installed monitoring wells except for WS1 were accessed on the first visit. All installed monitoring wells except for WS1, WS3 and BH2A were monitored on the second visit.

The atmospheric pressure was recorded as 1003mb on commencement and 1002mb on completion of monitoring. A falling trend in atmospheric pressure was reported between 19 and 21 November 2018[1]. During the second visit the atmospheric was recorded as 999mb on commencement and 1001mb on completion of monitoring.

The peak and steady concentration readings of methane, carbon dioxide and oxygen were recorded, together with flow readings and atmospheric pressure. This was undertaken using an infrared gas analyser. Groundwater levels were also measured. Monitoring for VOCs was undertaken using a PID.

Results, including the model type and detection limits of the on-site equipment used for the fieldwork, is presented in Appendix E.

[1] www.meteoblue.com – Atmospheric pressure data for Heathrow between 19 and 21 November 2018. Accessed 22 November 2018

7. Results

7.1 Geological Strata

Detailed logs of the strata encountered, together with records of the soil samples taken are provided in the Ground Investigation Factual Report, included in Appendix C. A summary of the geological strata is presented in Table 7.

Table 7: Geological strata encountered

Soil Type	Depth of Top of Stratum (m bgl)	Thickness (m)	Typical Description
Made Ground	0	0.05 to 0.15	BH1, BH2, BH2A, BH3, BH11, BH12, TP11, TP12, WS1, WS2, WS3, WS6, WS7, WS7A, WS8 only. Black and grey tarmacadam. Orangish brown brickwork at WS6.
Made Ground	0	0.10 to 0.70	WS4, HP1, HP2, HP3, HP4, HP5, HP6, HP11, HP11A, HP12, HP13, HP14, HP14A, HP15, HP15A, HP16, HP16A, HP17, HP18, HP19, BH13A, BH13C only. Grass over SILT with varying proportions of clay, sand and gravel. With fragments of concrete, brick, tarmacadam and frequent rootlets. Grass absent at HP1, HP3 and HP6. Clayey slightly sandy GRAVEL in HP6, TP11 and TP12.
Made Ground	0.05 to 0.45	0.25 to 0.95 where proven. Thickness not proven in HP6 (thickness at least 1.05m). Thickness not proven in HP2, HP4 and HP5 where hardstanding was encountered at 0.80m bgl in HP2 and HP5 and 1.00m bgl in HP4.	Clay, silt, sand and gravel of varying proportions with flint, brick, tarmacadam and concrete. Occasional rootlets. Light brownish grey concrete with rare reinforcement bars (up to 10mm diameter) between 0.30 and 0.40m bgl in BH2A. Geomembrane 2mm thick at 0.70m bgl in WS4. Geotextile at 0.80m bgl in HP4. With rare metal fragments in BH2. Red crushed brick in BH11 at 0.45m bgl. With charcoal between 0.50 and 0.90m bgl in HP1. Steel bolts and washers at 0.70m bgl in HP5.

Soil Type	Depth of Top of Stratum (m bgl)	Thickness (m)	Typical Description
			Frequent reinforcement bars up to 25mm in diameter between 0.25 and 0.40m bgl in HP3.
Langley Silt Member	0.15 to 1.10	0.20 to 2.00 Where proven. Thickness not proven in HP1, HP12, HP18, WS4, WS6, WS7A. Absent in BH3 and TP12. However, no recovery in BH3 1.50 to 2.20m bgl and 2.30 to 3.20m bgl.	SILT with varying proportions of sand and gravel. Occasionally slightly clayey. Rare pockets of black silt.
Taplow Gravel Member	1.00 to 1.60	2.50 to 4.80 Where proven. Thickness not proven in HP17, WS1, WS2, WS3, TP12, TP13. Gravel recorded 2.20 to 2.30m bgl in BH3. However, no recovery in BH3 1.50 to 2.20m bgl and 2.30 to 3.20m bgl.	SAND and GRAVEL with silt.
London Clay Formation	3.20 to 5.00	Proven to 29.95m bgl	Silty CLAY. Rare shell fragments, pyrite and selenite and occasional bands of claystone and mudstone reported in BH2A.

7.2 Underground Structures and Obstructions

Concrete obstructions were encountered in BH2, BH2A, BH13A-C, WS7, HP2, HP4, HP5, HP11A, HP14, HP14A, HP15, HP15A, HP16, HP16A and TP11. Brick and sandstone obstructions were noted in HP11.

A summary of the obstructions encountered is presented in Table 8.

Concrete encountered at these locations is considered likely to be slabs and hardstanding associated with historical on-Site development including the Imperial Biscuit Works, a nursery and potential air raid shelters.

It was not possible to identify the lateral extent of obstructions encountered due to limited working areas available to undertake the investigation, the need to minimise disruption to the operational Tesco store and physical limitations associated with the use of hand tools.

The window sample rig was not able to advance through very dense sand, gravel and silt of the Taplow Gravel Member. As such, the maximum drill depth of the window sample holes was 2.24m bgl.

Table 8: Underground structures and obstructions

Exploratory Hole	Obstruction Depth (m bgl)	Description
BH2	0.30	Concrete obstruction encountered in inspection pit. Borehole re-drilled 1m away as BH2A.
BH2A	0.30 to 0.40	Light brownish grey concrete with rare reinforcement bars (up to 10mm diameter). Concrete obstruction broken through to advance borehole.
BH13A	0.80	Concrete obstruction encountered in inspection pit. Borehole re-drilled 1m away at BH13B.
BH13B	0.55	Concrete obstruction and black plastic membrane encountered in inspection pit. Borehole re-drilled 1m away at BH13C.
BH13C	0.80	Concrete obstruction encountered in inspection pit. Borehole abandoned.
WS7	0.50	Concrete obstruction encountered in inspection pit. Window sample hole re-drilled 1m away as WS7A where the concrete obstruction was not encountered.
HP1	0.05 to 0.10	Light grey concrete slab (40mm thick) in east face of pit.
HP2	0.80	Hardstanding.
HP4	1.00	Hardstanding.
HP5	0.80	Hardstanding.
HP11	0.60	Brick and sandstone obstruction. Hand pit re-dug 1m away at HP11A.
HP11A	0.70	Hardstanding.
HP14	0.40	Hardstanding. Hand pit re-dug 1m away at HP14A
HP14A	0.50	Hardstanding.
HP15	0.30	Hardstanding. Hand pit re-dug 1m away at HP15A
HP15A	0.50	Hardstanding.
HP16	0.65	Hardstanding. Hand pit re-dug 1m away at HP16A
HP16A	0.50	Hardstanding.
TP11	2.20	Concrete obstruction encountered during trial pitting. No concrete obstruction was encountered in TP12 5m away to the northeast.

7.3 Visual and Olfactory Evidence of Contamination

The following visual and olfactory evidence of contamination was noted during the intrusive investigation:

- BH2 – 0.15 to 0.30m bgl: Rare angular metal fragments;
- HP1 – 0.50 to 0.90m bgl: two potential fragments of ACM (suspected cement bound asbestos);
- HP1 – 0.50 to 0.90m bgl: charcoal within Made Ground;
- HP2 – 0.65m bgl: potential ACM observed;
- HP3 - 0.25 to 0.40m bgl: frequent reinforcement bars up to 25mm in diameter;
- HP5 – 0.80m bgl: fragments of potential ACM observed;

- HP15 – 0.5m bgl: Suspected asbestos cement observed; and
- TP11 – 1.1m bgl: Suspected asbestos containing cement/concrete with metal reinforcement observed; Fragments of asbestos were abundant and up to 70cm size.

Potential ACMs were dispatched to the UKAS accredited laboratory for identification.

No visual or olfactory evidence of contamination was observed in sampled groundwater.

7.4 Chemical Analysis

The laboratory test results are presented in Appendix F.

7.5 Groundwater Levels

7.5.1 Groundwater Strikes

Groundwater strikes were not encountered in boreholes and window sample holes. Groundwater was not encountered in boreholes prior to the use of water flush in boreholes BH2A and BH3. Use of water flush commence at 4.00m bgl in BH2A and at 1.50m bgl in BH3. Water flush was not added to BH1, BH11 or BH12.

7.5.2 Groundwater Monitoring

Groundwater level monitoring was undertaken 20 to 21 November 2018 and 14 March 2019. Recorded groundwater levels are detailed in Table 9.

Table 9: Recorded groundwater Levels

Monitoring Well	Ground Level (m AOD)	Depth to Groundwater (m bgl) 1st Visit / 2nd Visit	Groundwater Level (m AOD) 1st visit / 2nd Visit
BH1	24.775	4.12 / 4.04	20.655 / 20.735
BH2A	23.305	3.77 / 3.62	19.535 / 19.685
BH3	23.122	1.27 / 1.21	21.852 / 21.912
BH11	24.70	N/A / 3.98	N/A / 20.72
BH12	24.10	N/A / 3.82	N/A / 20.28
WS1	22.995	Not accessible	N/A
WS3	23.875	N/A / N/A (dry)	N/A / N/A (dry)
WS4	24.172	N/A / N/A (dry)	N/A / N/A (dry)
WS7A	23.213	N/A / N/A (dry)	N/A / N/A (dry)
WS8	23.177	N/A / N/A (dry)	N/A / N/A (dry)

Recorded groundwater levels ranged from 1.21m bgl in BH3 to 4.12m bgl in BH1. Reduced groundwater levels were between 19.535m AOD in BH2A and 21.912m AOD in BH3, a range of 2.377m. WS3, WS4, WS7A and WS8 were dry at time of monitoring. WS1 could not be accessed.

Monitoring indicates groundwater is present in the Taplow Gravel Member and flowing generally south-east. However, given the steep groundwater gradient recorded, it is considered likely there is some interreference in groundwater flows, such as around BH3 where groundwater had risen above the installation's screened section. A petrol interceptor is understood to be adjacent to BH3.

Notwithstanding, it is likely groundwater in the wider area flows east towards the River Thames.

7.6 Ground Gas and Vapours

Ground gas and vapour monitoring was undertaken 20 to 21 November 2018 and 14 March 2019. Ground gas/vapour monitoring results are included within Appendix E. Table 10 summarises the results.

Table 10: Ground gas and vapour monitoring summary

Monitoring Well	No. of monitoring rounds undertaken	Gas Concentration					
		Methane (max % v/v)	Carbon Dioxide (max % v/v)	Oxygen (min % v/v)	Lower Explosive Limit (max %)	Volatile Organic Compounds (max ppm)	Flow rate (max L/hr)
BH1	2	<0.1	6.9	10.1	<0.1	6.3	0.5
BH2A	1	<0.1	0.1	18.7	<0.1	<0.1	<0.1
BH3	2	<0.1	0.1	11.2	<0.1	0.4	<0.1*
BH11	1	<0.1	0.1	19.0	<0.1	<0.1	<0.1
BH12	1	<0.1	1.6	17.8	<0.1	<0.1	<0.1
WS1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WS3	1	<0.1	0.8	11.9	<0.1	<0.1	<0.1
WS4	2	<0.1	0.9	16.7	<0.1	<0.1	0.6
WS7A	2	<0.1	0.2	13.6	<0.1	0.7	<0.1
WS8	2	<0.1	0.3	16.5	<0.1	10.1	<0.1

*Initial recorded flow rates of75l/hr and 13.8l/hr were recorded. However, these dropped to <0.1 (below the instrument's limit of detection) after 2.5 minutes. These initial recorded flow rates are considered to be a result of groundwater rising above the screened section of installation resulting in air being pushed out of the monitoring well. Therefore, these are not representative of significant gas generation and has been disregarded.

Gas flows above the instrument's limit of detection (>0.1l/hr) were recorded in BH1 (0.5l/hr) and WS4 (0.6l/hr).

Methane and lower explosive limit readings in all monitoring wells were below the instrument's limit of detection (<0.1% for methane and lower explosive limit).

Maximum carbon monoxide and hydrogen sulphide concentrations were recorded as 21ppm and <1ppm (below the laboratory limit of detection) respectively. The maximum carbon monoxide concentration of 21ppm was recorded in monitoring well WS4.

The peak recorded carbon dioxide concentration was 6.9%, obtained from BH1. The minimum oxygen concentration of 10.1% was also recorded in BH1. A peak VOC concentration of 10.1ppm was recorded in WS8.

VOC concentrations from soil headspace testing ranged from below the instruments limit of detection (<0.1ppm) to 3.3ppm at 5.60m bgl in BH11. VOC concentrations recorded above the instruments limit of detection during vapour monitoring ranged from below the instruments limit of detection (<0.1ppm) to 10.1ppm in WS8.

Concentrations of VOCs and SVOCs in soils are discussed in Section 10.

8. Geotechnical Results

The 2018 element of the ground investigation included in-situ geotechnical testing and sampling. The results are described below.

8.1 In-Situ Results

Standard Penetration Tests (SPTs) were undertaken at regular intervals within the boreholes and window samples completed as part of this investigation, in order to provide 'N' values for empirical assessment of strength and density parameters. Detailed results of the SPT tests and blow counts are included on the borehole log included within the Ground Investigation Factual Report in Appendix C and a summary is presented in Table 11.

Table 11: Standard Penetration Results

Stratum	No. of Tests	N Range	Average N Value
Made Ground	1	38	-
Langley Silt	9	11 to >50	38
Taplow Gravel Member	6	6 to >50	41
London Clay Formation	15	8 to >50	26

8.2 Geotechnical Laboratory Results

Disturbed samples were obtained from exploratory holes at regular intervals. However, geotechnical laboratory analysis is outside the scope of this investigation.

It is recommended that the geotechnical samples obtained undergo geotechnical laboratory testing or geotechnical testing is completed as part of the full ground investigation.

8.3 Groundwater

Groundwater was not encountered within the exploratory holes during the ground investigation. However, groundwater monitoring standpipes have been installed within BH01, BH02, BH03, BH11, BH12, WS1, WS3, WS4, WS7 and WS8. Monitoring visits were undertaken over the 20 and 21 November 2018 and 14 March 2019 and recorded a ground water levels in BH1 at 4.12m bgl and 4.04m bgl, BH2A at 3.77m bgl and 3.62m bgl, and BH3 at 1.27m bgl and 1.21m bgl.

Window sample installations were all dry with the exception of WS1 which was inaccessible during monitoring visits. Until additional monitoring data is received, it is suggested groundwater levels for design purposes is considered to be 1.20m bgl. However, this level is subject to revision on receipt of further data.

9. Generic Assessment Criteria

The information requirements for generic quantitative risk assessment will depend on:

- The substance being assessed;
- The receptors being considered;
- The pathways being considered; and
- The complexity of the site.

The outline conceptual model developed for the Site reported in the Section 3 identified potential contaminant linkages. These potential linkages have been investigated and the results assessed against generic assessment criteria.

The generic assessment criteria selected for each potential contaminant linkage are summarised in Table 12.

Table 12: Generic assessment criteria

Source	Pathway	Receptor	Generic Assessment Criteria
Contaminants present in soils and shallow groundwater.	Direct contact, inhalation and ingestion	Future users of the Site Off Site users	Generic Assessment Criteria for residential end-use without plant uptake. DEFRA Category 4 Screening Levels (C4SLs), LQM/CIEH S4ULs (Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3060. All rights reserved), CL:AIRE (2009)
Contaminated soils and shallow groundwater. Ground gas and vapours from soils. Vapours from contaminated groundwater.	Direct contact with soils and groundwater. Inhalation and ingestion. Inhalation of ground gases and vapours. Risk of asphyxiation	Construction workers	Qualitative Risk Assessment.
Contaminants present in shallow soils	Leaching into groundwater. Creation of preferential pathways by piling.	Principal Aquifer in Taplow Gravel Member River Brent	Environmental Quality Standards (EQS) for freshwater and $EQS_{bioavailable}$.
Ground gas and vapours from soils. Vapours from contaminated shallow groundwater.	Migration through soil matrix and accumulation in internal and confined spaces. Inhalation and risk of asphyxiation.	Future users of the Site Off-site users. On-site and off-site structures	Preliminary Gas Screening Value determination and assessment in accordance with CIRIA C665 and BS8485: 2015. Quantitative assessment of groundwater against the SoBRA derived $GACG_{WVAP}$ for commercial end-use. Semi-quantitative risk Assessment for vapours utilising PID measurements alongside soil and groundwater contamination results in

Source	Pathway	Receptor	Generic Assessment Criteria
	Accumulation and risk of explosion.		accordance with CIRIA C682 and BS8576: 2013.
Contaminants in soils and shallow groundwater.	Direct contact and chemical attack	Buried structures and services	BRE Special Digest 1: 2005 Concrete in Aggressive Ground. UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites

The generic assessment criteria used in this report are included in Appendix I.

9.1 Site Specific Information used to Support the Generic Risk Assessment

The site-specific information used to support the generic risk assessment undertaken as part of this investigation are described in the sections below:

Human Health Risk

The data obtained during the ground investigation will be compared to the Waterman GAC for residential end-use without plant uptake with 1% Soil Organic Matter (SOM). 1% was selected as a conservative and consistent approach across the Site and was based on the lowest SOM % identified in the soils.

Human Health Risk – Construction Workers

A qualitative assessment of the risk to construction workers will be undertaken as part of this assessment, given that there are no specific GAC currently available for contamination risks to this receptor.

Controlled Waters

The identified controlled water receptors are the Principal Aquifer in the Taplow Gravel Formation and the River Brent.

Groundwater analysis will be screened against EQS – Freshwater and $EQS_{bioavailable}$ to assess potential risks to the River Brent and to assess the quality of groundwater flowing onto and off the Site.

Where no EQS are available, DWS will be applied (if available) for information purposes only. There are no recorded drinking water abstractions within 2km of the Site. Therefore, this is a conservative approach to screening quality of the groundwater.

Ground Gas and Vapours

Potential receptors of ground gas generation are considered to be future Site users, off-site users and residents.

The potential risk arising from ground gas will be assessed based of the approach recommended in CIRIA C665, BS 8485: 2015 (assuming a Type A, B, C, or D building), and BS 8576: 2013. A preliminary gas screening value (GSV) for the Site has been derived.

The proposed development is considered a Type B building. A Type B building is described in BS 8485: 2015 as:

"Private or commercial property with central building management control of any alterations to the building or its uses but limited or no central building management control of the maintenance of the building, including the gas protection measures. Multiple occupancy. Small to medium size rooms with

passive ventilation of rooms and other internal spaces throughout ground floor and basement areas. May be conventional building or civil engineering construction. Examples include managed apartments, multiple occupancy offices, some retail premises and parts of some public buildings (such as schools, hospitals, leisure centres) and parts of hotels"

The risk from vapours to human health receptors will be determined quantitatively through assessment of the groundwater concentrations against the GAC_{GWVAP} as derived by The Society of Brownfield Risk Assessment (SoBRA). Based on the ground conditions on-Site this quantitative assessment builds in the following precautionary assumptions;

- No biodegradation is occurring between the source term, and the receptor;
- The groundwater is at 0.65mbgl;
- The geology on-site is a sandy stratum; and
- The omission of capillary fringe between the saturated and unsaturated zones.

The quantitative risk assessment will therefore be inherently conservative in its approach.

A semi-quantitative approach will be used to assess risks from vapours in accordance with CIRIA C682. Concentrations of hydrocarbon vapours (ppm) have been recorded in monitoring wells using a PID. Soil headspace testing has been used to supplement the vapour monitoring along with analysis for VOCs and SVOCs in soil and samples.

Risk to Water Supply Pipes and other Buried Infrastructure

The risk to water supply pipes will be assessed in accordance with the UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites.

The risk to buried structures will be assessed in accordance with the guidelines included within BRE Special Digest 1:2005 Concrete in Aggressive Ground.

Re-use of Topsoil

The proposed development may include areas of soft landscaping. Therefore, the risk to vegetation on the Site from contaminated soils will be assessed in general accordance with the requirements for topsoil as specified in BS3882:2015.

10. Quantitative Environmental Risk Assessment – Risk Estimation

The potential contaminant linkages identified in Section 3.5 have been evaluated using the Generic Assessment Criteria described in Section 9 and Appendix H. The results of this evaluation are reported below:

10.1 Risk to Human Health

10.1.1 Future Site Users

Results of laboratory analysis and screening criteria are provided in Appendix F and Appendix I respectively.

Glycols, BTEX, MTBE, PCBs, herbicides, organophosphorus and organonitrogen pesticides were not reported above the laboratory limit of detection in soil samples. All but one organochlorine pesticide was reported as below the laboratory limit of detection. DDT-p,p' (p,p-Dichlorodiphenyltrichloroethane**)** was reported at the laboratory limit of detection (1ug/kg) in sample HP06 – 0.45-0.50m bgl.

Inorganic Contaminants

Exceedances of the GAC for inorganic contaminants are detailed in Table 13

Table 13: Summary of GAC exceedances for human health – Inorganic Contaminants

Contaminant	Generic Assessment Criteria (mg/kg)	No of samples tested	No of Exceedances	Locations (depth m bgl) and strata	Concentration / concentration range (mg/kg)
Beryllium	1.70	39	1	HP5 (0.05-0.10) Made Ground	6.30
Mercury	1.20	39	6	HP1 (0.70-0.90) Made Ground HP2 (0.10-15) Made Ground HP3 (0.10-0.20) Made Ground HP12 (0.20) Made Ground HP15 (0.10) Made Ground BH12 (0.20) Made Ground	1.3 – 2.2
Lead	310	39	1	HP6 (0.25-0.30) Made Ground	320

Slighted elevated concentrations of mercury were reported in six exploratory hole locations (HP1, HP2, HP3, HP12, HP15 and BH12). Five of the six locations are in current soft landscaped areas with the other location being in the south of the car park.

HP2, HP12 and HP15 are in public open space. The slightly elevated concentrations of mercury are unlikely to pose a significant risk to future Site users. Screening the concentration of mercury in samples

HP2 - 0.70-0.90 (1.6mg/kg), HP12 – 0.20 (1.4mg/kg) and HP15 – 0.10 (2.2mg/kg) against the GAC for residential public open space (16mg/kg) shows the reported concentrations are well within this GAC.

HP1 and HP3 are in a strip of soft landscaping in the south of the Site. Development plans show this area will feature open space. Whilst the slight exceedances of mercury in Made Ground at these locations are unlikely to pose significant risks to future site users, it would be prudent to include provision for clean capping layers in this area to break potential contaminant linkages should this area include soft landscaping.

BH12 is in building footprint and Made Ground at this location will be excavated to facilitate basement construction. Notwithstanding, the building would break the potential contaminant linkage between residual inorganic contamination and future Site users following basement excavations..

HP5 and HP6 are located in an area not current accessible to the public. However, this area will comprise buildings and some open space. Whilst the reported exceedances of beryllium and lead in Made Ground at these locations are unlikely to present unacceptable risks to future Site users, it would be prudent to include provision for clean capping layers in this area should it include soft landscaping.

Organic Contaminants

Exceedances of the GAC for organic contaminants are detailed in Table 14.

Table 14: Summary of GAC exceedances for human health – Organic Contaminants

Contaminant	Generic Assessment Criteria (mg/kg)	No of samples tested	No of Exceedances	Locations (depth m bgl) and strata	Concentration / concentration range (mg/kg)
TPH Aromatic C21-C35	1900	41	1	HP5 (0.05-0.10) Made Ground	2100
TPH Aromatic C35-C44	1900	41	2	TP11 (0.30) Made Ground BH11 (0.10) Made Ground	2100 - 4800
Benzo(a)anthracene	11	38	1	HP5 (0.05-0.10) Made Ground	50
Chrysene	30	38	1	HP5 (0.05-0.10) Made Ground	39
Benzo(b)fluoranthene	3.9	38	2	HP5 (0.05-0.10) Made Ground BH1 (0.70-0.90) Made Ground	5 – 66
Benzo(a)pyrene	3.2	38	2	HP5 (0.05-0.10) Made Ground BH1 (0.70-0.90) Made Ground	4.3 – 61
Di-benzo(a.h.)anthracene	0.31	38	4	HP5 (0.05-0.10) Made Ground HP5 (0.45-0.50) Made Ground	0.36 – 7.5

Contaminant	Generic Assessment Criteria (mg/kg)	No of samples tested	No of Exceedances	Locations (depth m bgl) and strata	Concentration / concentration range (mg/kg)
				HP6 (0.25-0.30) Made Ground BH1 (0.70-0.90) Made Ground	

Exceedances of GACs for organic contaminants were reported in five exploratory holes (HP5, HP6, BH1, BH11 and TP11).

HP5, HP6 and TP11 are in an area not currently accessible to the public. However, this area will comprise buildings and some open space. Tarmacadam/asphalt was observed in Made Ground at HP5,HP6, TP11 and BH11. Therefore, it is possible the source of the PAHs and TPH is the tarmac/asphalt. However, it cannot be discounted the source of the PAHs and TPH is from historical land uses. Notwithstanding, provision should be made for clean capping layers in this area should it include soft landscaping.

The exceedances of organic contaminants reported in Made Ground at BH1 and BH11 are unlikely to present a significant risk to future Site users. Furthermore, Made Ground in building footprints will be excavated to facilitate basement construction. Notwithstanding, the building would break the potential contaminant linkage between the residual inorganic contamination and future Site users following basement excavations.

Whilst the majority of organic determinands analysed for did not report exceedances of GACs, concentrations of speciated TPHs and PAHs above the laboratory limit of detection were reported in numerous samples. A summary of total speciated TPHs and speciated PAHs is presented in Table 15.

Table 15: Summary of total speciated TPHs and speciated PAHs above the limit of detection

Contaminant	No of samples tested	Maximum Concentration (mg/kg)	Concentration range where determinand concentrations reported above LOD (mg/kg)	Location and depth of maximum concentration (depth m bgl)
Total Speciated TPH				
Total Aliphatic and Aromatic TPH (C5 – C44)	41	8,500	13 – 8,500	BH11 – 0.10
Speciated PAHs				
Naphthalene	38	2.0	1.3 – 2.0	TP11 – 0.30
Acenaphthylene		0.4 – 1.7	1.7	HP5 – 0.05 – 0.10
Acenaphthene		7.2	0.19 – 7.2	HP5 – 0.05 – 0.10
Fluorene		6.0	0.21 – 6.0	HP5 – 0.05 – 0.10
Phenanthrene		51	0.16 – 51	HP5 – 0.05 – 0.10
Anthracene		18	0.14 – 18	HP5 – 0.05 – 0.10
Fluoranthene		87	0.16 – 87	HP5 – 0.05 – 0.10
Pyrene		75	0.3 – 75	HP5 – 0.05 – 0.10

Contaminant	No of samples tested	Maximum Concentration (mg/kg)	Concentration range where determinand concentrations reported above LOD (mg/kg)	Location and depth of maximum concentration (depth m bgl)
Benzo(a)anthracene		50	0.19 – 50	HP5 – 0.05 – 0.10
Chrysene		39	0.23 – 39	HP5 – 0.05 – 0.10
Benzo(b)fluoranthene		66	0.25 – 66	HP5 – 0.05 – 0.10
Benzo(k)fluoranthene		29	0.12 - 29	HP5 – 0.05 – 0.10
Benzo(a)pyrene		61	0.18 – 61	HP5 – 0.05 – 0.10
Indeno(1,2,3-cd)pyrene		26	0.23 – 26	HP5 – 0.05 – 0.10
Di-benzo(a.h.)anthracene		7.5	0.24 – 7.5	HP5 – 0.05 – 0.10
Benzo(g.h.i.) Perylene		32	0.31 - 32	HP5 – 0.05 – 0.10

Total speciated TPH concentrations were mostly reported below 1000mg/kg. Eight samples were reported with concentrations of total speciated TPH above 1000mg/kg. Four of these samples were in the area not currently accessible to the public in the west of the Site, taken from HP5 (0.05-0.10m bgl and 0.45-0.50m bgl), HP6 (0.25-0.30m bgl) and BH11 (0.30m bgl). The other samples were taken from WS8 – 0.05-0.15m bgl, WS7A – 0.10-0.30m bgl, BH11 (0.10m bgl) and BH12 (0.20m bgl).

The highest concentrations of total speciated TPH and PAHs were reported in samples of Made Ground containing fragments of tarmacadam. Therefore, it is possible the source of the speciated TPH and PAHs is tarmac. Historical mapping and Site observations indicate the area around HP5, HP6 and TP11 has not been developed for some time. Therefore, it is possible the fragments of tarmacadam in the Made Ground contain a coal-tar binder. Coal tar binder was commonly used in road construction prior to the 1980s and typically contains high concentrations of PAHs.

Asbestos Containing Materials

Thirty-four samples of Made Ground were screened for the presence of asbestos. Asbestos was reported in five samples. The samples identified as containing asbestos, along with the asbestos type and concentration are as follows:

- WS2 – 0.20 – 0.40m bgl. Chrysotile, amosite and crocidolite loose fibres: <0.001%;
- HP2 – 0.10 – 0.15m bgl. Chrysotile, and crocidolite loose fibrous debris and bitumen: 0.009%;
- HP6 – 0.25 – 0.30m bgl. Chrysotile and amosite loose fibrous debris: 0.002%;
- HP6 – 0.45 – 0.50m bgl. Chrysotile loose fibres: <0.001%;
- TP11 – 2.20m bgl. Chrysotile loose fibres and hard/cement type material: 0.393%.

In addition to the above soil samples, four fragments of suspected ACMs were submitted for laboratory identification from the following exploratory hole locations and depths:

- HP1 – 0.50 to 0.90m bgl (two fragments of suspected cement bound asbestos);
- HP2 – 0.65m bgl: and
- HP5 – 0.80m bgl.

The laboratory reported the following:

- Two fragments of chrysotile hard/cement type material in HP1;
- Chrysotile bitumen in HP2;
- Chrysotile hard/cement type material in HP5

The primary risk from asbestos containing material is from disturbance, fibre release then inhalation. Certified clean capping layers and anti-dig layers would be required to break potential disturbance, fibre release and inhalation pathways in soft landscaping areas where fragments of ACMs and asbestos fibres were identified in soils.

Supplementary Ground Investigation

The scope of the supplementary ground investigation in March 2019 was to delineate soils containing asbestos fibres and asbestos containing materials. Seven hand pits were excavated in the northern soft landscaped area, with one potential asbestos containing material noted (suspected asbestos cement) in HP15A, however asbestos was not reported in soil samples submitted for asbestos screening from the supplementary hand pits advanced in this area.

Three trial pits were excavated in the area not accessible to the public in the west of the site, with abundant fragments of asbestos containing cement (up to 70cm in size) identified in TP11. Two samples of Made Ground from TP11 (at 0.30m bgl and 2.20m bgl) were screened for asbestos. The sample at 2.20m bgl returned positive for asbestos (chrysotile loose fibres and hard/cement type material). The concentration of asbestos in the sample was reported as 0.393%. Asbestos was not identified at a visual level on-Site in TP12 and TP13 or microscopic level at the laboratory in Made Ground samples screened from TP12 and TP13.

Asbestos was not identified at a visual level on-Site in HP18 and HP19 or at the microscopic level at the laboratory in Made Ground sampled screened from HP18 and HP19.

The supplementary ground investigation indicates the asbestos identified in soil as part of the 2018 investigation is present in isolated pockets in the soft landscaping in the south and north of the Site. However, asbestos fibres and fragments appear to be more abundant in soils in the land off MacFarlane Lane to the west of the Tesco Store.

Basement excavations will remove Made Ground at HP5, HP6, and TP11. Removal of impacted soils and/or placement of certified clean capping layers and anti-dig layers should be undertaken to break potential disturbance and inhalation pathways where asbestos is present in soils in proposed areas of soft landscaping.

10.1.2 Off-site users

Potential risks to off-site users from asbestos in Made Ground include inhalation of contaminated dusts during groundworks. These risks can be mitigated using standard techniques employed during construction works such as dust suppression, dampening down of exposed surfaces and covering of stockpiles. These measures would be typically implemented and managed through a Construction Environmental Management Plan (CEMP).

10.2 Ground Gas and Vapours

10.2.1 Ground Gas

Guidance in BS8485:2015 has been used to derive a preliminary gas screening value (GSV). The GSV is then used to select an appropriate Characteristic Situation (CS) for design and selection of the choice of ground gas protective measures.

The borehole flow rate Q_{hg} (in L/h) has been calculated for each monitoring location (for each hazardous gas) using the following equation:

$Q_{hg}=q\ (C_{hg}/100)$

Where: -

Q_{hg} is the borehole hazardous gas flow rate

q is the measured flow rate (in litres per hour) of combined gases from the monitoring standpipe

C_{hg} is the measured hazardous gas concentration (in % volume/volume).

The results are summarised in Table 16.

Table 16: Borehole hazardous gas flow rates

Monitoring Well	Response Zone	Q_{hg} (L/hr)			
		Round 1		Round 2	
		Methane	Carbon Dioxide	Methane	Carbon Dioxide
BH1	Langley Silt Member and Taplow Gravel Member	0.0005	0.0095	0.0001	0.0069
BH2A	Langley Silt Member and Taplow Gravel Member	0.0001	0.0001	N/A	N/A
BH3	Langley Silt Member and Taplow Gravel Member	0.0001	0.0001	0.0001	0.0001
BH11	Taplow Gravel Member	-	-	0.0001	0.0001
BH12	Langley Silt Member and Taplow Gravel Member	-	-	0.0001	0.0016
WS1	Langley Silt Member and upper horizons and the Taplow Gravel Member	N/A	N/A	N/A	N/A
WS3	Langley Silt Member and upper horizons and the Taplow Gravel Member	0.0001	0.0008	N/A	N/A
WS4	Made Ground and upper horizons of the Langley Silt Member	0.0006	0.0054	0.0001	0.0005
WS7A	Langley Silt Member	0.0001	0.0002	0.0001	0.0001
WS8	Langley Silt Member and upper horizons of the Taplow Gravel Member	0.0001	0.0003	0.0001	0.0001

The maximum Q_{hg} value is 0.0006l/hr for methane and 0.0095l/hr for carbon dioxide. The higher of these values, 0.0095l/hr, is used as the preliminary gas screening value (GSV). A maximum steady flow rate of 0.5l/hr was used for this calculation.

BS 8485:2015 recommends a worst-case check for a temporally and spatially limited dataset. In this case, the worst case Q_{hg} is 0.0414l/hr, which is calculated by multiplying the highest flow rate (0.6l/hr) by the highest carbon dioxide concentration (6.9%) recorded during monitoring then dividing by one-hundred.

The gas screening value (GSV) indicates the Site would be classified as a Characteristic Situation 1 (CS-1) – Very low risk. However, due to the concentration of carbon dioxide being more than 5% v/v, BS8485:2015 guidance considers an increase to a CS-2. For a CS-2 site, a minimum gas protection score of 3.5 is required for Type B Buildings and ground gas protection measures are required. However, this elevated carbon dioxide result is not consistent with other monitoring wells across the Site. As this assessment above is preliminary, further monitoring should be undertaken to confirm that this result is anomalous, and that the Site should be classified as a CS-1 site.

The data is spatially and temporally limited and additional monitoring visits and assessment would be required in accordance with BS 8485:2015 once further details of the proposed development are known including final Site layout and land uses, locations of any basements, room sizes at ground floor level and in basements.

Further monitoring would likely comprise six visits over a period of 12 weeks, including periods of low and falling pressure.

The site has been identified as being in a non-Radon affected area. However, current advice from the HPA is that all new buildings should include basic radon protective measures as a minimum whether they are in a radon affected area or not.

10.2.2 Vapours

Recorded VOC concentrations from soil headspace testing were <0.1ppm (below the instruments limit of detection) to 3.3ppm.

VOC concentrations recorded above the instruments limit of detection during vapour monitoring ranged from 0.4ppm in BH3 to 10.1ppm in WS8.

VOC concentrations above the laboratory limit of detection were not reported in any of the analysed soil samples. Furthermore, no VOC TICs were reported in the analysed soil samples.

SVOCs reported above the laboratory limit of detection were mainly the 17 speciated PAHs. Excluding the 17 speciated PAHs, sample HP5 – 0.05-0.10m bgl was the only sample analysed to report SVOCs above the laboratory limit of detection. The following SVOCs were reported:

- 2-Methylphenol (1.9mg/kg);
- 4-Methylphenol (5.4mg/kg);
- 2-Methylnaphthalene (4.6mg/kg);
- Dibenzofuran (4.0mg/kg);
- Carbazole (6.2mg/kg); and
- Anthraquinone (8.6mg/kg)

SVOC TICs were reported in numerous soil samples across the Site. Typically, these were reported in samples with PAHs reported above the laboratory limit of detection. Details of SVOC TICs are included in laboratory certificates included in Appendix F.

Screening of groundwater analysis against the SoBRA derived GAC_{GWVAP} for residential end-use reported a single exceedance of the GAC_{GWVAP} for aliphatic TPH C10-C12. Aliphatic TPH C10-C12 in water sampled from BH1 during the first sampling round had a reported concentration of 120ug/l against a GAC_{GWVAP} of 37ug/l. However, the second round of groundwater sampling reported TPH C10-C12 in BH1 as below the laboratory limit of detection (<0.10 ug/l).

Soils, vapour and groundwater analysis indicate a significant vapour regime is not present across the Site. Hydrocarbon impacted groundwater around BH1 could be acting as a localised source of vapour and may require further investigation and mitigation as part of redevelopment works. However, groundwater sampling undertaken as part of the supplementary ground investigation indicates this to be an isolated exceedance and not a widespread ongoing source of vapour. It is also likely that basement excavations and dewatering in the location of BH1 will remove the residual source of contamination.

10.3 Risk to Controlled Waters

Laboratory results from recovered groundwater samples have been assessed against EQS – Freshwater and $EQS_{bioavailable}$. Where EQS values were not available, assessment against DWS has been undertaken.

Two rounds of groundwater sampling have been undertaken on-Site. Eight groundwater samples have been submitted for a suite of analysis comprising inorganic and inorganic contaminants.

The analysis reported a slightly elevated concentration of cobalt and an elevated concentration of manganese in BH1, a marginally elevated concentration of mercury and elevated concentrations of boron and selenium in BH2A and slightly elevated concentrations of copper and selenium in BH3. One marginal exceedance of the GAC for Benzo(a)pyrene was reported in borehole BH11.

Exceedances of EQS and DWS in Area A are summarised in Table 17.

Table 17: Summary of generic quantitative risk assessment for controlled waters

Contaminant	Generic Assessment Criteria (ug/l) (EQS unless stated)	Number of Exceedances	Location(s)	Exceedance Concentration (ug/l)	Sampling Date
Dissolved Boron	1000 (DWS)	1	BH2A	9000	20.11.2018
Dissolved Cobalt	3	1	BH1	4.4	20.11.2018
Dissolved Copper	9.5 ($EQS_{bioavailable}$)	1	BH3	11	20.11.2018
Dissolved Selenium	10 (DWS)	2	BH2A BH3	96 12	20.11.2018 20.11.2018

Contaminant	Generic Assessment Criteria (ug/l) (EQS unless stated)	Number of Exceedances	Location(s)	Exceedance Concentration (ug/l)	Sampling Date
Dissolved Manganese	851.26 ($EQS_{bioavailable}$)	1	BH1	1400	20.11.2018
Dissolved Mercury	0.07	1	BH2A	0.08	20.11.2018
Benzo(a)pyrene	0.00017	1	BH11	0.01	14.03.2019

Chemical analysis indicates groundwater at the Site contains residual inorganic contamination. However, in consideration of the perceived discontinuous nature of the inorganic contamination, mostly marginal exceedances and distance to surface water bodies, the risks to controlled waters associated with groundwater inorganic contamination at the Site are low. Given the depth to groundwater (19.5 to 21.9m AOD) it is also likely basement excavations to 19.3m AOD and dewatering will remove the residual source of contamination.

One exceedance of the GAC for organic contaminants (benzo(a)pyrene) was reported in groundwater sampled at BH11. Additionally, the presence of total speciated TPH has been reported in groundwater sampled from BH1 and BH2A on both monitoring visits. Total speciated TPH was reported as 1200ug/l in BH1 and 3100ug/l in BH2A in the first visit, with lower concentrations of 460ug/l in BH1 and 415ug/l in BH2A identified in the second visit.

Most of the TPH in these samples have been reported in aliphatic carbon bands C21-C35 (1000ug/l and 460ug/l in BH1 and 2600ug/l and 190ug/l in BH2A). The remaining concentrations of speciated TPH were reported in aliphatic carbon bands C10-C12 and C16-C21 in BH1 and aliphatic carbon bands C12-C16 and C16-C21 in BH2A. These carbon bands are recognised as having low to very low mobility in groundwater[2].

During the two monitoring visits, two SVOCs were reported above the laboratory limit of detection. Diethyl phthalate was reported as 8.1ug/l in BH1 during the first visit and bis(2-chloroisopropyl)ether was reported as 45ug/l in BH1 and 16ug/l in BH2A. Numerous SVOC TICs were also reported in BH1 and BH2A. Details of SVOCs and SVOC TICs are included in laboratory certificates included in Appendix F.

The scope of the supplementary 2019 investigation was to confirm and delineate the petroleum hydrocarbon and SVOC concentrations identified in BH1 and BH2A. Groundwater samples from BH11 and BH12 did not report speciated TPH concentrations above the laboratory limit of detection (10 ug/l). However, one exceedance of the GAC for benzo(a)pyrene was reported in groundwater sampled at BH11 and other PAHs (naphthalene, acenaphthylene, fluorene, phenanthrene, anthracene, pyrene, benzo(a)anthracene, and chrysene) were reported at concentrations slightly above the laboratory limit of detection (0.01 ug/l) in BH11. Reported concentrations were between 0.01 ug/l and 0.12 ug/l.

Groundwater monitoring has indicated the presence of organic contamination in groundwater is not widespread and, where present in groundwater, is in residual pockets. In consideration of the perceived discontinuous nature of the organic contamination, distance to surface water bodies, and low mobility of the reported TPH, the risks to controlled waters associated with organic contamination in groundwater at the Site are low. Given the depth to groundwater (19.5 to 21.9m AOD) it is likely basement excavations to 19.3m AOD and dewatering will remove the residual source of contamination.

Where hydrocarbon contamination is present in groundwater, this will need to be appropriately managed during excavation works. Where dewatering of excavations is required, pockets of water may require

[2]CL:AIRE, 2017. Petroleum Hydrocarbons in Groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies. CL:AIRE, London

treatment to lower hydrocarbon concentrations if disposal to sewer under a discharge consent is to be undertaken.

A Foundation Works Risk Assessment (FWRA) should be prepared to assess risks to the Taplow Gravel Member - Principal Aquifer from the preferred piling methodology for the development. This may also be a requirement of the local planning authority/ Environment Agency to demonstrate mitigation measures to protect underlying groundwater from any residual contamination in soils and groundwater from piling activities.

10.4 Risk to Ecological Systems/Vegetation

Laboratory results have been assessed against the criteria given in BS3882: 2015 Specification for Topsoil. A screen of the copper, nickel and zinc results against the assessment criteria did not identify any exceedances.

Imported topsoil/subsoil should be assessed for its suitability for use. In order to assess the suitability of imported soil the full range of analysis specified in BS3882: 2015 and BS8601:2013 should be undertaken by an appropriately qualified specialist. Imported topsoil should also be protective of human health.

10.5 Risk to Water Supply Pipes and other Buried Infrastructure

The UKWIR project steering group decided that barrier pipes would provide sufficient protection for the supply of drinking water in all Brownfield site conditions. However, this approach needs to be agreed with the local water company.

Risks to buried concrete from aggressive ground conditions and chemical attack can be mitigated by designing concrete in accordance with BRE Special Digest 1 (2005), 3rd Edition (BRE-SD1), entitled *Concrete in aggressive ground,* which provides guidance on the specification for concrete for installation in natural ground and in brownfield locations.

Chemical analysis indicates residual contamination is present in groundwater and perched water at the Site. However, in consideration of the perceived discontinuous nature of the organic and inorganic contamination, mostly marginal exceedances and low mobility of the organic contamination, potential risks to off-site structures from off-site migration of contamination are low.

10.6 Risk to Construction Workers

Potential pathways between contaminants in soils and groundwater and construction workers/ ground workers include direct contact, inhalation, and ingestion. However, exposure to contamination would be short-term. There is also the risk of disturbance of ACMs and inhalation of asbestos fibres.

Depleted oxygen levels were recorded in most monitoring wells. A minimum oxygen concentration of 10.1% was recorded in BH1. A peak carbon dioxide concentration of 6.9% was also recorded in BH1. Methane was not recorded above the instrument's limit of detection (<0.1%). Hydrogen sulphide was also not recorded above the instrument's limit of detection (<1ppm). A maximum carbon monoxide concentration of 21ppm was recorded in WS4. A peak VOC concentration of 10.1ppm was recorded in WS8.

To mitigate the occupational risks to construction workers and groundworkers from depleted oxygen levels, ground gases and vapours appropriate PPE and if necessary RPE would be required during any

below ground works and the requirements included within the Confined Space Regulations 1997 should be adhered to. Mandatory health and safety requirements under the Construction, Design and Management (CDM) Regulations 2015 and Control of Substances Hazardous to Health (COSHH) Regulations 2002 and Control of Asbestos Regulations 2012 would also require adherence.

11. Preliminary Geotechnical Assessment

Development proposals will comprise a residential-led scheme including:

- Delivery of up to 1650 high quality homes;
- 35% affordable housing (on a habitable room basis);
- 10,858sqm (GIA) of commercial floorspace (Use Class A1-D2);
- 400 residential car parking spaces;
- A new community space; and
- Building heights ranging from three storeys to seventeen storeys.
- Development proposals do not include private gardens, but areas of soft landscaping may be included consisting of communal grassland, planters and tree pits and podium gardens.

Basements are proposed below each building. Basements will extend to about 19.3m AOD (about 4 to 5m below existing Site levels of about 23 to 24.5m AOD).

As this development comprises multi-storey buildings with basements, it is recommended that a pile foundation solution be considered with the loads being transmitted to the London Clay Formation. Indicative resistances of a single bored pile at varying depths and diameters in London Clay Formation, based on previous sites in similar conditions, is presented in Table 17 below **but should not be relied upon for design.**

Table 18: Indicative pile capacities

Estimated Pile Resistance (bored pile) kN				
Pile Length (m below cut-off level)	750mm	900mm	1050mm	1200mm
5	425	550	700	850
10	825	1000	1250	1500
20	1850	2300	2800	3300
30	3250	4000	4800	5600
40	3850	5550	7200	8400

These estimates should be confirmed upon completion of final ground investigation and suitable suite of geotechnical laboratory testing including BRE SD1 testing as London Clay Formation is well known to contain pyrite.

The final design of the piles will be the responsibility of the piling contractor. The carrying capacity of the actual pile groups will in part depend on the number, type and size of pile chosen by the contractor and the quality of workmanship. The piles should be designed based on the requirements of Eurocode 7.

The type of pile selected, and method of installation, requires careful consideration in relation to the potential to create a contamination pathway between shallow and deep aquifers, and may need agreement with the Environment Agency.

11.1 Floor Slabs

Due to the anticipated depth of the basements (circa 4m to 5m bgl) it is likely that ground bearing floor slabs can be adopted in the design as they will be founded on a blinding layer on either the Taplow Gravel or London Clay. This should be considered in conjunction with the wider foundation design strategy, accounting for the likelihood of piled foundations. The design of the slabs should only be finalised on completion of a gas monitoring assessment in order to allow for the incorporation of gas protection measures (if any).

11.2 Groundwater/Stability of Excavations

The redevelopment operations are likely to include shallow (<1.2m) and deep excavations (up to 5m bgl) associated with service runs, basements and piling. Based on observations made during fieldwork, shallow excavations are likely to be stable in the short term.

During the preliminary ground investigation, groundwater was not encountered. Groundwater monitoring has been recorded at a minimum depth of 1.21m bgl in BH3. It is possible that perched water may be present, and that groundwater levels are likely to fluctuate dependent on the time of year and prevailing weather conditions. Until additional monitoring data is received, it is suggested that groundwater level for design purposes is considered to be 1.20m bgl. However, this level is subject to revision on receipt of further data.

Given the basement excavation depths groundwater control may be required during construction and permanent design works to maintain a dry and stable environment. Appropriate dewatering measures employed should be in accordance with relevant guidance such as CIRIA Report C750, Groundwater control: design and practice, second edition (2016).

Groundwater inflow to excavations may promote instability and temporary works measures should include an allowance for groundwater control. In addition, pockets of perched groundwater and unstable materials in other areas of the Site which have not been investigated cannot be entirely discounted. In line with BS:6031 (2009), all excavations should be examined daily by a competent person to ensure that they remain safe and stable.

Where the sides cannot be graded back to a safe angle, as approved by a competent and experienced person, their continued stability should not be taken for granted. All excavations of greater than 1.2m depth requiring man entry must be provided with a suitably designed shoring support system. For excavations of over 1.20m depth, groundwater control in the form of excavation of sumps and pumping to agreed discharge points may be required.

12. Revised Conceptual Model

Following assessment of data gathered from the ground investigation, the contaminant linkages identified in the outline conceptual model have been re-evaluated and reclassified in relation to the information obtained

The results of the reassessment are summarised in Table 19:

Table 19: Revised conceptual model for the Site

Receptor	Potential Sources	Pathways	Preliminary Risk	Justification / Mitigation	Residual Risk
Human Health					
Future Site Users	Contaminated shallow soils	Direct contact, inhalation and ingestion	Medium	Elevated concentrations of beryllium, mercury, lead, speciated TPH and speciated PAHs have been reported in samples of Made Ground. Screening of Made Ground for asbestos identified five samples containing asbestos at microscopic levels. Fragments of asbestos were also observed in four exploratory hole locations (HP1, HP2, HP5 and TP11). Whilst a large portion of the Site would comprise buildings and hardstanding as part of proposed development plans, areas of soft landscaping would require clean capping layers and potentially anti-dig layers to break potential contaminant pathways between future site users and elevated concentrations of speciated TPH, speciated PAHs and asbestos. The 2019 supplementary investigation delineated the asbestos in the area of HP2 currently comprising public open space with no positive asbestos screening results. This indicates that localised asbestos may be present in that area. During the supplementary investigation an abundance of ACMs were identified at TP11 in the west of the Site. Removal of impacted soils and/or placement of certified clean capping layers and anti-dig layers should be included in soft landscaping areas to break potential disturbance and inhalation pathways.	Low
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater	Ingress into structures, accumulation, inhalation, risk of asphyxiation and potential for explosion	Medium	The GSV recorded during the preliminary monitoring has indicated the Site should be classified as a Characteristic Situation 1 (CS-1) – Very Low risk site. However, one carbon dioxide concentration of 6.9% v/v has been recorded indicating that the Site should be classified as a CS2 site. Based on this information, basic ground gas protection measures may be necessary. Further monitoring would be required to confirm the findings of the preliminary assessment and to confirm whether the high carbon dioxide is an anomalous result. Should further monitoring identify a ground gas risk, appropriate gas protection measures should be incorporated into the development to mitigate the risk. Soils, vapour and groundwater analysis indicate a significant vapour regime is not present across the Site. Minor localised hydrocarbon impacted groundwater has been identified at BH1, BH2 and BH11.	Low

Receptor	Potential Sources	Pathways	Preliminary Risk	Justification / Mitigation	Residual Risk
				However, the likelihood of groundwater acting as a significant source of vapour is considered unlikely.	
Off-site residents/users	Contaminated shallow soils	Dust generation during ground works, inhalation by off-site users	Medium	Dust potentially containing contaminants (including asbestos) may be generated and blown off-site during ground works The implementation of a Construction Environmental Management Plan (CEMP), including techniques for suppressing dust and handling and storage of fuels and hazardous substances, would mitigate potential risks to off-site users from contaminated dust.	Low
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater	Off-site migration of contaminants via groundwater flow through permeable strata, ingress of vapours into off-site structures. Off-site migration of ground gas through permeable strata, ingress of ground gases into off-site structures. Inhalation, risk of asphyxiation and potential for explosion.	Medium	Preliminary data indicates a significant ground gas and vapour regime does not exist at the Site. However, a high carbon dioxide concentration of 6.9% v/v has meant that it may be classified as a CS2 site. Further monitoring would be required to confirm the findings of the preliminary assessment, confirm the high carbon dioxide concentration is an anomalous result. Hydrocarbons have been identified in groundwater at BH1, BH2A and BH11. However, it is considered that groundwater is not acting as a significant source of vapour. Furthermore, the hydrocarbon contaminants identified are of low mobility.	Low
Construction Workers	Contaminated shallow soils and groundwater	Direct contact, inhalation and ingestion	Medium	Ground workers will need to be provided with appropriate Personal and Respiratory Protective Equipment (PPE/RPE) and adopt good hygiene standards. Laboratory analysis identified the presence of asbestos in soils at four exploratory hole locations. Fragments of asbestos were observed in four exploratory holes. Construction workers and ground workers should be asbestos awareness trained. A Control of Asbestos Regulations (CAR) 2012 asbestos management plan should be implemented for the redevelopment works.	Low
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile	Inhalation within confined spaces, risk of asphyxiation and explosions	Low to Medium	Depleted oxygen levels were recorded in most monitoring wells. Detectable concentrations of vapours, carbon dioxide and carbon monoxide were also recorded in monitoring wells. Construction workers and ground workers should avoid entering excavations. If entry cannot be avoided, a risk assessment should be undertaken with PPE and RPE used where appropriate. Confined space	Low

Receptor	Potential Sources	Pathways	Preliminary Risk	Justification / Mitigation	Residual Risk
	compounds in shallow groundwater			entry should be carried out in line with the Confined Space Entry Regulations 1997.	
Property					
On-Site structures	Contaminated soils and groundwater	Direct contact. Chemical attack on buried services and structures. Contamination of drinking water supply.	Medium	Barrier pipes would provide sufficient protection for drinking water supply pipes. This approach would need to be agreed with the local water company. Risks to buried concrete from aggressive ground conditions and chemical attack can be mitigated by designing concrete in accordance with BRE Special Digest 1 (2005), 3rd Edition (BRE-SD1), entitled Concrete in aggressive ground, which provides guidance on the specification for concrete for installation in natural ground and in brownfield locations.	Low
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater	Ground gas / vapour ingress and accumulation within structures, leading to potential explosion	Medium	Preliminary data indicates a significant ground gas and vapour regime does not exist at the Site. However, a single high carbon dioxide concentration of 6.9% v/v has meant that it may be classified as a CS2 site. No other carbon dioxide concentrations above 5% v/v have been identified, which indicates the result may be anomalous. Further monitoring would be required to confirm if the result is anomalous and whether the site should be classified as a CS1 site. If further monitoring does identify a ground gas risk, appropriate gas protection measures should be incorporated into the development to mitigate the risk. Minor localised hydrocarbon impacted groundwater has been identified at BH1, BH2 and BH11. However, it is considered that groundwater is not acting as a significant source of vapour.	Low
Off-site structures	Contaminated groundwater	Off-site migration of contamination by groundwater flow resulting in direct contact with off-site structures	Medium	Chemical analysis indicates residual organic and inorganic contamination is present in groundwater at the Site. However, in consideration of the perceived discontinuous nature of the organic and inorganic contamination, mostly marginal exceedances and low mobility of the organic contamination, potential risks to off-site structures from off-site migration of contamination are low.	Low
	Ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater	Off-site migration of contaminants via groundwater flow through permeable strata, ingress of vapours into off-site structures. Off-site migration of ground gas through	Medium	Preliminary data indicates a significant ground gas and vapour regime does not exist at the Site. However, a high carbon dioxide concentration of 6.9% v/v has meant that it may be classified as a CS2 site. Further monitoring would be required to confirm the findings of the preliminary assessment, confirm the high carbon dioxide concentration is an anomalous result. Hydrocarbons have been identified in groundwater at BH1, BH2A and BH11. However, it is considered that groundwater is not acting as a	Low

Receptor	Potential Sources	Pathways	Preliminary Risk	Justification / Mitigation	Residual Risk
		permeable strata, ingress of ground gases into off-site structures. Risk of explosion.		significant source of vapour. Furthermore, the hydrocarbon contaminants identified are of low mobility.	
Ecological Systems					
Soft landscaping	Contaminants in soils and shallow groundwater	Direct contact. Root uptake	Medium	No exceedances of potentially phytotoxic contaminants have been recorded in soils. Imported topsoil/subsoil should be assessed for its suitability for use. In order to assess the suitability of imported soil the full range of analysis specified in BS3882: 2015 and BS8601:2013 should be undertaken by an appropriately qualified specialist. Imported topsoil should also be protective of human health.	Low
Controlled Waters					
Taplow Gravel Member - Principal Aquifer	Historical and current on-Site and off-site land uses. Leachable contaminants in Made Ground.	Leaching into groundwater. Lateral migration. Preferential pathways created by piling activities.	Medium	Chemical analysis indicates residual inorganic and organic contamination is present in groundwater at the Site. However, in consideration of the perceived discontinuous nature of the inorganic and organic contamination and low mobility of the reported hydrocarbons, the risks to controlled waters associated with groundwater organic contamination at the Site are low The 2019 supplementary investigation did not identify significant hydrocarbon in BH11 and BH12, with TPH concentrations below the limit of detection. However, the sample from BH11 did contain low concentrations of PAHs. Where dewatering of excavations is required, pockets of water may require treatment to lower hydrocarbon concentrations if disposal to sewer under a discharge consent is to be undertaken. A Foundation Works Risk Assessment (FWRA) should be prepared to assess risks to the Taplow Gravel Member - Principal Aquifer from the preferred piling methodology for the development. This may also be a requirement of the local planning authority/ Environment Agency to demonstrate mitigation measures to protect underlying groundwater from any residual contamination in soils and groundwater from piling activities.	Low

13. Conclusions and Recommendations

13.1 Conclusions

On the basis of the information obtained from the intrusive investigation the Site is considered to represent a **Medium** risk.

The risk rating is based on the following:

- Widespread significant contamination of soils and groundwater has not been identified. However, collection of soil and groundwater data in the footprint of the Tesco store, delivery yard, PFS forecourt and store access roads has not been possible. Therefore, it cannot be discounted contamination exists in soils and groundwater in these areas and requirement for remediation of groundwater and soil cannot be ruled out;
- Slightly elevated concentrations of metals were reported in soils at several exploratory hole locations. Residual locations of elevated speciated TPH and speciated PAHs were also reported. However, a certified clean capping layer or hardstanding would break the potential contaminant linkages between these contaminants and future Site users;
- Asbestos was reported at the microscopic level in Made Ground sampled from four exploratory hole locations (WS2, HP2, HP6 and TP11). Asbestos fragments were also observed in Made Ground at four exploratory hole locations (HP1, HP2, HP5 and TP11). Areas of soft landscaping would require removal of asbestos impacted soils and/or clean capping layers and potentially anti-dig layers to break potential contaminant pathways between future site users and asbestos; and
- Chemical analysis indicates residual inorganic contamination in groundwater at the Site. Concentrations of speciated TPH and PAH above the laboratory limit of detection were also reported in a groundwater samples recovered from BH1, BH2A and BH11 in the west and south-east.

The potential pollutant linkages can be managed by design of appropriate mitigation measures during the redevelopment of the Site. Following the implementation of the recommendations, post development, the Site would be of **low** risk and should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990 and the requirements of the NPPF would be met.

13.2 Earthworks and Construction Considerations

- Buried obstructions may be widespread across the Site and are likely to consist of relic footings and foundations of previous Site uses (Imperial Biscuit Works and a nursery) and the existing foundations of the Tesco store, petrol interceptors, the PFS and associated tanks, tank bases, fuel lines and fuel pumps;
- Uncontaminated concrete may be recovered for reuse on-Site subject to compliance with the WRAP Quality Protocol for Production of Aggregates from Inert Waste or recovered as inert waste subject to acceptance at an appropriately permitted facility;
- Soils in locations where samples reported speciated TPH concentrations >1000mg/kg, including soil samples at WS7A WS8, HP5, HP6, BH11, BH12 and TP11 may be hazardous for waste disposal purposes. Sampling and assessment of waste soils in accordance with EA guidance documentation will be required to confirm this;
- Where hydrocarbon contamination in groundwater is present, this will need to be appropriately managed during excavation works. Where dewatering of excavations is required, pockets of water

may require treatment to lower hydrocarbon concentrations if disposal to sewer under a discharge consent is to be undertaken;

- Removal of soils from the Site can be minimised by their reuse on Site to facilitate filling where required provided they are chemically and geotechnically suitable. Any re-use of soils on Site should be in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP), subject to appropriate sampling and testing, risk assessment and compliance with the requirements of the DoWCoP;
- All site works will need to be managed to prevent contamination or pollution of the Taplow Gravel Member Principal Aquifer. Measures should include containment of fuels, oils and other hazardous substances in suitably bunded facilities, monitoring of these facilities, control of refuelling activities, spill response procedures, control of all discharges, management of run off from work areas and compounds;
- A Foundation Works Risk Assessment (FWRA) may be required by the local planning authority/ Environment Agency to demonstrate mitigation measures to protect underlying groundwater from any residual contamination in soils and groundwater from piling activities;
- Potential risks to construction workers and ground workers can be mitigated by the use of standard health and safety measures including PPE and if necessary RPE and conformance with the Confined Space Regulations 1997, Construction, Design and Management (CDM) Regulations 2015, Control of Substances Hazardous to Health (COSHH) Regulations 2002 and Control of Asbestos Regulations 2012;
- The potential for UXO at the Site cannot be discounted. A detailed UXO desk study should be undertaken and its findings and recommendations considered during subsequent intrusive Site works;
- Fuel and hazardous substance storage should be in accordance with the Control of Pollution (Oil Storage Regulations (England) 2001 and COSHH Regulations 2002 respectively. Bulk storage of fuel should only be permitted in double skinned tanks (integrally bunded).

13.2.1 Asbestos Containing Materials

Asbestos in Made Ground is not unexpected for post-industrial sites. The source of asbestos in Made Ground is typically historical demolition of buildings constructed before 1999 when the Asbestos (Prohibitions) (Amendment) Regulations 1999 came into force.

Asbestos was reported in soils at four exploratory hole locations. Reported concentrations ranged from <0.001% (below the laboratory limit of quantification) to 0.393%. Asbestos visible to the naked eye was also observed in soils at four exploratory hole locations. The hazardous waste threshold for the presence of asbestos in soils (where asbestos is not visible to the naked eye) is 0.1%. Although only one sample (TP11 – 2.20m bgl) exceeds this threshold, soils containing visible fragments of asbestos would be classified hazardous for waste disposal and the waste regarded as a mixed waste. The asbestos fragments would be classified as hazardous waste and the soil matrix classified either as non-hazardous or hazardous[3];

[3] As per Environment Agency Technical Guidance WM3 "Guidance on the classification and assessment of waste" (1st Edition v1.1 2018): If the waste contains any pieces of asbestos containing material that can be identified as potentially being asbestos containing materials by a competent person (if examined by the naked eye), then the pieces must be assessed separately. The waste is hazardous if the concentration of asbestos in the piece of asbestos containing material is 0.1% or more. The waste is regarded as a mixed waste and classified accordingly. The following codes should be assigned to the asbestos element of the waste as appropriate:

- 17 06 05* Construction material containing asbestos
- 17 06 01* Insulation material containing asbestos.

17 06 05* would normally be used in preference to 17 06 01* for the asbestos in asbestos contaminated soils and stones.

Visible asbestos debris in waste soils, if present in discreet pockets, could be managed by hand picking to potentially reduce disposal costs by separating asbestos from the soil matrix. This will allow waste soil to have its own waste classification. This task could be non-licensed or licensed depending on the type of asbestos and its condition.

Construction workers should be asbestos awareness trained and an asbestos management plan, in accordance with Control of Asbestos Regulations (CAR) 2012, prepared. This should include detailed risk assessments, provision of appropriate PPE and RPE, mitigation measures for dust generation and asbestos air monitoring.

13.3 Geotechnical

As this development comprises multi-storey buildings and basements, it is recommended that a pile foundation solution be considered with the loads being transmitted to the London Clay. Indicative resistances of a single bored pile at varying depths and diameters in London Clay, based on previous sites in similar conditions, is presented in Table 20 **but should not be relied upon for design**.

Table 20: Indicative pile capacities

Estimated Pile Resistance (bored pile) kN				
Pile Length (m below cut-off level)	750mm	900mm	1050mm	1200mm
5	425	550	700	850
10	825	1000	1250	1500
20	1850	2300	2800	3300
30	3250	4000	4800	5600
40	3850	5550	7200	8400

- These estimates should be confirmed upon completion of final Ground Investigation and suitable suite of geotechnical laboratory testing including BRE SD1 testing as London Clay is well known to contain pyrite;
- The final design of the piles will be the responsibility of the piling contractor. The carrying capacity of the actual pile groups will in part depend on the number, type and size of pile chosen by the contractor and the quality of workmanship. The piles should be designed based on the requirements of Eurocode 7;
- The type of pile selected, and method of installation, requires careful consideration in relation to the potential to create a contamination pathway between shallow and deep aquifers, and may need agreement with the Environment Agency;
- Due to the anticipated depth of the basements (circa 4m to 5m bgl) it is likely that ground bearing floor slabs can be adopted in the design as they will be founded on a blinding layer on either the Taplow Gravel or London Clay. This should be considered in conjunction with the wider foundation design strategy, accounting for the likelihood of piled foundations. The design of the slabs should only be finalised on completion of a gas monitoring assessment in order to allow for the incorporation of gas protection measures (if any);
- Groundwater has been recorded at a minimum depth of 1.21m bgl in BH3. It is possible that perched water may be present, and that groundwater levels are likely to fluctuate dependent on the time of

year and prevailing weather conditions. Until additional monitoring data is received, it is suggested that groundwater level for design purposes is considered to be 1.20m bgl. However, this level is subject to revision on receipt of further data;

- Given the basement excavation depths groundwater control may be required during construction and permanent design works to maintain a dry and stable environment. Appropriate dewatering measures employed should be in accordance with relevant guidance such as CIRIA Report C750, Groundwater control: design and practice, second edition (2016);
- Groundwater inflow to excavations may promote instability and temporary works measures should include an allowance for groundwater control. In addition, pockets of perched groundwater and unstable materials in other areas of the Site which have not been investigated cannot be entirely discounted. In line with BS:6031 (2009), all excavations should be examined daily by a competent person to ensure that they remain safe and stable;
- Where the sides cannot be graded back to a safe angle, as approved by a competent and experienced person, their continued stability should not be taken for granted. All excavations of greater than 1.2m depth requiring man entry must be provided with a suitably designed shoring support system. For excavations of over 1.20m depth, groundwater control in the form of excavation of sumps and pumping to agreed discharge points may be required.

13.4 Recommendations

13.4.1 Environmental

- The presence of asbestos in soils should be included in the Site's asbestos register;
- Consideration should be given to inaccessible areas of the Site during the ground investigation and uncertainties pertaining to the contamination status in these areas;
- Consideration should be given to potentially widespread buried obstructions across the Site, likely to consist of relic footings and foundations of previous Site uses and the existing foundations of the Tesco store, petrol interceptors, the PFS and associated tanks, tank bases and fuel lines;
- The potential for some soils to be classified as hazardous for waste disposal purposes due to TPH and asbestos should be considered. This should also include areas not accessible for the investigation, such as the PFS forecourt;
- Contingency should be made for management of asbestos contaminated soils during construction works and subsequent mitigation measures for the development;
- Retention of groundwater and ground gas monitoring wells installed as part of this ground investigation to enable future monitoring of ground gas and groundwater;
- Detailed environmental and geotechnical ground investigation should be undertaken once the design of proposed development has been finalised. This should target areas of the Site not accessible during this ground investigation, including the footprint of the Tesco store, delivery yard, PFS forecourt, and store access roads. The presence of buried obstructions should also be investigated;
- Waste classification assessment of likely waste soil arisings should be undertaken as part of the detailed environmental and geotechnical ground investigation. Exploratory holes should target proposed basement excavation areas and where Site levels are to be reduced;
- Further environmental and geotechnical ground investigation should also include ground gas, vapour and groundwater monitoring and sampling of monitoring wells;
- Monitoring and assessment of the Site's ground gas and vapour regime should be in accordance with guidance CIRIA C665, CIRIA C682, BS8485: 2015 and BS8576: 2013 and will be required once further details of the proposed development are known including: final Site layout and land uses, locations of basements, room sizes at ground floor level and in basements. Monitoring would likely comprise six visits over a period of 12 weeks, including monitoring during periods of low and falling pressure;
- A detailed UXO desk study should be undertaken and its findings and recommendations considered during subsequent intrusive Site works;
- Preparation of a Remediation Strategy, based on the findings of the Geo-Environmental Assessment report, detailing how potentially unacceptable risks to identified receptors will be mitigated at part of the development and a Verification Report confirming the implementation of the mitigation measures. Both documents should be suitable for submission for planning;
- Imported topsoil/subsoil should be assessed for its suitability for use. In order to assess the suitability of imported soil the full range of analysis specified in BS3882: 2015 and BS8601:2013 should be undertaken by an appropriately qualified specialist. Imported topsoil should also be protective of human health;

- A Foundation Works Risk Assessment (FWRA) should be undertaken to assess risks to the Principal Aquifer from the preferred foundation solution.

13.4.2 Geotechnical

As this preliminary ground investigation provided limited geotechnical information, and the proposed development involves multi-storey buildings, additional ground condition information such as shear strength, groundwater level and porewater pressure is required.

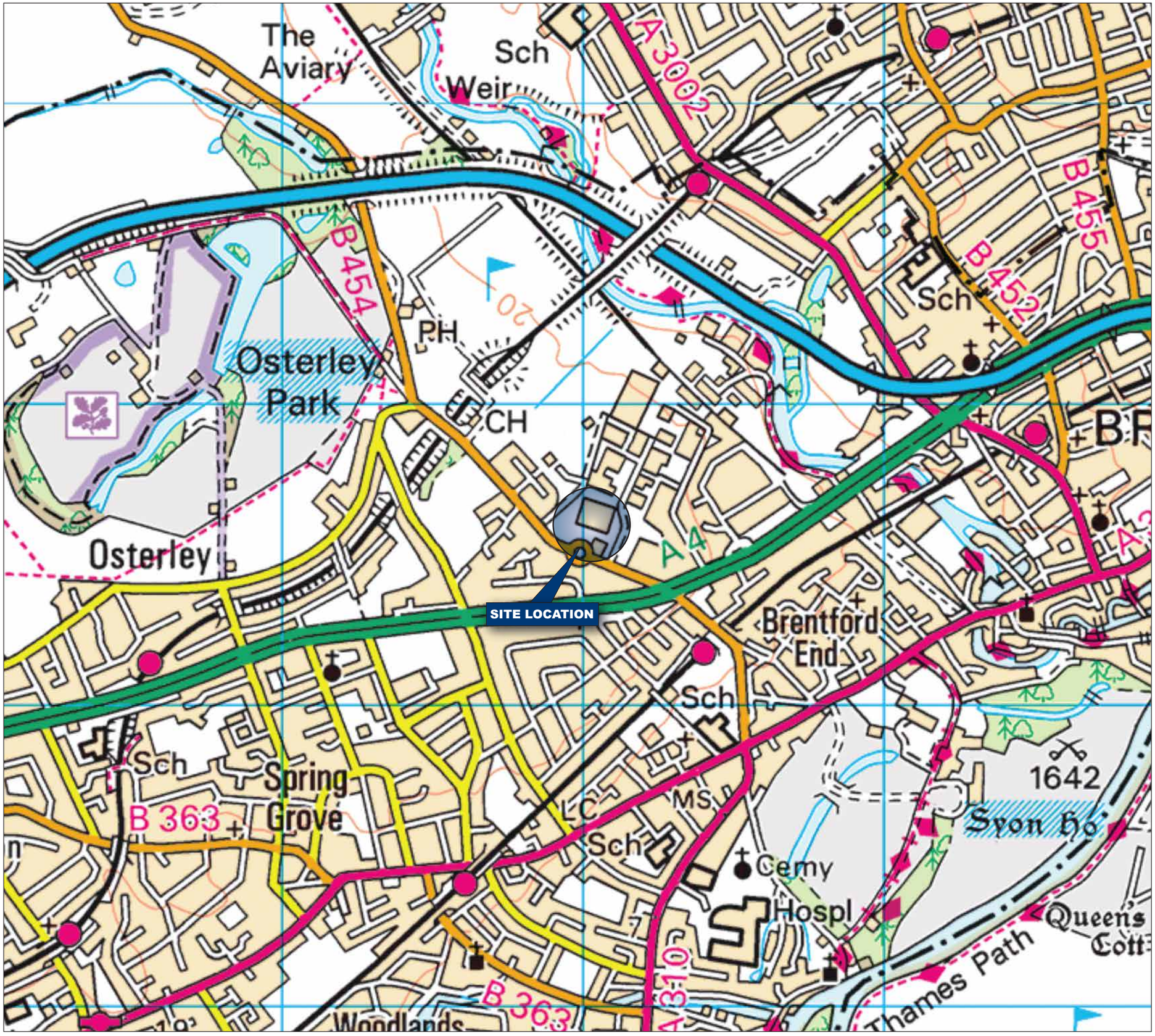
A further ground investigation is required comprising boreholes to depths in the region of 40m bgl with associated in-situ testing, standpipe and piezometer installation; and geotechnical laboratory testing of recovered samples. Geotechnical interpretative reporting should include:

- Identification of suitable piling depths and founding stratum for shallow foundations;
- Geotechnical parameters for foundation and pavement design;
- Indicative bored pile estimates must be confirmed upon completion of final ground investigation;
- Establish aggressivity of the soils/bedrock in relation to buried concrete; and
- Establish groundwater levels and potential impact on foundations design and temporary works.

APPENDICES

Appendix A Site Plans

- **Site Location Plan**
- **Site Plan**
- **Ground Investigation Plan**
- **Conceptual Site Model**
- **Proposed Development Plans**



Project Details	WIE15238-100: Tesco, Osterley Park, Syon Lane
Figure Title	Figure A1: Site Location Plan
Figure Ref	WIE15238-100_GR_3GQRA_A1A
Date	December 2018
File Location	\\s-lncs\wiel\projects\wie15238\100\graphics\3.gqra\issued figures

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waterman

Site Boundary

N

Project Details	WIE15238-100: Tesco, Osterley Park, Syon Lane
Figure Title	Figure A2: Site Plan
Figure Ref	WIE15238-100_GR_3GQRA_A2B
Date	July 2020
File Location	\\s-lncs\wiel\projects\wie15238\100\graphics\3.gqra\issued figures

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waterman

- Site Boundary
- Borehole Location
- Hand Pit Location
- Window Sample Location

Supplementary Ground Investigation Locations

- Supplementary Borehole Location
- Supplementary Hand Pit Location
- Supplementary Trial Pit Location

N

Project Details	WIE15238-100: Tesco, Osterley Park, Syon Lane
Figure Title	Figure A3: Ground Investigation Plan
Figure Ref	WIE15238-100_GR_3GQRA_A3C
Date	July 2020
File Location	\\s-lncs\wiel\projects\wie15238\100\graphics\3.gqra\issued figures

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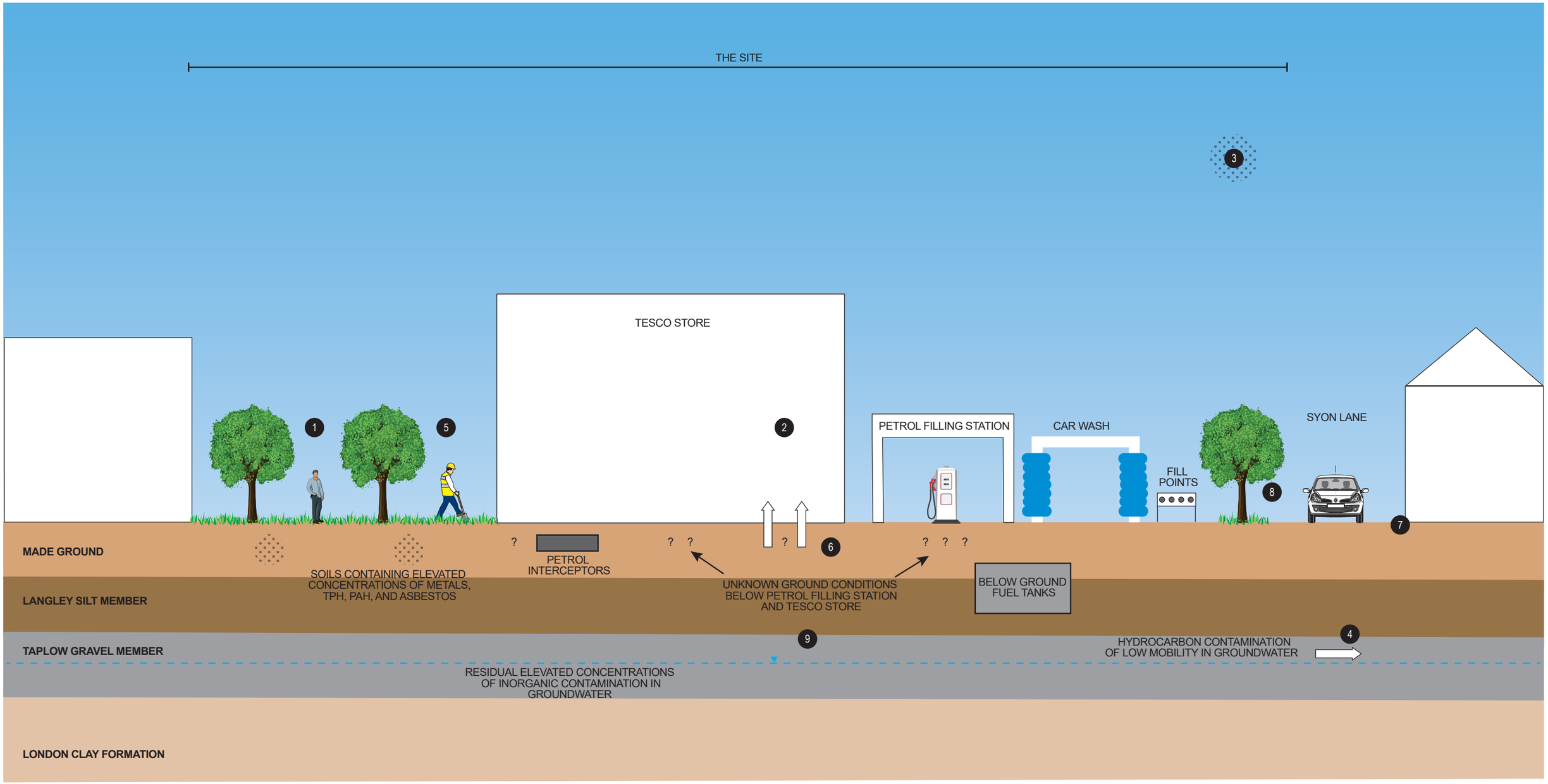

1. Risks to future site users from contamination in Made Ground. Potential contaminant linkages include: Direct contact, inhalation and ingestion.

2. Risks to future site users from ground gas and vapours. Potential contaminant linkages include: Ingress into structures, accumulation, inhalation, risk of asphyxiation and potential for explosion.

3. Risks to off-site users from contaminated dust during ground works. Potential contaminant linkages include: Dust generation during ground works, inhalation by off-site users.

4. Risks to off-site users from ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater. Potential contaminant linkages include: Off-site migration of contaminants via groundwater flow, off-site migration of ground gas through permeable strata, ingress of ground gases into off-site structures, inhalation, risk of asphyxiation and potential for explosion.

5. Risks to construction workers from contamination in Made Ground, ground gas and vapours in soils and groundwater. Potential contaminant linkages include: Direct contact, inhalation and ingestion of contamination and inhalation of ground gases and vapours.

6. Risks to future on-site structures. Potential contaminant linkages include: Direct contact with contaminated soils and groundwater. Chemical attack on buried services and structures. Contamination of drinking water supply. Ground gas / vapour ingress and accumulation within structures, leading to potential explosion.

7. Risks to off-site structures from ground gas and vapours from organic constituents and volatile compounds in Made Ground, volatile compounds in shallow groundwater. Potential contaminant linkages include: Off-site migration of contaminants via groundwater flow, off-site migration of ground gas through permeable strata, ingress of ground gases into off-site structures, inhalation, risk of asphyxiation and potential for explosion.

8. Risks to future soft landscaping from direct contact with contaminated soils and groundwater and root uptake.

9. Risks to the Taplow Gravel Member– Principal Aquifer from historical and current on-Site and off-site land uses. Leachable contaminants in Made Ground. Potential contaminant linkages include: Leaching into groundwater. Lateral migration. Preferential pathways created by piling activities.

Project Details	WIE15238-100: Tesco, Osterley Park, Syon Lane
Figure Title	Figure A4: Conceptual Site Model
Figure Ref	WIE15238-100_GR_3GQRA_A4A
Date	December 2018
File Location	\\s-lncs\wiel\projects\wie15238\100\graphics\3.gqra\issued figures

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KEY_PP_Proposed Site Levels

- Application Boundary
- +xx.x Proposed Site Level in Metres AOD
- Development Parcel

Rev	Date	Description	Drawn	Chkd
02	25/06/20	Design Freeze Revision A	EA	IF/RT
01	27/05/20	Design Freeze	EA	IF/RT

Drawing Status
Outline Planning Application

Client
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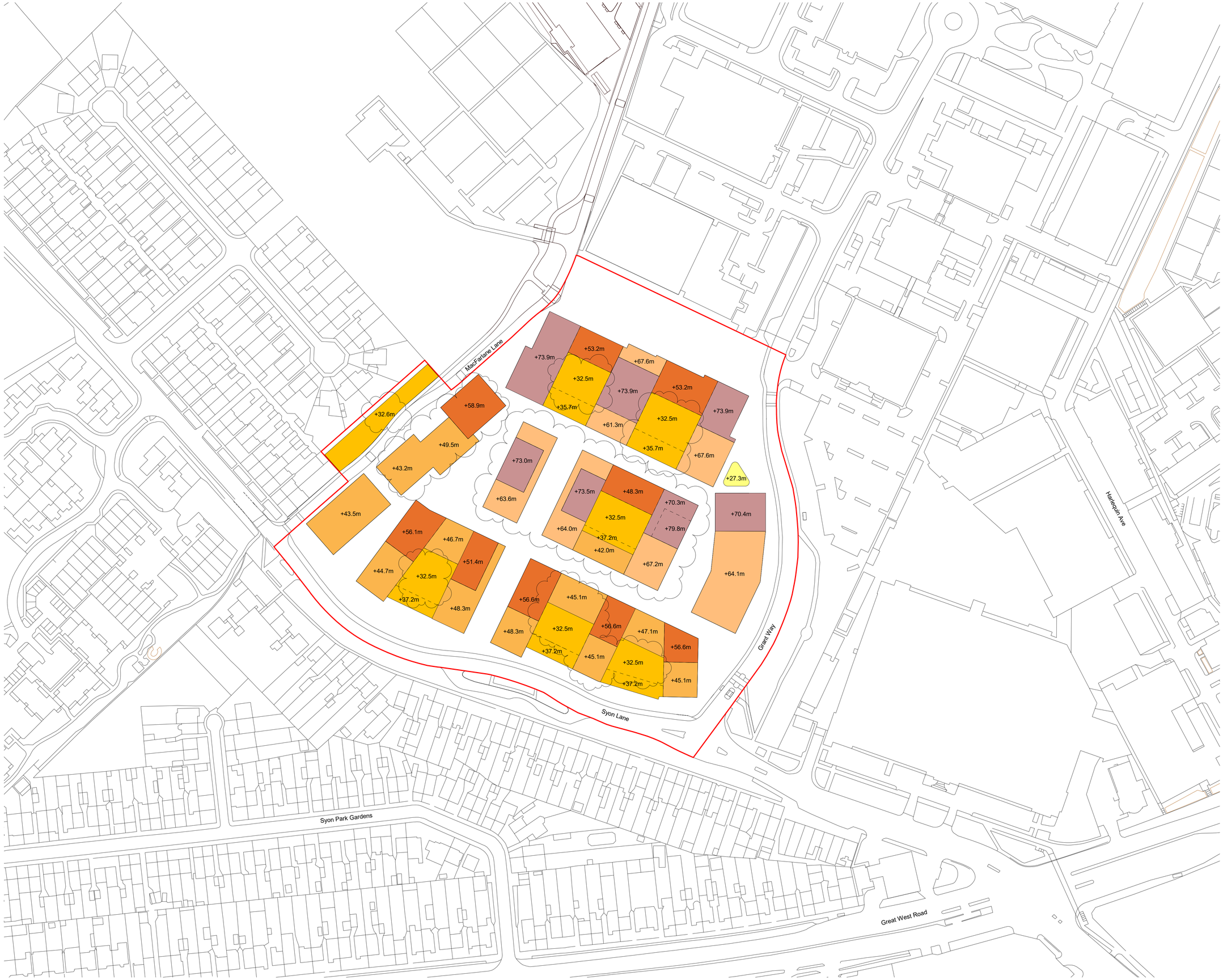
www.jtp.co.uk

Project
Tesco Osterley

Drawing Title
Parameter Plan
Proposed Site Levels

Scale @A1 1 : 1000 Job Ref. 01754
Drawing No. JTP-DR-MP-PP-001 Revision.
Scale Bar 0 10 20 30 40 50 m



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KEY_PP_Vertical Building Parameters

Application Boundary

+ X Maximum Building Height AOD (Ground Level taken at 23.3m)

Maximum height includes building parapets, rooftop plant and core overruns.

Building Heights:

- <+20m AOD
- +30-40m AOD
- +40-50m AOD
- +50-60m AOD
- +70m AOD

Rev	Date	Description	Drawn	Chkd
02	25/06/20	Design Freeze Revision A	EA	IF/RT
01	27/05/20	Design Freeze	EA	IF/RT

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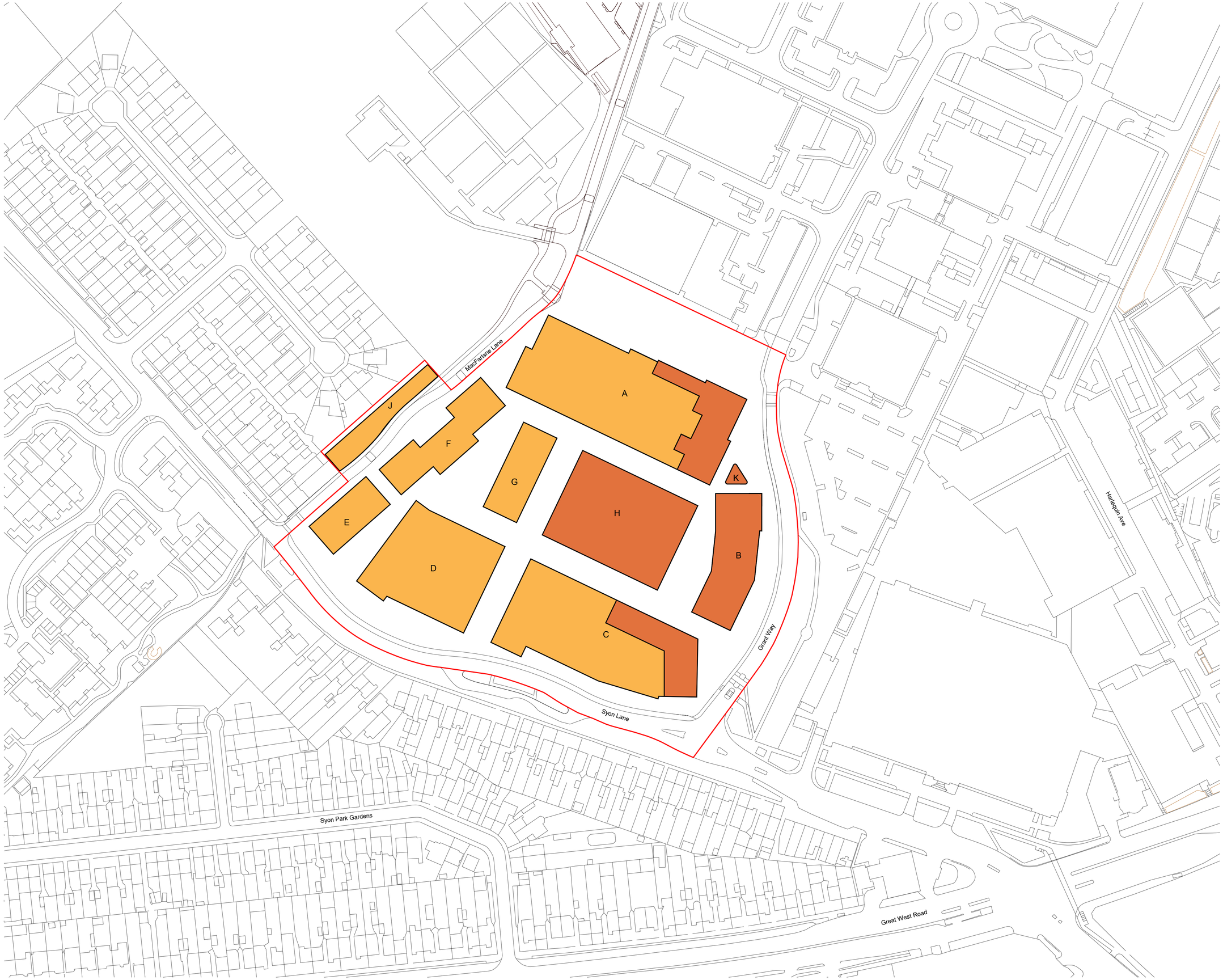
Drawing Title
Parameter Plan
Maximum Building Heights

Scale @A1 1 : 1000 Job Ref. 01754
Drawing No. JTP-DR-MP-PP-003 Revision.1
Scale Bar 0 10 20 30 40 50 m



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KEY_PP_Predominant Uses (Ground & First Floor)

- Application Boundary
- Mix of Residential and Non-Residential
- Residential and Residential Ancillary

Rev	Date	Description	Drawn	Chkd
02	25/06/20	Design Freeze Revision A	EA	IF/RT
01	27/05/20	Design Freeze	EA	IF/RT

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Drawing Title
Parameter Plan
Predominant Ground Floor Uses

Scale @A1 1 : 1000 Job Ref. 01754
Drawing No. JTP-DR-MP-PP-004 Revision.
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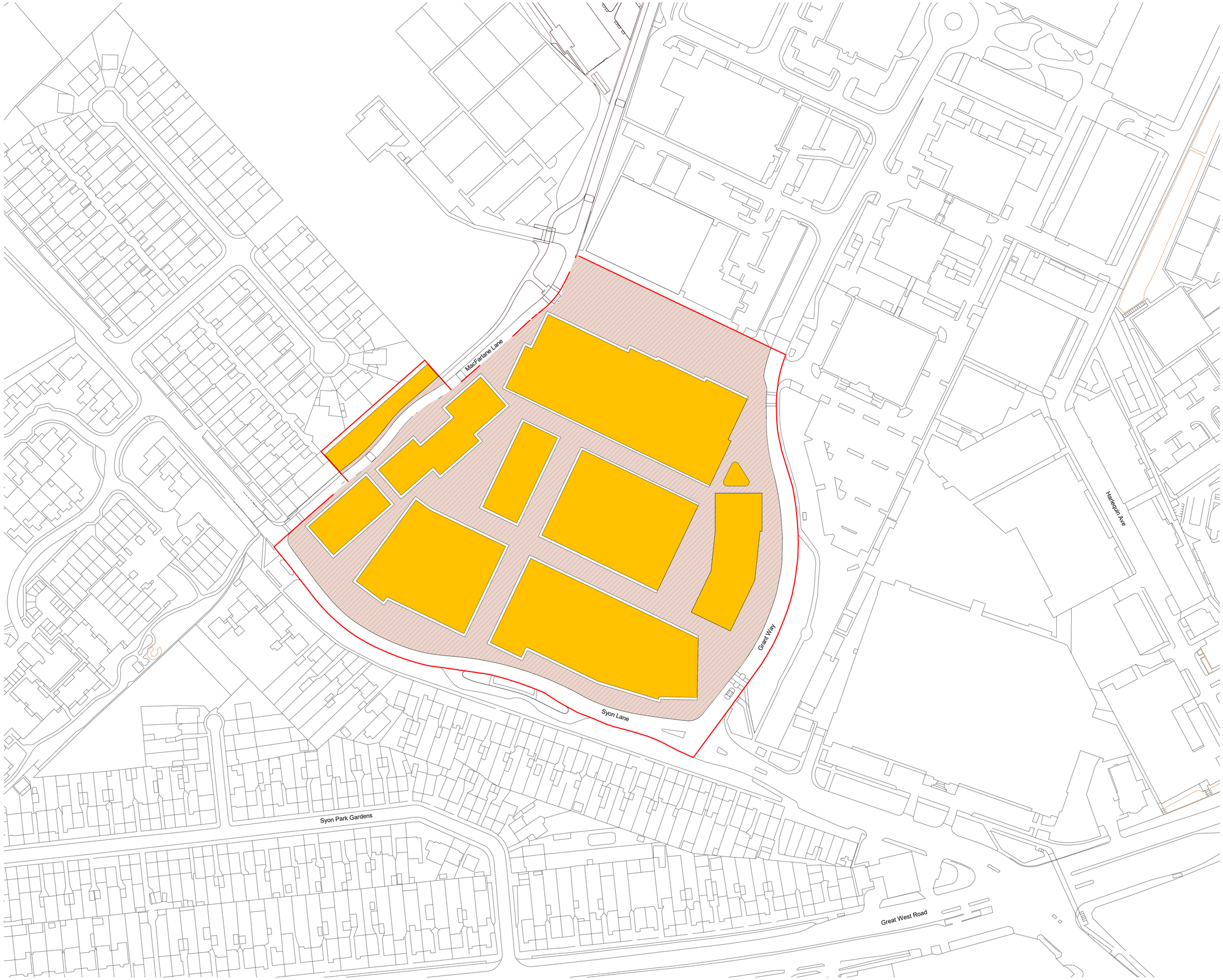

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KEY_PP_Proposed Open Space at Ground Level

- Application Boundary
- Public Open Space (including proposed access routes)
- Development Parcel
- Minimum Zone of Defensible Space Surrounding Development Parcel

Rev	Date	Description	Drawn	Chkd
02	25/06/20	Design Freeze Revision A	EA	IF/RT
01	27/05/20	Design Freeze	EA	IF/RT

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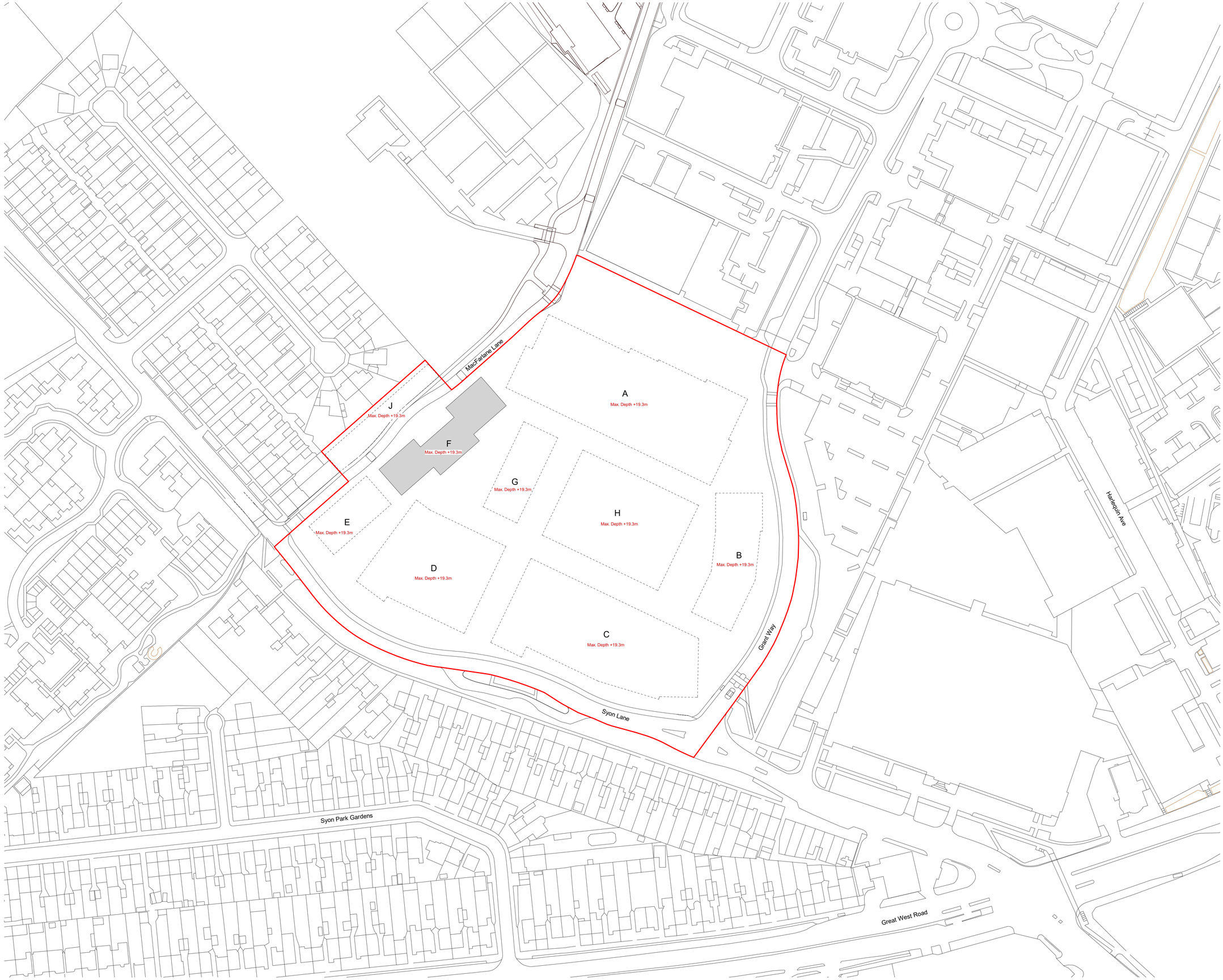
Drawing Title
Parameter Plan
Proposed Open Space at Ground Level

Scale @A1 1 : 1000 Job Ref. 01754
Drawing No. JTP-DR-MP-PP-007 Revision.
Scale Bar 0 10 20 30 40 50 m



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KEY_PP_Basement Provision

- Application Boundary
- Basement Area Maximum Extents for Cycle Storage
- Basement Area Maximum Extents for Plant Room Only
- x.xxm — Proposed Deepest Extent of Basement Finish Floor Level (Levels in Metres AOD)

Rev	Date	Description	Drawn	Chkd
02	25/06/20	Design Freeze Revision A	EA	IF/RT
01	27/05/20	Design Freeze	EA	IF/RT

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Drawing Title
Parameter Plan
Basement Provision

Scale @A1 1 : 1000 Job Ref. 01754
Drawing No. JTP-DR-MP-PP-010 Revision.
Scale Bar 0 50 100 150 200 250 mm

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KEY_PP_Proposed Open Space at Podium Level

- Application Boundary
- Zone of Open Space at Podium Level
- x.xxm — Maximum Height of Open Space (Level in Metres AOD)

Rev	Date	Description	Drawn	Chkd
02	25/06/20	Design Freeze Revision A	EA	IF/RT
01	27/05/20	Design Freeze	EA	IF/RT

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Drawing Title
Parameter Plan
Open Space at Podium Level

Scale @A1 1 : 1000 Job Ref. 01754
Drawing No. JTP-DR-MP-PP-008 Revision.1
Scale Bar 0 50 100 150 200 250 mm

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KEY_PP_Proposed Open Space at Roof Level

- Application Boundary
- Maximum Zone of Open Space at Roof Level (Residential Access Only)
- Maximum Zone of Bidoiverse Roofs
- x.xxm Maximum Height of Open Space (Level in Metres AOD)

Rev	Date	Description	Drawn	Chkd
02	25/06/20	Design Freeze Revision A	EA	IF/RT
01	27/05/20	Design Freeze	EA	IF/RT

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Drawing Title
Parameter Plan
Open Space at Roof Level

Scale @A1 1 : 1000 Job Ref. 01754
Drawing No. JTP-DR-MP-PP-009 Revision.1
Scale Bar 0 50 100 150 200 250 mm

Appendix B Site Photographs

Petrol Filling Station in the South

Petrol Filling Station Fill Points

Hand Car Wash Area in the East

Vent Pipe. Evidence of a Petrol Interceptor in the North-West

Automated Car Wash in the South

Vacant Land in the West

Public Open Space in the North

Electricity Sub-Station in the North-East

Project Details	WIE15238-100: Tesco, Osterley Park, Syon Lane
Figure Title	Figure B1: Site Photographs
Figure Ref	WIE15238-100_GR_3GQRA_B1A
Date	December 2018
File Location	\\s-lncs\wiel\projects\wie15238\100\graphics\3.gqra\issued figures

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Appendix C Ground Investigation Factual Report

- **Geotechnical Engineering Ltd – Factual Report on Ground Investigation. Report Ref. 34745**
- **RSK – Factual Report – Supplementary Ground Investigation. Report Ref. 1920315-R01 (00)**

WIE15238 - TESCO, OSTERLEY PARK

FACTUAL REPORT ON GROUND INVESTIGATION

Prepared for WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

Report Ref: 34745

Geotechnical Engineering Ltd
Centurion House, Olympus Park
Quedgeley, Gloucester. GL2 4NF

01452 527743
www.geoeng.co.uk

WIE15238 - TESCO, OSTERLEY PARK

FACTUAL REPORT ON GROUND INVESTIGATION

Prepared for WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

Report Ref: 34745

PROJECT: Environmental Assessment

VOLUME - VERSION	STATUS	ORIGINATOR	CHECKER	APPROVED	DATE
1 of 1 – A	DRAFT	BC	EC	-	23/11/2018
1 of 1 – A	FINAL	BC	EC	EC	06/12/2018

ORIGINATOR	APPROVER
B CORRIGAN Senior Engineering Geologist	E CRIMP Senior Geotechnical Engineer

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The report has been prepared for the sole use and reliance by Waterman Infrastructure and Environment Ltd. GEL accepts no liability as a result of the use or reliance of this report by any other parties.

CONTENTS

REPORT **PAGE**

1. INTRODUCTION 1

2. SITE LOCATION AND GEOLOGY 1

3. GROUND INVESTIGATION 2

3.1 Fieldwork 2

3.2 Logging 5

3.3 Laboratory Testing 5

4. REFERENCES 6

FIGURES **Nos.**

EXPLORATORY HOLE LOCATION PLAN 1

APPENDICES

APPENDIX A FIELDWORK DATA

1. INTRODUCTION

It is proposed to undertake an environmental assessment at the existing Tesco store in Osterley Park, Brentford. Geotechnical Engineering Limited (GEL) was instructed by Watermans Infrastructure and Environment Ltd (the Client) to carry out an investigation to determine the ground conditions.

The scope of works and terms and conditions of appointment were specified by the Client and GEL correspondence reference T29024, dated 17th October 2018. The investigation was carried out under the direction of the Client.

This report describes the investigation and presents the findings.

2. SITE LOCATION AND GEOLOGY

The site is situated within the car park of the existing Tesco store in Osterley Park, Brentford, West London and is centred on its National Grid co-ordinates TN 160 775.

British Geological Survey (BGS) England and Wales (Sheet No. 270, South London, 1:50,000, 1998) and the BGS online geology (1:50,000) indicate the site is underlain by superficial deposits of the Langley Silt overlying the Taplow Gravel. The underlying solid geology is composed of the London Clay Formation.

3. GROUND INVESTIGATION

3.1 Fieldwork

The fieldwork was carried out in general accordance with BS5930:2015 during the period 25th October to 15th November 2018 and comprised ten boreholes (including two aborted attempts) and six hand dug inspection pits.

The exploratory hole locations were selected by the Client and set out by this Company and are shown on Figure 1. The ground level and co-ordinates at each exploratory hole was established by this Company using GPS techniques.

The site is considered to be in an area at risk of Unexploded Ordnance (UXO) therefore required an Unexploded Ordnance Survey (UXO). The survey, carried out by others comprised on site monitoring by a UXO specialist from First Line Defence Ltd. Down-hole magnetometer testing was also undertaken at regular intervals as the boreholes were advanced.

The boreholes, referenced BH01, BH02, BH02A and BH03 (Appendix A), were formed using a track-mounted Geotechnical Pioneer Rig. Initially, hydraulic breaker (BH01 only) or rotary core drilling (300mm) techniques were used to penetrate the tarmacadam surfacing. An inspection pit was then hand excavated at each borehole location to a depth of 1.20m to check for buried services. Disturbed samples were taken and retained in a combination of plastic tubs, bags and glass jars. The inspection pit of borehole BH02 was terminated at 0.30m due to the presence of concrete and the hole was reattempted as BH02A. Heavy duty dynamic sampling techniques were then employed to produce a continuous disturbed sample of 112mm nominal diameter reducing to 97 and 83mm as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.

On refusal to dynamic sampling, the boreholes were continued by rotary core drilling techniques utilising a water flush. A double-tube swivel core barrel with semi-rigid plastic liner was utilised to recover a continuous sample of 120mm (BH03) or 90mm diameter. Where appropriate, dynamic sampling techniques were carried out to recover dropped core or where rotary core drilling was not suitable.

The dynamic samples and rotary core were extracted horizontally from the sampler and core barrel respectively, the semi-rigid liner was cut to length and sealed at each end to retain moisture content. All samples and core were retained in sequence in labelled, wooden coreboxes.

The boreholes, referenced WS01 to WS04, WS06, WS07, WS07A and WS08 (Appendix A), were formed using a Terrier 2000 rig. Initially, a hydraulic breaker was used at all locations (except WS04) to penetrate the tarmacadam surfacing. An inspection pit was then hand excavated at each borehole location to a depth of 1.20m to check for buried services. Disturbed samples were taken and retained in a combination of plastic tubs, bags and glass jars. The inspection pit for WS07 was terminated at 0.50m due to the presence of concrete and the hole was reattempted as WS07A. Dynamic sampling techniques were then employed to produce a continuous disturbed sample of 97 or 83mm diameter reducing to 70mm as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.

The samples were extracted horizontally from the sampler, labelled and sealed at each end to retain moisture.

Standard penetration tests (SPT) were carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011. A split barrel or a solid cone was used depending upon the materials encountered and the split barrel samples retained in airtight jars. The SPT N value was taken as the number of blows to penetrate the 300mm test drive following a 150mm seating drive. Where low penetration was recorded the seating drive was terminated at 25 blows and the

test drive completed after a further 50 blows. Detailed SPT results, together with the energy ratio (E_r), are presented in Appendix A and summarised as uncorrected N values on the borehole logs.

Boreholes were monitored for groundwater ingress as dynamic sampling proceeded. Water levels were also recorded at the start and finish of each day's work and on completion of the borehole and are presented on the relevant log.

On completion, slotted standpipes were installed in boreholes BH01, BH02A, BH03, WS03, WS04, WS07A and WS08. Each standpipe consisted of a 50mm ID HDPE slotted tube set in a granular filter medium and sealed above (and below in BH01, BH02A and BH03 only) with a bentonite plug. The installations were protected at the surface by a lockable stopcock cover set in concrete. Installation details are given on the relevant borehole log. Subsequent water level readings are tabulated in Appendix A.

On completion, boreholes BH02, WS01, WS02 and WS06 were backfilled with bentonite pellets and arisings and the surface tarmacadam reinstated where appropriate.

Trial pits, referenced HP01 to HP06 (Appendix A), were hand excavated to obtain soil samples. On completion all trial pits were backfilled with arisings. The ground surface was left slightly proud to accommodate the future inevitable settlement of the backfill.

Samples for chemical analyses were dispatched from site directly to i2 Analytical Laboratories under a Chain of Custody. The remaining samples were brought to this Company's laboratory for testing and storage.

3.2 Logging

The logging of soils and rocks was carried out by an Engineering Geologist in general accordance with BS5930:2015. A key to the exploratory hole logs is presented in Appendix A.

Detailed descriptions of the core and samples are given in the borehole logs, Appendix A, along with details of sampling, in situ testing, groundwater ingress, installations and relevant comments on drilling techniques.

Prior to logging, photographs of the core were taken and are presented separately.

The trial pits were logged in situ. Detailed descriptions are given in the trial pit logs, Appendix A, along with details of sampling and in situ testing, groundwater ingress and relevant comments on stability and excavatability.

3.3 Laboratory Testing

Geotechnical laboratory testing was not required as part of this contract.

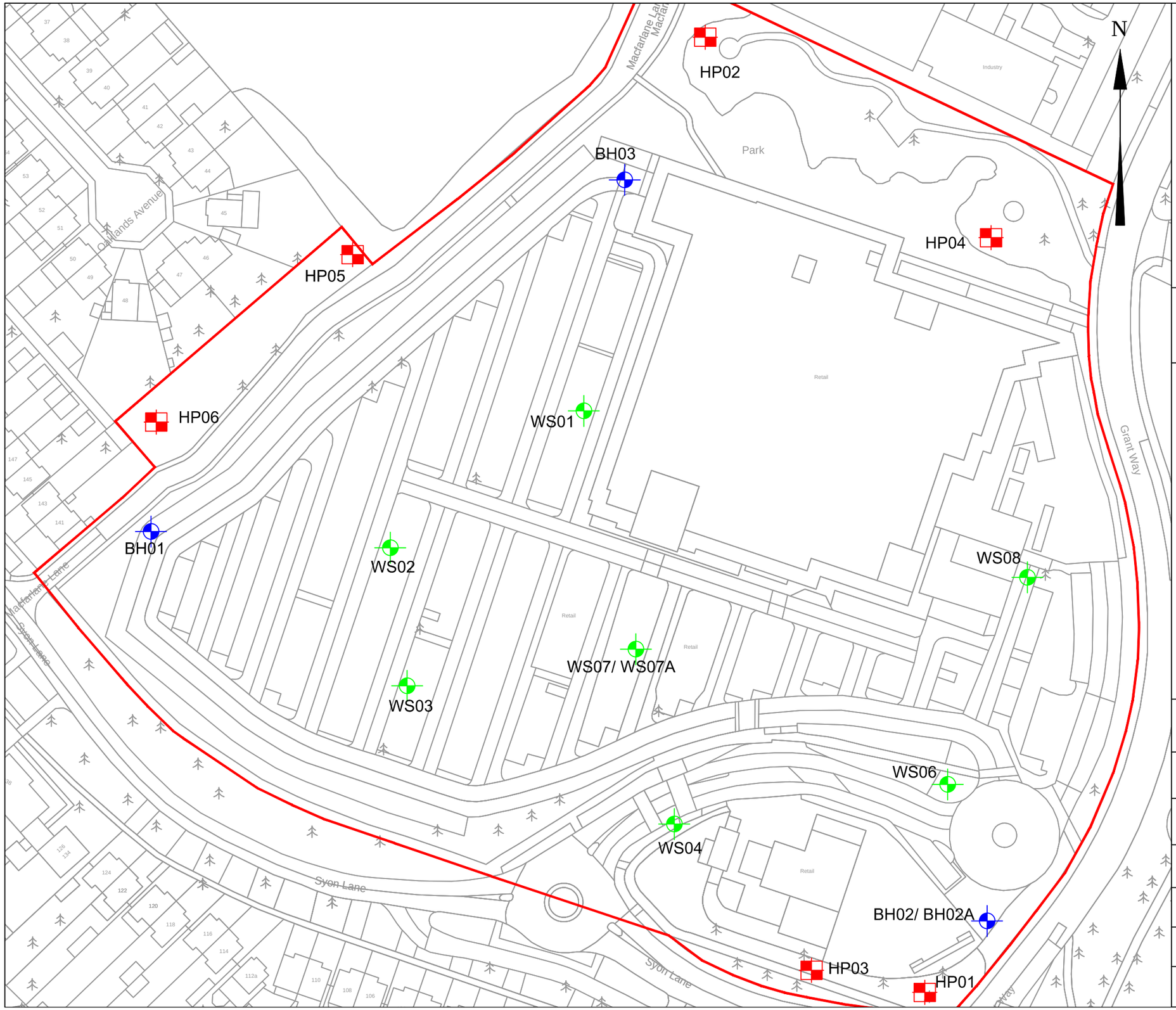
Selected samples were dispatched to i2 Analytical Laboratories, where chemical analyses were carried out to in-house methods for a suite of contaminants. All analyses were arranged directly by the Client and do not form part of this report.

GEOTECHNICAL ENGINEERING LIMITED

4. REFERENCES

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

British Standards Institution (2012): Geotechnical investigation and testing. Field testing. Standard penetration test. BS EN ISO 22476-3:2005+A1:2011.

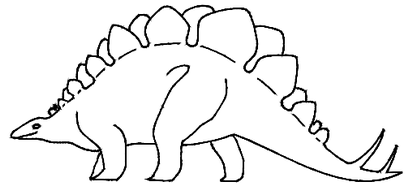


Key.

- Borehole Location
- Trial Pit Location
- Dynamic Sampler Borehole Location

Notes:

Drawing supplied by Client.



geotechnical

Geotechnical Engineering Ltd

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Client:	WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD
Consultant:	
Site:	WIE15328, TESCO, OSTERLEY PARK
Title:	Exploratory Hole Location Plan

Drawn By: BC	Checked By: EC	Paper Size: A3
Scale: 1:750	Date: Nov 2018	
Contract: 34745	Figure: 01	

APPENDIX A

FIELDWORK DATA

Geotechnical Engineering Limited

KEY TO EXPLORATORY HOLE LOGS

Sample type

D Small disturbed	U Undisturbed	L Dynamic	ES Environmental - soil	Cs Core subsample (prepared)
B Bulk disturbed	UT Undisturbed thin wall	C Core	EW Environmental - water	Ls Dynamic subsample (prepared)
LB Large bulk disturbed	P Piston	W Water		

Test type

S SPT - Split spoon sampler followed by uncorrected SPT 'N' Value
C SPT - Solid cone followed by uncorrected SPT 'N' Value
(*250 - Where full test drive not completed, linearly extrapolated 'N' value reported, ** - Denotes no effective penetration)
H Hand vane - direct reading in kPa - not corrected for BS1377 (1990). Re* denotes refusal
M Mackintosh probe - number of blows to achieve 100mm penetration
Mx Mexe cone - average reading of equivalent CBR value in %
PP Pocket penetrometer - direct reading in kg/sq.cm
Vo Headspace vapour reading, uncorrected peak values in ppm, using a PID (calibrated with Isobutylene, using a 10.6eV bulb)

Sample/core range/I_f

Dynamic sample

Undisturbed sample - open drive including thin wall. Symbol length reflects recovery

x x = Total Core Recovery (TCR) as percentage of core run

y y = Solid Core Recovery (SCR) as percentage of core run. Assessment of core is based on full diameter.

z z = Rock Quality Designation (RQD). The amount of solid core greater than 100mm expressed as percentage of core run.

Where SPT has been carried out at beginning of core run, disturbed section of core excluded from SCR and RQD assessment.

I_f - fracture spacing - the modal fracture spacing (mm) over the indicated length of core. Where spacing varies significantly, the minimum, mode and maximum values are given. NI = non-intact core NA = not applicable

Instrumentation

Porous tip | Perforated standpipe | Granular response zone | Bentonite seal | Cement/ bentonite grout | Soil Backfill | Concrete

Stratum boundaries

Estimated boundary

Grading boundary

Logging

The logging of soils and rocks has been carried out in general accordance with BS 5930:2015.

Chalk is logged in general accordance with Lord et al (2002) CIRIA C574. Where possible, dynamic samples in chalk have been logged in accordance with CIRIA C574; descriptions and gradings (if presented) should be treated with caution given the potential for sample disturbance.

For rocks the term fracture has been used to identify a mechanical break within the core. Where possible incipient and drilling induced fractures have been excluded from the assessment of fracture state. Where doubt exists, a note has been made in the descriptions. All fractures are considered to be continuous unless otherwise reported.

Made Ground is readily identifiable when, within the material make up, man made constituents are evident. Where Made Ground appears to be reworked natural material the differentiation between in situ natural deposits and Made Ground is much more difficult to ascertain. The interpretation of Made Ground within the logs should therefore be treated with caution.

The descriptors "topsoil" and "tarmacadam" are used as generic terms and do not imply conformation to any particular standard or composition.

Rootlets are defined as being less than 2mm in diameter, roots are defined as in excess of 2mm diameter.

General Comments

The process of drilling and sampling will inevitably lead to disturbance, mixing or loss of material in some soil and rocks.

Indicated water levels are those recorded during the process of drilling or excavating exploratory holes and may not represent standing water levels.

All depths are measured along the axis of the borehole and are related to ground level at the point of entry. All inclinations are measured normal to the axis of the core.

Where provided, the stratigraphic names/geological rock units are for guidance only and may not be wholly accurate.

Geotechnical Engineering Limited

BOREHOLE LOG

BH01

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 15 November 2018 — Easting 515869 — Scale 1 : 50

End Date 15 November 2018 — Northing 177594 — Ground level 24.75 — Depth 6.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
15/11/18 1000hrs	1B	0.20 - 0.40					MADE GROUND comprising black TARMACADAM.	0.05	24.70	
	1ES	0.20 - 0.40		Vo 0.0			Brown and dark brownish grey slightly silty sandy angular to rounded fine to coarse flint, concrete and brick GRAVEL. (MADE GROUND)			
	2B	0.70 - 0.90								
	2ES	0.70 - 0.90		Vo 0.0						
	3B	1.00 - 1.20								
	3ES	1.00 - 1.20		Vo 0.0				1.00	23.75	
	4D	1.20 - 1.65	Nil	S 10			Brown gravelly SILT. Gravel is angular to subrounded fine to coarse flint.	1.20	23.55	
	5L	1.20 - 2.20								
	4ES	1.50 - 1.70		Vo 0.0			Loose to medium dense orangish brown slightly silty medium and coarse SAND.			
	6D	2.20 - 2.65	Nil	S 29				2.20	22.55	
	7L	2.20 - 3.20					Medium dense dark orangish brown silty medium and coarse SAND with frequent black pockets (up to 30mm) of organic material.			
	5ES	2.20 - 2.40		Vo 0.0				2.70	22.05	
							Firm orangish brown slightly sandy clayey SILT.			
	6ES	2.90 - 3.10		Vo 0.0						
	8D	3.20 - 3.65	3.20	S 11				3.30	21.45	
	9L	3.20 - 4.20					Medium dense orangish brown slightly silty medium and coarse SAND.	3.70	21.05	
							Loose dark brown slightly silty sandy subangular to rounded fine to coarse flint GRAVEL.			
	7ES	4.00 - 4.20		Vo 0.0						
	10D	4.20 - 4.65	4.20	S 6						
	11L	4.20 - 5.00								
	8ES	4.70 - 4.90		Vo 0.0						
	12D	5.00 - 5.45	5.00	S 13				5.00	19.75	
	13L	5.00 - 6.00					Firm indistinctly fissured dark grey silty CLAY with frequent partings and pockets (up to 40mm) of dark bluish grey silt.			
15/11/18 1230hrs 0.50m	9ES	5.50 - 5.70		Vo 0.0						
							Borehole completed at 6.00m.	6.00	18.75	
								{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Surface hardstanding broken out using hydraulic breaker 0.00-0.50m and hand dug inspection pit 0.50-1.20m. Dynamic sampled (128mm) 1.20-2.20m, (113mm) 2.20-3.20m and (98mm) 3.20-6.00m.

CASING: 168mm diam to 5.00m.

BACKFILL: On completion, borehole backfilled with bentonite pellets 6.00-5.00m. A slotted standpipe (50mm) was installed from 5.00m, granular response zone 5.00-1.80m, bentonite seal 1.80-0.30m, concrete and stopcock cover 0.30-0.00m.

REMARKS: Downhole magnetometry for UXO risk mitigation carried out 1.20-6.00m. No anomalies encountered.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

AGS

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Geotechnical Engineering Limited

BOREHOLE LOG

BH02

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 26 October 2018 — Easting 516084 — Scale 1 : 50

End Date 26 October 2018 — Northing 177494 — Ground level 23.30mOD — Depth 0.30 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
26/11/18 0850hrs	C 1ES 1B	0.00 - 0.15 0.20 - 0.30 0.20 - 0.30		Vo 0.0	100			MADE GROUND comprising black locally light grey TARMACADAM.	0.15	23.15	
								Greyish brown slightly clayey sandy subangular to rounded fine to coarse flint and concrete GRAVEL with rare angular metal fragments (up to 70mm). (MADE GROUND) 0.30m: Concrete obstruction across pit. Borehole completed at 0.30m.	0.30 {8.00}	23.00	

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Rotary core drilled (300mm) 0.00-0.15m. Hand dug inspection pit 0.15-0.30m.

CASING: None used.

BACKFILL: On completion, hole backfilled with arisings and the tarmacadam reinstated.

REMARKS: Borehole abandoned at 0.30m due to presence of concrete obstruction across pit. Re-drilled approximately 1.00m to the south-west as BH02A.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

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Geotechnical Engineering Limited

BOREHOLE LOG

BH02A

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 4

Start Date 26 October 2018 — Easting 516084 — Scale 1 : 50

End Date 2 November 2018 — Northing 177493 — Ground level 23.30mOD — Depth 29.95 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
26/10/18 0850hrs	C	0.00 - 0.15			100			MADE GROUND comprising black locally grey TARMACADAM.	0.15	23.15	
	1B	0.40 - 0.60							0.30	23.00	
	1ES	0.40 - 0.60		Vo 0.0				Greyish brown slightly clayey sandy subangular to rounded fine to coarse flint and concrete GRAVEL. (MADE GROUND)	0.40	22.90	
	2B	0.70 - 0.90									
	2ES	0.70 - 0.90		Vo 0.0							
	3B	1.00 - 1.20						MADE GROUND comprising light brownish grey CONCRETE with rare metal reinforcement bars (up to 10mm diam).	1.00	22.30	
	4D	1.20 - 1.65	Nil	S 34							
	5L	1.20 - 2.00									
	3ES	1.30 - 1.50		Vo 0.0				Yellowish brown gravelly SILT. Gravel is subangular to rounded fine and medium flint.			
	4ES	1.80 - 2.00		Vo 0.0							
	6D	2.00 - 2.15	Nil	S*200				Dense orangish brown silty gravelly medium and coarse SAND. Gravel is angular to rounded fine to coarse flint. 1.20 - 1.50m: Orangish brown sandy gravelly silt. Gravel is angular to rounded fine to coarse flint.	2.00	21.30	
	7L	2.00 - 3.00									
	5ES	2.30 - 2.50		Vo 0.0							
26/10/18 1900hrs Dry	6ES	2.80 - 3.00		Vo 0.0				Very dense greyish brown silty sandy GRAVEL. Gravel is angular to rounded fine to coarse flint.			
	8D	3.00 - 3.36	3.00	S*71							
29/10/18 1050hrs Dry	9L	3.00 - 4.00						3.10 - 3.40m: Greyish brown gravelly medium and coarse sand.			
	7ES	3.30 - 3.50		Vo 0.0							
	8ES	3.80 - 4.00		Vo 0.0							
	11D	4.00 - 4.45	4.00	S 10							
	10C	4.00 - 5.00			0	NR		4.00m: Loose to medium dense.			
									4.45	18.85	
								Assessed zone of core loss.			
	13D	5.00 - 5.45	4.00	S 10					5.00	18.30	
	12C	5.00 - 6.50			50			Firm indistinctly fissured dark grey silty CLAY with rare shell fragments (up to 5mm).			
		5.50		H 116							
	14ES	5.50 - 5.70		Vo 0.0		NA		5.75 - 7.50m: Assessed zone of core loss.			
	C	6.50 - 7.00			0						
	16D	7.00 - 7.45	5.00	S 18							
	15C	7.00 - 8.50			100						
	10ES	7.50 - 7.70		Vo 0.0		NA					
								Continued Next Page	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Rotary core drilled (300mm) 0.00-0.15m. Hand dug inspection pit 0.15-1.20m. Dynamic sampled (128mm) 1.20-2.00m and (113mm) 2.00-4.00m. Waterflush rotary core drilled (116mm) 4.00-29.50m.

CASING: 168mm diam to 2.80m and 140mm diam to 10.50m.

BACKFILL: On completion, borehole backfilled with bentonite pellets 29.50-6.00m. A slotted standpipe (50mm) was installed from 6.00-1.00m, granular response zone 6.00-1.00m, bentonite seal 1.00-0.70m, gravel drain 0.70-0.40m, concrete 0.40-0.10m, tarmacadam and stopcock cover 0.10-0.00m.

REMARKS: Dynamic sampling techniques carried out to recover dropped core 7.00-8.50m (recovered 1.50m) and 16.00-17.50m (recovered 1.50m). Driller notes no flush returns 5.00-7.00m and reduced flush returns 4.00-5.00m (20%), 8.50- 10.00m (50%), 10.00-11.50m (60%), 20.50-22.00m (20%) and 25.00-26.50m (50%). Downhole magnetometry for UXO risk mitigation carried out 1.20-6.00m. No anomalies encountered.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

AGS

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Geotechnical Engineering Ltd, Tel. 01452 527743 34745_BRENTFORD TESCO.GPJ TRIALJH.GPJ GEOTECH2.GLB 06/12/2018 14:37:19 WG EL

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BOREHOLE LOG

BH02A

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 2 of 4

Start Date 26 October 2018 — Easting 516084 — Scale 1 : 50

End Date 2 November 2018 — Northing 177493 — Ground level 23.30mOD — Depth 29.95 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
29/10/18 1700hrs 2.00m	11ES	8.30 - 8.50		Vo 0.0							
30/10/18 0830hrs 3.00m	17C	8.50 - 10.00			90			Very stiff fissured dark brownish grey silty CLAY. Fissures are subhorizontal and 30° to subvertical planar smooth clean.	8.60	14.70	
	12ES	9.30 - 9.50		Vo 0.0							
	18D	10.00 - 10.45	5.00	S 50					10.00	13.30	
	19C	10.00 - 11.50			53			Very stiff dark brownish grey silty CLAY with rare shell fragments (up to 5mm).			
	13ES	10.50 - 10.70		Vo 0.0				10.50m: Thin bed of medium strong brown claystone.			
						NR		10.75 - 11.50m: Assessed zone of core loss.			
	20D	11.50 - 11.95	10.50	S 25							
	21C	11.50 - 13.00			100	NA					
	14ES	12.00 - 12.20		Vo 0.0							
	15ES	12.80 - 13.00		Vo 0.0							
	22D	13.00 - 13.45	10.50	S 24							
	23C	13.00 - 14.50			100						
	16ES	13.50 - 13.70		Vo 0.0				13.80m: Thin bed of medium strong brown claystone. 13.85 - 14.30m: Fissured. Fissures are subhorizontal and 60° to subvertical planar smooth clean.			
	17ES	14.30 - 14.50		Vo 0.0							
	24D	14.50 - 14.95	10.50	S 25							
	25C	14.50 - 16.00			100			14.80m: 10mm pyrite nodule. 15.30 - 15.50m: 50° fissure planar smooth clean.			
30/10/18 1700hrs 3.00m	18ES	15.50 - 15.70		Vo 0.0							
	26D	16.00 - 16.45	10.50	S 34				15.80m: 10mm bivalve shell.			
31/10/18 0800hrs 3.00m	27C	16.00 - 17.50			100						
	19ES	16.50 - 16.70		Vo 0.0							
	18ES	17.30 - 17.50		Vo 0.0							
	28D	17.50 - 17.95	10.50	S 32							
	29C	17.50 - 19.00			100						
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

AGS

CONTRACT **34745**

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Geotechnical Engineering Ltd, Tel. 01452 527743 34745_BRENTFORD TESCO.GPJ TRIALJH.GPJ GEOTECH2.GLB 06/12/2018 14:37:19 WG EL

Geotechnical Engineering Limited

BOREHOLE LOG

BH02A

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 3 of 4

Start Date 26 October 2018 — Easting 516084 — Scale 1 : 50

End Date 2 November 2018 — Northing 177493 — Ground level 23.30mOD — Depth 29.95 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	21ES	18.80 - 19.00		Vo 0.0							
	30D	19.00 - 19.45	10.50	S 35							
	31C	19.00 - 20.50			100						
	32C	20.50 - 22.00	10.50		100 0 0						
						NI		Medium strong dark brown calcareous MUDSTONE.	21.00	2.30	
								Very stiff dark brownish grey silty CLAY.	21.15	2.15	
						NA		Medium strong dark brown calcareous MUDSTONE.	21.30	2.00	
	33D	22.00 - 22.45	10.50	S 40				Very stiff indistinctly fissured dark brownish grey silty CLAY with rare shell fragments (up to 5mm).	21.50	1.80	
	34C	22.00 - 23.50			66						
31/10/18 1700hrs 3.00m								22.70 - 23.30m: Fissured. Fissures are randomnly orientated extremely closely spaced planar smooth clean. 22.90 - 22.95m: 30° fissure planar smooth clean. 23.30 - 23.50m: Speckled black.			
01/11/18 0800hrs 3.00m	35C	23.50 - 25.00	10.50		100						
								Very stiff brownish grey slightly sandy clayey SILT with rare dark bluish grey fine sand pockets (up to 20mm).	24.00	-0.70	
	36D	25.00 - 25.45	10.50	S 46					25.00	-1.70	
	37C	25.00 - 26.50			100			Very stiff dark brownish grey silty CLAY.			
	38C	26.50 - 28.00	10.50		100						
								Continued Next Page	{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

AGS

CONTRACT **34745**

CHECKED **EC**

Geotechnical Engineering Limited

BOREHOLE LOG

BH02A

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 4 of 4

Start Date 26 October 2018 — Easting 516084 — Scale 1 : 50

End Date 2 November 2018 — Northing 177493 — Ground level 23.30mOD — Depth 29.95 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	39C	28.00	29.50	10.50		100						
01/11/18 1720hrs 3.00m												
02/11/18 0830hrs 3.00m	40D	29.50	29.95	10.50	S 52							
									Borehole completed at 29.95m.	29.95	-6.65	
										{38.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

AGS

CONTRACT **34745**

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BOREHOLE LOG

BH03

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 15 November 2018 — Easting 515991 — Scale 1 : 50

End Date 15 November 2018 — Northing 177685 — Ground level 23.10mOD — Depth 5.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
15/11/18 1300hrs	1B	0.05 - 0.20					MADE GROUND comprising black TARMACADAM.	0.05	23.05	
	1ES	0.05 - 0.20		Vo 0.0			Brown slightly silty slightly sandy angular to rounded fine to coarse concrete, flint, brick, tarmacadam and limestone GRAVEL with a low subangular concrete, tarmacadam and brick cobble content. (MADE GROUND)			
	2B	0.50 - 0.70								
	2ES	0.50 - 0.70		Vo 0.0						
	3B	1.00 - 1.20								
	3ES	1.00 - 1.20		Vo 0.0						
	4D	1.20 - 1.65	Nil	S 38						
	5L	1.20 - 1.50					1.20m: Dense.			
	4ES	1.30 - 1.50		Vo 0.0				1.50	21.60	
	C	1.50 - 2.20	Nil		0		NO RECOVERY.			
	7D	2.20 - 2.65	2.20	S 48				2.20	20.90	
	6C	2.20 - 3.20			10		Dense multicoloured subangular to rounded fine to coarse flint GRAVEL. Fines probably washed away.	2.30	20.80	
							NO RECOVERY.			
	8D	3.20 - 3.65	2.20	S 23				3.20	19.90	
	9L	3.20 - 4.20					Stiff locally firm indistinctly structured dark grey silty CLAY with frequent dark bluish grey partings and pockets (up to 40mm) of silt.			
	5ES	3.40 - 3.60		Vo 0.0						
	6ES	4.00 - 4.20		Vo 0.0						
	10D	4.20 - 4.65	3.20	S 13						
	11L	4.20 - 5.00	4.20							
15/11/18 1800hrs 0.50m	7ES	4.70 - 4.90		Vo 0.0						
	12D	5.00 - 5.45	4.20	S 15				5.45	17.65	
							Borehole completed at 5.45m.	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Surface hardstanding broken out using hydraulic breaker 0.00-0.30m and hand dug inspection pit 0.30-1.20m. Dynamic sampled (128mm) 1.20-1.50m and 3.20-4.20m and (98mm) 4.20-5.00m. Waterflush rotary core drilled (146mm) 1.50-3.20m.

CASING: 168mm diam to 4.20m.

BACKFILL: On completion borehole backfilled with bentonite pellets 5.45-4.00m. A slotted standpipe (50mm) was installed at 4.00m, granular response zone 4.00-1.80m, bentonite seal 1.80-0.50m, gravel drain 0.50-0.30m and concrete and stopcock cover 0.30-0.00m.

REMARKS: Downhole magnetometry for UXO risk mitigation carried out 1.20-5.45m. No anomalies encountered.

Driller notes loss of flush returns 1.50-3.20m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

AGS

CONTRACT	CHECKED
34745	**EC**

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BOREHOLE LOG

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

WS01

SITE WIE15238 - TESCO, OSTERLEY PARK Sheet 1 of 1

Start Date 31 October 2018 Easting 515981 Scale 1 : 50

End Date 31 October 2018 Northing 177625 Ground level 23.00mOD Depth 1.54 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
31/10/18 0830hrs	C	0.00 - 0.05			100		MADE GROUND comprising black TARMACADAM.	0.05	22.95	
	1B	0.10 - 0.30					Greyish brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse flint, concrete, brick and tarmacadam. (MADE GROUND)	0.40	22.60	
	1ES	0.10 - 0.30		Vo 0.0						
	2B	0.70 - 0.90					Orangish brown mottled light yellowish brown slightly sandy slightly gravellly SILT with frequent pockets (up to 50mm) of black silt. Gravel is rounded and subrounded fine and medium flint.			
	2ES	0.70 - 0.90		Vo 0.0						
31/10/18 1130hrs Dry	3D	1.20 - 1.42	Nil	S*214				1.20	21.80	
	4L	1.20 - 1.45								
	5D	1.45 - 1.54	Nil	S*250			Very dense orangish brown slightly sandy silty subrounded to well rounded fine and medium flint GRAVEL.	1.54	21.46	
							Borehole completed at 1.54m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (300mm) 0.00-0.05m. Hand dug inspection pit 0.05-1.20m using hand tools and mechanical breaker. Dynamic sampled (98mm) 1.20-1.45m.

CASING: None used.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 1.45m, granular response zone 1.54-0.50m, bentonite seal 0.50-0.20m, concrete and stopcock cover 0.20-0.00m.

REMARKS: Borehole terminated at 1.54m due to SPT refusal.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

CONTRACT	CHECKED
34745	**EC**

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BOREHOLE LOG

WS02

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 26 October 2018 — Easting 515931 — Scale 1 : 50

End Date 26 October 2018 — Northing 177590 — Ground level 23.80mOD — Depth 2.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
26/10/18 0900hrs	C	0.00 - 0.05			100			MADE GROUND comprising black TARMACADAM.	0.05	23.75	
	1B	0.20 - 0.40		Vo 0.4				Greyish brown silty gravelly fine to coarse SAND with rare food fragments (up to 80mm) and pockets of greyish brown clay (up to 100mm). Gravel is angular to subrounded fine to coarse chalk, concrete, flint and crystalline. (MADE GROUND)	0.50	23.30	
	1ES	0.20 - 0.40							0.80	23.00	
	2B	0.50 - 0.70		Vo 0.0					1.10	22.70	
	2ES	0.50 - 0.70									
	3B	1.00 - 1.20									
	3ES	1.00 - 1.20		Vo 0.0							
	4D	1.20 - 1.65	Nil	S 33				Soft orangish brown slightly gravelly slightly sandy clayey SILT. Gravel is angular and subangular fine and medium flint, sandstone and siltstone.	1.50	22.30	
	5L	1.20 - 1.50	1.20								
	6L	1.50 - 2.00	1.50					Soft orangish brown slightly sandy clayey SILT.			
26/10/18 1200hrs Dry	4ES	1.80 - 2.00		Vo 0.0							
		2.00 - 2.09	1.50	C**				Firm orangish brown slightly sandy slightly gravelly clayey SILT. Gravel is angular to subrounded fine to coarse and flint. 1.25m: Flint cobble. 1.25 - 1.50m: Becoming gravelly. Gravel is angular to subrounded fine to coarse flint.	2.00	21.80	
		2.09 - 2.18	1.50	C*300				Very dense orangish brown sandy angular to subrounded fine to coarse flint and rare limestone GRAVEL.			
								Borehole completed at 2.00m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (300mm) 0.00-0.05m. Hand dug inspection pit 0.05-1.20m. Dynamic sampled (113mm) 1.20-1.50m and (84mm) 1.50-2.00m

CASING: 128mm diam to 1.50m.

BACKFILL: On completion, hole backfilled with bentonite pellets 2.00-1.00m, arisings 1.00-0.15m, concrete 0.15-0.10m and tarmacadam 0.10-0.00m.

REMARKS: Borehole terminated at 2.00m due to SPT(C) refusal.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks

Groundwater not encountered.

AGS

CONTRACT **34745**

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BOREHOLE LOG

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

WS03

SITE WIE15238 - TESCO, OSTERLEY PARK

Sheet 1 of 1

Start Date 26 October 2018 Easting 515935

Scale 1 : 50

End Date 26 October 2018 Northing 177555 Ground level 23.88mOD

Depth 2.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
26/10/18 1335hrs	C	0.00 - 0.07			100		MADE GROUND comprising black TARMACADAM.	0.07	23.81	
	1B	0.20 - 0.40		Vo 0.0			Brown sandy GRAVEL. Gravel is angular to subrounded fine to coarse flint, concrete, crystalline, brick, sandstone and siltstone. (MADE GROUND)	0.40	23.48	
	1ES	0.20 - 0.40								
	2B	0.50 - 0.70		Vo 0.0						
	2ES	0.50 - 0.70								
	3B	1.00 - 1.20					Firm brown slightly gravelly sandy clayey SILT. Gravel is angular to subrounded fine to coarse flint, sandstone and siltstone.	0.90	22.98	
	3ES	1.00 - 1.20		Vo 0.0						
	4D	1.20 - 1.65	Nil	S 12				1.20	22.68	
	5L	1.20 - 1.75	1.20				Soft orangish brown slightly sandy clayey SILT with rare pockets of organic clay (up to 20mm).	1.60	22.28	
26/10/18 1650hrs Dry	4ES	1.50 - 1.70		Vo 0.0						
	6L	1.75 - 2.00	1.75				Medium dense orangish brown mottled greyish yellow sandy SILT.	1.90	21.98	
		2.00 - 2.35	1.75	C*75			Orangish brown gravelly medium and coarse SAND. Gravel is angular to subrounded fine to coarse flint.	2.00	21.88	
		2.35 - 2.45	1.75	C*214			Orangish brown sandy angular to subrounded fine to coarse flint GRAVEL.			
							Borehole completed at 2.00m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (300mm) 0.00-0.07m. Hand dug inspection pit 0.07-1.20m. Dynamic sampled (113mm) 1.20-1.75m and (84mm) 1.75-2.00m.

CASING: 128mm diam to 1.75m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 2.00m, granular response zone 2.00-0.40m, bentonite seal 0.40-0.15m, concrete 0.15-0.10m, tarmacadam and stopcock cover 0.10-0.00m.

REMARKS: Borehole terminated at 2.00m due to SPT(C) refusal.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

CONTRACT	CHECKED
34745	**EC**

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BOREHOLE LOG

WS04

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 29 October 2018 — Easting 516004 — Scale 1 : 50

End Date 29 October 2018 — Northing 177519 — Ground level 24.15mOD — Depth 2.24 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
29/10/18 1000hrs	1B	0.10	0.30					Grass over soft dark brown slightly gravelly clayey SILT with rare fragments (up to 20mm) of glass. Gravel is subangular and subrounded fine and medium flint, brick and concrete. Frequent rootlets. (MADE GROUND)	0.40	23.75	
	1ES	0.10	0.30		Vo 0.0						
	2B	0.60	0.80								
	2ES	0.60	0.80		Vo 0.0						
	3ES	1.00	1.20		Vo 0.0						
	3B	1.00	1.10								
		1.20	1.65	Nil	S 38			Brown slightly gravelly SILT with a low subangular concrete cobble content. Gravel is subangular to rounded fine to coarse flint, concrete and tarmacadam. (MADE GROUND) 0.70m: Light brown geomembrane (2mm thick).	1.10	23.05	
	4L	1.20	2.00								
	4ES	1.70	2.00					Dense orangish brown slightly gravelly SILT with frequent pockets (up to 5mm) of black silt. Gravel is subangular fine flint. Rare rootlets.	1.80	22.35	
29/10/18 1200hrs Dry	5D	2.00	2.24	Nil	S*212			Very stiff yellowish brown clayey SILT with white silty clay pockets (up to 3mm).	2.24	21.91	
								Borehole completed at 2.24m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (98mm) 1.20-2.00m.

CASING: None used.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 2.00m, granular response zone 2.24-0.50m, bentonite seal 0.50-0.30m, concrete and stopcock cover 0.30-0.00m.

REMARKS: Borehole terminated at 2.24m due to SPT refusal.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

CONTRACT	CHECKED
34745	**EC**

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BOREHOLE LOG

WS06

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 29 October 2018 — Easting 516074 — Scale 1 : 50

End Date 29 October 2018 — Northing 177529 — Ground level 23.65mOD — Depth 1.59 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
29/10/18 1040hrs	1B	0.10	0.30					MADE GROUND comprising orangish brown BRICK PAVING.	0.10	23.55	
	1ES	0.10	0.30		Vo 0.0				0.50	23.15	
	2B	0.60	0.80					Dark greyish brown slightly clayey sandy subangular to rounded fine to coarse flint, concrete and brick GRAVEL with a low subangular concrete and brick cobble content. (MADE GROUND)			
	2ES	0.60	0.80		Vo 0.0						
	3B	1.00	1.10								
	3ES	1.00	1.10		Vo 0.0						
		1.20	1.50	Nil	S*118			Very stiff orangish brown slightly gravelly clayey SILT with frequent pockets (up to 4mm) of black silt. Gravel is subrounded fine flint.			
29/10/18 1400hrs Dry	4L	1.20	1.50								
	5D	1.50	1.59	Nil	S*300				1.59	22.06	
								Borehole completed at 1.59m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Hydraulic breaker 0.00-0.10m and hand dug inspection pit 0.10-1.20m. Dynamic sampled (98mm) 1.20-1.50m.

CASING: None used.

BACKFILL: On completion, hole backfilled with bentonite pellets 1.59-0.30m and the brick paving reinstated.

REMARKS: Borehole terminated at 1.59m due to SPT refusal.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

CONTRACT	CHECKED
34745	EC

Geotechnical Engineering Limited

BOREHOLE LOG

WS07

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 30 October 2018 — Easting 515994 — Scale 1 : 50

End Date 30 October 2018 — Northing 177564 — Ground level 23.15mOD — Depth 0.50 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
30/10/18 1530hrs									MADE GROUND comprising black locally grey TARMACADAM.	0.05	23.10	
									Greyish brown slightly silty gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint, brick and concrete. (MADE GROUND) 0.50m: Concrete obstruction across pit.	0.50	22.65	
									Borehole completed at 0.50m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Hydraulic breaker 0.00-0.05m and hand dug inspection pit 0.05-0.50m.

CASING: None used.

BACKFILL: On completion, hole backfilled with arisings and the surface reinstated.

REMARKS: Hole abondoned at 0.50m due to concrete encontered in pit. Borehole reattempted as WS7A approximately 1.00m to the south-east.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks

Groundwater not encountered.

AGS

CONTRACT **34745**

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Geotechnical Engineering Limited

BOREHOLE LOG

WS07A

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 30 October 2018 — Easting 515994 — Scale 1 : 50

End Date 30 October 2018 — Northing 177563 — Ground level 23.20mOD — Depth 1.56 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
30/10/18 1540hrs	1B	0.10	0.30					MADE GROUND comprising black locally grey TARMACADAM.	0.05	23.15	
	1ES	0.10	0.30		Vo 0.0				0.50	22.70	
	2B	0.70	0.90					Dark greyish brown slightly clayey sandy subangular to rounded fine to coarse flint, brick and concrete GRAVEL with a low flint, brick and concrete cobble content. (MADE GROUND)			
	2ES	0.70	0.90		Vo 0.0						
	3D	1.20	1.44	Nil	S*176			Orangish brown locally mottled dark brown slightly gravelly SILT with rare pockets of black silt (up to 5mm). Gravel is subrounded fine and medium flint and quartz. 1.20 - 1.56m: Very dense.			
30/10/18 1730hrs Dry	4L	1.20	1.50								
	5D	1.50	1.56	Nil	S*375				1.56	21.64	
								Borehole completed at 1.56m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Hydraulic breaker 0.00-0.05m and hand dug inspection pit 0.05-1.20m. Dynamic sampled (98mm) 1.20-1.50m.

CASING: None used.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 1.50m, granular response zone 1.56-0.50m, bentonite seal 0.50-0.20m, concrete and stopcock cover 0.20-0.00m.

REMARKS: Borehole terminated at 1.56m due to SPT refusal.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks

Groundwater not encountered.

AGS

CONTRACT **34745**

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BOREHOLE LOG

WS08

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 30 October 2018 — Easting 516095 — Scale 1 : 50

End Date 30 October 2018 — Northing 177583 — Ground level 23.20mOD — Depth 1.92 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
30/10/18 0830hrs	1B	0.05	0.15					MADE GROUND comprising dark grey locally black TARMACADAM.	0.05	23.15	
	1ES	0.05	0.15		Vo 0.0						
	2B	0.65	0.85					Greyish brown slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint, concrete, brick and tarmacadam. (MADE GROUND)	0.50	22.70	
	2ES	0.65	0.85		Vo 0.0						
	3B	1.00	1.20								
	3ES	1.00	1.20		Vo 0.0			Orangish brown slightly gravelly SILT with frequent pockets (up to 5mm) of black silt. Gravel is subangular and subrounded fine and medium flint.	1.10	22.10	
	4D	1.20	1.65	Nil	S*71						
	5L	1.20	1.65						1.50	21.70	
30/10/18 1250hrs Dry	6D	1.65	1.92	Nil	S*130			Very dense brownish orange slightly gravelly medium and coarse SAND. Gravel is angular to subrounded fine and medium flint.	1.92	21.28	
								Very dense brownish orange gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint.			
								Borehole completed at 1.92m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Hydraulic breaker 0.00-0.05m and hand dug inspection pit 0.05-1.20m. Dynamic sampled (98mm) 1.20-1.65m and (84mm) m

CASING: None used.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 1.65m, granular response zone 1.92-0.50m, bentonite seal 0.50-0.20m, concrete and stopcock cover 0.20-0.00m.

REMARKS: Borehole terminated at 1.92m due to SPT refusal.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

CONTRACT	CHECKED
34745	**EC**

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STANDARD PENETRATION TEST

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
BH01	1.20		1.65	Nil	Dry	1 1	75 75	3 3 2 2	75 75 75 75	S	10	78
BH01	2.20		2.65	Nil	Dry	2 5	75 75	8 9 6 6	75 75 75 75	S	29	78
BH01	3.20		3.65	3.20	1.00	1 2	75 75	3 3 2 3	75 75 75 75	S	11	78
BH01	4.20		4.65	4.20	0.50	1	150	1 5	75 75 75 75	S	6	78
BH01	5.00		5.45	5.00	0.50	6 6	75 75	3 3 3 4	75 75 75 75	S	13	78
BH02A	1.20		1.65	Nil	Dry	6 6	75 75	7 7 8 12	75 75 75 75	S	34	63
BH02A	2.00		2.15	Nil	Dry	25	75	50	75	S	200	63
BH02A	3.00		3.36	3.00	Dry	7 11	75 75	17 17 16	75 75 60	S	71	63
BH02A	4.00		4.45	4.00	0.00	2 2	75 75	1 3 3 3	75 75 75 75	S	10	63
BH02A	5.00		5.45	4.00	2.00	1 1	75 75	2 2 3 3	75 75 75 75	S	10	63
BH02A	7.00		7.45	5.00	1.00	2 2	75 75	3 5 5 5	75 75 75 75	S	18	63
BH02A	10.00		10.45	5.00	1.00	4 4	75 75	5 5 25 15	75 75 75 75	S	50	63
BH02A	11.50		11.95	10.50	3.00	2 4	75 75	5 6 7 7	75 75 75 75	S	25	63
BH02A	13.00		13.45	10.50	3.00	2 4	75 75	5 5 6 8	75 75 75 75	S	24	63
BH02A	14.50		14.95	10.50	3.00	2 4	75 75	5 6 7 7	75 75 75 75	S	25	63
BH02A	16.00		16.45	10.50	3.00	5 5	75 75	7 8 9 10	75 75 75 75	S	34	63
BH02A	17.50		17.95	10.50	3.00	5 6	75 75	7 8 8 9	75 75 75 75	S	32	63
BH02A	19.00		19.45	10.50	3.00	5 5	75 75	8 8 9 10	75 75 75 75	S	35	63
BH02A	22.00		22.45	10.50	3.00	5 5	75 75	8 9 10 13	75 75 75 75	S	40	63
BH02A	25.00		25.45	10.50	3.00	5 7	75 75	10 11 12 13	75 75 75 75	S	46	63
BH02A	29.50		29.95	10.50	3.00	6 8	75 75	10 14 12 16	75 75 75 75	S	52	63
BH03	1.20		1.65	Nil	Dry	1 3	75 75	3 6 13 16	75 75 75 75	S	38	78
BH03	2.20		2.65	2.20	0.80	2 3	75 75	11 13 15 9	75 75 75 75	S	48	78
BH03	3.20		3.65	2.20	1.00	7 4	75 75	3 2 7 11	75 75 75 75	S	23	78

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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STANDARD PENETRATION TEST

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
BH03	4.20		4.65	3.20	1.00	1 2	75 75	3 3 3 4	75 75 75 75	S	13	78
BH03	5.00		5.45	4.20	1.00	2 3	75 75	3 3 4 5	75 75 75 75	S	15	78
WS01	1.20		1.42	Nil	Dry	14 9	75 75	50	70	S	214	80
WS01	1.45		1.54	Nil	Dry	25	30	50	60	S	250	80
WS02	1.20		1.65	Nil	Dry	2 2	75 75	2 2 4 25	75 75 75 75	S	33	70
WS02	2.00		2.09	1.50	Dry	25	75	50	15	C	**	70
WS02	2.09		2.18	1.50	Dry	25	40	50	50	C	300	70
WS03	1.20		1.65	Nil	Dry	2 1	75 75	3 2 3 4	75 75 75 75	S	12	70
WS03	2.00		2.35	1.75	Dry	8 8	75 75	9 17 24	75 75 50	C	75	70
WS03	2.35		2.45	1.75	Dry	25	30	50	70	C	214	70
WS04	1.20		1.65	Nil	Dry	7 12	75 75	10 8 9 11	75 75 75 75	S	38	80
WS04	2.00		2.24	Nil	Dry	12 15	75 75	45 15	75 10	S	212	80
WS06	1.20		1.50	Nil	Dry	12 13	75 75	18 27 15	75 75 2	S	118	80
WS06	1.50		1.59	Nil	Dry	25	40	50	50	S	300	80
WS07A	1.20		1.44	Nil	Dry	4 17	75 75	40 10	75 10	S	176	80
WS07A	1.50		1.56	Nil	Dry	25	20	50	40	S	375	80
WS08	1.20		1.65	Nil	Dry	6 7	75 75	11 14 20 26	75 75 75 75	S	71	80
WS08	1.65		1.92	Nil	Dry	10 17	75 75	27 23	75 40	S	130	80

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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TRIAL PIT LOG

HP01

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 25 October 2018 — Easting 516068 — Scale 1 : 25

End Date 25 October 2008 — Northing 177476 — Ground level 24.20mOD — Depth 1.10 m

water record	sample/test no/type	result	depth (m)	description	depth (m)	level (m)	legend
	1B		0.00- 0.20	Soft dark brown slightly sandy gravelly clayey SILT with frequent fragments (up to 30mm) of glass. Gravel is angular to subrounded fine to coarse flint, brick and clinker. Frequent roots (up to 10mm diam) and rootlets. (MADE GROUND)	0.10	24.10	
	1ES		0.00- 0.20	0.05 - 0.10m: Light grey concrete slab (40mm thick) in East face.			
	2B		0.20- 0.40				
	2ES		0.20- 0.40	Yellowish brown slightly sandy slightly gravelly SILT. Gravel is subangular to rounded fine and medium flint, brick and rare porcelain. Rare rootlets. (MADE GROUND)	0.50	23.70	
	4ES		0.50- 0.90				
	5ES		0.50- 0.90	Brown slightly sandy slightly gravelly SILT. Gravel is subangular to rounded fine flint, brick and charcoal. Rare roots (up to 8mm diam) and rootlets. (MADE GROUND)			
	3B		0.70- 0.90				
	3ES		0.70- 0.90	0.50 - 0.90m: Potential Asbestos Containing Material.	0.90	23.30	
				Yellowish brown slightly gravelly SILT. Gravel is subangular fine and medium siltstone. Rare relict rootlets.	1.10	23.10	
Dry.				Trial pit completed at 1.10m.			

Notes

Trial pit excavated using hand tools.
Groundwater was not encountered.
Trial pit dimensions 0.30x0.30x1.10m.
On completion, the trial pit was backfilled with arisings and the surface reinstated.
Possible ACM found in arisings between 0.50-0.90m and retained in sample 4ES and 5ES.
ACM refers to Asbestos Containing Material.

Sketch of Foundation - Not to scale. All dimensions in metres.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

AGS

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TRIAL PIT LOG

HP02

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 7 November 2018 — Easting 516012 — Scale 1 : 25

End Date 7 November 2018 — Northing 177721 — Ground level 23.20mOD — Depth 0.80 m

water record	sample/test no/type	sample/test result	sample/test depth (m)	description	depth (m)	level (m)	legend
	1B 1ES		0.00- 0.30 0.10- 0.15	Grass over soft dark brown slightly sandy slightly gravelly clayey SILT with a low subangular concrete cobble content. Gravel is subangular to rounded fine to coarse flint, brick and concrete. Frequent rootlets. (MADE GROUND)			
					0.45	22.75	
	2B 2ES 3ES		0.45- 0.60 0.50- 0.55 0.65	Dark brown and light brown gravelly medium and coarse SAND with a low subrounded flint cobble content. Gravel is angular to rounded fine to coarse flint, brick and concrete. (MADE GROUND) 0.65m: Fragments of potential ACM.			
Dry.				0.80m: Hardstanding. Trial pit completed at 0.80m.	0.80	22.40	

Notes

Trial pit excavated using hand tools.
Groundwater was not encountered.
Trial Pit dimensions 0.30x0.30x0.80m.
Trial pit sides remained stable.
Trial pit terminated at 0.80m due to encountering subsurface hardstanding.
On completion, the trial pit was backfilled with arisings and the surface reinstated.
Possible ACM found in arisings at 0.65m and retained in sample 3ES.
ACM refers to Asbestos Containing Material.

Sketch of Foundation - Not to scale. All dimensions in metres.

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TRIAL PIT LOG

HP03

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 6 November 2018 — Easting 516039 — Scale 1 : 25

End Date 6 November 2018 — Northing 177481 — Ground level 24.40mOD — Depth 0.90 m

water record	sample/test no/type	sample/test result	sample/test depth (m)	description	depth (m)	level (m)	legend
	1B 1ES	Vo 0.0	0.00- 0.30 0.10- 0.20	Dark brown slightly sandy slightly gravelly SILT. Gravel is subrounded and rounded fine and medium flint. Frequent roots (up to 50mm diam) and rootlets. (MADE GROUND)	0.20	24.20	
	2B 2ES	Vo 0.0	0.30- 0.60 0.40- 0.60	Light brown slightly sandy slightly gravelly becoming gravelly SILT. Gravel is subangular to rounded fine and medium flint and brick. (MADE GROUND) 0.25 - 0.40m: Frequent steel reinforcement bars (up to 50mm diam).	0.90	23.50	
Dry.				Trial pit completed at 0.90m.			

Notes

Trial pit excavated using hand tools.
Groundwater was not encountered.
Trial pit dimensions 0.30x0.30x0.90m.
Trial pit sides remained stable.
On completion, the trial pit was backfilled with arisings and the surface reinstated.

Sketch of Foundation - Not to scale. All dimensions in metres.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

AGS

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TRIAL PIT LOG

HP04

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 7 November 2018 — Easting 516085 — Scale 1 : 25

End Date 7 November 2018 — Northing 177670 — Ground level 23.10mOD — Depth 1.00 m

water record	sample/test no/type	sample/test result	sample/test depth (m)	description	depth (m)	level (m)	legend
	1B		0.00- 0.25	Grass over soft dark brown slightly gravelly clayey SILT. Gravel is subangular to subrounded fine to coarse flint, brick and tarmacadam. (MADE GROUND)			
	1ES		0.10- 0.15		0.25	22.85	
	2B		0.30- 0.60	Light brown and yellowish brown slightly silty slightly gravelly fine and medium SAND. Gravel is subangular to rounded fine and medium flint. (MADE GROUND)			
	2ES		0.35- 0.40	0.45m: Tile fragment (150x160mm).			
				0.80m: Geotextile membrane across the pit.			
	3ES		0.90- 1.00	0.90m: Becoming gravelly.	1.00	22.10	
Dry				1.00m: Hardstanding Trial pit completed at 1.00m.			

Notes

Trial pit excavated using hand tools.
Groundwater was not encountered.
Trial Pit dimensions 0.30x0.30x1.00m.
Trial pit sides remained stable.
Trial pit terminated at 1.00m due to encountering subsurface hardstanding.
On completion, the trial pit was backfilled with arisings and the surface reinstated.

Sketch of Foundation - Not to scale. All dimensions in metres.

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TRIAL PIT LOG

HP05

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 7 November 2018 — Easting 515921 — Scale 1 : 25

End Date 7 November 2018 — Northing 177666 — Ground level 24.20mOD — Depth 0.80 m

water record	sample/test no/type	sample/test result	sample/test depth (m)	description	depth (m)	level (m)	legend
	1B		0.00- 0.10	Grass over dark brown slightly gravelly sandy SILT. Gravel is angular to subrounded fine and medium flint, concrete and tarmacadam. Frequent roots (up to 20mm diam) and rootlets. (MADE GROUND)	0.10	24.10	
	1ES		0.05- 0.10				
	2B		0.10- 0.30				
	2ES		0.15- 0.20	Light brown and reddish brown slightly sandy gravelly SILT. Gravel is angular to subrounded fine to coarse flint, tarmacadam, concrete, crystalline and brick. Rare rootlets. (MADE GROUND)	0.45	23.75	
	3B		0.45- 0.65				
	3ES		0.50- 0.55	Firm reddish brown slightly sandy slightly gravelly clayey SILT. Gravel is subangular to rounded fine to coarse flint, brick and tarmacadam. (MADE GROUND)			
Dry.	4ES		0.75	0.70m: Steel bolts and washers (150x40mm). 0.80m: Fragments of potential ACM. 0.80m: Hardstanding. Trial pit completed at 0.80m.	0.80	23.40	

Notes

Trial pit excavated using hand tools and a hydraulic breaker.
Groundwater was not encountered.
Trial Pit dimensions 0.30x0.30x0.80m.
Trial pit sides remained stable.
Trial pit terminated at 0.80m due to encountering subsurface hardstanding.
On completion, the trial pit was backfilled with arisings and the surface reinstated.
Possible ACM found in arisings at 0.75m and retained in sample 4ES.
ACM refers to Asbestos Containing Material.

Sketch of Foundation - Not to scale. All dimensions in metres.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

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TRIAL PIT LOG

HP06

CLIENT WATERMAN INFRASTRUCTURE AND ENVIRONMENT LTD

SITE WIE15238 - TESCO, OSTERLEY PARK — Sheet 1 of 1

Start Date 7 November 2018 — Easting 515871 — Scale 1 : 25

End Date 7 November 2018 — Northing 177622 — Ground level 24.75mOD — Depth 1.20 m

water record	sample/test no/type	sample/test result	sample/test depth (m)	description	depth (m)	level (m)	legend
	1B		0.00- 0.10	Dark grey and dark brown slightly clayey slightly sandy GRAVEL. Gravel is angular to subangular fine to coarse flint, tarmacadam and crystalline. (MADE GROUND)	0.15	24.60	
	1ES		0.05- 0.10				
	2B		0.20- 0.40				
	2ES		0.25- 0.30	Firm light brown slightly sandy slightly gravelly clayey SILT with a low angular to subangular concrete and brick cobble content. Gravel is rounded to angular fine to coarse flint, brick, concrete and tarmacadam. (MADE GROUND)	0.40	24.35	
	3B		0.40- 0.70				
	3ES		0.45- 0.50	Firm brown mottled orangish brown slightly sandy slightly gravelly silty CLAY. Gravel is angular to subrounded fine to coarse flint, tarmacadam, concrete and brick. Rare rootlet relicts. (MADE GROUND)			
				0.90m: Ceramic fragments (up to 30x30x3mm).			
Dry.				Trial pit completed at 1.20m.	1.20	23.55	

Notes

Trial pit excavated using hand tools and hydraulic breaker.
Groundwater was not encountered.
Trial Pit dimensions 0.30x0.30x1.20m.
Trial pit sides remained stable.
On completion, the trial pit was backfilled with arisings and the surface reinstated.

Sketch of Foundation - Not to scale. All dimensions in metres.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

AGS

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34745	EC

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Waterman Infrastructure and Environment Limited

Tesco Superstore, Syon Lane, Isleworth, TW7 5NZ

Factual Report – Supplementary Ground Investigation

1920315-R01 (00)

MARCH 2019

RSK GENERAL NOTES

Project No: 1920315-R01 (00)

Title: Factual Report – Supplementary Ground Investigation: Tesco Superstore, Syon Lane, Isleworth, TW7 5NZ

Client: Waterman Infrastructure and Environment Limited:
Pickfords Wharf, Clink Street, London, SE1 9DG

Date: 26th March 2019

Office: RSK, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT
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Status: Final

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Signature		Signature	
Date:	26th March 2019	Date:	26th March 2019

RSK Environment Limited (RSK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Environment Ltd.

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Appendix G	Asbestos air monitoring data

1 INTRODUCTION

RSK Environment Limited (RSK) was commissioned by Waterman Infrastructure and Environment Limited to carry out a supplementary ground investigation at the Tesco Superstore at Syon Lane, Brentford, TW7 5NZ.

It is understood that the site is considered to be re-developed for residential end-use.

This report is subject to the RSK service constraints given in **Appendix A**.

1.1 Objective

The objective of the work is to provide supplementary factual information on ground conditions and the contamination status of the site. Previous site investigations carried out by others have highlighted areas of environmental concern which are targeted in the Client's supplementary investigation program. Previously identified contaminants include petroleum hydrocarbons, Semi-Volatile Organic Compounds (SVOC) and asbestos.

The purpose of the supplementary investigation is to provide further information on previously encountered contamination and further assess the contamination status of the site for due diligence purposes. This includes:

- To log the encountered strata and collect samples to allow for the assessment of contaminants within the underlying soils;
- The installation of groundwater/ground gas monitoring standpipes to allow for the continued monitoring of ground gas concentrations, groundwater levels and to facilitate the collection of groundwater samples.

This report includes the factual information from the supplementary investigation only.

1.2 Scope

The scope of the investigation was designed to cover geo-environmental issues and was defined in the client's "Supplementary Ground Investigation Specification", ref: WIE15238-100-S-3-1-1-TN, dated December 2018. Both the scope and layout of this report has been designed with consideration of CLR11 (Environment Agency, 2004a), BS 5930:1999+A2:2010 (BSI, 2010), BS 10175: 2011 (BSI, 2011) and guidance on land contamination reports issued by the Environment Agency (EA) (2010a).

The scope of works for the ground investigation included:

- Ground Penetrating Radar (GPR) Survey and CAT and Genny Scans for buried service clearance;

- 3No drive-in sampler boreholes with hollow stem auger (BH11 – BH13) into the London Clay Formation to a maximum depth of 6.00 mbgl;
- 3No machine excavated trial pits (TP11 – TP13) to a maximum depth of 3.50 mbgl;
- 9No hand excavated trial pits (HP11 – HP19) to a maximum depth of 1.20 mbgl;
- Asbestos air monitoring during intrusive works.
- Ground gas and groundwater monitoring installations within boreholes progressed on site;
- Collection of soil samples, to be used for geo-environmental testing;
- In-situ headspace analysis using a Photo-Ionisation Detector (PID);
- Backfilling of all exploratory hole locations with arisings and finish to existing conditions, where not installed with groundwater or ground gas monitoring wells;
- Covering of the mechanically excavated trial pit arisings with a tarpaulin on completion to minimise any asbestos fibre release;
- Surveying of all exploratory hole locations to National Grid and mAOD;
- Preparation of a factual report including AGS data.

1.3 Existing reports

The following reports pertinent to the site were made available for review:

- "Engineering Site Appraisal", dated September 2016. Written by Pinnacle Consulting Engineers on behalf of Tesco;
- "Factual report on ground investigation", reference 34745, dated December 2018. Written by Geotechnical Engineering Ltd on behalf of Waterman Infrastructure and Environment Ltd; and
- Interim Utility Report, reference 604601, dated February 2019. Written by Premier Energy.

1.4 Limitations

The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work. However, there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account. In particular, it should be noted that there may be areas of made ground not detected due to the limited nature of the investigation or the thickness and quality of made ground across the site may be variable.

Asbestos containing materials were identified during the fieldworks and supporting laboratory analysis, and the history of the site indicates that additional asbestos may well be present. Asbestos is often present in discrete areas, thus additional asbestos impact may be found during more extensive ground works.

2 THE SITE

2.1 Site location

The site is located to the north of Syon Lane in Isleworth, approximately 300m to the north west of the junction of Syon Lane and the A4 Great West Road. The site is currently occupied by a supermarket, car park and fuel station operated by Tesco. A small car wash is located in the eastern part of the car park. The site also comprises a small park to the north of the supermarket and a disused gated area to the west of MacFarlane Lane. The site is bound by land pertaining to Sky News Headquarters to the north, Syon Lane to the south, Grant Way to the east and residential dwellings and a sport complex adjacent to the western site boundary.

The site is roughly trapezoidal in shape, covering an area of approximately 4.7 hectares (ha) and can alternatively be located at National Grid Reference 516016,177600.

The area around the site is predominantly commercial and residential as detailed in **Table 1**.

A site location plan is shown in **Figure 1.**

Table 1: Site setting

To the north:	Sky News Headquarters and Athena Court (corporate office)
To the east:	Grant Way, Athena Court car park and a small park
To the south:	Syon Lane and residential housing
To the west:	MacFarlane Lane, residential housing and 'Goals Gilette Corner' sports complex

2.2 Site description

A site walkover was carried out by RSK on 4th March 2019.

The site currently comprises a retail superstore and petrol station surrounded by a car park and access roads, a small park and a disused gated area. The site is essentially level and mainly covered with hardstanding. Soft surfaced areas are present in the gated area and the majority of the small park. Trees, hedges and strips of grass are present along the southern and eastern site boundaries. A wire-mesh fence separates the car park from MacFarlane Lane in the west. The area across MacFarlane Lane is fenced and accessible via a small pedestrian gate and a large double-doored gate. To the west the area is separated by a wooden fence from adjacent residential housing. A metal fence is present adjacent to the north of the supermarket where the small park adjoins with a strip of hedges and shrubs. The park is fenced-off from MacFarlane Lane in the

west (wire-mesh fence with pedestrian gate). To the east the park access is open and adjacent to Grant Way.

According to the Tesco Store Management, Japanese Knotweed was reported to be present in proximity to the site boundary in the gated area.

Several trees and shrubs are present in the small park in the northern part of the site.

Site photographs are provided in **Appendix C.**

2.3 Proposed development

The proposed development is to comprise residential housing as shown in **Figure 2**.

2.4 Summary of previous investigation

Waterman Infrastructure and Environment Ltd instructed Geotechnical Engineering Ltd in 2018 to perform an intrusive environmental site investigation comprising eleven shallow boreholes to a maximum depth of 6.00 mbgl, one deep borehole to 29.95 mbgl and six hand dug pits to 0.80 to 1.20 mbgl. The boreholes were advanced using dynamic sampling techniques with rotary follow upon refusal of the dynamic sampler. One shallow and one deep borehole were aborted due to obstructions encountered.

The intrusive investigation generally encountered up to 1.5 m of Made Ground overlying superficial silts sands and gravels to depths of between 3.2 m and 5.0 m, which in turn were underlain by firm to stiff grey fissured London Clay Formation. Groundwater was not encountered.

3 SITE INVESTIGATION METHODOLOGY

RSK carried out intrusive investigation work between 4th and 8th March 2019 to provide information on ground conditions, assess for the presence of contamination, to collect samples for geotechnical testing and to facilitate the installation of gas and groundwater monitoring pipes.

3.1 Sampling strategy and methodology

The techniques adopted for the investigation were specified in the client's investigation specification.

The intrusive investigation comprised the following:

- The advancement of three drive-in sampler boreholes through hollow stem auger techniques (BH11 to BH13) to depths of maximum 6.00 m;
- The installation of groundwater/ground gas monitoring standpipes into all boreholes;
- The mechanical excavation of 3 trial pits (TP11 to TP13) to a maximum depth of 3.5 m; and
- The manual excavation of 9 hand pits (HP11 to HP19) to 1.20 m.

Due to obstructions encountered in the ground, 4 additional hand pits (HP11A and HP14A to HP16A) and 3 inspections pits for BH13 (BH13A to BH13C) were excavated, which had to be aborted due to further obstructions.

The drive-in boreholes were sunk by percussive means using a 'Comacchio GEO205' rig with a hollow stem auger serving as a casing. Samples are won by driving a steel sample tube with a 87 mm ID clear plastic 'coreline' type tube within the sampler into the ground, which is then withdrawn.

The hand dug pits were excavated by a two-man crew using hand tools.

The three deeper trial pits were excavated using a JCB 3CX with a 600 mm bucket and hydraulic breaker.

Soil samples were taken from the exploratory holes as specified by the client and dispatched daily to the laboratory for analysis.

The descriptions of the strata encountered, a list of samples taken and PID screening values obtained are given in the exploratory hole records presented in **Appendices D and E**.

3.1.1 Health and safety considerations

The scope of works was undertaken in line with RSK's Safety, Health, Environment and Quality Management Systems (SHEQMS), which is accredited to ISO9001: 2008 (Quality Management System standard), ISO14001:2004 (Environmental Management System standard) and OHSAS18001:2007 (Occupational Health and Safety Management System standard).

RSK completed and provided a site-specific Health and Safety Plan and associated Method Statements to the Client.

As part of the compilation of the pre-works information, RSK were provided with service plans for the site, showing the locations of all known buried utilities. In addition, each exploratory location was cleared by EMF Detection & Surveys Ltd, using a combination of cable detection and ground penetrating radar techniques. A copy of the most recent utility plan provided to RSK is presented **Appendix B**.

As an additional precautionary measure, each borehole location was scanned using a Cable Avoidance Tool (CAT) and commenced with a hand-dug pit (excavated to approximately 1.2 m depth) prior to the advancement of the boreholes.

The preliminary UXO risk map (Zetica) provided by the Client characterised the majority of the site as a low risk zone. BH13, HP18 and HP19 are located in a low to medium risk zone. Aerial images of the site in 1945 show that BH13 is located directly beneath a factory. As the site has been historically redeveloped since 1945, it is unlikely that historic ordnance was not recorded and therefore UXO clearance was not considered necessary during the works. The hand pitting was considered a low risk exercise due to the techniques employed and limited depth of excavation.

Asbestos air monitoring was undertaken during all intrusive works. The monitoring results are presented in **Appendix G**.

3.1.2 Investigation locations

The investigation and the soil descriptions were carried out in general accordance with 'BS 5930:1999. Code of Practice for Site Investigations' (BSI, 1999). The exploratory hole logs are presented in **Appendices D and E**.

The locations of the intrusive investigations are shown in **Figure 3**.

The investigation points were determined using the site plan provided by the client in their works information. BH13 had to be moved due to physical constraints and alternative locations BH13A, BH13B and BH13C were advanced until refusal. Down-hole obstructions were also encountered in several hand pits (HP11, HP14, HP15 and HP16) and one alternative location for each has been excavated until refusal. The locations of all exploratory positions (including ground levels) were recorded using the GPS system and are provided on the exploratory logs given in **Appendices D and E**.

3.1.3 Monitoring well installations

50mm groundwater monitoring standpipes were installed within the boreholes to provide future groundwater monitoring points. Installation details are summarised in **Table 2**.

Table 2: Standpipe installation details

Location	Response Zone Depth	Targeting Stratum
BH11	4.00 to 5.50 m	Taplow Gravel
BH12	2.00 to 4.50 m	

3.1.4 Soil sampling, in-situ testing and laboratory analysis

Environmental samples were taken beneath hardstanding/near surface and at 0.50 m intervals within the made ground and superficial deposits and at 2.50 m intervals within the London Clay Formation. Samples were collected in a set of 3 containers (tub, jar, vial). In addition to this, a minimum of one small disturbed sample was taken from each stratum.

For each environmental sample additional material was placed in polythene bags for headspace screening with a photo-ionisation detector (PID) fitted with a 10.2 eV bulb. A summary table of the in-situ PID results are given as **Appendix F**.

Samples are recorded together with their depths and the PID screening results on the exploratory hole records in **Appendices D and E**. The samples were transported to the laboratory in chilled cool boxes. Laboratory chain of custody forms were provided to the Client on a daily basis.

Samples were stored in accordance with the RSK quality procedures to maintain sample integrity and preservation and to minimise the chance of cross contamination.

4 GROUND CONDITIONS

The results of the intrusive investigation and subsequent laboratory analysis undertaken are detailed below. The descriptions of the strata encountered, notes regarding visual or olfactory evidence of contamination, list of samples taken, field observations of soil and groundwater, in-situ testing and details of monitoring well installations are included on the exploratory hole records presented in **Appendix D and E**.

4.1 Soil

The exploratory holes revealed that the site is underlain by a variable thickness of made ground/topsoil overlying the Langley Silt Member, which in turn is underlain by the Taplow Gravel over the London Clay Formation.

For the purpose of discussion, the ground conditions are summarised in **Table 3** and the strata discussed in subsequent subsections.

Table 3: General succession of strata encountered

Strata	Exploratory holes encountered	Depth to top of stratum m bgl	Thickness (m)
Reworked Topsoil	BH13A, BH13C, HP11 to HP19, HP11A, HP14A to HP16A, TP13	Ground level	0.10 to 0.35
Hard Standing	BH11, BH13B, BH12, TP11, TP12, TP13	Ground level	0.15 to 0.50
Made Ground	BH13A to BH13C, BH11, BH12, HP11 to HP19, HP11A, HP14A, to HP16A, TP11, TP13	Ground level to 2.20	>0.30 to 2.20
Langley Silt Member	BH11, BH12, TP13	0.50 to 0.80	1.65 to 2.00
Taplow Gravel	BH11, BH12, TP12, TP13	1.40 to 2.60	>0.90 to 3.10
London Clay Formation	BH11, BH12	4.70 to 5.40	Not proven

4.1.1 Reworked topsoil

Reworked topsoil was encountered from ground level to depths of 0.10 m to 0.35 mbgl. The topsoil was generally found to comprise dark brown to brown slightly clayey/silty slightly sandy slightly gravelly silt/clay with roots and rootlets. The topsoil in HP14 and HP16 was found to contain anthropogenic (clinker, brick, glass, plastic)

4.1.2 Hardstanding

Asphalt hardstanding comprising a black bitumen-bound sandy gravel was encountered to a depth of 0.50 mbgl and 0.15 mbgl within BH11 and BH12. In BH12, the asphalt was underlain by a 0.02 to 0.03 m thickness of concrete.

In trial pits TP11 to TP13 the surface was covered partially with asphalt hardstanding and reworked topsoil. Asphalt was encountered to approximately 0.10 mbgl in TP11 and TP12 and to 0.05 mbgl in TP13.

Two layers of concrete hardstanding were encountered to a depth of 0.55 mbgl within BH13B, separated by a black plastic membrane at 0.25 mbgl.

4.1.3 Made ground

From surface or beneath the reworked topsoil/hardstanding, made ground was encountered in the majority of the exploratory hole locations.

The made ground encountered was of variable composition, generally comprising a dark brown gravelly silt/silty clay with flints and diverse anthropogenic materials such as concrete, brick, metal, plastic, resin, tile, wires, clinker and plastic/fibrous membranes.

Within the pits excavated in the park area, in proximity to the fuel station (hand pits HP11 to HP19) and in two of the inspection pits near the turning circle in the east of the site (BH13A and BH13C), made ground generally comprised dark to light brown and greyish brown clayey, gravelly/sandy silt, sand and gravel with low cobble content comprising some of the above listed anthropogenic materials. In HP15A, small fragments of suspected asbestos containing cement were discovered.

Within the machine excavated trial pits to the west of MacFarlane Lane, made ground was of various composition ranging between clay, silt, sand and gravel with varying secondary constituents and varying amounts of anthropogenic materials.

High amounts of suspected asbestos containing cements (cobbles and boulders) were encountered in TP11, together with metal reinforcement and cobbles of asphalt and brick.

In BH11 and BH12, the asphalt is underlain by dark brown to brown sandy gravelly silt with roots and gravel/cobbles of concrete, brick, asphalt and flint to a depth of 0.50 to 0.55 mbgl.

4.1.4 Langley Silt Member

The Langley Silt Member was encountered in BH11, BH12 and TP13. The stratum comprised firm to very stiff (if cohesive) light to orangish brown slightly clayey sandy silt and silty sand with the amount of flint gravel varying with depth. The stratum was generally encountered to depths of between 1.40 and 2.60 m below ground level.

4.1.5 Taplow Gravel

The Taplow Gravel was encountered in BH11, BH12, TP12 and TP13 and was generally recovered as orangish brown very gravelly slightly silty medium to coarse sand with lenses of clay and low cobble content grading into slightly clayey sandy to very sandy gravel of flint with low cobble content. This stratum extended to depths of between 4.7 m and 5.4 m.

4.1.6 London Clay Formation

The London Clay Formation was encountered from 5.40 m and 4.70 m depth (base of the Taplow Gravel) in BH11 and BH12 respectively. It initially comprised a weathered horizon, recovered as a firm to stiff brown mottled orangish red slightly sandy to very sandy silty clay with pockets of fine sand and black specks. This graded into a stiff closely fissured dark grey slightly sandy slightly silty clay with dispersed selenite to depths in excess of 6.00m, the maximum depth investigated.

4.1.7 Obstructions

Due to the thickness of the concrete encountered in BH13B, the client requested the excavation of two alternative locations, in which concrete obstructions were encountered at 0.80 m bgl (BH13A and BH13C).

In HP11, HP14, HP15 and HP16, concrete and sandstone/brick obstructions were encountered between 0.40 mbgl and 0.65 mbgl. The client requested the excavation of four alternative locations within the radius of the GPR scan, where concrete obstructions were encountered at similar depths.

4.1.8 Groundwater

During the intrusive works, groundwater was only encountered as a seepage within BH12 at 3.90 mbgl.

4.1.9 Visual/olfactory evidence of soil and groundwater contamination

The following visual or olfactory signs of contamination were noted during the siteworks:

- Suspected asbestos containing cement was encountered in TP11 and HP15A; and
- PID readings range from 0.0 to 3.3 ppm. The maximum reading of 3.3 ppm was taken in BH11 at 5.60 m depth. No olfactory signs of contamination of the screened materials were noted.

5 LABORATORY TESTING

5.1 Geotechnical analyses

Geotechnical analysis is to be scheduled by Waterman Infrastructure & Environment Limited and forms no further part of this report.

5.2 Contamination analyses

During the siteworks, samples of soil for chemical analysis were sent to i2 Analytical Services at Croxley Green Business Park, Croxley Park, 7 Woodshots Meadow, Watford, which is a UKAS and MCERTS accredited laboratory.

Contamination analysis is to be scheduled by Waterman Infrastructure & Environment Limited and forms no further part of this report.

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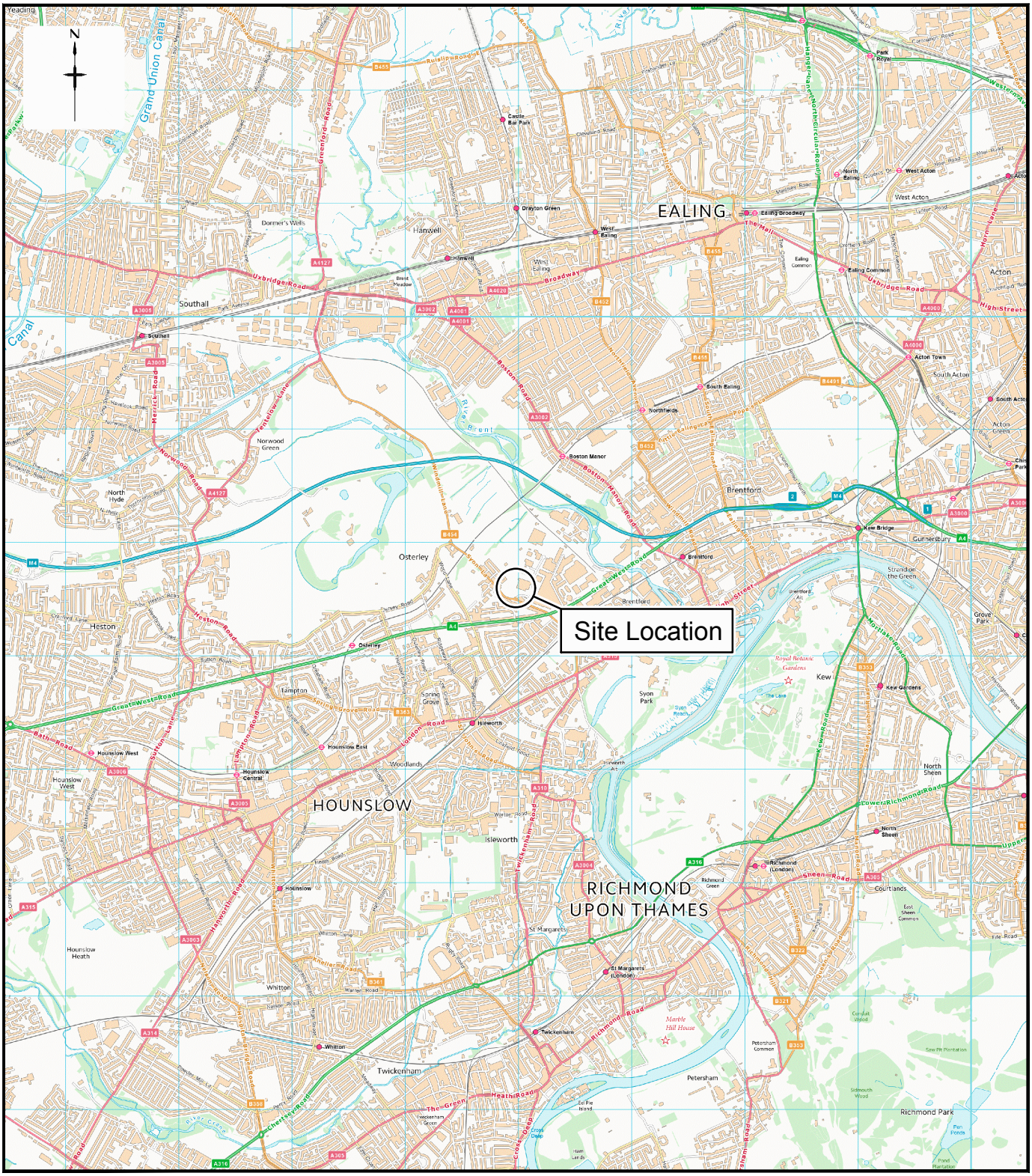
FIGURES



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Client	WATERMAN INFRASTRUCTURE AND ENVIRONMENT LIMITED
Project Title	TESCO, SYON LANE, BRENTFORD
Drawing Title	SITE LOCATION PLAN

Rev	Drawn	Date	Checked	Date	Approved	Date
01	ASC	15.03.19	DD	15.03.19	DD	15.03.19

Dimensions	Scale	Original Size
m	1:50,000	A4

Project Number	Drawing File	Drawing Number
1920315 - R01 (00)	1920315 - SLP.dwg	FIGURE 1

LEGEND

- Site Boundary
- Borehole Location
- Window Sample Location
- Hand Pit Location

Supplementary Investigation:

- Borehole Location
- Trial Pit Location
- Hand Pit Location

Rev.	Date	Amendment	Drawn	Chkd.	Appd.

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Client
WATERMAN INFRASTRUCTURE AND ENVIRONMENT LIMITED

Project Title
TESCO
SYON LANE,
BRENTFORD

Drawing Title
SITE LAYOUT
AND EXPLORATORY HOLE
LOCATION PLAN

Drawn	Date	Checked	Date	Approved	Date
ASC	20.03.19	DD	20.03.19	DD	20.03.19

Scale	Orig Size	Dimensions
1:1000	A3	m

Project No.	Drawing File
1920315 - R01 (00)	1920315 (R01-00) Fig 2.dwg

Drawing No.	Rev.
FIGURE 2	P1

Scale 1 : 1000
0 10 20 30 40 50m

LEGEND

Site Boundary

Rev.	Date	Amendment	Drawn	Chkd.	Appd.

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Client
WATERMAN INFRASTRUCTURE AND ENVIRONMENT LIMITED

Project Title
TESCO
SYON LANE,
BRENTFORD

Drawing Title
PROPOSED DEVELOPMENT PLAN

Drawn	Date	Checked	Date	Approved	Date
ASC	20.03.19	DD	20.03.19	DD	20.03.19

Scale	Orig Size	Dimensions
1:1000	A3	m

Project No.	Drawing File
1920315 - R01 (00)	1920315 (R01-00) Fig 3.dwg

Drawing No.	Rev.
FIGURE 3	P1

Scale 1 : 1000
0 10 20 30 40 50m

APPENDIX A
SERVICE CONSTRAINTS

1. This report and the site investigation carried out in connection with the report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) for Waterman Infrastructure and Environment Limited (the "client") in accordance with the terms of a contract [RSK Group Standard Terms and Conditions] between RSK and the "client", dated November 2016. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.

2. Other than that, expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed in writing the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.

4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK 's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date of this report, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.

6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, invasive plants, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials, unless specifically identified in the Services.

7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a visual inspection of the site together with RSK's interpretation of information, including documentation, obtained from third parties and from the client on the history and usage of the site, unless specifically identified in the Services or accreditation system (such as UKAS ISO 17020:2012 clause 7.1.6):

    a. the Services were based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely

    b. the Services were limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the visual inspection

    c. the Services did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services.

    RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.

8. The intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined locations based on the known historic / operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent

of the limited area depends on the properties of the materials adjacent and local conditions, together with the position of any current structures and underground utilities and facilities, and natural and other activities on-site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on-site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.

APPENDIX B
SITE UTILITIES PLAN

45 BEG BEND
45 BEG BEND
45 BEG BEND
11kV 3x1C SWA XLPE U/G
11kV 3x1C SWA XLPE H/V
11kV 3x1C SWA XLPE U/G
11kV 3x1C SWA XLPE U/G
11kV 3x1C SWA XLPE U/G

APPENDIX C
SITE PHOTOGRAPHS

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Site Walkover

Photo No. 1	**Date:** 04/03/19
Direction Photo Taken: North	
Description: Eastern part of the supermarket	

Photo No. 2	**Date:** 04/03/19
Direction Photo Taken: North west	
Description: View of the supermarket – main entrance	

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Site Walkover

Photo No.	**Date:**
3	04/03/19

Direction Photo Taken:

North north east

Description:

West of the car park

Photo No.	**Date:**
4	04/03/19

Direction Photo Taken:

South west

Description:

West of the car park

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Site Walkover

Photo No.	**Date:**
5	04/03/19

Direction Photo Taken:

South west

Description:

View of MacFarlane Lane; fenced investigation area to the right and Tesco car park to the left

Photo No.	**Date:**
6	04/03/19

Direction Photo Taken:

North north east

Description:

Small park at the rear of Tesco store; View of locations HP11, HP11A and HP12

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Site Walkover

Photo No.	**Date:**
7	04/03/19

Direction Photo Taken:

West

Description:

Small park at the rear of Tesco store: Hedges, shrubs and trees;

View of locations HP15 and HP15A

Photo No.	**Date:**
8	04/03/19

Direction Photo Taken:

East

Description:

Small park at the rear of Tesco store:

Public Pathway, site boundary and adjacent buildings

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Site Walkover

Photo No.	**Date:**
9	04/03/19

Direction Photo Taken:

North

Description:

Turning Circle and warehouse access in the east of the site

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Trial Pits

Photo No. 10	**Date:** 05/03/19	
Direction Photo Taken: N/A		
Description: TP11		

Photo No. 11	**Date:** 05/03/19	
Direction Photo Taken: N/A		
Description: Backfilled TP11 and TP12		

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Trial Pits

Photo No. 12	**Date:** 05/03/19
Direction Photo Taken: N/A	
Description: TP13	

Photo No. 13	**Date:** 05/03/19
Direction Photo Taken: N/A	
Description: HP19	

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Trial Pits

Photo No. 14	**Date:** 05/03/19
Direction Photo Taken: N/A	
Description: HP18	

Photo No. 15	**Date:** 06/03/19
Direction Photo Taken: N/A	
Description: HP12	

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Trial Pits

Photo No. 16	**Date:** 06/03/19
Direction Photo Taken: N/A	
Description: HP13	

Photo No. 17	**Date:** 06/03/19
Direction Photo Taken: N/A	
Description: HP15	

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Trial Pits

Photo No.	**Date:**
18	06/03/19

Direction Photo Taken:

N/A

Description:

HP14

Photo No.	**Date:**
19	06/03/19

Direction Photo Taken:

N/A

Description:

HP16

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Trial Pits

Photo No.	**Date:**
20	06/03/19

Direction Photo Taken:

N/A

Description:

HP17

Photo No.	**Date:**
21	06/03/19

Direction Photo Taken:

N/A

Description:

HP11

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Trial Pits

Photo No. 22	**Date:** 06/03/19
Direction Photo Taken: N/A	
Description: HP11A	

Photo No. 23	**Date:** 06/03/19
Direction Photo Taken: N/A	
Description: HP14A	

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Trial Pits

Photo No.	**Date:**
24	06/03/19

Direction Photo Taken:

N/A

Description:

HP15A

Photo No.	**Date:**
25	06/03/19

Direction Photo Taken:

N/A

Description:

HP16A

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Boreholes

Photo No. 26	**Date:** 07/03/19

Direction Photo Taken:

N/A

Description:

BH11:

1.20 to 1.50 m

1.50 to 3.00 m

3.00 to 4.50 m

Clear-out run

4.50 to 6.00 m

Photo No. 27	**Date:** 08/03/19

Direction Photo Taken:

N/A

Description:

BH12

1.20 to 2.70 m

2.70 to 4.20 m

4.20 to 5.70 m

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Boreholes

Photo No.	**Date:**
28	08/03/19

Direction Photo Taken:

N/A

Description:

BH13B

Photo No.	**Date:**
29	08/03/19

Direction Photo Taken:

N/A

Description:

BH13A

RSK	Report No: 1920315-R01 (00)	PHOTOGRAPHIC LOG
Client name: Waterman Infrastructure and Environment Ltd	**Site Location: Tesco, Syon Lane, Isleworth, TW7 5NZ**	Boreholes

Photo No.	**Date:**
30	08/03/19

Direction Photo Taken:

N/A

Description:

BH13C

APPENDIX D
BOREHOLE RECORDS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**BH11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**07.03.19** End: **07.03.19**	**24.70**	**E:515867.9 N:177562.4**	**1** of **2**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10	43	ES				MADE GROUND: Asphalt comprising bitumen-bound black sandy GRAVEL. Sand is medium to coarse. Gravel is fine to coarse very angular to angular asphalt.	(0.45)	
	0.10	43	D						
	0.10		PID	0.1ppm					
								0.45	
							Rare brick gravel.	0.50	
							MADE GROUND: Red crushed brick.		
	0.60	44	ES				Stiff brown clayey slightly sandy SILT. Sand is fine. (LANGLEY SILT MEMBER)	(0.50)	
	0.60	44	D						
	0.60		PID	0.3ppm					
								1.00	
	1.10	45	ES				Stiff to very stiff brown sandy slightly gravelly SILT. Sand is fine. Gravel is white and black fine to coarse angular to subangular flint. (LANGLEY SILT MEMBER)	(0.40)	
	1.10		PID	0.3ppm					
								1.40	
	1.60	46	ES				Brown slightly gravelly slightly clayey fine to medium SAND. Gravel is fine to medium angular to subangular flint. (TAPLOW GRAVEL)	(1.10)	
	1.60	46	D						
	1.60		PID	0.3ppm					
	2.10	47	ES						
	2.10		PID	0.2ppm			. . . Firm and clayey.		
								2.50	
	2.60	48	ES				Brown slightly clayey slightly gravelly medium SAND. Gravel is fine to medium angular to subangular flint. (TAPLOW GRAVEL)	(0.70)	
	2.60	48	D						
	2.60		PID	0.3ppm					
								3.20	
	3.10	49	ES				Soft to firm brown silty CLAY. (TAPLOW GRAVEL)	(0.90)	
	3.10		PID	0.3ppm					
	3.60	50	ES						
	3.60	50	D						
	3.60		PID	0.3ppm					
								4.10	
	4.10	51	ES				Brown gravelly clayey coarse SAND. Gravel is fine to coarse very angular to subangular flint. (TAPLOW GRAVEL)	4.30	
	4.10		PID	0.3ppm					
							Description on next sheet		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. No groundwater encountered.
4. 50mm groundwater monitoring standpipe installed with a response zone between 4.0m and 5.5m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window sampling	**Comacchio GEO 205**	**ADP**	**DDaghighi**	AGS

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log WINDOW SAMPLE LOG - A4P | 1920315_SYON LANE.GPJ - v8_07.
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437500, Fax: 01442 437550, Web: www.rsk.co.uk. | 26/03/19 - 16:57 | DD2 |

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**BH11**

Contract Ref:	Start: **07.03.19** End: **07.03.19**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315		**24.70**	**E:515867.9 N:177562.4**	**2** of **2**

Progress	Samples / Tests				Water	Backfill & Instru-mentation	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	4.60	52	ES				Brown sandy slightly clayey GRAVEL. Sand is medium to coarse. Gravel is fine to coarse very angular to subrounded flint. (TAPLOW GRAVEL) *(stratum copied from 4.30m from previous sheet)* . . . Very sandy.	(1.10)	
	4.60	52	D						
	4.60		PID	0.4ppm					
	5.10	53	ES					5.40	
	5.10		PID	0.4ppm					
	5.60	54	ES				Firm to stiff brown mottled orangish to reddish brown sandy silty CLAY with black specks. Sand is fine. [Weathered London Clay] (LONDON CLAY FORMATION)	(0.40)	
	5.60	54	D					5.80	
	5.60		PID	3.3ppm			Stiff dark grey slightly sandy CLAY. Sand is fine dispersed selenite. (LONDON CLAY FORMATION)	6.00	
							End of borehole.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window sampling	**Comacchio GEO 205**	**ADP**	**DDaghighi**	AGS

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log WINDOW SAMPLE LOG - A4P | 1920315_SYON LANE.GPJ - v8_07.
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437500, Fax: 01442 437550, Web: www.rsk.co.uk. | 26/03/19 - 16:57 | DD2 |

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**BH12**

Contract Ref:	Start: **08.03.19**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	End: **08.03.19**	**24.10**	**E:515947.5 N:177519.5**	**1** of **2**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10	55	ES				MADE GROUND: Asphalt comprising black very gravelly slightly silty SAND. Gravel is fine to coarse very angular to angular asphalt and flint.	0.15	
	0.10	55	D				. . . Concrete layer.	0.30	
	0.10		PID	1.9ppm			MADE GROUND: Dark brown slightly clayey sandy gravelly SILT with roots and rootlets. Sand is fine to coarse. Gravel is fine to coarse very angular to subrounded flint, concrete, brick and asphalt.	0.55	
	0.20	56	ES						
	0.20	56	D						
	0.20		PID	0.4ppm					
	0.40	57	ES						
	0.40	57	D						
	0.40		PID	2.0ppm			MADE GROUND: Brown sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse very angular to subangular flint, brick and concrete. Cobbles are brick and concrete.		
	1.00	58	ES				Stiff to very stiff light brown slightly clayey sandy SILT. Sand is fine. (LANGLEY SILT MEMBER)		
	1.00	58	D						
	1.00		PID	1.7ppm					
							Becoming slightly gravelly below 1.00m bgl. Gravel is fine to medium very angular to subangular flint.	(1.65)	
	1.50	59	ES						
	1.50	59	D				Becoming very stiff below 1.20m bgl.		
	1.50		PID	0.9ppm					
	2.00	60	ES					2.20	
	2.00	60	D						
	2.00		PID	0.7ppm			Brown slightly silty very sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse very angular to subrounded flint. (TAPLOW GRAVEL)	(0.50)	
	2.50	61	ES					2.70	
	2.50	61	D						
	2.50		PID	1.9ppm			Brown slightly clayey gravelly SAND. Sand is coarse. Gravel is fine to coarse very angular to subangular flint. (TAPLOW GRAVEL)		
	3.00	62	ES						
	3.00-4.50	62	D						
	3.00		PID	1.1ppm				(1.40)	
	3.50	63	ES						
	3.50		PID	1.1ppm					
					≈		Becoming very gravelly below 3.70m bgl.		
	4.00	64	ES					4.10	
	4.00		PID	1.1ppm			Brown very sandy GRAVEL. Sand is coarse. Gravel is fine to coarse very angular to subrounded flint. (TAPLOW GRAVEL)	(0.60)	

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. No groundwater encountered.
4. 50mm groundwater monitoring standpipe installed with a response zone between 2.0m and 4.5m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window sampling	**Comacchio GEO 205**	**ADP**	**DDaghighi**	AGS

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log WINDOW SAMPLE LOG - A4P | 1920315_SYON LANE.GPJ - v8_07.
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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**BH12**

Contract Ref:	Start: **08.03.19** End: **08.03.19**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315		**24.10**	**E:515947.5 N:177519.5**	**2** of **2**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	4.50	65	ES						
	4.50		PID	0.5ppm				4.70	
							Firm to stiff brown mottled orangish red slightly sandy to very sandy silty CLAY with pockets of fine sand. Sand is fine. [Weathered London Clay] (LONDON CLAY FORMATION)	(0.45)	
	5.00	66	ES					5.15	
	5.00	66	D						
	5.00		PID	0.0ppm			Stiff closely fissured dark grey slightly sandy slightly silty CLAY. Sand is fine dispersed selenite. Fissures are undulating and rough. (LONDON CLAY FORMATION)	(0.55)	
	5.50	66a	D					5.70	
							End of borehole.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window sampling	**Comacchio GEO 205**	**ADP**	**DDaghighi**	AGS

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log WINDOW SAMPLE LOG - A4P | 1920315_SYON LANE.GPJ - v8_07.
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437500, Fax: 01442 437550, Web: www.rsk.co.uk. | 26/03/19 - 16:58 | DD2 |

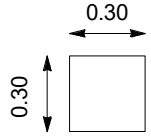
INSPECTION PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**BH13A**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**08.03.19**	**23.56**	**E:516100.4 N:177550.5**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Brown slightly clayey slightly sandy SILT topsoil. Sand is fine. (REWORKED TOPSOIL)	0.10	
						MADE GROUND: Brown slightly clayey slightly sandy slightly gravelly SILT with medium cobble content. Sand is fine to medium. Gravel is fine to coarse angular to subangular brick and flint. Cobbles are brick. Abundant plastic at 0.25m bgl.	(0.40)	
							0.50	
0.50 0.50 0.50	67 67	ES D PID	0.6ppm			MADE GROUND: Light brown gravelly sandy slightly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded flint, brick and concrete. Cobbles are brick and concrete with metal fragments.	(0.30)	
							0.80	

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit terminated at 0.80m due to concrete obstruction.
3. Trial pit remained dry and stable during excavation.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:10**

Method Used:	Plant Used:	Logged By:	Checked By:
Inspection pit + Inspection pit	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log INSPECTION PIT LOG - A4P | 1920315_SYON LANE.GPJ - v8_07.
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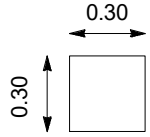
INSPECTION PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**BH13B**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**08.03.19**	**23.70**	**E:516101.8 N:177555.2**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Grey concrete.		
						Black plastic membrane.	(0.55)	
							0.55	

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Concrete core terminated at 0.40m.
3. Depth of concrete proved to at least 0.55m using hand held breaker.
4. Backfilled with concrete upon completion.

All dimensions in metres | Scale: **1:10**

Method Used:	Plant Used:	Logged By:	Checked By:
Inspection pit + Inspection pit	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log INSPECTION PIT LOG - A4P | 1920315_SYON LANE.GPJ - v8_07.
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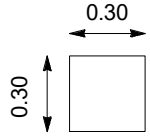
INSPECTION PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**BH13C**

Contract Ref:	Date:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**08.03.19**	**---**	**---**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Dark brown slightly sandy slightly clayey SILT topsoil with rootlets. (REWORKED TOPSOIL)	0.10	
0.30 0.30 0.30	68 68	ES D PID	0.8ppm			MADE GROUND: Dark brown slightly clayey slightly sandy gravelly SILT. Sand is fine to medium. Gravel is fine to coarse angular to subangular flint and brick.	(0.40) 0.50	
0.60 0.60 0.60	69 69	ES D PID	0.7ppm			MADE GROUND: Light brown slightly silty gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subangular flint, brick and concrete. Cobbles are flint.	(0.30) 0.80	

Plan (Not to Scale)



General Remarks

1. Position checked with CAT and Genny prior to excavation.
2. Inspection pit terminated at 0.80m due to concrete obstruction.
3. Trial pit remained dry and stable during excavation.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:10**

Method Used:	Plant Used:	Logged By:	Checked By:
Inspection pit + Inspection pit	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log INSPECTION PIT LOG - A4P | 1920315_SYON LANE.GPJ - v8_07.
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APPENDIX E
TRIAL PIT / HAND PIT RECORDS

TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.26**	**E:516010.1 N:177728.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Dark brown slightly sandy slightly silty CLAY topsoil with rootlets and roots. (REWORKED TOPSOIL)	0.10	
0.20	39	ES				MADE GROUND: Dark brown slightly sandy gravelly SILT with low cobble content. Sand is fine to medium. Gravel is fine to coarse angular to subrounded flint, brick and concrete. Cobbles are concrete.	(0.35)	
0.20	39	D						
0.20		PID	0.1ppm				0.45	
						MADE GROUND: Black to dark brown very sandy clayey GRAVEL. Sand is medium to coarse. Gravel is fine to coarse angular to rounded flint, brick, concrete and black sandstone.	0.60	
0.60	40	ES						
0.60	40	D						
0.60		PID	0.1ppm			End of hand pit due to brick and sandstone obstruction.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit refused at 0.60m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437550, Fax: 01442 437500, Web: www.rsk.co.uk. | 26/03/19 - 16:58 | DD2 |

TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP11A**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.29**	**E:516011.5 N:177730.6**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10	41	ES				MADE GROUND: Dark brown sandy slightly gravelly SILT with rootlets. Gravel is subangular to rounded flint. (REWORKED TOPSOIL)	0.25	
0.10	41	D						
0.10		PID	0.0ppm			MADE GROUND: Dark brown very gravelly clayey SAND with medium cobble content. Sand is medium to coarse. Gravel is angular to subrounded flint, brick, concrete and tile. Cobbles are concrete.	(0.45)	
0.60	42	ES					0.70	
0.60	42	D						
0.60		PID	0.0ppm			End of hand pit due to concrete obstruction.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit refused at 0.70m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437500, Fax: 01442 437550, Web: www.rsk.co.uk. | 26/03/19 - 16:58 | DD2 |

TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.24**	**E:516006.5 N:177711.9**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Dark brown slightly sandy clayey SILT topsoil with abundant rootlets. (REWORKED TOPSOIL)	0.10	
0.20	26	ES				MADE GROUND: Dark brown gravelly slightly clayey slightly sandy SILT with roots and rootlets and low cobble content. Sand is fine to medium. Gravel is fine to coarse subangular to subrounded flint.	(0.35)	
0.20	26	D						
0.20		PID	2.2ppm				0.45	
						MADE GROUND: Brown to light brown silty slightly clayey sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded flint and concrete. Cobbles are concrete.	(0.35)	
0.70	27	ES						
0.70	27	D						
0.70		PID	0.1ppm				0.80	
						Firm light brown to orangish brown clayey slightly sandy gravelly to very gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded flint. (LANGLEY SILT MEMBER)	1.00	
1.20	28	ES				Firm orange brown mottled light brown slightly gravelly clayey sandy SILT. Sand is fine to coarse. Gravel is fine to medium subangular flint. (LANGLEY SILT MEMBER)	1.20	
1.20	28	D						
1.20		PID	0.4ppm					
						End of hand pit.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit terminated at 1.20m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437500, Fax: 01442 437550, Web: www.rsk.co.uk. | 26/03/19 - 16:58 | DD2 |

TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.27**	**E:516015.8 N:177708.6**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Brown slightly sandy slightly gravelly SILT topsoil with abundant rootlets. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded flint. (REWORKED TOPSOIL)	(0.35)	
0.30-0.40	29	ES					0.35	
0.30-0.40	29	D						
0.30		PID	0.4ppm			MADE GROUND: Dark brown sandy slightly gravelly SILT with low cobble content and abundant roots and rootlets. Sand is fine to medium. Gravel is fine to coarse angular to subrounded flint, clinker and concrete. Cobbles are subangular flint.	(0.30)	
							0.65	
						Black plastic membrane at 0.35m bgl.		
0.80-0.90	30	ES				MADE GROUND: Blackish brown to greyish brown and brown sandy clayey GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded flint and concrete. Cobbles are concrete.	(0.55)	
0.80-0.90	30	D						
0.80		PID	0.2ppm				1.20	
						Fibrous membrane at 0.65m bgl.		
						End of hand pit.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit terminated at 1.20m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP14**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.35**	**E:516022.6 N:177719.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	32	ES				MADE GROUND: Dark brown slightly clayey gravelly SILT topsoil with abundant rootlets. Sand is fine to medium. Gravel is fine to coarse angular to subrounded flint, glass, clinker and brick. (REWORKED TOPSOIL)	(0.30)	
0.10-0.20	32	D						
0.10		PID	0.1ppm				0.30	
0.30-0.40	33	ES				MADE GROUND: Brown to light brown clayey very sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to rounded flint, brick and concrete. Cobbles are concrete.	0.40	
0.30-0.40	33	D						
0.30		PID	0.1ppm					
						End of hand pit due to concrete obstruction.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit refused at 0.40m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP14A**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.44**	**E:516025.2 N:177718.9**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Dark brown clayey SILT topsoil with rootlets. (REWORKED TOPSOIL)	0.20	
						MADE GROUND: Dark brown slightly sandy gravelly slightly clayey SILT with low cobble content. Sand is fine. Gravel is fine to coarse angular to subrounded flint, brick and concrete. Cobbles are concrete.	0.40	
						MADE GROUND: Light brown clayey gravelly to very gravelly SAND. Sand is medium to coarse. Gravel is fine to coarse subangular to subrounded flint, brick and concrete.	0.50	
						End of hand pit due to concrete obstruction.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit refused at 0.50m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.27**	**E:516022.8 N:177706.8**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.30	31	ES				MADE GROUND: Dark brown sandy slightly gravelly SILT topsoil with roots and rootlets. Sand is fine to coarse. Gravel is angular to subrounded flint. (REWORKED TOPSOIL)	(0.30)	
0.10-0.30	31	D					0.30	
0.10		PID	1.9ppm			End of hand pit due to concrete obstruction.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit refused at 0.30m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP15A**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.23**	**E:516025.7 N:177707.1**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Dark brown slightly clayey SILT topsoil with rootlets. (REWORKED TOPSOIL)	0.10	
						MADE GROUND: Dark brown slightly clayey slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse very angular to subrounded flint, suspected asbestos cement and concrete.	(0.40)	
						End of hand pit due to concrete obstruction.	0.50	

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit refused at 0.50m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP16**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.34**	**E:516051.9 N:177706.8**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.20	34	ES				MADE GROUND: Dark brown clayey slightly gravelly slightly sandy SILT topsoil. Sand is fine to medium. Gravel is fine to medium angular to subrounded flint, brick and plastic. (REWORKED TOPSOIL)	0.20	
0.10-0.20	34	D						
0.10		PID	0.0ppm			MADE GROUND: Brown to light brown gravelly slightly clayey SAND with medium cobble content. Sand is medium to coarse. Gravel is fine to coarse angular to subrounded flint, concrete, brick, clinker and tile. Cobbles are concrete.	(0.45)	
0.60-0.65	35	ES					0.65	
0.60-0.65	35	D				End of hand pit due to concrete obstruction.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit refused at 0.65m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP16A**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**23.36**	**E:516054.9 N:177706.1**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Dark brown slightly clayey slightly sandy SILT topsoil with rootlets. Sand is fine to medium. (REWORKED TOPSOIL)	0.15	
						MADE GROUND: Dark brown slightly sandy gravelly SILT with rare roots. Sand is fine to medium. Gravel is fine to coarse angular to subangular flint, brick, clinker, concrete and tile.	0.30	
						MADE GROUND: Light brown clayey gravelly SAND with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded flint and concrete. Cobbles are concrete.	0.50	
						End of hand pit due to concrete obstruction.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit refused at 0.50m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP17**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**06.03.19** End: **06.03.19**	**22.94**	**E:516063.5 N:177687.5**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.10-0.15	36	ES				MADE GROUND: Dark brown to brown sandy slightly silty CLAY topsoil with roots and rootlets. Sand is fine to coarse. (REWORKED TOPSOIL)	0.15	
0.10-0.15	36	D						
0.10		PID	0.1ppm			Firm brown silty slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subrounded flint. (LANGLEY SILT MEMBER)	(0.55)	
0.60	37	ES					0.70	
0.60	37	D						
0.60		PID	0.0ppm			Orangish brown clayey sandy slightly silty GRAVEL. Sand is fine to coarse. Gravel is medium to coarse angular to subrounded flint. (TAPLOW GRAVEL)	(0.50)	
1.10	38	ES					1.20	
1.10	38	D						
1.10		PID	0.0ppm			End of hand pit.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit terminated at 1.20m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP18**

Contract Ref:	Start: **05.03.19**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	End: **05.03.19**	**24.46**	**E:516057.9 N:177476.6**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Dark brown clayey slightly sandy SILT topsoil with rootlets. Sand is fine to medium. (REWORKED TOPSOIL)	0.10	
0.20-0.30 0.20-0.30 0.20	23 23	D ES PID	0.1ppm			MADE GROUND: Dark brown slightly clayey slightly sandy slightly gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded flint and brick. Cobbles are subangular flint. Rare nodules of beige weathered brick and rare fragments of tile.	(0.50)	
							0.60	
						Large brick fragments at 0.50m.		
0.70-0.80 0.70-0.80 0.70	24 24	D ES PID	0.0ppm			MADE GROUND: Brown slightly sandy slightly gravelly SILT. Sand is fine to medium. Gravel is fine to medium angular to subangular brick and flint.	(0.40)	
							1.00	
						Soft light orangish brown clayey SILT. (LANGLEY SILT MEMBER)	(0.30)	
1.20-1.30 1.20	25	D PID	0.0ppm				1.30	
						End of hand pit.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit terminated at 1.30m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**HP19**

Contract Ref:	Start: **05.03.19**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	End: **05.03.19**	**25.67**	**E:516073.5 N:177480.9**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Dark brown slightly sandy slightly clayey SILT topsoil. (REWORKED TOPSOIL)	0.10	
0.20-0.30 0.20-0.30 0.20	20 20	D ES PID	0.6ppm			MADE GROUND: Dark brown slightly sandy slightly gravelly SILT with roots and low cobble content. Sand is fine to medium. Gravel is fine to medium angular to rounded flint and brick. Rare fragments of wood and glass. Cobbles are angular to subangular concrete.	(0.40) 0.50	
						Large red and beige bricks and large concrete block at 0.30m. Large roots at 0.40m.		
0.70-0.90 0.70-0.90 0.70	21 21	D ES PID	0.6ppm			MADE GROUND: Brown slightly gravelly sandy SILT. Sand is fine to medium. Gravel is white fine to medium angular to subangular flint. Rare fragments of concrete and asphalt (<1cm).	(0.70) 1.20	
1.20 1.20	22	ES PID	0.6ppm			End of hand pit.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit terminated at 1.20m depth.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**DDaghighi**	

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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**TP11**

Contract Ref:	Start: **05.03.19**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	End: **05.03.19**	**24.60**	**E:515888.5 N:177639.2**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	1	ES				HARDSTANDING: Black asphalt.	0.10	
0.00-0.30	1	D				MADE GROUND: Dark brown sandy GRAVEL with medium cobble content and rare wires. Sand is fine to coarse. Gravel is fine to coarse very angular to angular flint and asphalt. Cobbles are flint and asphalt.	(0.40)	
0.30		PID	0.1ppm				0.50	
						MADE GROUND: Brown to light brown sandy slightly gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is fine to coarse angular to subangular brick and flint. Cobbles are angular brick.	(0.60)	
0.80-1.00	2	ES						
0.80-1.00	2	D						
0.80		PID	0.2ppm				1.10	
						MADE GROUND: Brown and black clayey sandy GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subangular brick, tile, concrete, suspected asbestos cement and flint. Cobbles are angular brick and suspected asbestos containing cement/concrete with metal reinforcement. Fragments of asbestos cement are abundant and up to 70cm size. Rare plastic.	(1.10)	
1.30-1.50	3	ES						
1.30-1.50	3	D						
1.30		PID	0.3ppm					
1.80-1.90	4	ES						
1.80-1.90	4	D						
1.80		PID	0.2ppm				2.20	
2.20-2.20	5	ES				End of trial pit (concrete obstruction/concrete slab).		
2.20-2.20	5	D						
2.20		PID	0.6ppm					

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit backfilled with arisings in reverse order upon completion. Tarpaulin placed at 0.20m bgl and covered with superficial arisings/hardstanding.
4. Trial pit refused at 2.20m depth.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Unknown**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**TP12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**05.03.19** End: **05.03.19**	**24.62**	**E:515897.1 N:177646.9**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						HARDSTANDING: Black asphalt.	0.10	
						MADE GROUND: Black sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse very angular to angular flint.	0.20	
0.20	6	ES						
0.20	6	D						
0.20		PID	0.7ppm			MADE GROUND: Dark brown sandy slightly clayey GRAVEL with medium cobble content and abundant roots. Sand is medium to coarse. Gravel is fine to coarse angular to subrounded flint, concrete, brick and asphalt. Cobbles are angular to subrounded tile, concrete, flint. Rare plastic.	(0.60)	
							0.80	
0.80-0.90	7	ES				MADE GROUND: Brown to light brown clayey slightly sandy SILT with low cobble content. Sand is fine to coarse. Cobbles are concrete, tile and brick. Rare plastic.		
0.80-0.90	7	D						
0.80		PID	0.3ppm					
1.30	8	ES					(1.20)	
1.30	8	D						
1.30		PID	0.5ppm					
1.80	9	ES						
1.80		PID	0.5ppm				2.00	
						Brown to light brown slightly gravelly medium to coarse SAND. Gravel is fine to medium subangular to rounded flint. (TAPLOW GRAVEL)		
2.30	10	ES						
2.30	10	D						
2.30		PID	0.4ppm				(1.00)	
2.80	11	ES						
2.80	11	D						
2.80		PID	0.7ppm				3.00	
						Brown very sandy to sandy GRAVEL with low cobble content. Sand is coarse. Gravel is fine to coarse angular to subrounded flint. Cobbles are subrounded flint. (TAPLOW GRAVEL)		
3.30	12	ES					(0.80)	
3.30		PID	0.2ppm					
							3.80	
						End of trial pit.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit backfilled with arisings in reverse order upon completion. Tarpaulin placed at 0.20m bgl and covered with superficial arisings/hardstanding.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Unknown**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437550, Fax: 01442 437500, Web: www.rsk.co.uk. | 26/03/19 - 16:58 | DD2 |

TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Tesco, Syon Lane, Brentford, TW7 5NZ	**Waterman Infrastructure and Environment Ltd**	**TP13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
1920315	**05.03.19** End: **05.03.19**	**24.41**	**E:515910.4 N:177661.9**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Dark brown sandy SILT topsoil with abundant rootlets and patches of black asphalt.	0.05 0.20	
0.20 0.20 0.20	13 13	ES D PID	0.3ppm			MADE GROUND: Brown to dark brown to greyish brown slightly silty gravelly SAND with rootlets. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded flint and brick.	(0.40)	
						MADE GROUND: Dark brown to brown very gravelly silty SAND with light brown nodules of SILT and medium cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded flint and brick. Cobbles are flint, brick and resin.	0.60	
0.70 0.70 0.70	14 14	ES D PID	0.2ppm			Light brown to orangish brown to brown sandy SILT / silty SAND with rootlets. Sand is fine. (LANGLEY SILT MEMBER) Becoming clayey below 1.00m bgl.	(0.60)	
							1.20	
1.20 1.20 1.20	15 15	ES D PID	0.3ppm			Firm to stiff light brown to orangish brown to brown slightly gravelly slightly silty CLAY. Gravel is white/beige fine to medium subangular to subrounded flint. (LANGLEY SILT MEMBER)		
1.70 1.70 1.70	16 16	ES D PID	0.4ppm				(1.40)	
2.20 2.20 2.20	17 17	ES D PID	0.4ppm				2.60	
2.70 2.70-3.20 2.70	18 18	ES D PID	0.2ppm			Orangish brown very gravelly slightly silty SAND with rare clay pockets (<1cm) and low cobble content. Sand is medium to coarse. Gravel is fine to coarse very angular to subrounded flint. Cobbles are flint. (TAPLOW GRAVEL) Grading into very sandy GRAVEL from 3.00m bgl.	(0.90)	
3.20 3.20	19	ES PID	0.2ppm				3.50	
						End of trial pit.		

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit backfilled with arisings in reverse order upon completion. Tarpaulin placed at 0.20m bgl and covered with superficial arisings/hardstanding.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Unknown**	**DDaghighi**	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - NO PLAN - A4P | 1920315_SYON LANE.GPJ - v8_07.
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437550, Fax: 01442 437500, Web: www.rsk.co.uk. | 26/03/19 - 16:59 | DD2 |

APPENDIX F
PID SUMMARY TABLE

STRUCTURAL SOILS

SUMMARY OF PHOTO IONISATION TESTS

Contract:	Client:	Job No:
Tesco, Syon Lane, Brentford, TW7 5NZ	Waterman Infrastructure and Environment Ltd	1920315

Exploratory Position ID	Depth (m)	Test Date	PID Result VOC (ppm)	Test Related Notes
HP11A	0.10	06/03/2019	0.0	Operator: DDaghighi
HP14	0.10	06/03/2019	0.1	Operator: DDaghighi
HP15	0.10	06/03/2019	1.9	Operator: DDaghighi
HP16	0.10	06/03/2019	0.0	Operator: DDaghighi
HP17	0.10	06/03/2019	0.1	Operator: DDaghighi
BH11	0.10	07/03/2019	0.1	Operator: DDaghighi
BH12	0.10	08/03/2019	1.9	Operator: DDaghighi
HP18	0.20	05/03/2019	0.1	Operator: DDaghighi
HP19	0.20	05/03/2019	0.6	Operator: DDaghighi
TP12	0.20	05/03/2019	0.7	Operator: DDaghighi
TP13	0.20	05/03/2019	0.3	Operator: DDaghighi
HP11	0.20	06/03/2019	0.1	Operator: DDaghighi
HP12	0.20	06/03/2019	2.2	Operator: DDaghighi
BH12	0.20	08/03/2019	0.4	Operator: DDaghighi
TP11	0.30	05/03/2019	0.1	Operator: DDaghighi
HP13	0.30	06/03/2019	0.4	Operator: DDaghighi
HP14	0.30	06/03/2019	0.1	Operator: DDaghighi
BH13C	0.30	08/03/2019	0.8	Operator: DDaghighi
BH12	0.40	08/03/2019	2.0	Operator: DDaghighi
BH13A	0.50	08/03/2019	0.6	Operator: DDaghighi
HP11	0.60	06/03/2019	0.1	Operator: DDaghighi
HP11A	0.60	06/03/2019	0.0	Operator: DDaghighi
HP17	0.60	06/03/2019	0.0	Operator: DDaghighi
BH11	0.60	07/03/2019	0.3	Operator: DDaghighi
BH13C	0.60	08/03/2019	0.7	Operator: DDaghighi
HP18	0.70	05/03/2019	0.0	Operator: DDaghighi
HP19	0.70	05/03/2019	0.6	Operator: DDaghighi
TP13	0.70	05/03/2019	0.2	Operator: DDaghighi
HP12	0.70	06/03/2019	0.1	Operator: DDaghighi
TP11	0.80	05/03/2019	0.2	Operator: DDaghighi
TP12	0.80	05/03/2019	0.3	Operator: DDaghighi
HP13	0.80	06/03/2019	0.2	Operator: DDaghighi

Notes:

STRUCTURAL SOILS

SUMMARY OF PHOTO IONISATION TESTS

Contract:	Client:	Job No:
Tesco, Syon Lane, Brentford, TW7 5NZ	Waterman Infrastructure and Environment Ltd	1920315

Exploratory Position ID	Depth (m)	Test Date	PID Result VOC (ppm)	Test Related Notes
BH12	1.00	08/03/2019	1.7	Operator: DDaghighi
HP17	1.10	06/03/2019	0.0	Operator: DDaghighi
BH11	1.10	07/03/2019	0.3	Operator: DDaghighi
HP18	1.20	05/03/2019	0.0	Operator: DDaghighi
HP19	1.20	05/03/2019	0.6	Operator: DDaghighi
TP13	1.20	05/03/2019	0.3	Operator: DDaghighi
HP12	1.20	06/03/2019	0.4	Operator: DDaghighi
TP11	1.30	05/03/2019	0.3	Operator: DDaghighi
TP12	1.30	05/03/2019	0.5	Operator: DDaghighi
BH12	1.50	08/03/2019	0.9	Operator: DDaghighi
BH11	1.60	07/03/2019	0.3	Operator: DDaghighi
TP13	1.70	05/03/2019	0.4	Operator: DDaghighi
TP11	1.80	05/03/2019	0.2	Operator: DDaghighi
TP12	1.80	05/03/2019	0.5	Operator: DDaghighi
BH12	2.00	08/03/2019	0.7	Operator: DDaghighi
BH11	2.10	07/03/2019	0.2	Operator: DDaghighi
TP11	2.20	05/03/2019	0.6	Operator: DDaghighi
TP13	2.20	05/03/2019	0.4	Operator: DDaghighi
TP12	2.30	05/03/2019	0.4	Operator: DDaghighi
BH12	2.50	08/03/2019	1.9	Operator: DDaghighi
BH11	2.60	07/03/2019	0.3	Operator: DDaghighi
TP13	2.70	05/03/2019	0.2	Operator: DDaghighi
TP12	2.80	05/03/2019	0.7	Operator: DDaghighi
BH12	3.00	08/03/2019	1.1	Operator: DDaghighi
BH11	3.10	07/03/2019	0.3	Operator: DDaghighi
TP13	3.20	05/03/2019	0.2	Operator: DDaghighi
TP12	3.30	05/03/2019	0.2	Operator: DDaghighi
BH12	3.50	08/03/2019	1.1	Operator: DDaghighi
BH11	3.60	07/03/2019	0.3	Operator: DDaghighi
BH12	4.00	08/03/2019	1.1	Operator: DDaghighi
BH11	4.10	07/03/2019	0.3	Operator: DDaghighi
BH12	4.50	08/03/2019	0.5	Operator: DDaghighi

Notes:

STRUCTURAL SOILS

SUMMARY OF PHOTO IONISATION TESTS

Contract:	Client:	Job No:
Tesco, Syon Lane, Brentford, TW7 5NZ	Waterman Infrastructure and Environment Ltd	1920315

Exploratory Position ID	Depth (m)	Test Date	PID Result VOC (ppm)	Test Related Notes
BH11	4.60	07/03/2019	0.4	Operator: DDaghighi
BH12	5.00	08/03/2019	0.0	Operator: DDaghighi
BH11	5.10	07/03/2019	0.4	Operator: DDaghighi
BH11	5.60	07/03/2019	3.3	Operator: DDaghighi

Notes:

APPENDIX G
ASBESTOS AIR MONITORING DATA

AIR SAMPLING TEST CERTIFICATE

Hemel Hempstead

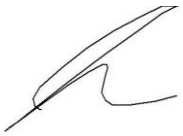
18 Frogmore Road,
Hemel Hempstead,
Hertfordshire
HP3 9RT
Telephone +44 (0)1442 416635

0278

Certificate no.:	**AM-20190304130125**	Project no.:	C-01382
UKAS accredited method statement and disclaimers:	ASB 017 based on HSG 248		
Client name and address:	RSK Environment Limited, Abbey Park, Humber Road, Coventry, West Midlands, CV3 4AQ	Site address:	Syon Lane, Brentford Osterley Park Syon Lane Isleworth
Work location:	As per indicated on plan - Tesco car park	Date:	05/03/2019 18:41

Microscope no.:	3809	NPL test slide no.:	3814	Graticule Diameter (µm):	100	Graticule ref:	-
Exposed filter diameter (mm)	22	Timer ref:	4372	Flow meter ref:	4316	Counter ref	2372 2974
Barometer ref:	4386	Pressure (mb):	1008	Thermometer ref:	4389	Temperature (°C):	8
Stage micrometer	4185	Band 5 visible:	YES				
Test Conditions	Satisfactory						

Sample no.	Pump no.	Cowl no.	Test	Location	Start time	Finish time	Sample time (T)	Initial flow (l/m)	Final flow (l/m)	Average flow (F) (l/m)	Volume (V) (V=T*F)	Fibres	Fields	Limit of quantification	Calculated result (f/ml)	Recorded result (f/ml)
A1	4381	859	Background	See plan	09:22	11:54	152	5.0	5.0	5.0	760	3.5	200	0.006	0.0011	< 0.01
A2	4224	206	Background	See plan	09:26	11:50	144	5.0	5.0	5.0	720	4.5	200	0.007	0.0015	< 0.01
A3	4424	108	Background	See plan	13:24	14:36	72	8.0	8.0	8.0	576	2	200	0.008	0.0008	< 0.01
A4	4381	999	Background	See plan	14:38	15:44	66	8.0	8.0	8.0	528	3.5	200	0.009	0.0016	< 0.01

Acknowledgement:			
Pass or fail statement:	All results satisfactory - No where to set up lab on site, slides read at home end of day		
Analyst name:	Adam Bristow	Analyst signature:	
Date and time:	05/03/2019 18:41		

PHOTOGRAPH APPENDIX

Certificate no.:	AM-20190304130125	Project no.:	C-01382
Analyst name:	Adam Bristow		

	Pump set up
	Trial pit
	Large amounts of asbestos cement throughout pit 11

	trial pit 12 - Samples of suspected ACM taken (Geo)

Hemel Hempstead

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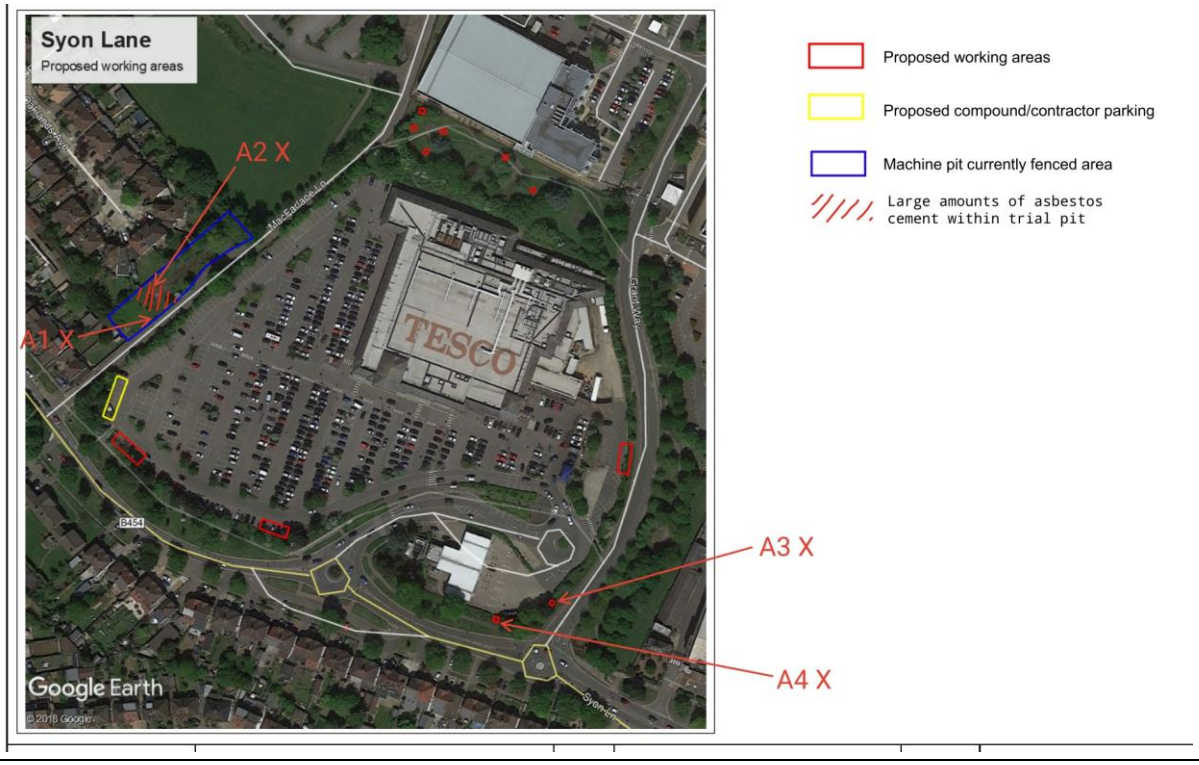
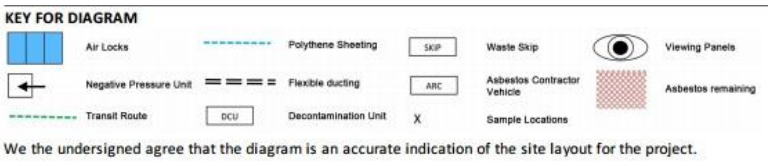
SITE LAYOUT DIAGRAM

0278

Certificate no.:	AM-20190304130125	Project no.:	C-01382

DIAGRAMS MUST BE INCLUSIVE OF APPROXIMATE ENCLOSURE DIMENSIONS



Key for diagram	

Acknowledgement:			
We the undersigned agree that the diagram is an accurate indication of the site layout for the project.			
Contractor name:		Contractor signature:	
Date:	05/03/2019		
Analyst name:	Adam Bristow	Analyst signature:	

AIR SAMPLING TEST CERTIFICATE

Hemel Hempstead

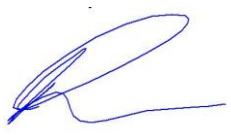
18 Frogmore Road,
Hemel Hempstead,
Hertfordshire
HP3 9RT
Telephone +44 (0)1442 416635

0278

Certificate no.:	**AM-20190306081721**	Project no.:	C-01382
UKAS accredited method statement and disclaimers:	ASB 017 based on HSG 248		
Client name and address:	RSK Environment Limited, Abbey Park, Humber Road, Coventry, West Midlands, CV3 4AQ	Site address:	Syon Lane, Brentford Osterley Park Syon Lane Isleworth
Work location:	As per indicated on plan - Tesco car park	Date:	06/03/2019 18:27

Microscope no.:	3809	NPL test slide no.:	3814	Graticule Diameter (µm):	100	Graticule ref:	-
Exposed filter diameter (mm)	22	Timer ref:	4372	Flow meter ref:	4316	Counter ref	2372 2974
Barometer ref:	4386	Pressure (mb):	990	Thermometer ref:	4389	Temperature (°C):	7
Stage micrometer	4185	Band 5 visible:	YES				
Test Conditions	Satisfactory						

Sample no.	Pump no.	Cowl no.	Test	Location	Start time	Finish time	Sample time (T)	Initial flow (l/m)	Final flow (l/m)	Average flow (F) (l/m)	Volume (V) (V=T*F)	Fibres	Fields	Limit of quantification	Calculated result (f/ml)	Recorded result (f/ml)
A1	4361	859	Background	See plan	08:37	11:28	171	6.0	6.0	6.0	1026	3	200	0.005	0.0007	< 0.00
A2	4224	206	Background	See plan	08:38	11:34	176	6.0	6.0	6.0	1056	4.5	200	0.005	0.0010	< 0.00
A3	4361	108	Background	See plan	12:54	13:50	56	10	10	10.0	560	2.5	200	0.009	0.0011	< 0.01

Acknowledgement:			
Pass or fail statement:	All results satisfactory		
Analyst name:	Adam Bristow	Analyst signature:	
Date and time:	06/03/2019 18:27		

PHOTOGRAPH APPENDIX

Certificate no.:	AM-20190306081721	Project no.:	C-01382
Analyst name:	Adam Bristow		

	Small fragments of visible cement with hand dug pit
	Hand dug pits
	Hand dug pits
	Pump set up whilst breaking tarmac

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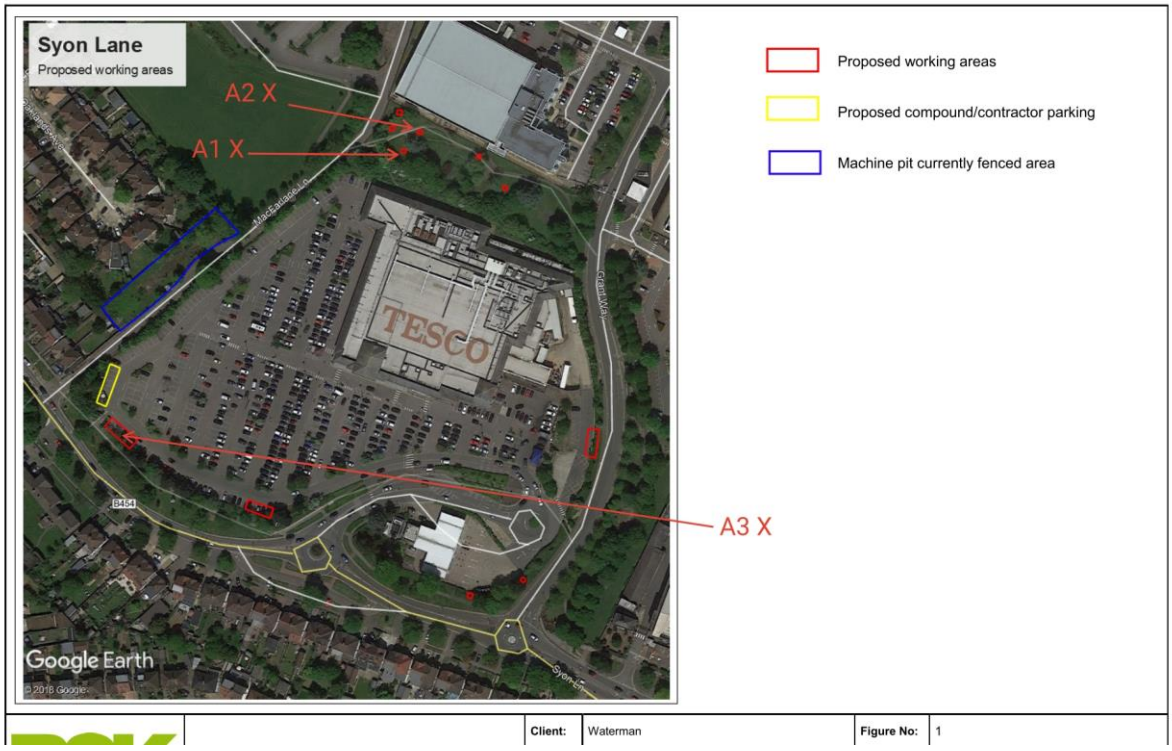
SITE LAYOUT DIAGRAM

0278

Certificate no.:	AM-20190306081721	Project no.:	C-01382

DIAGRAMS MUST BE INCLUSIVE OF APPROXIMATE ENCLOSURE DIMENSIONS



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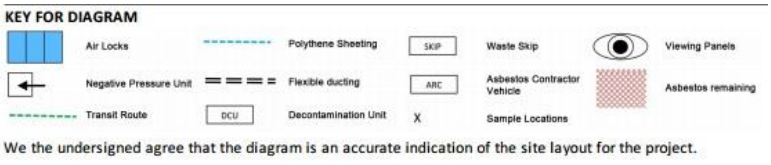

Acknowledgement:			
We the undersigned agree that the diagram is an accurate indication of the site layout for the project.			
Contractor name:		Contractor signature:	
Date:			
Analyst name:	Adam Bristow	Analyst signature:	

AIR SAMPLING TEST CERTIFICATE

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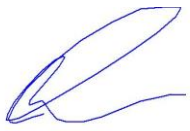
0278

Certificate no.:	**AM-20190307084149**	Project no.:	C-01382
UKAS accredited method statement and disclaimers:	ASB 017 based on HSG 248		
Client name and address:	RSK Environment Limited, Abbey Park, Humber Road, Coventry, West Midlands, CV3 4AQ	Site address:	Syon Lane, Brentford Osterley Park Syon Lane Isleworth
Work location:	As indicated on plan	Date:	07/03/2019 18:34

Microscope no.:	3809	NPL test slide no.:	3814	Graticule Diameter (µm):	100	Graticule ref:	-
Exposed filter diameter (mm)	22	Timer ref:	4372	Flow meter ref:	4316	Counter ref	2372 2974
Barometer ref:	4386	Pressure (mb):	1006	Thermometer ref:	4389	Temperature (°C):	8
Stage micrometer	4185	Band 5 visible:	YES				
Test Conditions	Satisfactory						

Sample no.	Pump no.	Cowl no.	Test	Location	Start time	Finish time	Sample time (T)	Initial flow (l/m)	Final flow (l/m)	Average flow (F) (l/m)	Volume (V) (V=T*F)	Fibres	Fields	Limit of quantification	Calculated result (f/ml)	Recorded result (f/ml)
A1	4381	859	Background	See plan	08:44	13:05	261	5.0	5.0	5.0	1305	4.5	200	0.004	0.0008	< 0.00
A2	4224	206	Background	See plan	12:45	15:40	175	7.0	7.0	7.0	1225	5	200	0.004	0.0010	< 0.00

Acknowledgement:			
Pass or fail statement:	All results satisfactory		
Analyst name:	Adam Bristow	Analyst signature:	
Date and time:	07/03/2019 18:34		

PHOTOGRAPH APPENDIX

Certificate no.:	AM-20190307084149	Project no.:	C-01382
Analyst name:	Adam Bristow		

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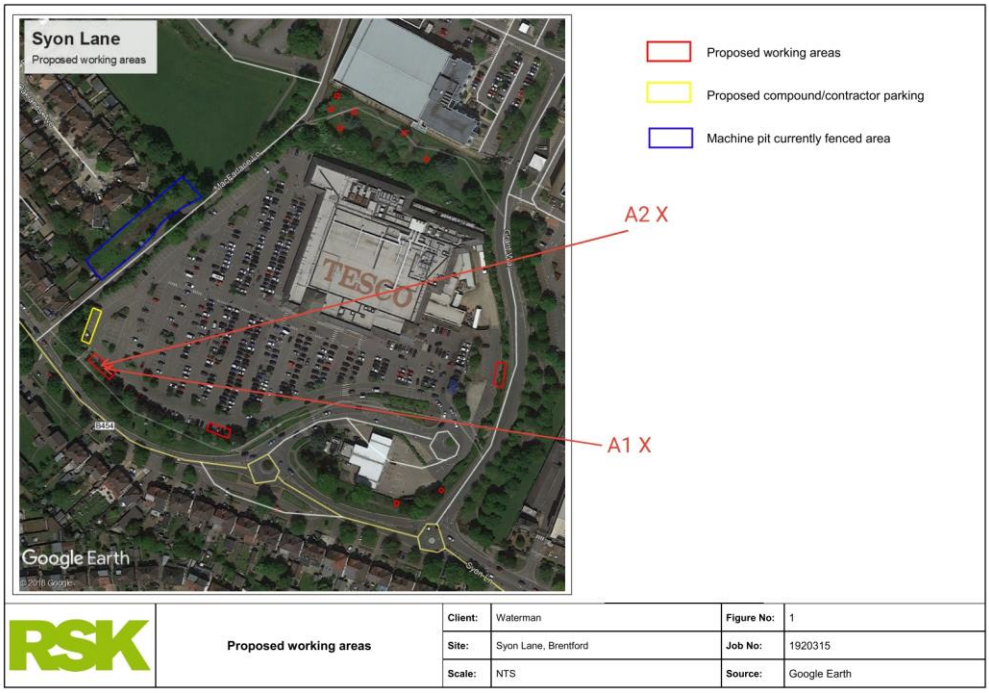
SITE LAYOUT DIAGRAM

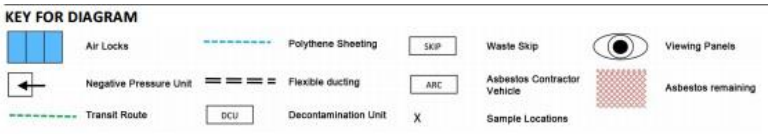
0278

Certificate no.:	AM-20190307084149	Project no.:	C-01382

DIAGRAMS MUST BE INCLUSIVE OF APPROXIMATE ENCLOSURE DIMENSIONS



Key for diagram	



Acknowledgement:			
We the undersigned agree that the diagram is an accurate indication of the site layout for the project.			
Contractor name:		Contractor signature:	
Date:			
Analyst name:	Adam Bristow	Analyst signature:	

AIR SAMPLING TEST CERTIFICATE

Hemel Hempstead

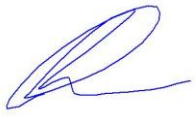
18 Frogmore Road,
Hemel Hempstead,
Hertfordshire
HP3 9RT
Telephone +44 (0)1442 416635

0278

Certificate no.:	**AM-20190308085915**	Project no.:	C-01382
UKAS accredited method statement and disclaimers:	ASB 017 based on HSG 248		
Client name and address:	RSK Environment Limited, Abbey Park, Humber Road, Coventry, West Midlands, CV3 4AQ	Site address:	Syon Lane, Brentford Osterley Park Syon Lane Isleworth
Work location:	As indicated on plan	Date:	08/03/2019 19:06

Microscope no.:	3809	NPL test slide no.:	3814	Graticule Diameter (µm):	100	Graticule ref:	-
Exposed filter diameter (mm)	22	Timer ref:	4372	Flow meter ref:	4316	Counter ref	2372 2974
Barometer ref:	4386	Pressure (mb):	1008	Thermometer ref:	4389	Temperature (°C):	8
Stage micrometer	4185	Band 5 visible:	YES				
Test Conditions	Satisfactory						

Sample no.	Pump no.	Cowl no.	Test	Location	Start time	Finish time	Sample time (T)	Initial flow (l/m)	Final flow (l/m)	Average flow (F) (l/m)	Volume (V) (V=T*F)	Fibres	Fields	Limit of quantification	Calculated result (f/ml)	Recorded result (f/ml)
A1	4381	206	Background	See plan	08:27	11:43	196	6.0	6.0	6.0	1176	3.5	200	0.004	0.0007	< 0.00
A2	4224	859	Background	See plan	13:05	15:11	126	6.0	6.0	6.0	756	2.5	200	0.006	0.0008	< 0.01

Acknowledgement:			
Pass or fail statement:	All results satisfactory		
Analyst name:	Adam Bristow	Analyst signature:	
Date and time:	08/03/2019 19:06		

PHOTOGRAPH APPENDIX

Certificate no.:	AM-20190308085915	Project no.:	C-01382
Analyst name:	Adam Bristow		

GEO 205	

Hemel Hempstead

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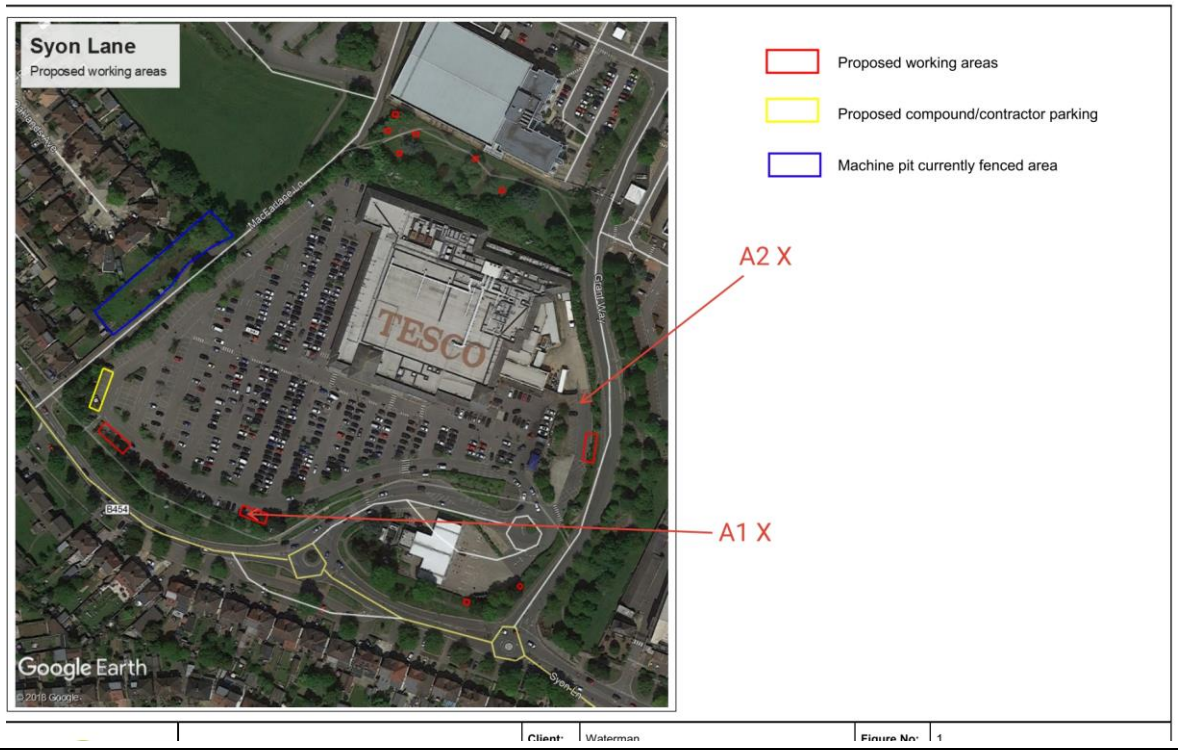
Hertfordshire
HP3 9RT
Telephone +44 (0)1442 416635

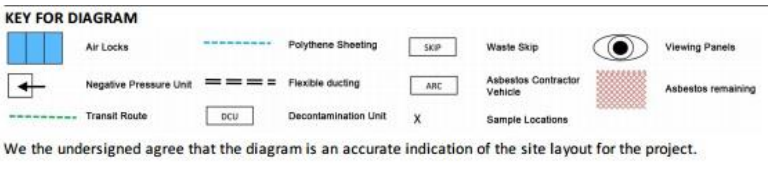
SITE LAYOUT DIAGRAM

0278

Certificate no.:	AM-20190308085915	Project no.:	C-01382

DIAGRAMS MUST BE INCLUSIVE OF APPROXIMATE ENCLOSURE DIMENSIONS



Key for diagram	

Acknowledgement:			
We the undersigned agree that the diagram is an accurate indication of the site layout for the project.			
Contractor name:		Contractor signature:	
Date:			
Analyst name:	Adam Bristow	Analyst signature:	

Appendix D Third Party Correspondence

- **Groundsure Enviro Insight Report (Report Ref. ref: WTM1-5538639)**
- **Groundsure Geo Insight Report (Report Ref. WTM1-5538640)**
- **Groundsure Historical Map Pack**
- **London Borough of Hounslow Land Quality Team records**

Waterman Infrastructure & Environment Limited

PICKFORDS WHARF WATERMAN GROUP,
CLINK STREET,
LONDON, SE1 9DG

Groundsure Reference:	WTM1-5538639
Your Reference:	93729
Report Date	17 Oct 2018
Report Delivery Method:	Email - pdf

Enviro Insight

Address: TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159 000, queries: info@groundsure.com quoting the above report reference number

Yours faithfully,

Waterman

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ**
Date:	**17 Oct 2018**
Reference:	**WTM1-5538639**
Client:	**Waterman Infrastructure & Environment Limited**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	20-Apr-2015
Grid Reference:	515972,177585
Site Size:	4.37ha

Report Reference: WTM1-5538639
Client Reference: 93729

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	7	14	34	143
1.2 Additional Information – Historical Tank Database	0	0	5	20
1.3 Additional Information – Historical Energy Features Database	0	0	29	24
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	4	2
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	11	102

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	2
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	1	0	3	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	1
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	1	0	2	2
2.3.2 National Incidents Recording System, List 1	0	0	0	1
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	2	2	5
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	1
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	15	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	2	10	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	2	0	28	Not searched
4.2 Records of Petrol and Fuel Sites	1	0	1	1
4.3 National Grid Underground Electricity Cables	0	0	0	12
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology

5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology

	0-500m
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	5
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	3	1
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	#250GWV #	#500GWV #	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	Yes	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	0	14	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Enviroment Agency Zone 2 floodplains within 250m of the study site	None identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential below Surface
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Moderate

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	1
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	3
8.8 Records of World Heritage Sites	0	0	0	0	1	1
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Moderate
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Moderate
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

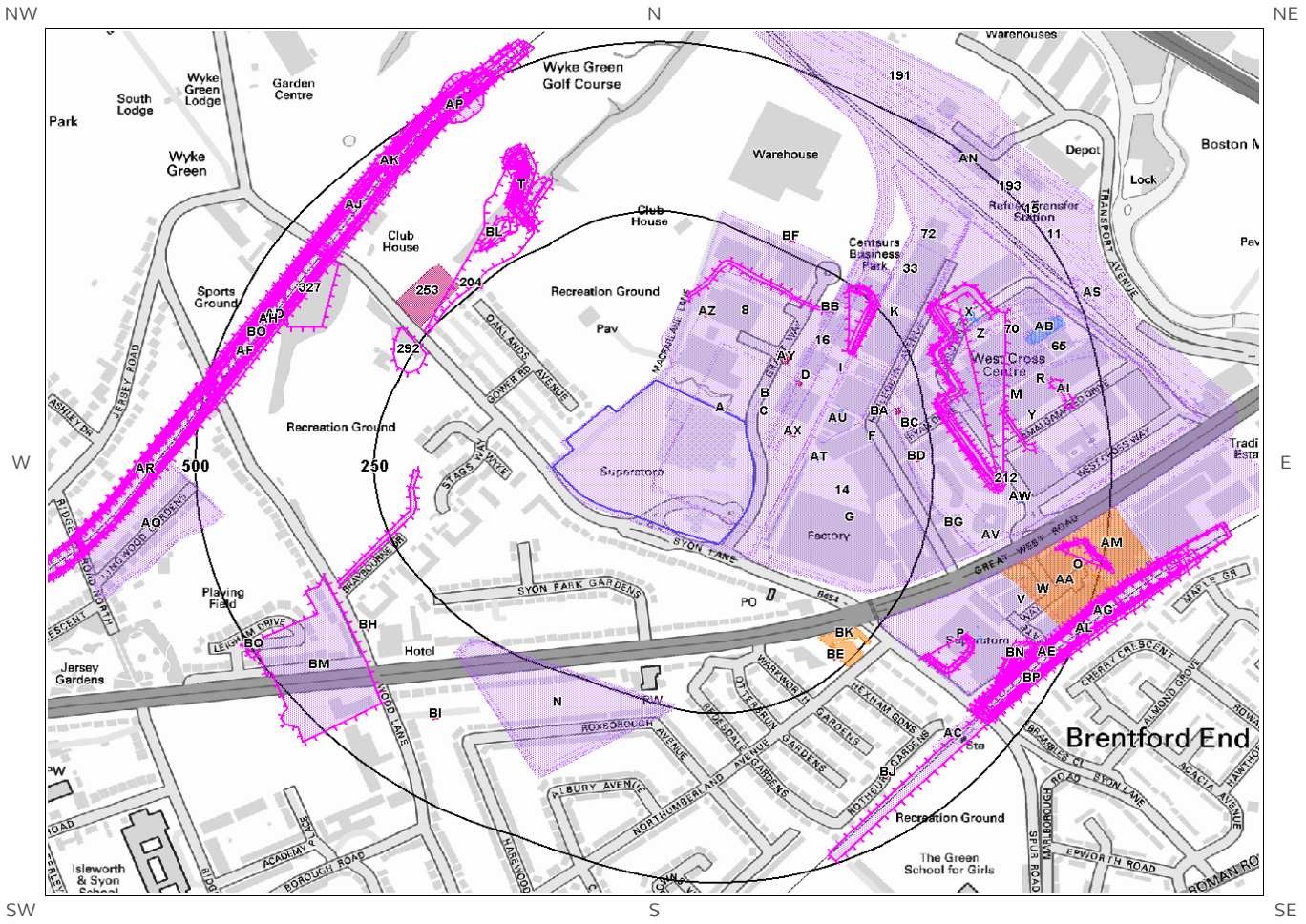
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 198

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Works	1948
2A	0	On Site	Biscuit Works	1948
3A	0	On Site	Unspecified Works	1961
4C	0	On Site	Biscuit Works	1938
5B	0	On Site	Unspecified Factory	1966
6B	0	On Site	Unspecified Factory	1974
7C	0	On Site	Biscuit Works	1935
8	2	NE	Unspecified Commercial/Industrial	1987
9D	3	E	Railway Sidings	1966
10D	3	E	Railway Sidings	1974
11	21	E	Railway Sidings	1938
12E	23	E	Railway Sidings	1948
13E	23	E	Railway Sidings	1948
14	26	E	Unspecified Factory	1987
15	27	E	Railway Sidings	1935
16	28	E	Railway Sidings	1961
17F	33	SE	Unspecified Commercial/Industrial	1961
18F	33	SE	Folding Boats Manufactory	1948
19F	33	SE	Factory	1948
20G	41	SE	Unspecified Factory	1974
21G	41	SE	Unspecified Factory	1966
22AU	123	E	Unspecified Tank	1935
23K	124	E	Unspecified Depot	1974
24H	131	N	Unspecified Ground Workings	1948
25H	131	N	Unspecified Ground Workings	1948
26I	148	NE	Chimney	1974
27I	148	NE	Chimney	1966
28J	175	NE	Unspecified Ground Workings	1948
29J	175	NE	Unspecified Ground Workings	1948
30J	177	NE	Unspecified Ground	1938

			Workings	
31J	177	NE	Unspecified Ground Workings	1935
32J	177	NE	Unspecified Ground Workings	1935
33	178	NE	Unspecified Depot	1966
34K	182	NE	Unspecified Depot	1987
35L	187	W	Unspecified Ground Workings	1948
36L	187	W	Unspecified Ground Workings	1948
37M	192	E	Rubber Tyres Manufactory	1948
38M	192	E	Factory	1948
39M	196	E	Unspecified Factory	1961
40Z	211	E	Railway Sidings	1966
41M	211	E	Unspecified Factory	1966
42Y	215	E	Unspecified Factory	1974
43R	219	E	Folding Boats Manufactory	1938
44N	243	S	Nursery	1865
45N	244	S	Nursery	1894
46N	245	S	Nursery	1898
47O	245	SE	Unspecified Commercial/Industrial	1948
48O	245	SE	Unspecified Commercial/Industrial	1948
49N	245	S	Nursery	1894
50V	246	SE	Unspecified Commercial/Industrial	1961
51O	247	SE	Unspecified Commercial/Industrial	1935
52P	249	SE	Unspecified Works	1966
53P	249	SE	Unspecified Works	1987
54P	249	SE	Unspecified Works	1974
55N	249	S	Nursery	1896
56Q	265	E	Unspecified Ground Workings	1948
57Q	265	E	Unspecified Ground Workings	1948
58Q	267	E	Unspecified Pit	1961
59R	268	E	Rubber Tyres Manufactory	1935
60S	268	E	Unspecified Ground Workings	1935
61S	268	E	Unspecified Ground Workings	1935
62S	270	E	Unspecified Ground Workings	1938
63T	279	NW	Unspecified Ground Workings	1896
64T	282	NW	Unspecified Ground	1894

			Workings	
65	283	E	Railway Sidings	1961
66T	285	N	Unspecified Ground Workings	1898
67T	286	N	Unspecified Ground Workings	1912
68T	287	N	Unspecified Heap	1933
69T	287	N	Unspecified Heap	1894
70	293	E	Unspecified Commercial/Industrial	1938
71T	296	NW	Unspecified Heap	1912
72	298	NE	Folding Boat Manufactory	1935
73T	324	NW	Unspecified Heap	1935
74T	324	NW	Unspecified Heap	1935
75U	326	SE	Unspecified Ground Workings	1948
76U	326	SE	Unspecified Ground Workings	1948
77T	326	NW	Unspecified Heap	1938
78T	327	NW	Unspecified Heap	1948
79T	327	NW	Unspecified Heap	1948
80U	327	SE	Unspecified Ground Workings	1935
81U	327	SE	Unspecified Ground Workings	1935
82U	328	SE	Unspecified Heap	1938
83W	330	E	Unspecified Commercial/Industrial	1987
84V	342	E	Unspecified Factory	1974
85W	342	E	Unspecified Factory	1966
86X	343	NE	Unspecified Tank	1974
87X	343	NE	Unspecified Tank	1966
88Y	347	E	Unspecified Factory	1961
89Y	352	E	Rubber Tyres Manufactory	1938
90Y	354	E	Unspecified Ground Workings	1948
91Y	354	E	Unspecified Ground Workings	1948
92BM	360	SW	Brick Field	1865
93Z	361	E	Unspecified Tank	1938
94Z	363	E	Unspecified Tank	1966
95Z	363	E	Unspecified Tank	1974
96AA	393	E	Unspecified Works	1974
97AA	393	E	Unspecified Works	1966
98AB	407	E	Unspecified Tanks	1961
99AB	410	E	Tanks	1948
100AB	410	E	Tanks	1948
101AB	413	E	Unspecified Tanks	1938
102AB	413	E	Unspecified Tanks	1935

103AB	415	E	Unspecified Tanks	1966
104AB	415	E	Unspecified Tanks	1974
105AF	419	NW	Cuttings	1896
106AC	422	SE	Railway Station	1974
107AC	422	SE	Railway Station	1987
108AC	422	SE	Railway Building	1966
109AD	423	NW	Cuttings	1894
110AC	424	SE	Railway Station	1961
111AG	425	SE	Cuttings	1987
112AD	425	NW	Cuttings	1898
113BO	426	NW	Cuttings	1912
114AC	426	SE	Railway Station	1935
115AC	426	SE	Railway Station	1938
116AE	426	SE	Cuttings	1933
117AE	426	SE	Cuttings	1894
118AC	426	SE	Railway Station	1948
119AC	426	SE	Railway Station	1948
120AE	426	SE	Cuttings	1913
121AF	426	NW	Cuttings	1974
122AF	426	NW	Cuttings	1987
123AG	427	SE	Cuttings	1974
124AG	427	SE	Cuttings	1966
125AH	427	NW	Cuttings	1935
126AL	428	SE	Cuttings	1912
127AJ	428	NW	Cuttings	1913
128AH	428	NW	Cuttings	1913
129AI	430	E	Unspecified Ground Workings	1948
130AI	430	E	Unspecified Ground Workings	1948
131AH	430	NW	Cuttings	1938
132AH	430	NW	Cuttings	1912
133AJ	430	NW	Cuttings	1938
134AJ	430	NW	Cuttings	1912
135AH	430	NW	Cuttings	1948
136AH	430	NW	Cuttings	1948
137AK	431	NW	Cuttings	1948
138AK	431	NW	Cuttings	1948
139AE	431	SE	Cuttings	1961
140AL	432	SE	Cuttings	1898
141AJ	432	NW	Cuttings	1933
142AJ	432	NW	Cuttings	1894
143AE	432	SE	Cuttings	1938
144AE	432	SE	Cuttings	1912
145AL	433	SE	Cuttings	1948
146AL	433	SE	Cuttings	1948

147AD	433	NW	Cuttings	1966
148AD	433	NW	Cuttings	1961
149AL	433	SE	Cuttings	1935
150BP	433	SE	Cuttings	1865
151AM	433	E	Unspecified Works	1987
152AM	433	E	Unspecified Works	1974
153AM	433	E	Unspecified Works	1966
154AH	433	NW	Cuttings	1894
155AH	433	NW	Cuttings	1933
156AM	434	E	Unspecified Ground Workings	1948
157AM	434	E	Unspecified Ground Workings	1948
158AL	435	SE	Cuttings	1896
159AL	437	SE	Cuttings	1894
160AM	437	E	Unspecified Heap	1961
161AM	441	E	Unspecified Ground Workings	1935
162AM	441	E	Unspecified Ground Workings	1935
163AC	442	SE	Railway Building	1935
164AP	446	NW	Cuttings	1896
165AN	447	NE	Railway Sidings	1961
166AN	447	NE	Railway Sidings	1974
167AN	447	NE	Coal Yard	1966
168AN	447	NE	Railway Sidings	1966
169AO	451	NE	Railway Sidings	1948
170AO	451	NE	Railway Sidings	1948
171AP	456	NW	Cuttings	1933
172AP	458	NW	Cuttings	1913
173AP	459	NW	Cuttings	1894
174AP	459	NW	Cuttings	1912
175AP	461	NW	Cuttings	1938
176AQ	464	W	Nursery	1933
177AP	464	NW	Unspecified Heap	1865
178AQ	466	W	Nursery	1912
179AQ	468	W	Nursery	1912
180AQ	468	W	Nursery	1913
181AN	481	NE	Railway Building	1935
182AN	481	NE	Railway Building	1938
183AR	487	W	Cuttings	1938
184AR	487	W	Cuttings	1912
185AR	488	W	Cuttings	1913
186BQ	489	SW	Unspecified Heap	1865
187AR	489	W	Cuttings	1933
188AR	489	W	Cuttings	1894
189AR	489	W	Cuttings	1948

190AR	489	W	Cuttings	1948
191	491	NE	Railway Sidings	1987
192AO	496	NE	Railway Building	1974
193	497	NE	Railway Building	1974
194AS	499	NE	Goods Station	1966
195AS	499	NE	Railway Building	1974
196AS	499	NE	Railway Building	1961
197AS	499	NE	Railway Building	1948
198AS	499	NE	Railway Building	1948

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 25

ID	Distance (m)	Direction	Use	Date
199AT	86	E	Unspecified Tank	1991
200AT	86	E	Unspecified Tank	1987
201AT	88	E	Unspecified Tank	1995
202AT	88	E	Unspecified Tank	1988
203AU	132	E	Unspecified Tank	1935
204	255	NW	Unspecified Tank	1896
205AV	337	E	Unspecified Tank	1995
206AV	337	E	Unspecified Tank	1995
207AV	337	E	Unspecified Tank	1992
208X	344	NE	Tanks	1974
209X	345	NE	Unspecified Tank	1960
210X	345	NE	Unspecified Tank	1960
211X	346	NE	Unspecified Tank	1960
212	350	E	Unspecified Tank	1995
213X	355	NE	Unspecified Tank	1960
214X	355	NE	Unspecified Tank	1960
215X	355	NE	Unspecified Tank	1960
216P	366	SE	Unspecified Tank	1984
217AW	367	E	Unspecified Tank	1995
218AW	367	E	Unspecified Tank	1991
219P	373	SE	Tanks	1984
220AB	412	E	Tanks	1935
221AB	418	E	Tanks	1960
222AB	418	E	Tanks	1960
223AB	418	E	Tanks	1960

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 53

ID	Distance (m)	Direction	Use	Date
224AX	56	E	Electricity Substation	1987
225AX	57	E	Electricity Substation	1988
226D	90	NE	Electricity Substation	1995
227D	90	NE	Electricity Substation	1991
228AY	101	NE	Electricity Substation	1995
229AY	104	NE	Electricity Substation	1991
230AY	104	NE	Electricity Substation	1987
231AY	105	NE	Electricity Substation	1988
232AZ	115	NE	Electricity Substation	1991
233AZ	115	NE	Electricity Substation	1988
234AZ	117	NE	Electricity Substation	1995
235BA	185	E	Electricity Substation	1991
236BA	185	E	Electricity Substation	1987
237BA	186	E	Electricity Substation	1988
238BA	187	E	Electricity Substation	1995
239BB	199	NE	Electricity Substation	1991
240BB	200	NE	Electricity Substation	1995
241BA	210	E	Electricity Substation	1987
242BA	210	E	Electricity Substation	1991
243BA	211	E	Electricity Substation	1995
244BA	211	E	Electricity Substation	1988
245BC	222	E	Electricity Substation	1995
246BC	223	E	Electricity Substation	1991
247BD	225	E	Electricity Substation	1995
248BD	225	E	Electricity Substation	1991
249BE	232	SE	Electricity Substation	1984
250BE	233	SE	Electricity Substation	1995
251BE	233	SE	Electricity Substation	1992
252BE	233	SE	Electricity Substation	1995
253	263	NW	Gas Station	1995
254BF	267	NE	Electricity Substation	1991
255BF	268	NE	Electricity Substation	1995
256BG	283	E	Electricity Substation	1995
257BG	283	E	Electricity Substation	1992
258BG	283	E	Electricity Substation	1995

259E	331	NE	Electricity Substation	1988
260E	332	NE	Electricity Substation	1995
261E	332	NE	Electricity Substation	1991
262E	332	NE	Electricity Substation	1987
263E	332	NE	Electricity Substation	1983
264BH	349	SW	Electricity Substation	1995
265BH	349	SW	Electricity Substation	1995
266BH	349	SW	Electricity Substation	1986
267BI	382	SW	Electricity Substation	1986
268BI	382	SW	Electricity Substation	1995
269BI	382	SW	Electricity Substation	1995
270BJ	413	SE	Electricity Substation	1995
271BJ	413	SE	Electricity Substation	1992
272BJ	413	SE	Electricity Substation	1995
273O	474	E	Electricity Substation	1984
274O	474	E	Electricity Substation	1991
275O	474	E	Electricity Substation	1991
276O	474	E	Electricity Substation	1984

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 6

ID	Distance (m)	Direction	Use	Date
277BK	195	SE	Garage	1960
278BK	195	SE	Garage	1960
279BK	198	SE	Garage	1960
280BE	215	SE	Garage	1935
281W	367	E	Motor Car Service Station	1935
282AM	431	E	Motor Car Service Station	1935

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 113

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

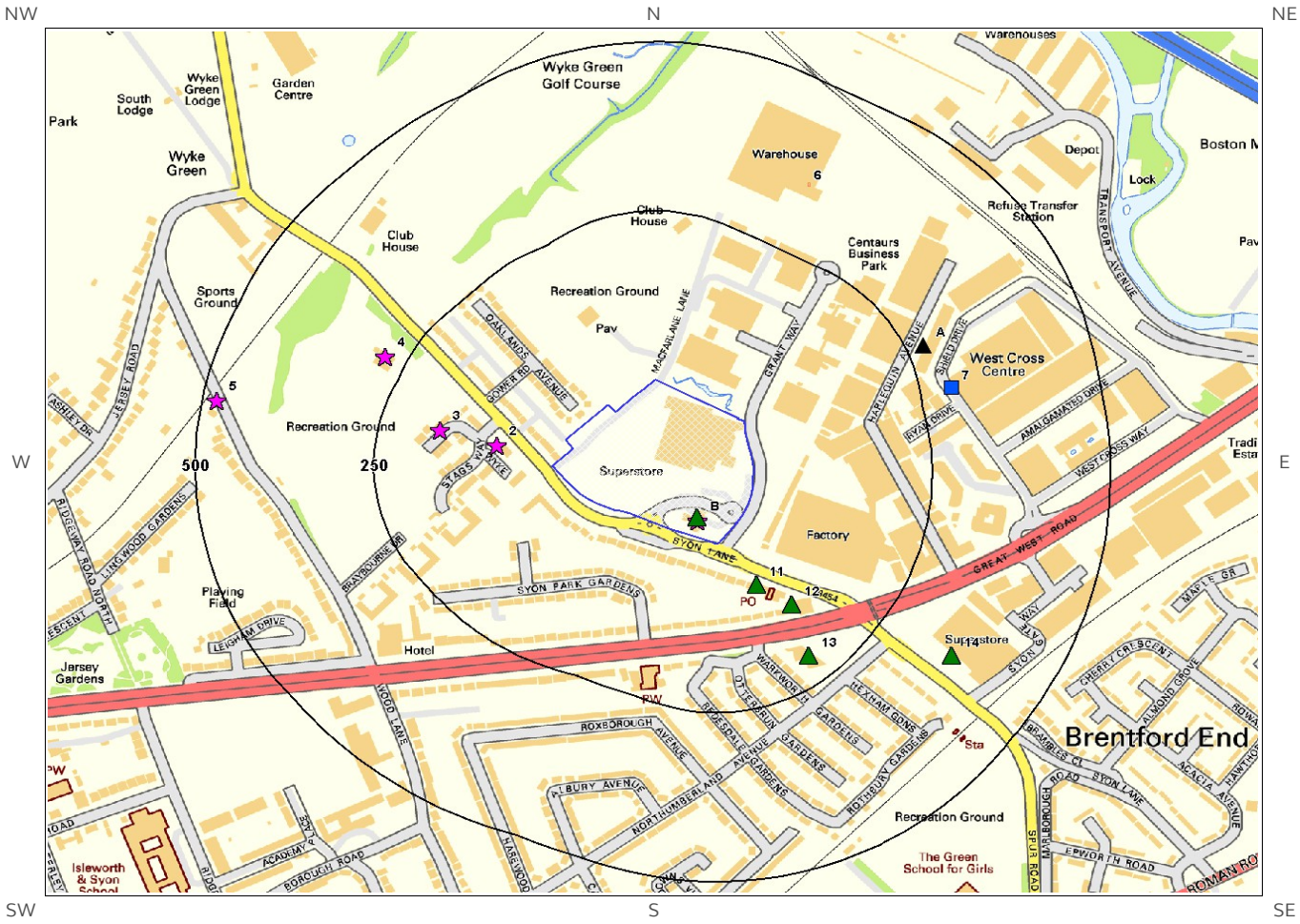
ID	Distance(m)	Direction	Use	Date
283H	131	N	Unspecified Ground Workings	1948
284H	131	N	Unspecified Ground Workings	1948
285J	175	NE	Unspecified Ground Workings	1948
286J	175	NE	Unspecified Ground Workings	1948
287J	177	NE	Unspecified Ground Workings	1938
288J	177	NE	Unspecified Ground Workings	1935
289J	177	NE	Unspecified Ground Workings	1935
290L	187	W	Unspecified Ground Workings	1948
291L	187	W	Unspecified Ground Workings	1948
292	230	NW	Pond	1865
293BL	246	NW	Pond	1865
294Q	265	E	Unspecified Ground Workings	1948
295Q	265	E	Unspecified Ground Workings	1948
296Q	267	E	Unspecified Pit	1961
297S	268	E	Unspecified Ground Workings	1935
298S	268	E	Unspecified Ground Workings	1935
299S	270	E	Unspecified Ground Workings	1938
300T	279	NW	Unspecified Ground	1896

			Workings	
301T	282	NW	Unspecified Ground Workings	1894
302BL	284	NW	Pond	1894
303T	285	N	Unspecified Ground Workings	1898
304T	286	N	Unspecified Ground Workings	1912
305T	287	N	Unspecified Heap	1933
306T	287	N	Unspecified Heap	1894
307BL	288	NW	Pond	1898
308BL	292	NW	Pond	1894
309BL	292	NW	Pond	1933
310T	296	NW	Unspecified Heap	1912
311T	297	NW	Pond	1865
312T	314	NW	Pond	1966
313T	314	NW	Pond	1974
314T	324	NW	Unspecified Heap	1935
315T	324	NW	Unspecified Heap	1935
316U	326	SE	Unspecified Ground Workings	1948
317U	326	SE	Unspecified Ground Workings	1948
318T	326	NW	Unspecified Heap	1938
319T	327	NW	Unspecified Heap	1948
320T	327	NW	Unspecified Heap	1948
321U	327	SE	Unspecified Ground Workings	1935
322U	327	SE	Unspecified Ground Workings	1935
323U	328	SE	Unspecified Heap	1938
324Y	354	E	Unspecified Ground Workings	1948
325Y	354	E	Unspecified Ground Workings	1948
326BM	360	SW	Brick Field	1865
327	380	NW	Pond	1865
328AF	419	NW	Cuttings	1896
329BN	422	SE	Pond	1894
330AD	423	NW	Cuttings	1894
331AG	425	SE	Cuttings	1987
332AD	425	NW	Cuttings	1898
333BN	425	SE	Pond	1898
334BO	426	NW	Cuttings	1912
335AE	426	SE	Cuttings	1933
336AE	426	SE	Cuttings	1894
337AE	426	SE	Cuttings	1913
338AF	426	NW	Cuttings	1974
339AF	426	NW	Cuttings	1987

340AG	427	SE	Cuttings	1974
341AG	427	SE	Cuttings	1966
342AH	427	NW	Cuttings	1935
343AL	428	SE	Cuttings	1912
344AJ	428	NW	Cuttings	1913
345AH	428	NW	Cuttings	1913
346BN	429	SE	Pond	1935
347BN	429	SE	Pond	1938
348AI	430	E	Unspecified Ground Workings	1948
349AI	430	E	Unspecified Ground Workings	1948
350AH	430	NW	Cuttings	1938
351AH	430	NW	Cuttings	1912
352AJ	430	NW	Cuttings	1912
353AJ	430	NW	Cuttings	1938
354AH	430	NW	Cuttings	1948
355AH	430	NW	Cuttings	1948
356AK	431	NW	Cuttings	1948
357AK	431	NW	Cuttings	1948
358AL	431	SE	Cuttings	1961
359BN	432	SE	Pond	1894
360AL	432	SE	Cuttings	1898
361AJ	432	NW	Cuttings	1933
362AJ	432	NW	Cuttings	1894
363AE	432	SE	Cuttings	1938
364AE	432	SE	Cuttings	1912
365AL	433	SE	Cuttings	1948
366AL	433	SE	Cuttings	1948
367AD	433	NW	Cuttings	1966
368AD	433	NW	Cuttings	1961
369AL	433	SE	Cuttings	1935
370BP	433	SE	Cuttings	1865
371BN	433	SE	Pond	1865
372AH	433	NW	Cuttings	1894
373AH	433	NW	Cuttings	1933
374AM	434	E	Unspecified Ground Workings	1948
375AM	434	E	Unspecified Ground Workings	1948
376AL	435	SE	Cuttings	1896
377AL	437	SE	Cuttings	1894
378AM	437	E	Unspecified Heap	1961
379AM	441	E	Unspecified Ground Workings	1935
380AM	441	E	Unspecified Ground Workings	1935
381AP	446	NW	Cuttings	1896

382AP	456	NW	Cuttings	1933
383AP	458	NW	Cuttings	1913
384AP	459	NW	Cuttings	1894
385AP	459	NW	Cuttings	1912
386AP	461	NW	Cuttings	1938
387AP	464	NW	Unspecified Heap	1865
388AR	487	W	Cuttings	1912
389AR	487	W	Cuttings	1938
390AR	488	W	Cuttings	1913
391BQ	489	SW	Unspecified Heap	1865
392AR	489	W	Cuttings	1894
393AR	489	W	Cuttings	1933
394AR	489	W	Cuttings	1948
395AR	489	W	Cuttings	1948

2. Environmental Permits, Incidents and Registers Map



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- Site Outline
- Search Buffers (m) — 250 / 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

2

The following Part A(1) and IPPC Authorised Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
15A	273	NE	516360 177760	Operator: Bskyb Ltd Installation Name: Bskyb Osterley Campus Process: COMBUSTION; WASTE DERIVED FUEL =>3MW BUT <50MW	Permit Number: HP3331TA Original Permit Number: HP3331TA EPR Reference: - Issue Date: 14/3/2011 Effective Date: 14/3/2011 00:00:00 Last date noted as effective: 2018-03-01 Status: Superceded
16A	273	NE	516360 177760	Operator: Bskyb Ltd Installation Name: Bskyb Osterley Campus Process: THE INCINERATION OF NON-HAZARDOUS WASTE IN AN INCINERATION OR CO-INCINERATION PLANT WITH A CAPACITY EXCEEDING 3 TONNES PER HOUR.	Permit Number: QP3733VW Original Permit Number: HP3331TA EPR Reference: - Issue Date: 13/2/2014 Effective Date: 13/2/2014 00:00:00 Last date noted as effective: 2018-03-01 Status: Effective

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2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

5

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
10B	0	On Site	516043 177505	Address: Tesco, Syon Lane, Syon Lane, Isleworth, TW8 9BS Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
11	82	SE	516126 177406	Address: Pressed Valet Dry Cleaners, 48 Syon Lane, Isleworth, TW7 5NQ Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
12	138	SE	516176 177377	Address: Shell UK Ltd, 882 Great West Road, Isleworth, TW7 4DA Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
13	211	SE	516200 177301	Address: Shell Syon Hill, Gt West Rd Process: Petrol Vapour Recovery Process Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
14	361	SE	516400 177301	Address: Gillette UK, Gt West Rd, TW7 5ND Process: Other Metal Processes Status: Historical Permit	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

ID	Distance (m)	Direction	NGR	Details
				Permit Type: Part B

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

1

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
7	294	E	516400 177700	Address: OUTLET C, GREAT WEST ROAD, BRENTFOR, OUTLET C, GREAT WEST ROAD, BRENT, FORD, MIDDX Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CTMR.0332 Permit Version: 1	Receiving Water: - Status: REVOKED - UNSPECIFIED Issue date: 01/01/1977 Effective Date: 01-Jan-1977 Revocation Date: 10/12/1990

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

5

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1B	0	On Site	516043 177503	Incident Date: 31-Aug-2001 Incident Identification: 28169 Pollutant: Oils and Fuel Pollutant Description: Petrol	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	84	W	515762 177614	Incident Date: 28-Aug-2001 Incident Identification: 27152 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
3	166	W	515683 177637	Incident Date: 22-Jan-2003 Incident Identification: 132677 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Natural Organic Material	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4	282	NW	515605 177746	Incident Date: 29-Oct-2002 Incident Identification: 117476 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
5	480	W	515370 177680	Incident Date: 12-Apr-2003 Incident Identification: 150525 Pollutant: Oils and Fuel Pollutant Description: Hydraulic Oils	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

1

The following NIRS List 1 records are represented as points on the Environmental Permits, Incidents and Registers Map:

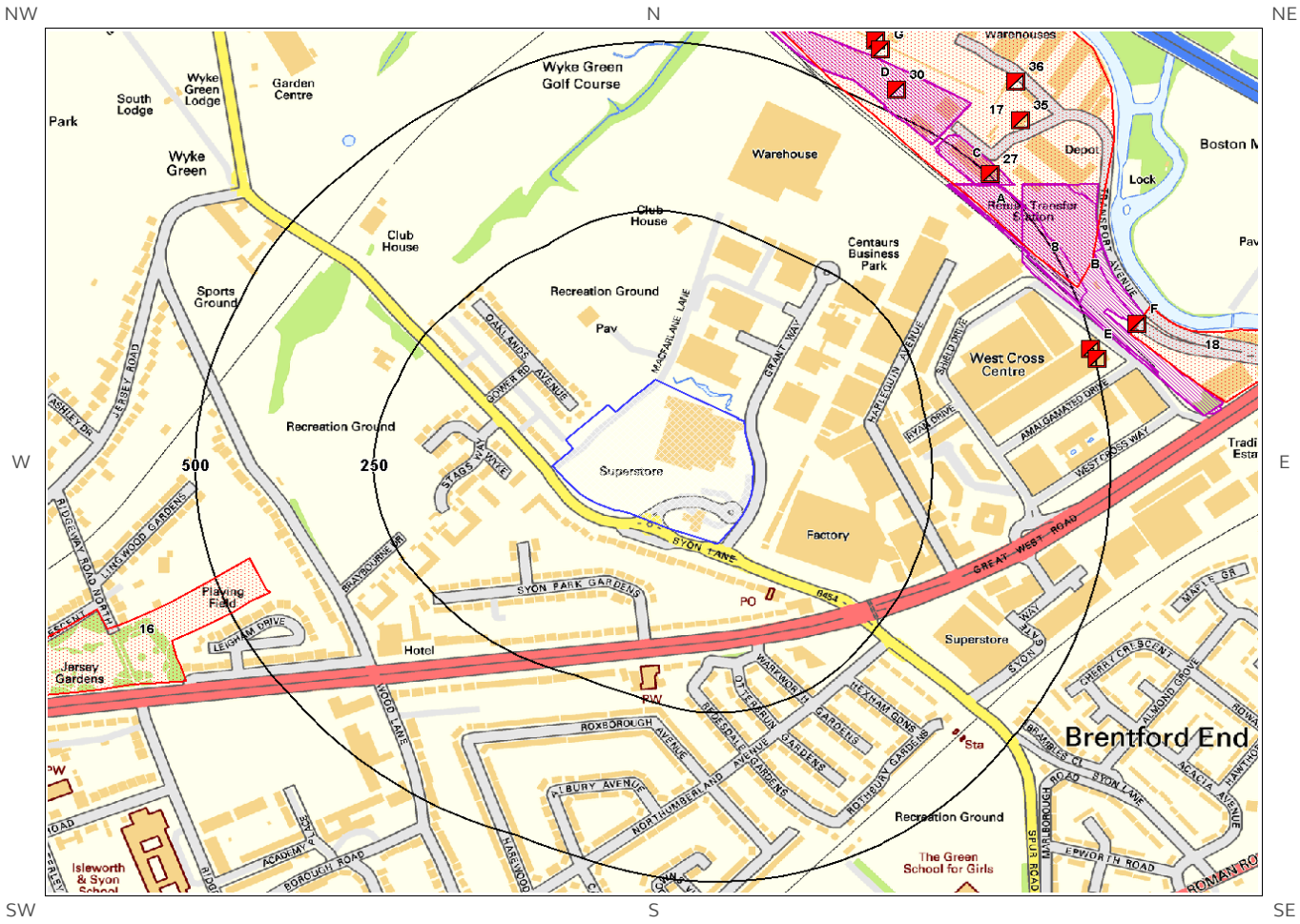
ID	Distance(m)	Direction	NGR	Details	
6	354	NE		Incident Date: 28-Sep-2000 Incident Identification: 11110.0 Catchments Name: BRENT Water Description: RIVER STRETCH (FRESHWATER) Water Course: BRENT / G.U.C. - BOSTON M Incident Substantiated: N/A	Priority Description: Immediate (2 Hours) Waste Description: Not Available Water Impact: Significant Impact Land Impact: No Impact Air Impact: No Impact Action Taken: Prosecution

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site	0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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Site Outline

250 / 500 Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

9

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
16	437	SW		Site Address: Jersey Gardens, Osterley, Hounslow, London Waste Licence: - Site Reference: 8HO034 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: L B Hounslow First Recorded: 31-Dec-1895 Last Recorded: 31-Dec-1951
17	457	NE		Site Address: Transport Avenue, Transfer Avenue Waste Licence: - Site Reference: 8HO060, HOUX13 Waste Type: Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1900 Last Recorded: 31-Dec-1938
18	555	E		Site Address: Transport Avenue, Brentford, Hounslow, London Waste Licence: - Site Reference: 8HO084, WES002 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1961
Not shown	690	N		Site Address: Wyke Green, Brentford, Hounslow, London Waste Licence: - Site Reference: 8HO089 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1949 Last Recorded: -
Not shown	1107	E		Site Address: Northumberland Wharf, Brentford End, Brentford, London Waste Licence: -	Licence Issue: Licence Surrendered: Licence Holder Address: -

ID	Distance (m)	Direction	NGR	Details	
				Site Reference: 8HO067 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	1184	N		Site Address: Trumpers Way, London W5 Waste Licence: - Site Reference: 8EA001, EAL001 Waste Type: Inert, Industrial, Commercial, Household, Special, Liquid sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: London Borough of Ealing First Recorded: 31-Dec-1946 Last Recorded: 31-Dec-1985
Not shown	1245	NW		Site Address: Long Wood Open Space, Long Wood Waste Licence: - Site Reference: 8EA015 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1946 Last Recorded: 31-Dec-1966
Not shown	1429	SW		Site Address: London Road Sports Ground, London Road Waste Licence: - Site Reference: 8HO035, HOU036 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Greenhams sand and Gravel Licence Holder: - First Recorded: 31-Dec-1934 Last Recorded: 31-Dec-1951
Not shown	1483	E		Site Address: Layton Road, Brentford, Hounslow, London Waste Licence: - Site Reference: 8HO083 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1865

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

1

The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
Not shown	1424	SW	515057 176049	Thornbury Park	London Borough of Hounslow	Polygon

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

15

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
1A	449	NE	516447 177952	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1988	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
2A	452	NE	516448 177956	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1991	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
3A	452	NE	516448 177956	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1987	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
4A	452	NE	516448 177956	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1983	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
5A	452	NE	516474 177955	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1995	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
6B	455	NE	516598 177829	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1991	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
7B	455	NE	516598 177829	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1983	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
8	464	NE	516544 177896	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1988	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
9B	464	NE	516640 177829	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1994	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
10C	476	NE	516434 178036	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1990	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

ID	Distance (m)	Direction	NGR	Details		
11C	476	NE	516434 178036	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1990	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
12C	476	NE	516433 178036	Type of Site: Refuse Transfer Station Site Address: N/A	Planning Application Reference: N/A Date: 1981	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
13D	486	NE	516274 178158	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1990	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
14D	486	NE	516274 178158	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1990	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
15D	486	NE	516276 178157	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1981	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

12

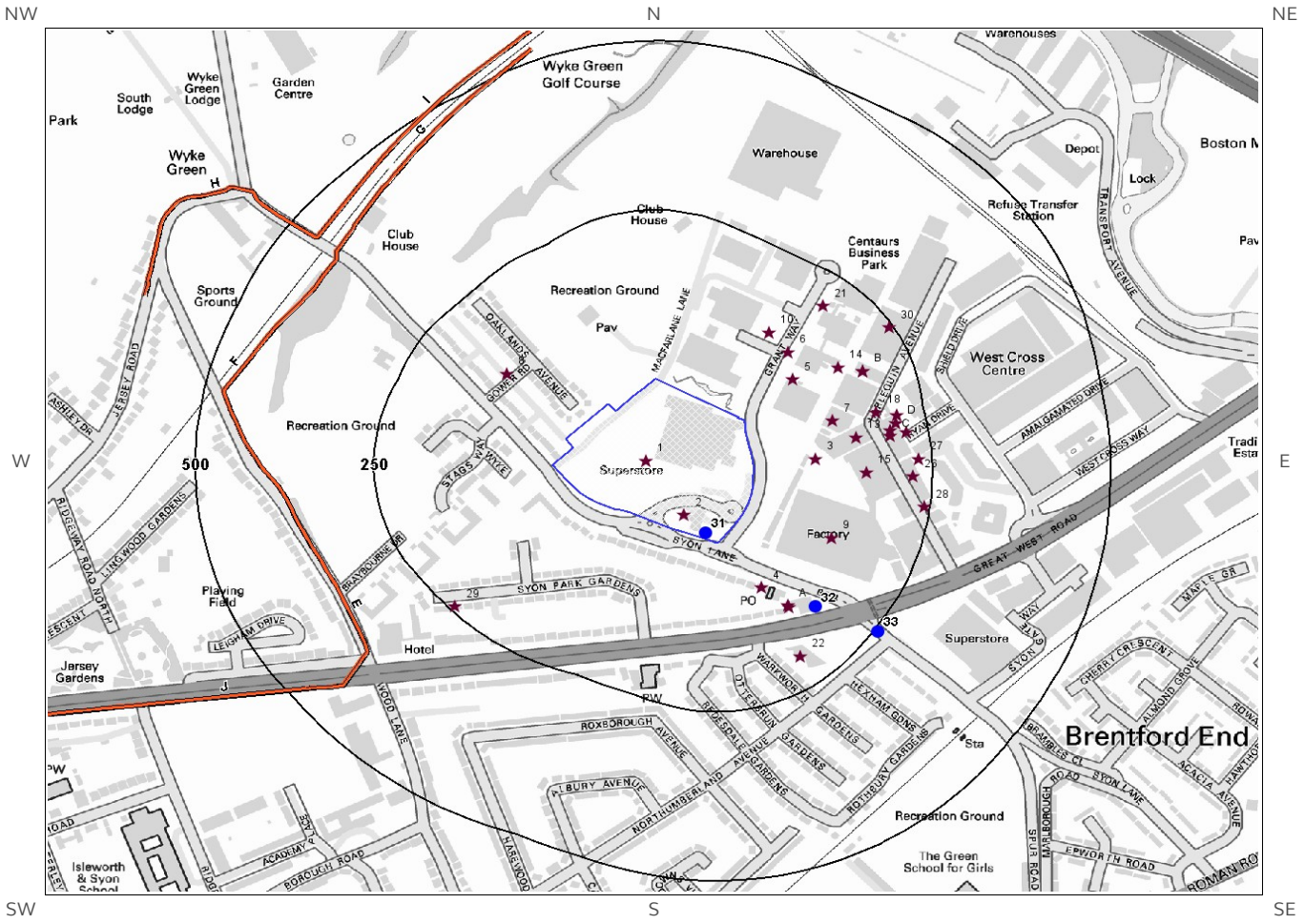
The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
25E	497	E	516595 177758	Site Address: Unit 8, Amalgamated Drive, West Cross Ind Park, Brentford, Middlesex, TW8 9EZ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: REN005 EPR reference: EA/EPR/FP3395EE/V003 Operator: Rentokil Initial Services Limited Waste Management licence No: 100044 Annual Tonnage: 4999.0	Issue Date: 09/09/2007 Effective Date: - Modified: 15/08/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Brentford Service Centre Correspondence Address: -
26E	497	E	516595 177758	Site Address: Unit 8, Amalgamated Drive, West Cross Ind Park, Brentford, Middlesex, TW8 9EZ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: REN005 EPR reference: EA/EPR/FP3395EE/V002 Operator: Rentokil Initial Services Ltd Waste Management licence No: 100044 Annual Tonnage: 4999.0	Issue Date: 09/09/2007 Effective Date: - Modified: 31/03/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Brentford Service Centre Correspondence Address: -
27	502	NE	516454 178016	Site Address: Transport Avenue Transfer Station, Transport Avenue, Off Great West	Issue Date: 20/04/1993 Effective Date: 19/01/2014

ID	Distance (m)	Direction	NGR	Details	
				Road, Brentford, Middlesex, TW8 9HF Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIT773 EPR reference: EA/EPR/AB3709CF/V003 Operator: Suez Recycling And Recovery U K Ltd Waste Management licence No: 80077 Annual Tonnage: 432840.0	Modified: 30/06/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Transport Avenue Transfer Station Correspondence Address: -
28E	502	E	516604 177743	Site Address: Unit 8, Amalgamated Drive, West Cross Ind Park, Brentford, Middlesex, TW8 9EZ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: REN041 EPR reference: EA/EPR/DB3800XR/T001 Operator: Rentokil Initial U K Limited Waste Management licence No: 100044 Annual Tonnage: 4999.0	Issue Date: 09/09/2007 Effective Date: 01/02/2016 Modified: 15/08/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Brentford Service Centre Correspondence Address: -
29E	502	E	516604 177743	Site Address: Initial Washrooms (Brentford) Service Centre, Unit 8, Amalgamated Drive, West Cross Ind Park, Brentford, Middlesex, TW8 9EZ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: REN041 EPR reference: EA/EPR/DB3800XR/V003 Operator: Rentokil Initial U K Ltd Waste Management licence No: 100044 Annual Tonnage: 4999.0	Issue Date: 09/09/2007 Effective Date: 01/02/2016 Modified: 08/06/2018 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Initial Washrooms (Brentford) Service Centre Correspondence Address: -
30	533	NE	516323 178140	Site Address: Mayer Parry Brentford, Private Sidings, Transport Avenue, Brentford, Middlesex, TW8 9HA Type: Metal Recycling Site (mixed MRS's) Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MAY003 EPR reference: EA/EPR/YP3091NU/V002 Operator: Mayer Parry Recycling Ltd Waste Management licence No: 80370 Annual Tonnage: 74999.0	Issue Date: 28/07/1998 Effective Date: - Modified: 11/12/2009 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Mayer Parry, Brentford Correspondence Address: -
31F	567	E	516659 177795	Site Address: Transport Avenue Transfer Station, Transport Avenue, Off Great West Road, Brentford, Middlesex, TW8 9HF Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WES002 EPR reference: EA/EPR/RP3496NV/A001 Operator: West London Waste Authority Waste Management licence No: 80077 Annual Tonnage: 552975.0	Issue Date: 20/04/1993 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Transport Avenue Transfer Station Correspondence Address: -
32F	567	E	516659 177795	Site Address: Transport Avenue Transfer Station, Transport Avenue, Off Great West Road, Brentford, Middlesex, TW8 9HF Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations	Issue Date: 20/04/1993 Effective Date: 19/01/2014 Modified: 25/11/2014 Surrendered Date: 0 Expiry Date: - Cancelled Date: - Status: Modified

ID	Distance (m)	Direction	NGR	Details	
				(Waste) Licence Number: SIT773 EPR reference: EA/EPR/AB3709CF/V002 Operator: Sita U K Ltd Waste Management licence No: 80077 Annual Tonnage: 432840.0	Site Name: Transport Avenue Transfer Station Correspondence Address: -
33G	577	NE	516300 178200	Site Address: Mayer Parry Brentford, Private Sidings, Transport Avenue, Brentford, Middx, TW8 9HA Type: Metal Recycling Site (mixed MRS's) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MAY003 EPR reference: - Operator: Mayer Parry Recycling Ltd Waste Management licence No: 80370 Annual Tonnage: 0.0	Issue Date: 28/07/1998 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: "Mayer Parry, Brentford" Correspondence Address: Mayer Parry Recycling Ltd, Manor Road, Erith, Kent, DA8 2AD
34G	586	NE	516294 178213	Site Address: Brentford Aggregate Materials Recycling Facility, Transport Avenue, Brentford, Middlesex, TW8 9HF Type: Material Recycling Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DAY051 EPR reference: EA/EPR/BB3232RX/V004 Operator: Day Group Limited Waste Management licence No: 103193 Annual Tonnage: 500000.0	Issue Date: 31/05/2012 Effective Date: - Modified: 15/03/2018 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Brentford Aggregate Materials Recycling Facility Correspondence Address: -
35	589	NE	516496 178096	Site Address: Transport Avenue, Brentford, Middlesex, TW8 9HF Type: Mobile plant treatment for soil <75,000 tpd Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DAY057 EPR reference: EA/EPR/DB3639DV/A001 Operator: Day Group Limited Waste Management licence No: 105269 Annual Tonnage: 74999.0	Issue Date: 16/12/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: S R 2010 No 11 Correspondence Address: -
36	629	NE	516490 178152	Site Address: Brentford Aggregate Materials Recycling Facility, Transport Avenue, Brentford, Middlesex, TW8 9HF Type: Material Recycling Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DAY051 EPR reference: EA/EPR/BB3232RX/A001 Operator: Day Group Ltd Waste Management licence No: 103193 Annual Tonnage: 775000.0	Issue Date: 31/05/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Brentford Aggregate Materials Recycling Facility Correspondence Address: -

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 30

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Tesco Hand Car Wash	515972 177591	Osterley Park, Syon Lane, Isleworth, TW7 5NZ	Vehicle Cleaning Services	Personal, Consumer and Other Services
2	0	On Site	Tesco Osterley	516025 177511	Syon Lane, Isleworth, TW7 5NZ	Petrol and Fuel Stations	Road and Rail
3	87	E	Tank	516209 177594	TW7	Tanks (Generic)	Industrial Features
4	89	SE	Airzak Building Services	516133 177403	46, Syon Lane, Isleworth, TW7 5NQ	Construction Completion Services	Construction Services
5	90	NE	Electricity Sub Station	516177 177711	TW7	Electrical Features	Infrastructure and Facilities
6	118	NE	Electricity Sub Station	516170 177752	TW7	Electrical Features	Infrastructure and Facilities
7	122	E	Works	516233 177650	TW8	Unspecified Works Or Factories	Industrial Features
8	127	NW	Electricity Sub Station	515777 177720	TW7	Electrical Features	Infrastructure and Facilities
9	128	SE	Factory	516232 177477	TW7	Unspecified Works Or Factories	Industrial Features
10	132	NE	Centaurs Business Park	516144 177781	TW7	Business Parks and Industrial Estates	Industrial Features
11A	134	SE	Shell Gillette Corner	516170 177377	882, Great West Road, Isleworth, TW7 5NG	Petrol and Fuel Stations	Road and Rail
12A	136	SE	Shell Service Station	516171 177374	882, Great West Road, Isleworth, TW7 5NG	Petrol and Fuel Stations	Road and Rail
13	148	E	Factory	516266 177626	TW8	Unspecified Works Or Factories	Industrial Features
14	152	NE	Electricity Sub Station	516240 177729	TW8	Electrical Features	Infrastructure and Facilities
15	158	E	Works	516281 177574	TW8	Unspecified Works Or Factories	Industrial Features
16B	181	NE	X G Plastics Ltd	516275 177724	Bastion House, Harlequin Avenue, Brentford, TW8 9EW	General Construction Supplies	Industrial Products
17B	181	NE	Hydro Pneumatic Services	516275 177724	Bastion House, Harlequin Avenue, Brentford, TW8 9EW	Pumps and Compressors	Industrial Products
18	184	E	Electricity Sub Station	516294 177663	TW8	Electrical Features	Infrastructure and Facilities
19C	196	E	Factory	516314	TW8	Unspecified Works Or	Industrial Features

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
				177628		Factories	
20C	197	E	Frank Dale & Stepsons	516313 177635	Harlequin Avenue, Brentford, TW8 9EW	Vehicle Repair, Testing and Servicing	Repair and Servicing
21	201	NE	Electricity Sub Station	516219 177820	TW7	Electrical Features	Infrastructure and Facilities
22	203	SE	Works	516188 177302	TW7	Unspecified Works Or Factories	Industrial Features
23D	207	E	Sky Studios	516322 177647	Isleworth, TW8	Energy Production	Industrial Features
24D	211	E	Electricity Sub Station	516323 177658	TW8	Electrical Features	Infrastructure and Facilities
25D	219	E	Electricity Sub Station	516336 177634	TW8	Electrical Features	Infrastructure and Facilities
26	222	E	Factory	516345 177568	TW8	Unspecified Works Or Factories	Industrial Features
27	230	E	Electricity Sub Station	516353 177594	TW8	Electrical Features	Infrastructure and Facilities
28	241	E	Works	516361 177523	TW8	Unspecified Works Or Factories	Industrial Features
29	243	SW	Arawak Business Consulting Ltd	515703 177375	64, Syon Park Gardens, Isleworth, TW7 5ND	Electrical Equipment Repair and Servicing	Repair and Servicing
30	244	NE	Depot	516312 177788	TW8	Container and Storage	Transport, Storage and Delivery

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 3

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
31	0	On Site	516055 177484	TESCO EXTRA	Syon Lane, Osterley Park, Isleworth, Outer London, TW7 5NZ	No	Open
32	164	SE	516209 177375	SHELL	882, Great West Road, Syon Lane, Brentford, Outer London, TW7 5NG	No	Open
33	255	SE	516296 177338	TEXACO	Great West Road, Syan Lane, Brentford, Outer London, TW7 5NU	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 12

The following Underground Electricity Transmission Cable records are represented as linear features on the Current Land Use map:

ID	Distance (m)	Direction	Details	
34E	351	SW	Cable Set: EALING - LALEHAM 1 CABLE SECTION 36 Cable Route: EALING - LALEHAM 1 Cable Make: PIRELI 275KV O	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1964 Cable in tunnel: -
35E	352	SW	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
36F	402	W	Cable Set: EALING - LALEHAM 1 CABLE SECTION 37 Cable Route: EALING - LALEHAM 1 Cable Make: PIRELI 275KV O	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1964 Cable in tunnel: -
37F	404	W	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
38G	425	NW	Cable Set: EALING - LALEHAM 1 CABLE SECTION 38 Cable Route: EALING - LALEHAM 1 Cable Make: PIRELI 275KV O	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1964 Cable in tunnel: -
39G	425	NW	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
40H	458	NW	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
41H	459	NW	Cable Set: EALING - LALEHAM 2 CABLE SECTION 37 Cable Route: EALING - LALEHAM 2 Cable Make: PIRELI 275KV O	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1964 Cable in tunnel: -
42I	464	NW	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
43I	464	NW	Cable Set: EALING - LALEHAM 2 CABLE SECTION 38 Cable Route: EALING - LALEHAM 2 Cable Make: PIRELI 275KV O	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1964 Cable in tunnel: -
44J	477	SW	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -

ID	Distance (m)	Direction	Details	
45J	478	SW	Cable Set: EALING - LALEHAM 1 CABLE SECTION 35 Cable Route: EALING - LALEHAM 1 Cable Make: PIRELI 275KV O	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1964 Cable in tunnel: -

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LASI-XCZ	LANGLEY SILT MEMBER	CLAY AND SILT
TPGR-XSV	TAPLOW GRAVEL MEMBER	SAND AND GRAVEL

5.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LC-XCZ	LONDON CLAY FORMATION	CLAY AND SILT

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology

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Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

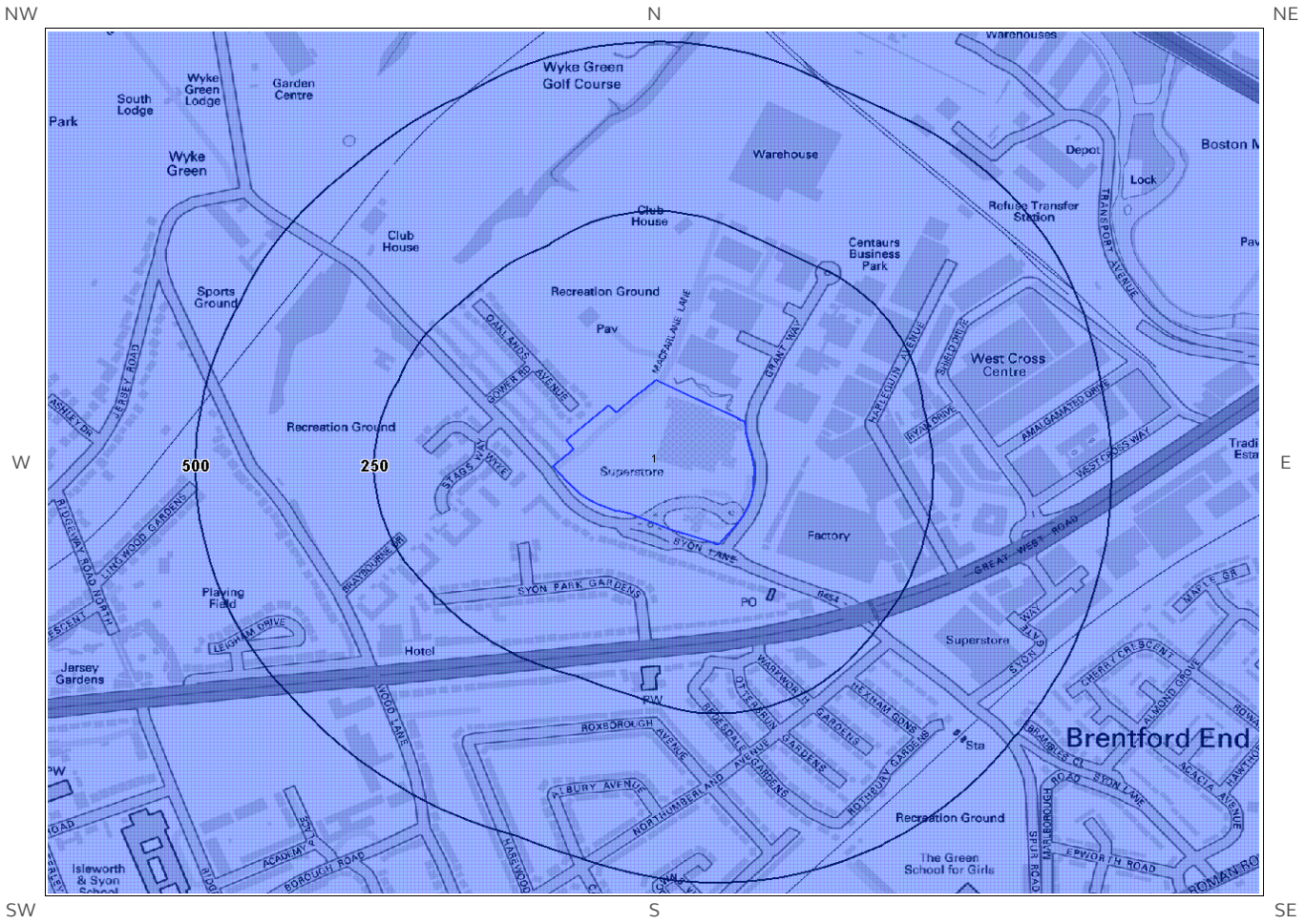
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licences



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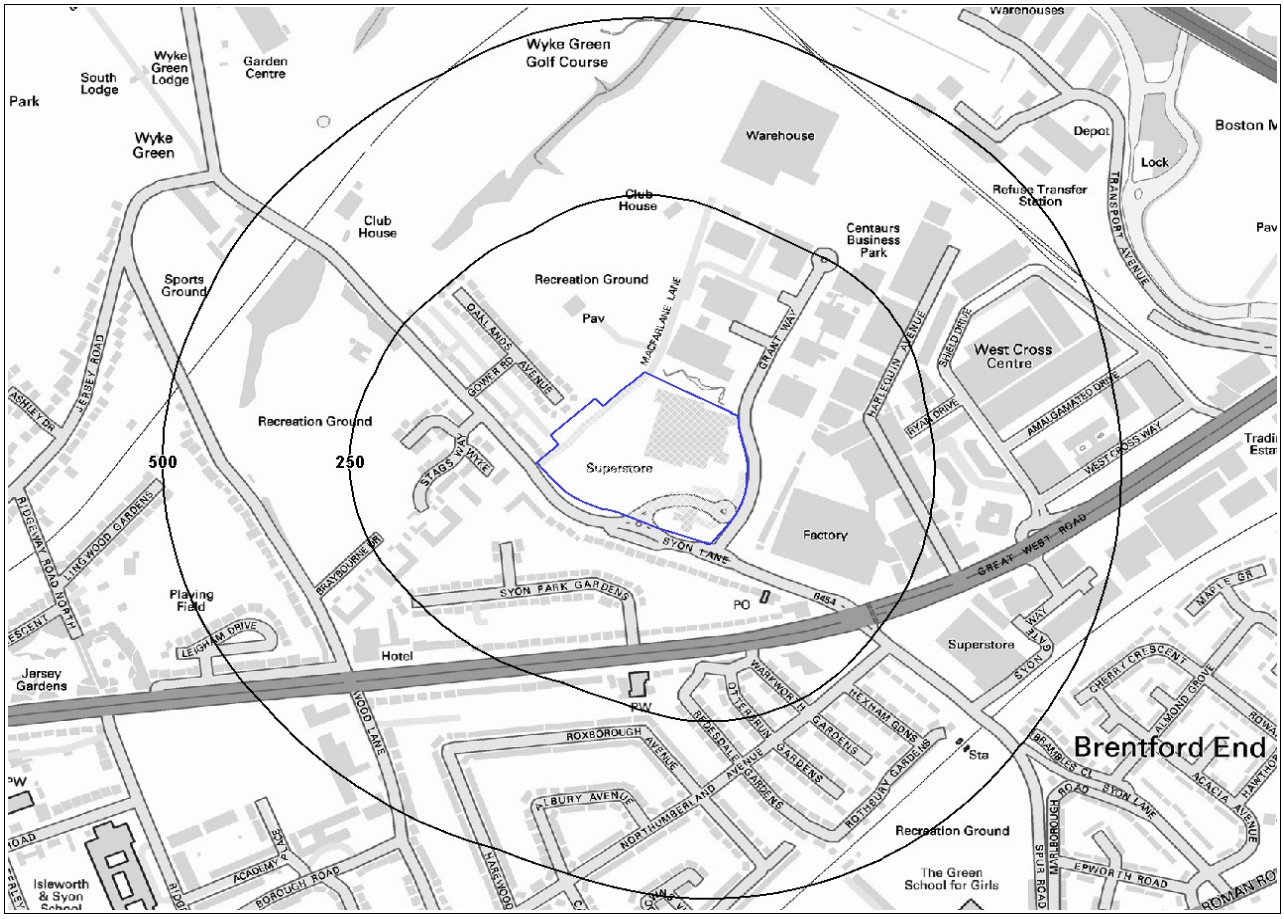
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences

NW N NE

W E

SW S SE



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Site Outline

250 500 Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

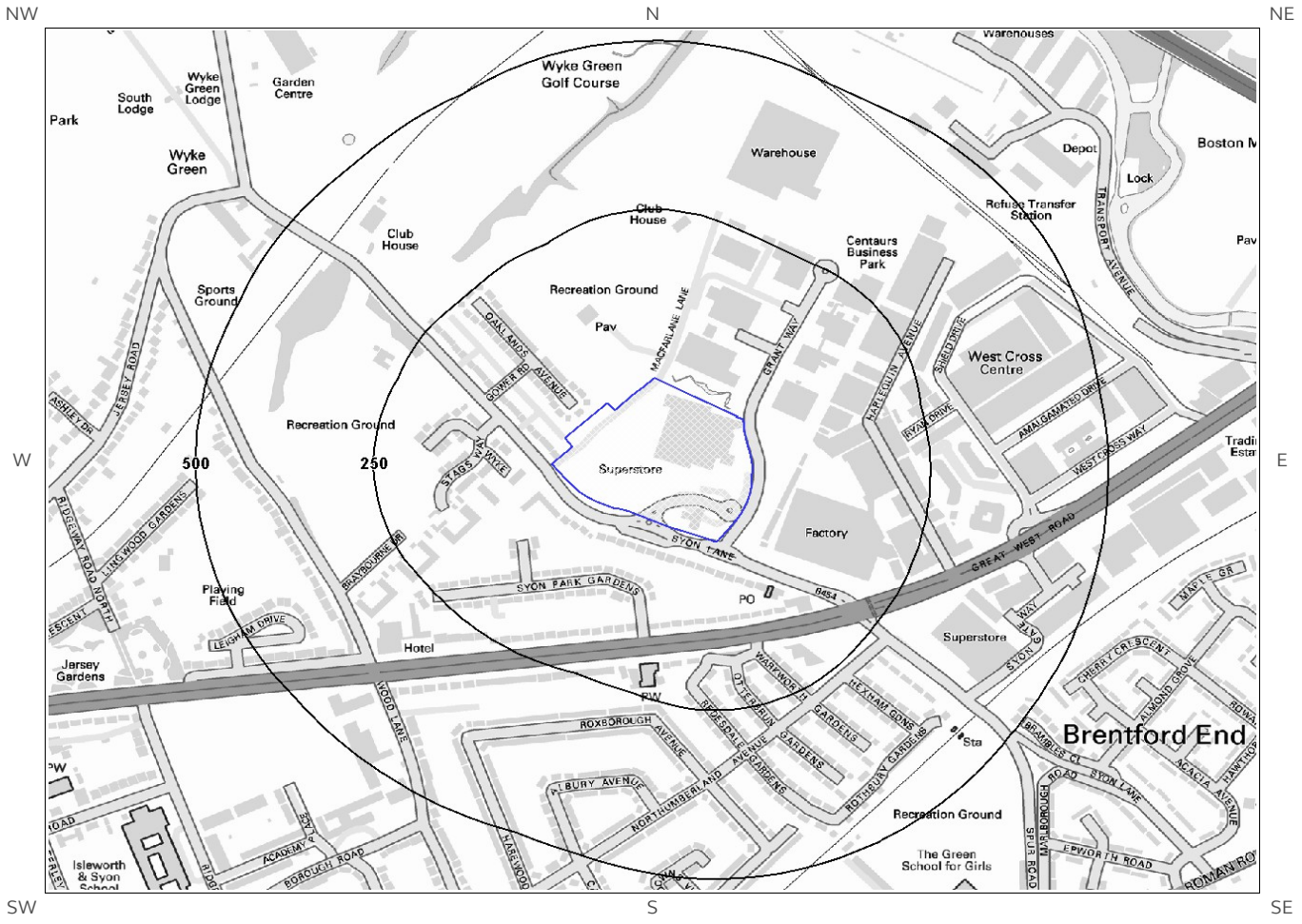
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



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Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

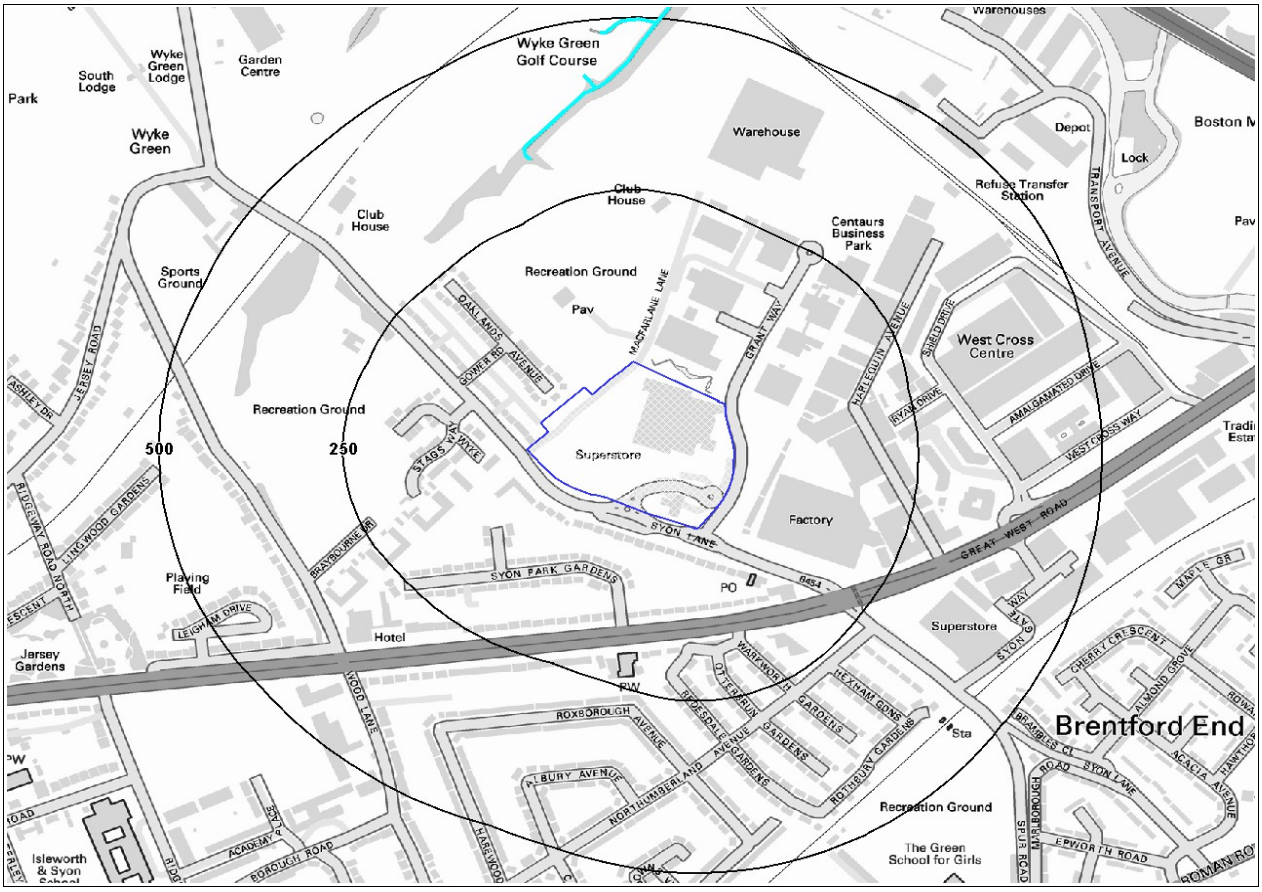
Potable Water Abstraction Licence

6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E

SW S SE



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Site Outline

250
500
Search Buffers (m)

Tidal River
Inland River
Underground or Elevated Tidal River
Underground or Elevated Inland River
Foreshore
General Quality Assessment: Chemistry

Canal
Underground or Elevated Canal
Lock or Flight of Locks
Lake, Reservoir, or Marsh
Drain or Transfer
General Quality Assessment: Biology

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
5	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
1	37	SE	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site — Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1029	SE	517000 177000	Status: Active Licence No: 28/39/37/0005 Details: Horticultural Watering Direct Source: THAMES GROUNDWATER Point: BOREHOLE 'A' AT SYON PARK, BRENTFORD Data Type: Point Name: Trustees Of Syon Park Estate	Annual Volume (m^3): 9092 Max Daily Volume (m^3): 218.2 Original Application No: - Original Start Date: 29/07/1982 Expiry Date: - Issue No: 102 Version Start Date: 28/09/2010 Version End Date:
Not shown	1029	SE	517000 177000	Status: Active Licence No: 28/39/37/0005 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE 'A' AT SYON PARK, BRENTFORD Data Type: Point Name: Trustees Of Syon Park Estate	Annual Volume (m^3): 9092 Max Daily Volume (m^3): 218.2 Original Application No: - Original Start Date: 29/07/1982 Expiry Date: - Issue No: 102 Version Start Date: 28/09/2010 Version End Date:
Not shown	1281	SE	517100 176700	Status: Active Licence No: 28/39/37/0005 Details: Horticultural Watering Direct Source: THAMES GROUNDWATER Point: BOREHOLE 'B' AT SYON PARK, BRENTFORD Data Type: Point Name: Trustees Of Syon Park Estate	Annual Volume (m^3): 9092 Max Daily Volume (m^3): 218.2 Original Application No: - Original Start Date: 29/07/1982 Expiry Date: - Issue No: 102 Version Start Date: 28/09/2010 Version End Date:
Not shown	1281	SE	517100 176700	Status: Active Licence No: 28/39/37/0005 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE 'B' AT SYON PARK, BRENTFORD Data Type: Point Name: Trustees Of Syon Park Estate	Annual Volume (m^3): 9092 Max Daily Volume (m^3): 218.2 Original Application No: - Original Start Date: 29/07/1982 Expiry Date: - Issue No: 102 Version Start Date: 28/09/2010 Version End Date:
Not shown	1847	SW	514740 176090	Status: Historical Licence No: 28/39/37/0008 Details: Pollution Remediation Direct Source: THAMES GROUNDWATER Point: POINT 'A' AT BROADWAY SERVICE STATION, HOUNSLOW, MIDDLESEX Data Type: Point Name: TOTALFINAELF UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 28/03/2002 Expiry Date: 31/03/2005 Issue No: 1 Version Start Date: 28/03/2002 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site — Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not	611	N	516180	Status: Historical	Annual Volume (m^3): 20000

ID	Distance (m)	Direction	NGR	Details	
shown			178290	Licence No: 28/39/38/0039 Details: Dust Suppression Direct Source: THAMES SURFACE WATER - NON TIDAL Point: GRAND UNION CANAL AT BRENTFORD, MIDDLESEX Data Type: Point Name: BRITISH WATERWAYS BOARD	Max Daily Volume (m^3): 100 Application No: - Original Start Date: 21/04/1999 Expiry Date: 31/12/2009 Issue No: 101 Version Start Date: 17/12/2007 Version End Date:
Not shown	611	N	516180 178290	Status: Active Licence No: TH/039/0038/004 Details: Dust Suppression Direct Source: THAMES SURFACE WATER - NON TIDAL Point: GRAND UNION CANAL AT BRENTFORD, MIDDLESEX Data Type: Point Name: Canal and River Trust	Annual Volume (m^3): 20000 Max Daily Volume (m^3): 100 Application No: - Original Start Date: 25/05/2010 Expiry Date: 31/03/2019 Issue No: 1 Version Start Date: 25/05/2010 Version End Date:
Not shown	784	E	516880 177800	Status: Active Licence No: 28/39/36/0074 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: 980 GREAT WESTERN ROAD, BRENTFORD- RIVER BRENT Data Type: Point Name: Canal and River Trust	Annual Volume (m^3): 876000 Max Daily Volume (m^3): 2400 Application No: - Original Start Date: 03/09/2007 Expiry Date: 31/03/2025 Issue No: 2 Version Start Date: 17/12/2007 Version End Date:
Not shown	1719	NW	514800 178980	Status: Active Licence No: 28/39/38/0035 Details: Spray Irrigation - Direct Direct Source: THAMES SURFACE WATER - NON TIDAL Point: POINT A ON INLAND WATER ON UNNAMED TRIBUTARY OF RIVER BRENT Data Type: Point Name: THE AVIARY ESTATE	Annual Volume (m^3): 10000 Max Daily Volume (m^3): 69 Application No: - Original Start Date: 01/04/1991 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2008 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site — None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site Identified

6.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	643	N	516120 178340	River Name: Grand Union Canal (brent) Reach: Wyke Stream - Tideway End/Start of Stretch: Start of Stretch NGR	D	D	E	E	E
Not shown	643	N	516120 178340	River Name: Brent Reach: Costons Brook - Wyke Stream End/Start of Stretch: End of Stretch NGR	E	E	E	E	E

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

					Chemical Quality Grade				
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
Not shown	643	N	516120 178340	River Name: Brent Reach: Wyke Stream - Tideway End/Start of Stretch: Start of Stretch NGR	C	C	C	D	D
Not shown	1198	E	517297 177321	River Name: Brent Reach: Wyke Stream - Tideway End/Start of Stretch: Sample Point NGR	C	C	C	D	D

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	325 NW	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
Not shown	325 NW	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.1
2	401 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.0
3	401 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.0

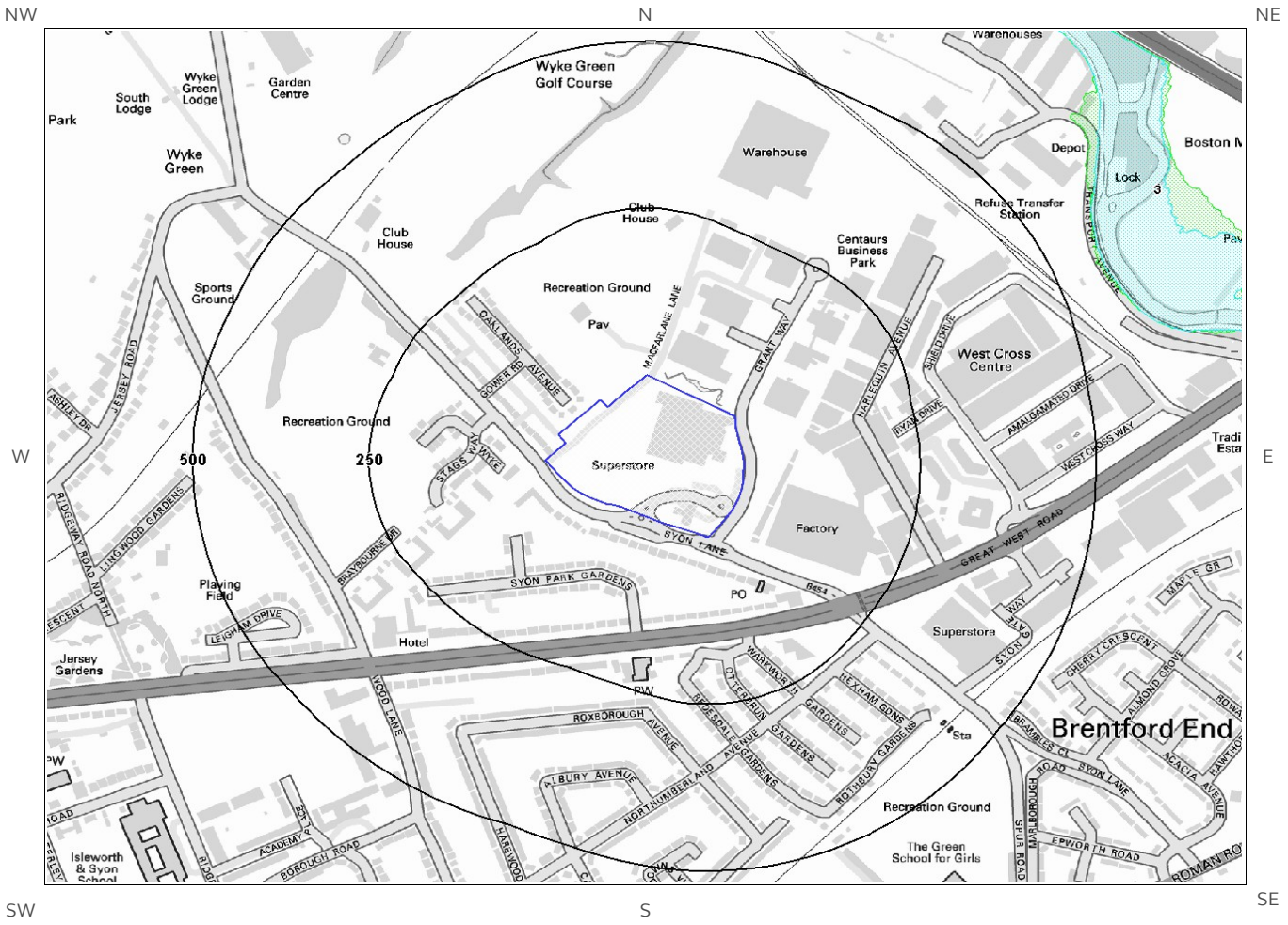
ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	401 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.0
Not shown	401 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.0
4	480 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
Not shown	480 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
5	493 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
6	493 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.0
Not shown	493 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
Not shown	493 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.0
7	498 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	498 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

Surface water features within 250m of the study site — None identified

Database searched and no data found.

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



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Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

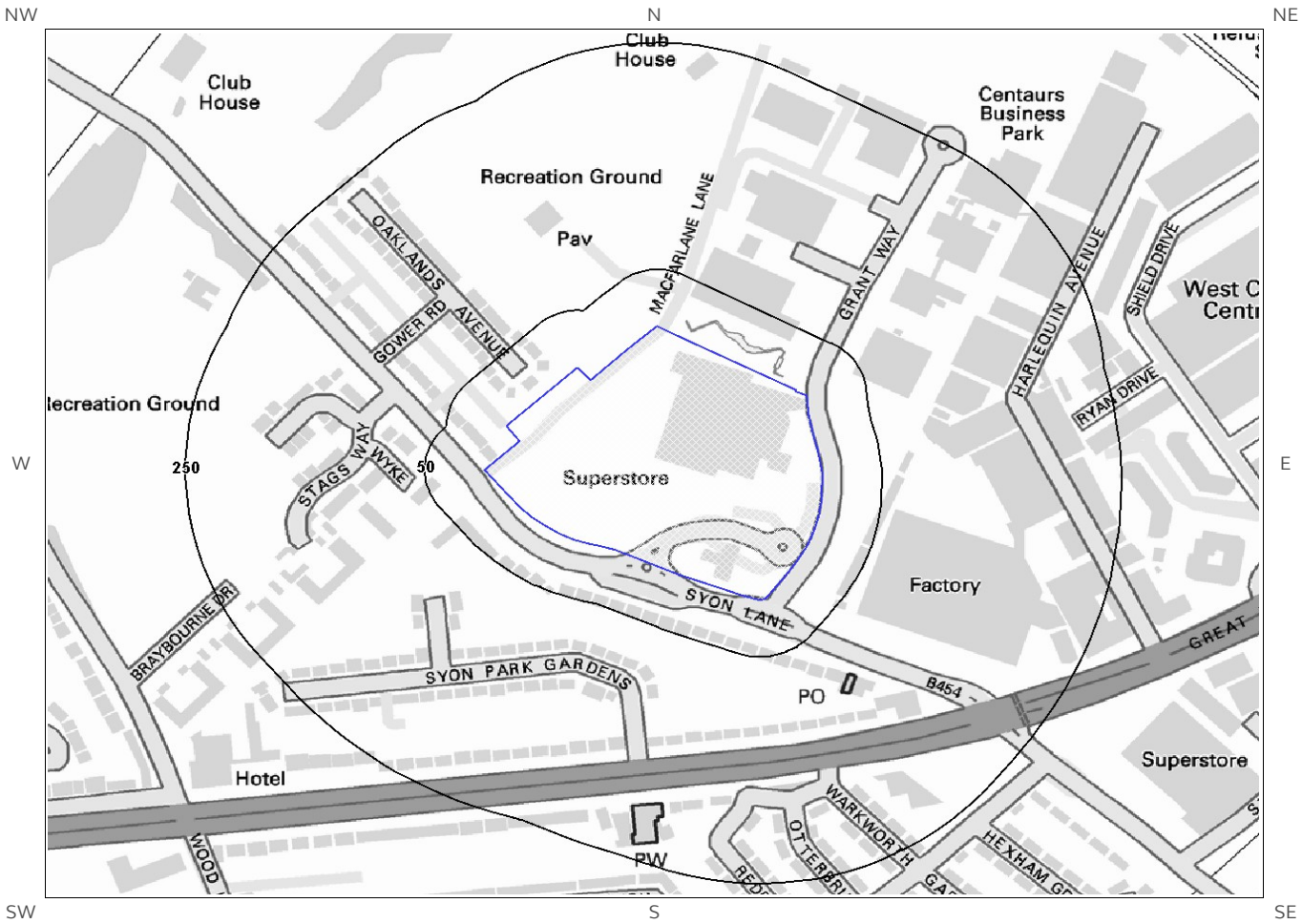
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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Site Outline

100
250
Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — None identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — None identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite — Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Flood Defences within 250m of the study site — None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site — None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site	None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site	Identified
Clearwater Flooding or Superficial Deposits Flooding	Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential below Surface

Where potential for groundwater flooding of property situated below ground level is indicated, this means that given the geological conditions there may be a groundwater flooding hazard to basements and other below surface infrastructure. Unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area you need take no further action in relation to groundwater flooding hazard. If there are records of previous incidences of groundwater flooding, then is recommended that other information e.g. rainfall history, property type, and land drainage information in addition to previous records of flooding be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

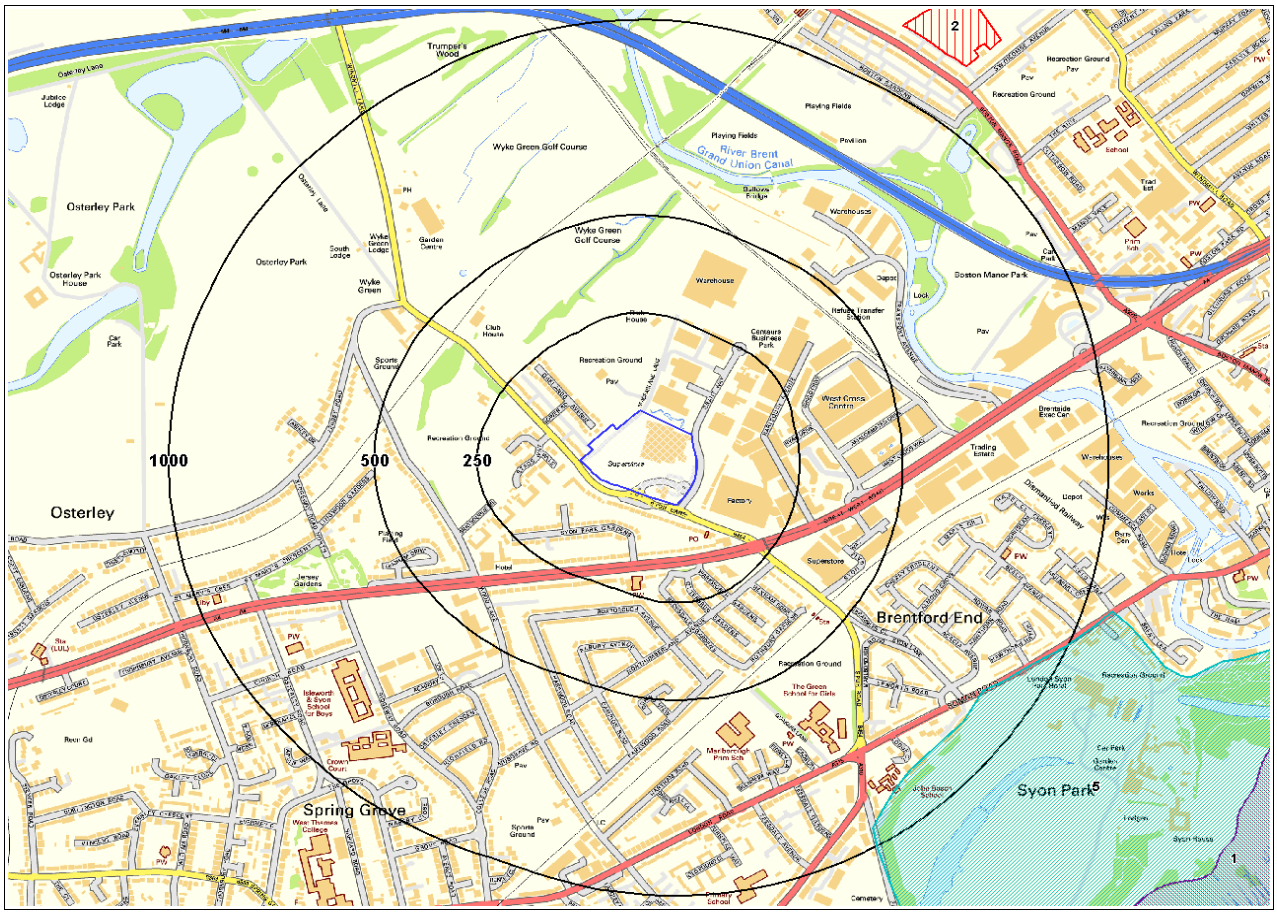
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result	Moderate

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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Site Outline

100
250
Search Buffers (m)

AONB
National Park
SSSI
Special Protection Areas
Nitrate Vulnerable Zones

Green Belt
Environmentally Sensitive Areas
Special Areas of Conservation
World Heritage Sites
Nitrate Sensitive Areas

Ancient Woodland
National Nature Reserve
Local Nature Reserves
Ramsar Sites

8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site | Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

1

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
1	1513	SE	Syon Park	Natural England

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

3

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
2	1154	NE	Blondin Nature area	Natural England
Not shown	1217	NW	Long Wood	Natural England
Not shown	1659	SE	Isleworth Ait	Natural England

8.8 Records of World Heritage Sites within 2000m of the study site:

2

The following World Heritage Site records provided by English Heritage and Cadw are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	World Heritage Site Name	Data Source
5	878	SE	Royal Botanic Gardens, Kew Buffer Zone	Historic England
Not shown	1818	SE	Royal Botanic Gardens, Kew	Historic England

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell* hazard rating identified on the study site — Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site — Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slight possibility for collapsible deposit problems after major changes in loading or groundwater conditions. Normal maintenance to avoid large amounts of water entering the ground through pipe leakage or soak-aways should reduce the likelihood of problems due to collapsible deposits. For new build, assess the possibility of collapsible (loessic) deposits in ground investigation. For existing property, no significant increase in insurance risk from collapsible deposits is likely.

9.1.6 Running Sand

Maximum Running Sand*[*] hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site — None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site — None identified
Guidance: No Guidance Required.

Contact Details

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info@groundsure.com

British Geological Survey Enquiries
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Fax: 0115 936 3276.
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Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

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Phone: 020 8583 2000
Web: http://www.hounslow.gov.uk/
Address: Civic Centre, Lampton Road, Hounslow, London, TW3 4DN

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England/Natural Resources Wales who retain the Copyright and Intellectual Property Rights for the data.
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https://www.groundsure.com/terms-and-conditions-may25-2018

Waterman Infrastructure & Environment Limited

PICKFORDS WHARF WATERMAN GROUP,
CLINK STREET,
LONDON, SE1 9DG

Report Reference: WTM1-5538640

Your Reference: 93729

Report Date 17 Oct 2018

Report Delivery Method: Email - pdf

Geo Insight

Address: TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159 000, queries: info@groundsure.com quoting the above report reference number

Yours faithfully,

Waterman

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ**
Date:	**17 Oct 2018**
Reference:	**WTM1-5538640**
Client:	**Waterman Infrastructure & Environment Limited**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	20-Apr-2015
Grid Reference:	515972,177585
Site Size:	4.37ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	No

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	3	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	5	8

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Moderate
6.2 Landslides	Very Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Negligible
6.5 Collapsible Deposits	Low
6.5 Running Sand	Very Low

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	0	0	5

Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	4	2	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	0	13	4	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	0	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability

1_10,000 Availability Legend

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Site Outline

Full Coverage

Partial Coverage

No Coverage

50
250
Search Buffers (m)

Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	No coverage
2	841.0	Some deposits are mapped	Full	Full	No coverage

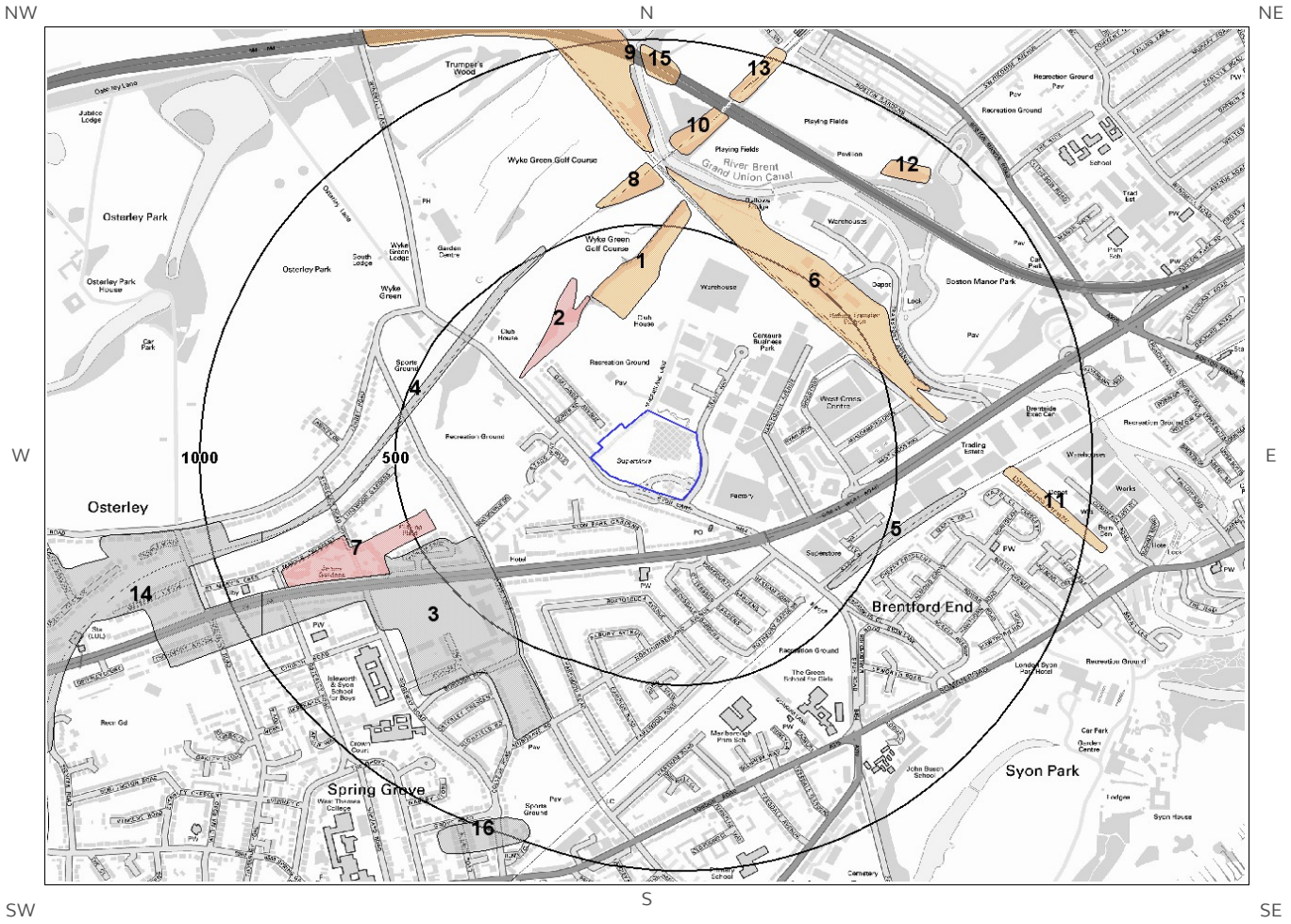
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

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Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

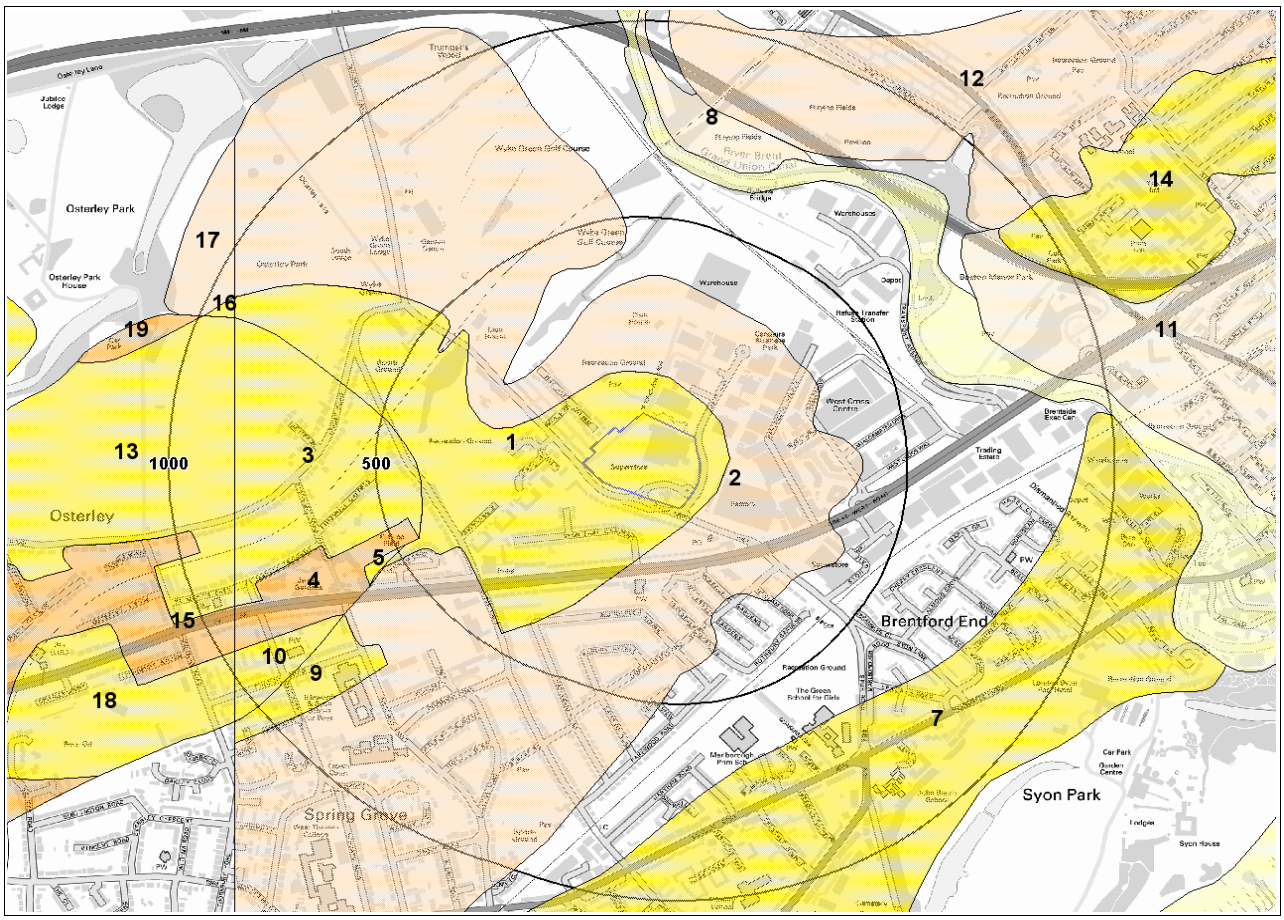
ID	Distance	Direction	LEX Code	Description	Rock Description
1	254.0	N	MGR-UKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry
2	263.0	NW	WMGR-UKNOWN	Infilled Ground	Unknown/unclassified Entry
3	365.0	SW	WGR-UKNOWN	Worked Ground (Undivided)	Unknown/unclassified Entry
4	430.0	NW	WGR-UKNOWN	Worked Ground (Undivided)	Unknown/unclassified Entry
5	432.0	SE	WGR-UKNOWN	Worked Ground (Undivided)	Unknown/unclassified Entry
6	438.0	NE	MGR-UKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry
7	440.0	SW	WMGR-UKNOWN	Infilled Ground	Unknown/unclassified Entry

1.2 Superficial Deposits and Landslips map (1:10,000 scale)

NW N NE

W E

SW S SE



Artificial Ground Legend

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Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	LASI-Z	Langley Silt Member - Silt (unlithified Deposits Coding Scheme)	Silt
2	37.0	SE	TPGR-XSV	Taplow Gravel Formation - Sand And Gravel	Sand And Gravel
3	394.0	W	LASI-Z	Langley Silt Member - Silt (unlithified Deposits Coding Scheme)	Silt
4	440.0	SW	LHGR-XSV	Lynch Hill Gravel Member - Sand And Gravel	Sand And Gravel
5	475.0	SW	LASI-Z	Langley Silt Member - Silt (unlithified Deposits Coding Scheme)	Silt

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

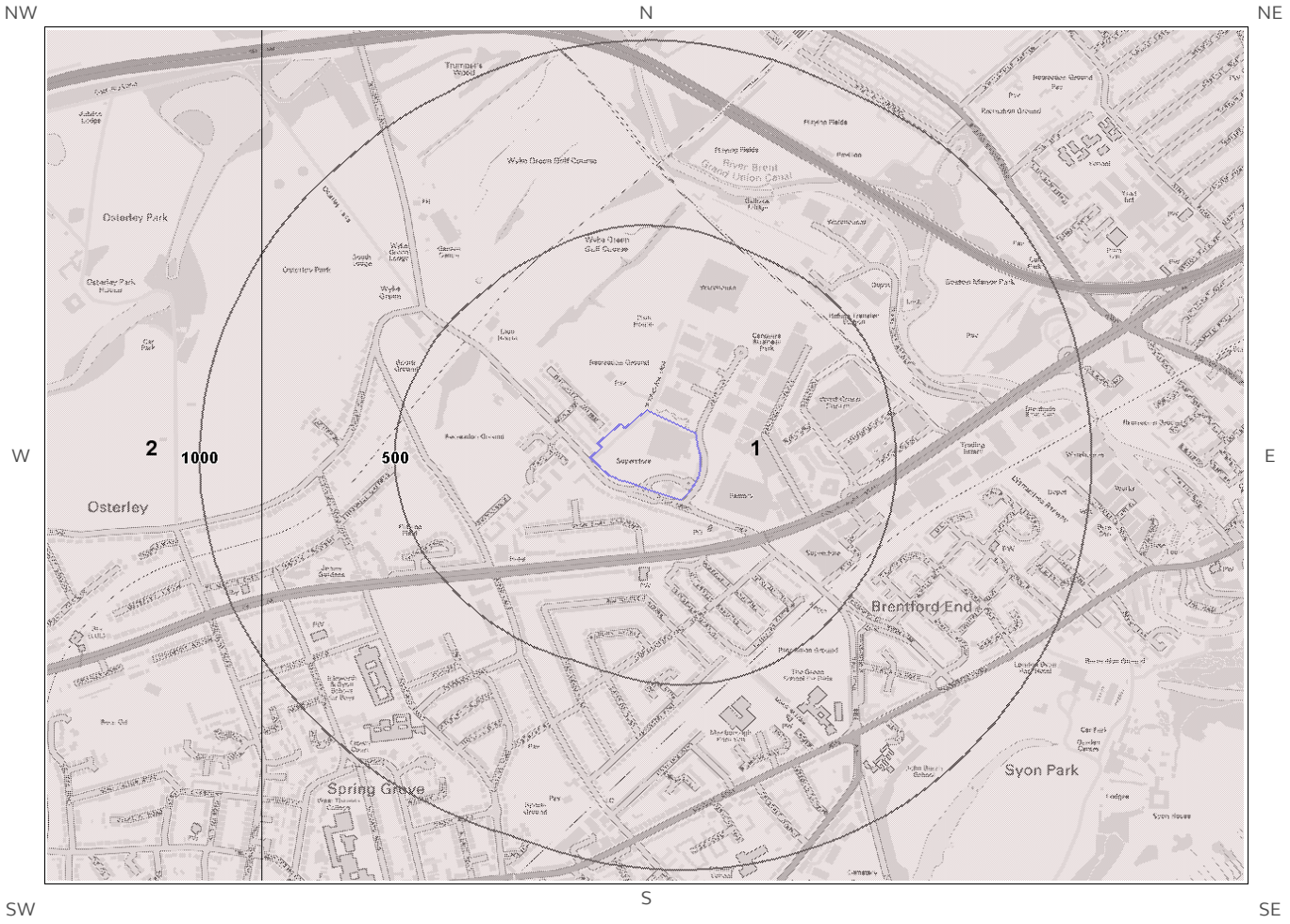
No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

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Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LC-CLAY	London Clay Formation - Clay	Eocene Epoch

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

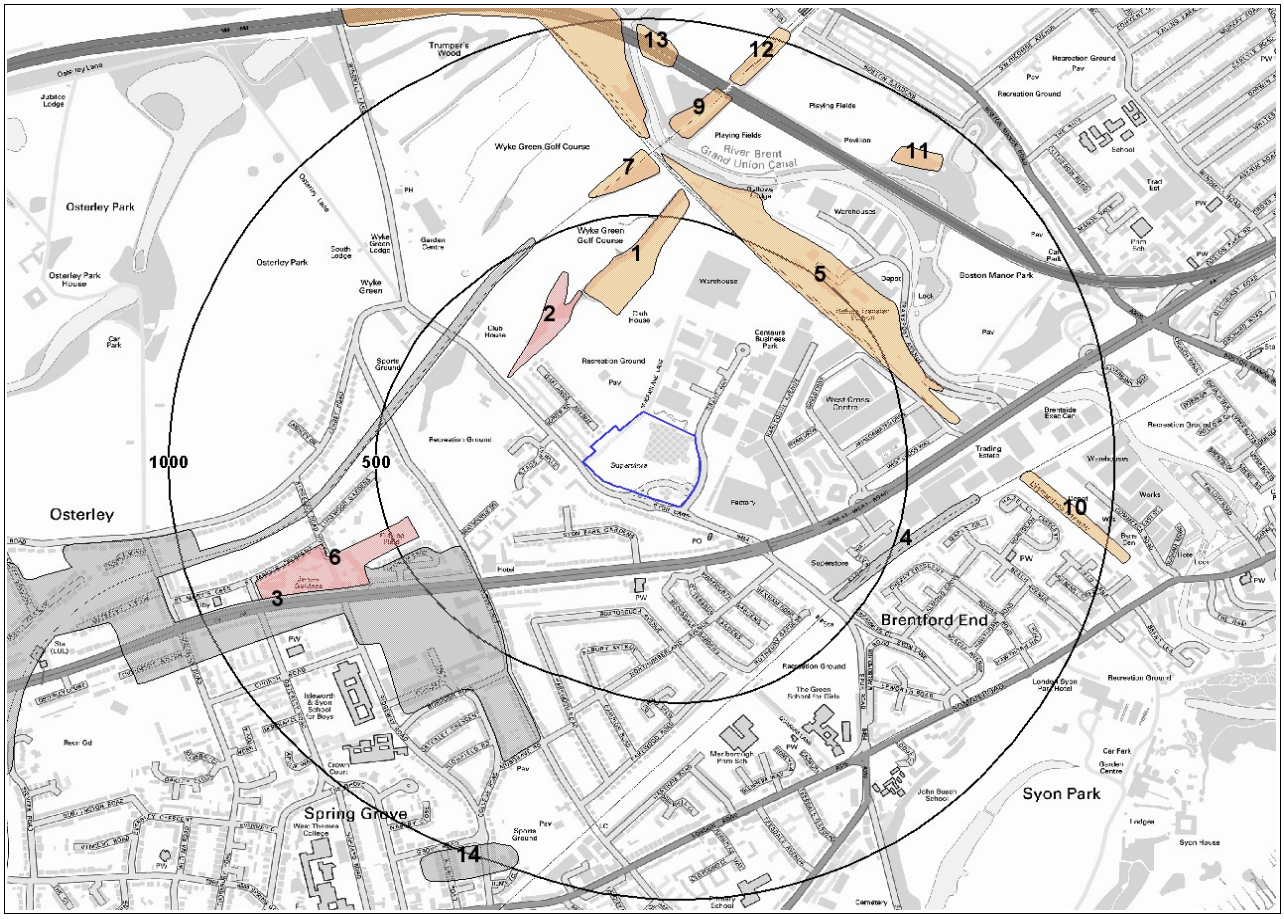
2 Geology 1:50,000 Scale

2.1 Artificial Ground map

NW N NE

W E

SW S SE



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Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 270

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

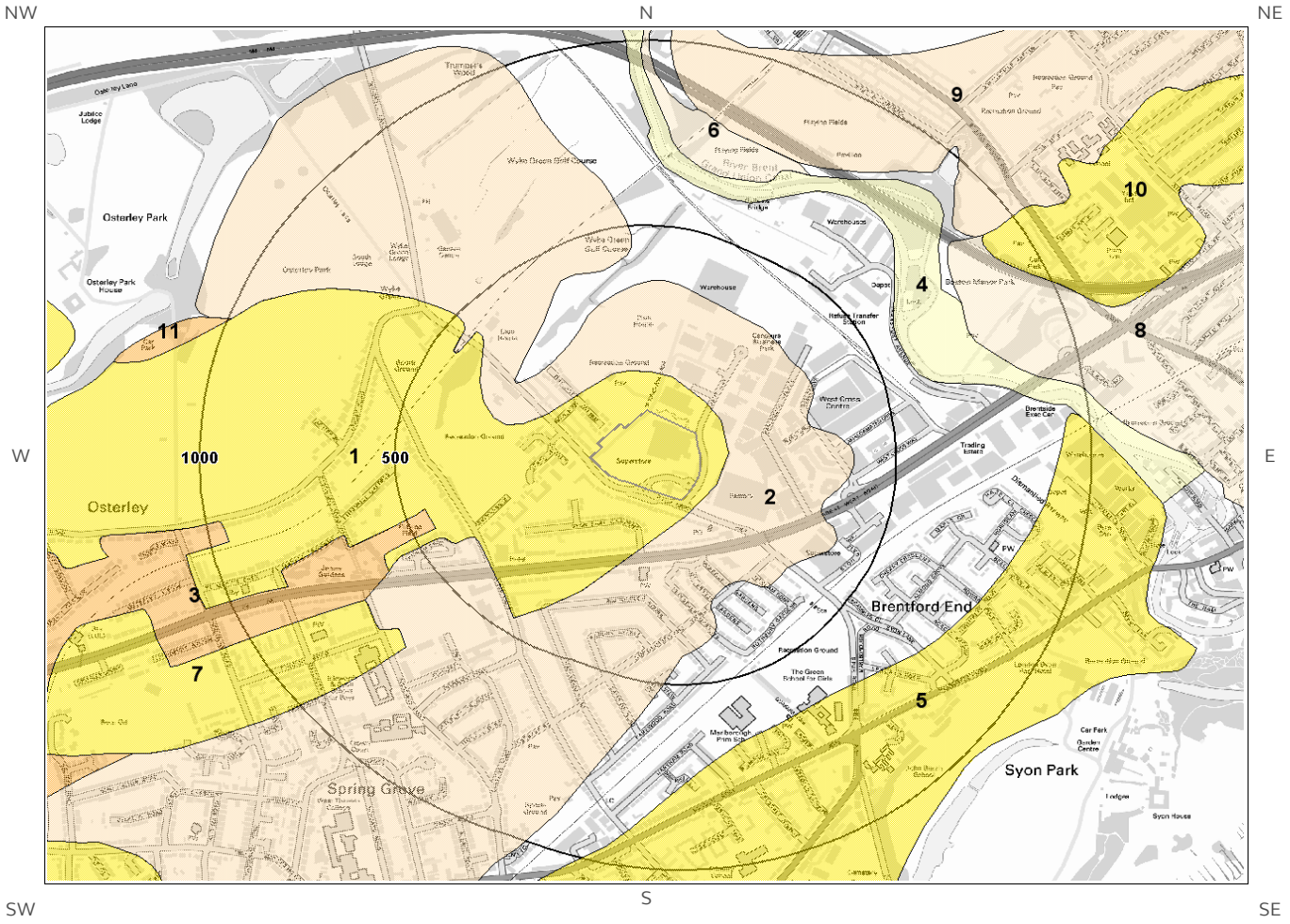
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	254.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	263.0	NW	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
3	365.0	SW	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
4	431.0	SE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
5	438.0	NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
6	440.0	SW	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	LASI-XCZ	LANGLEY SILT MEMBER	CLAY AND SILT
2	37.0	SE	TPGR-XSV	TAPLOW GRAVEL MEMBER	SAND AND GRAVEL
3	440.0	SW	LHGR-XSV	LYNCH HILL GRAVEL MEMBER	SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Low	Very Low
37.0	SE	Intergranular	Very High	High

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

2.3 Bedrock and linear features map (1:50,000 scale)

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Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 270

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	LC-XCZ	LONDON CLAY FORMATION - CLAY AND SILT	YPRESIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Low	Very Low

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

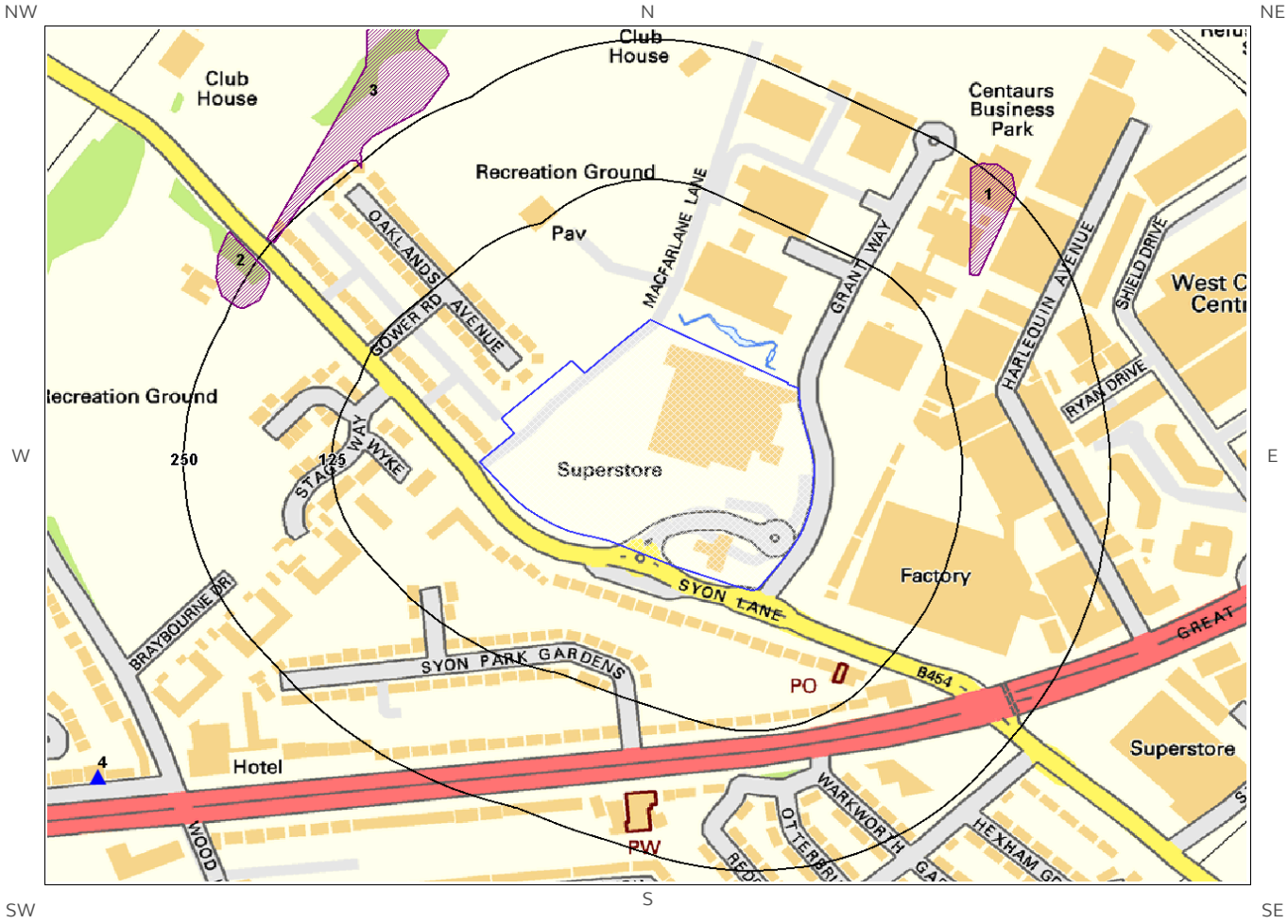
The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

---

4 Ground Workings map



Ground Workings Legend

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Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1	177.0	NE	516275 177801	Unspecified Ground Workings	1938
2	230.0	NW	515641 177756	Pond	1865
3	246.0	NW	515738 177916	Pond	1865

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

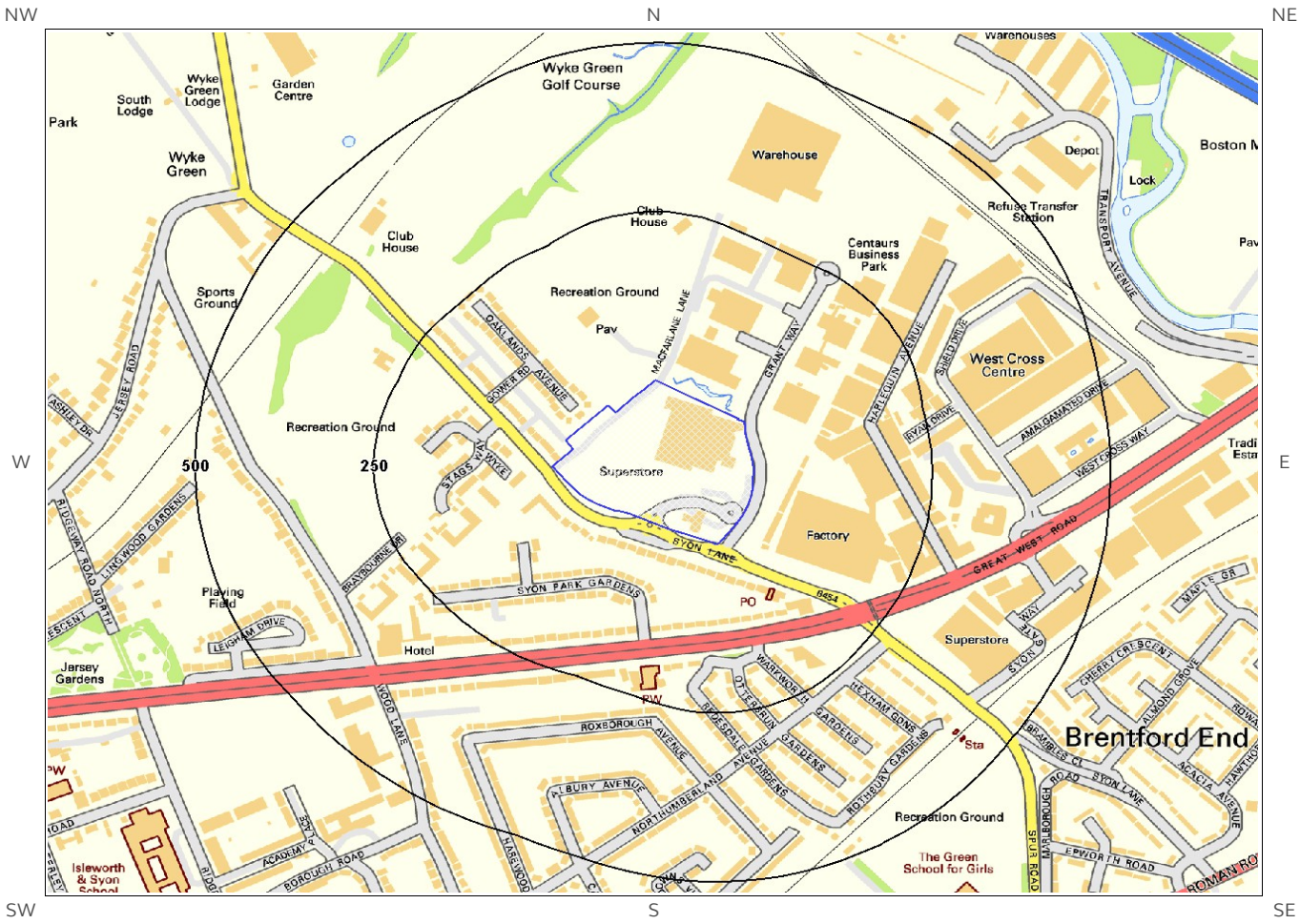
Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
4	428.0	SW	515518 177303	Clay & Shale	Spring Grove Brick Fields	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	463.0	NE	516425 177990	Marine Sand & Gravel	Brentford Rail Depot	A site where mineral commodities are unloaded from rail trucks and stored	Active
Not shown	463.0	NE	516425 177990	Secondary	Brentford Rail Depot	A site where mineral commodities are unloaded from rail trucks and stored	Active

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	463.0	NE	516425 177990	Crushed Rock	Brentford Rail Depot	A site where mineral commodities are unloaded from rail trucks and stored	Active
Not shown	499.0	SW	515381 177390	Clay & Shale	Scrattage Brick Fields	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	533.0	SW	515505 177163	Clay & Shale	Spring Grove Brick Fields	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	556.0	SW	515399 177247	Clay & Shale	Spring Grove Brick Fields	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	585.0	SW	515524 177079	Sand & Gravel	Wood Lane Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	616.0	SW	515665 176960	Sand & Gravel	Wood Lane Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	655.0	SW	515318 177190	Clay & Shale	Spring Grove Brick Fields	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	698.0	SW	515203 177301	Clay & Shale	Scrattage Brick Fields	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	765.0	SW	515170 177217	Clay & Shale	Scrattage Brick Fields	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	937.0	SW	515000 177170	Clay & Shale	Scrattage Brick Fields	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

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Site Outline

Search Buffers (m) — 250 — 500

Historical Mining

Non-Coal Mining Cavities

Natural Cavities (point data)

Natural Cavities (polygon data)

Non-Coal Mining

- Highly likely
- Likely
- Unlikely
- Highly unlikely
- Rare

5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

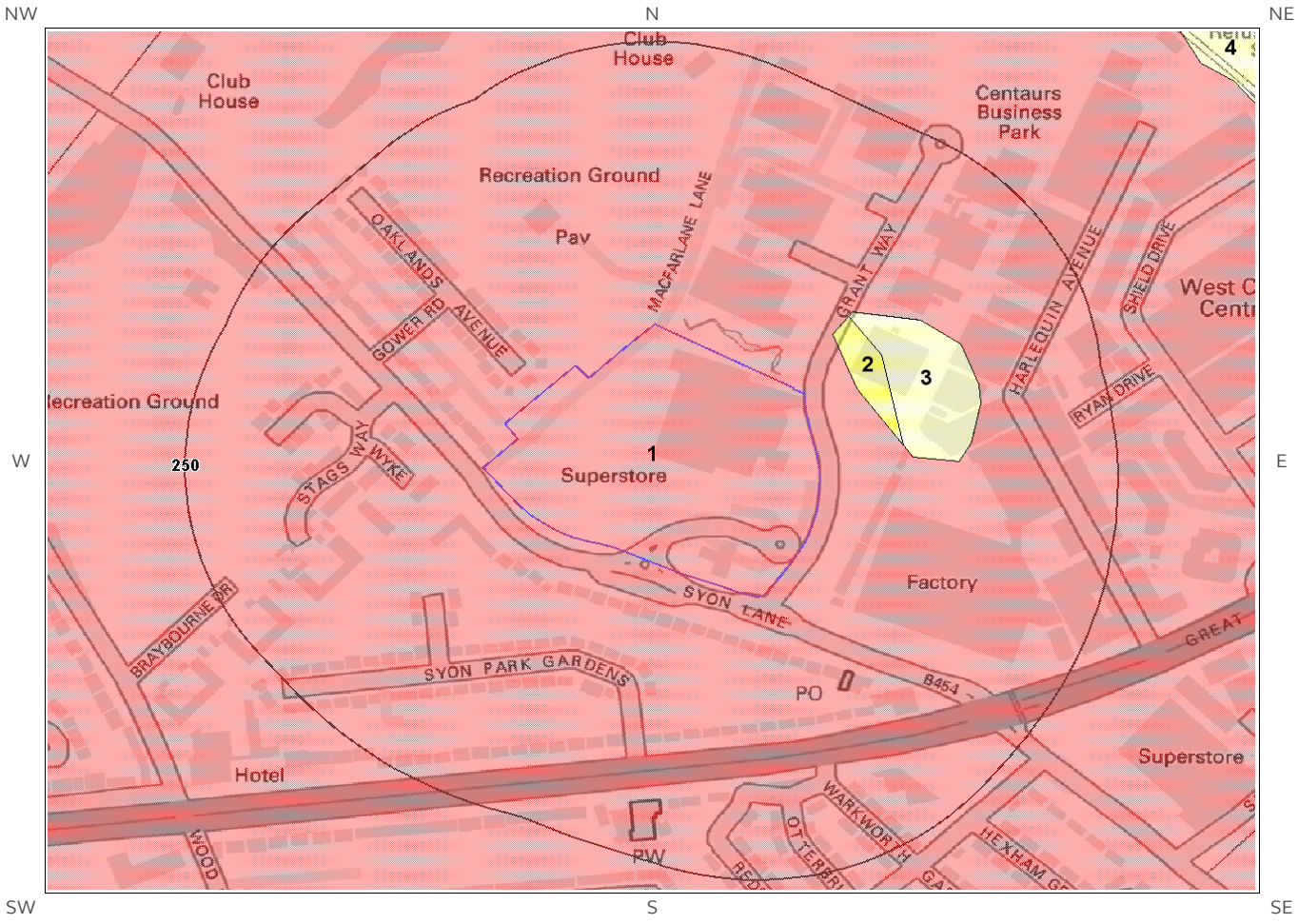
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

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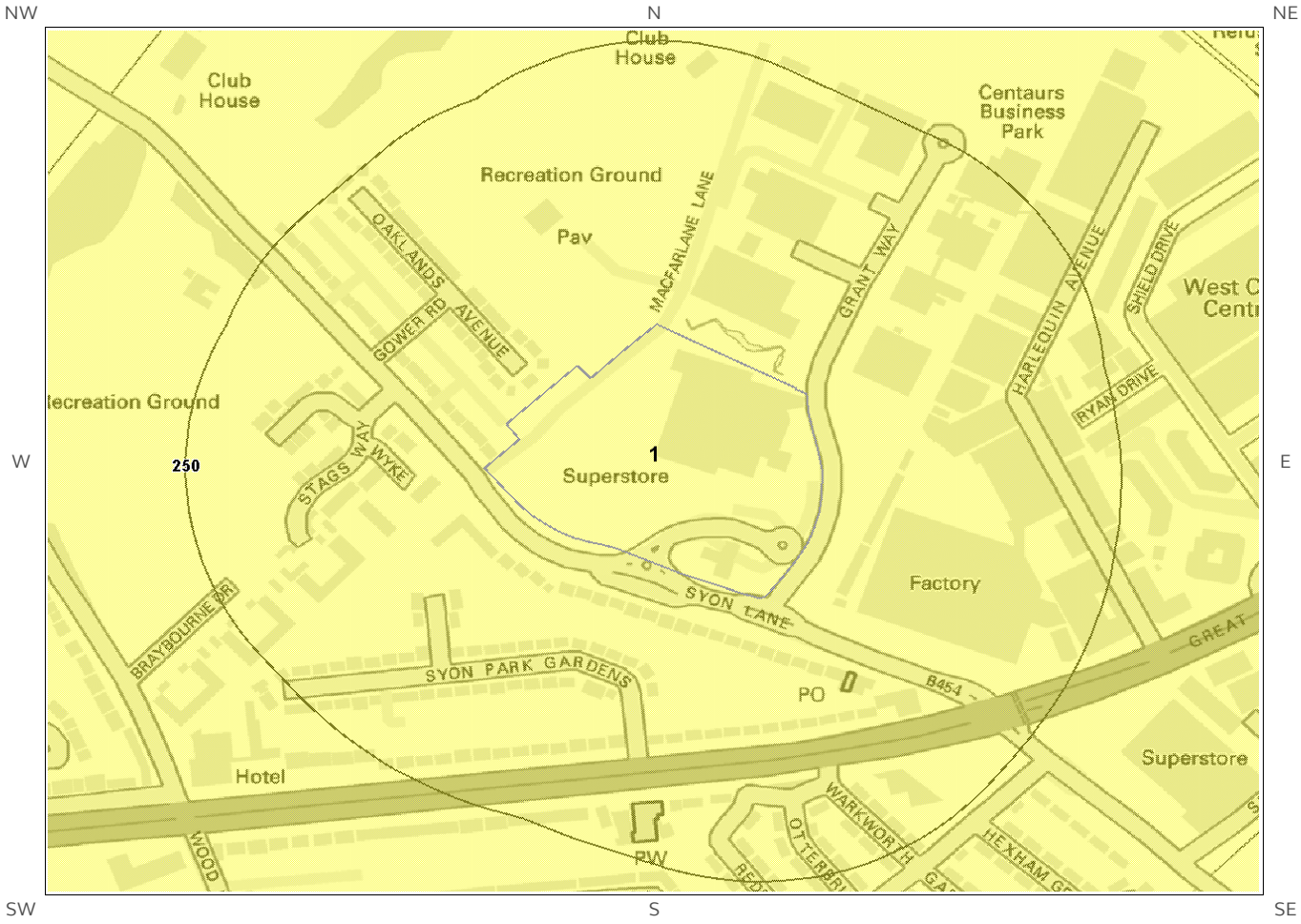
6.2 Landslides map



Landslides Legend

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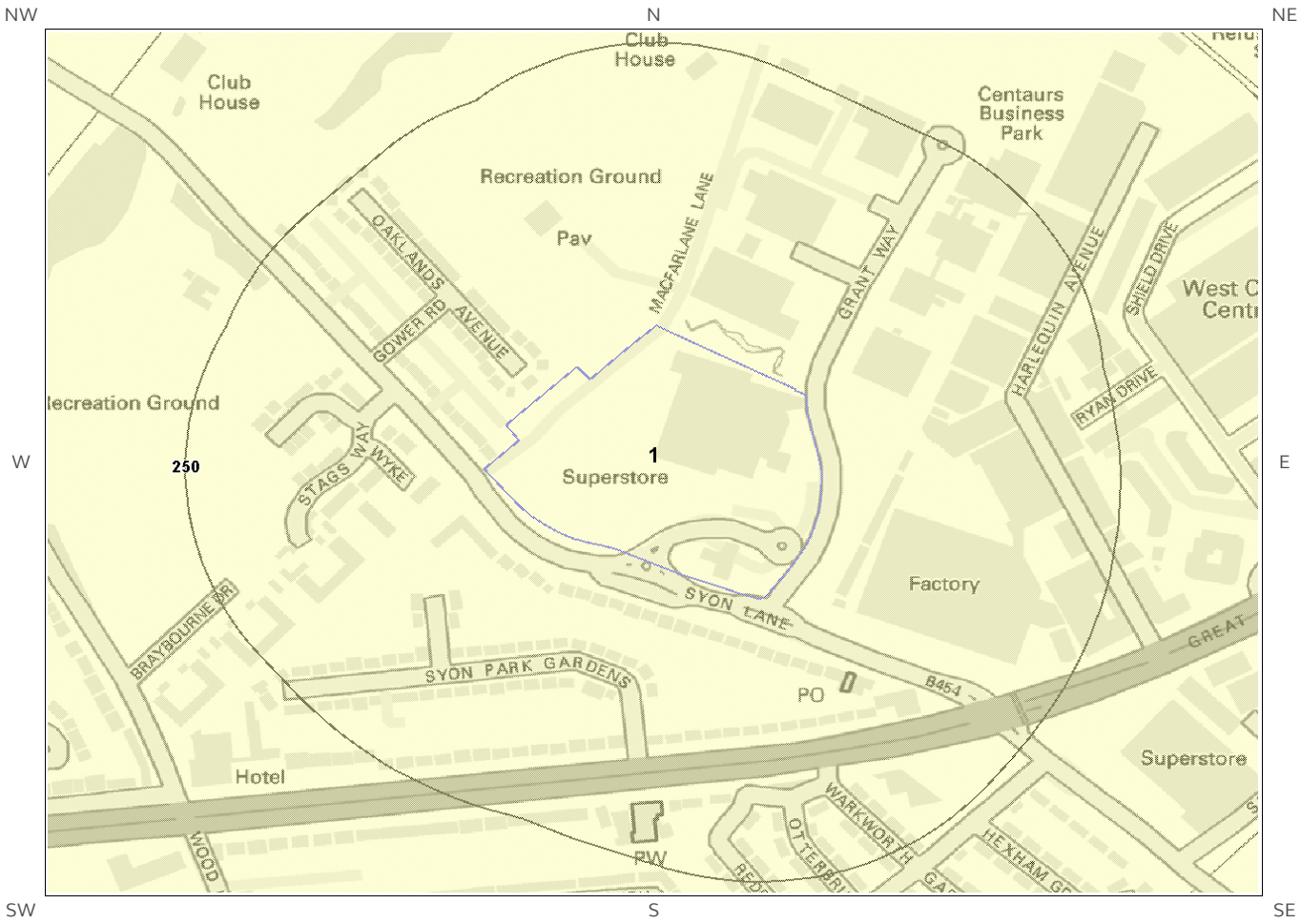
6.3 Ground Dissolution of Soluble Rocks map



Ground Dissolution Soluble Rocks Legend

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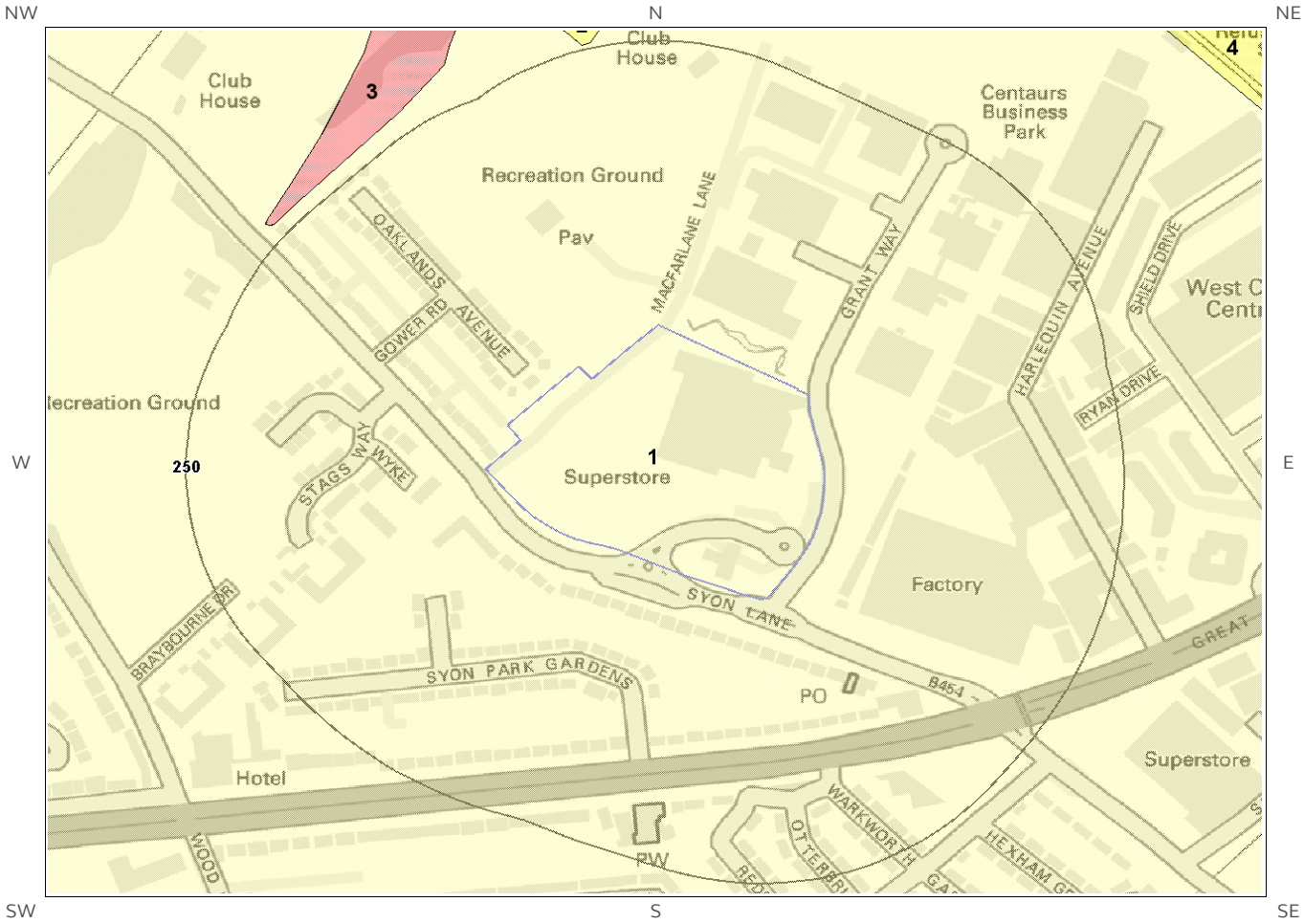
6.4 Compressible Deposits map



Compressible Deposits Legend

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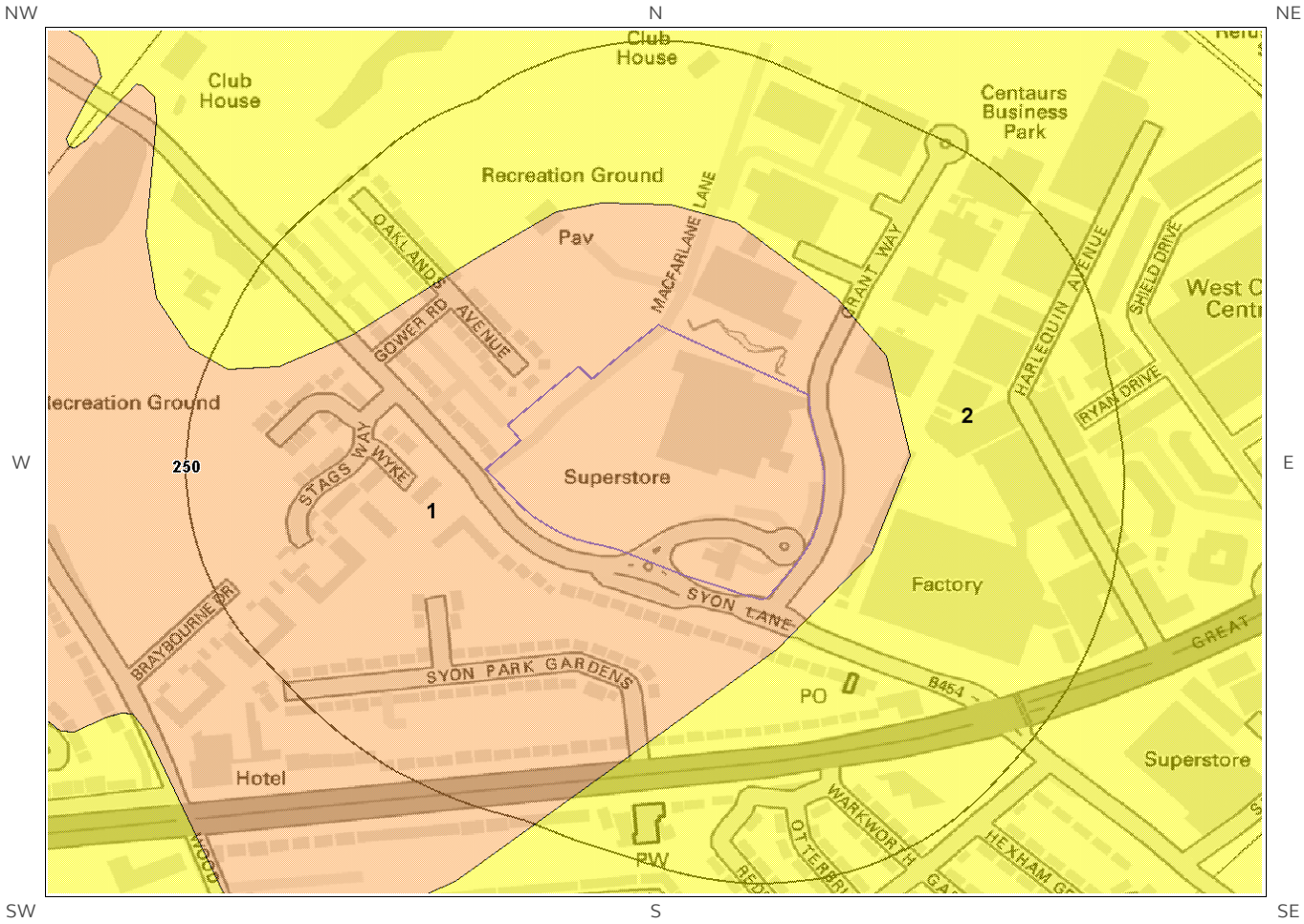
6.5 Collapsible Deposits map



Collapsible Deposits Legend

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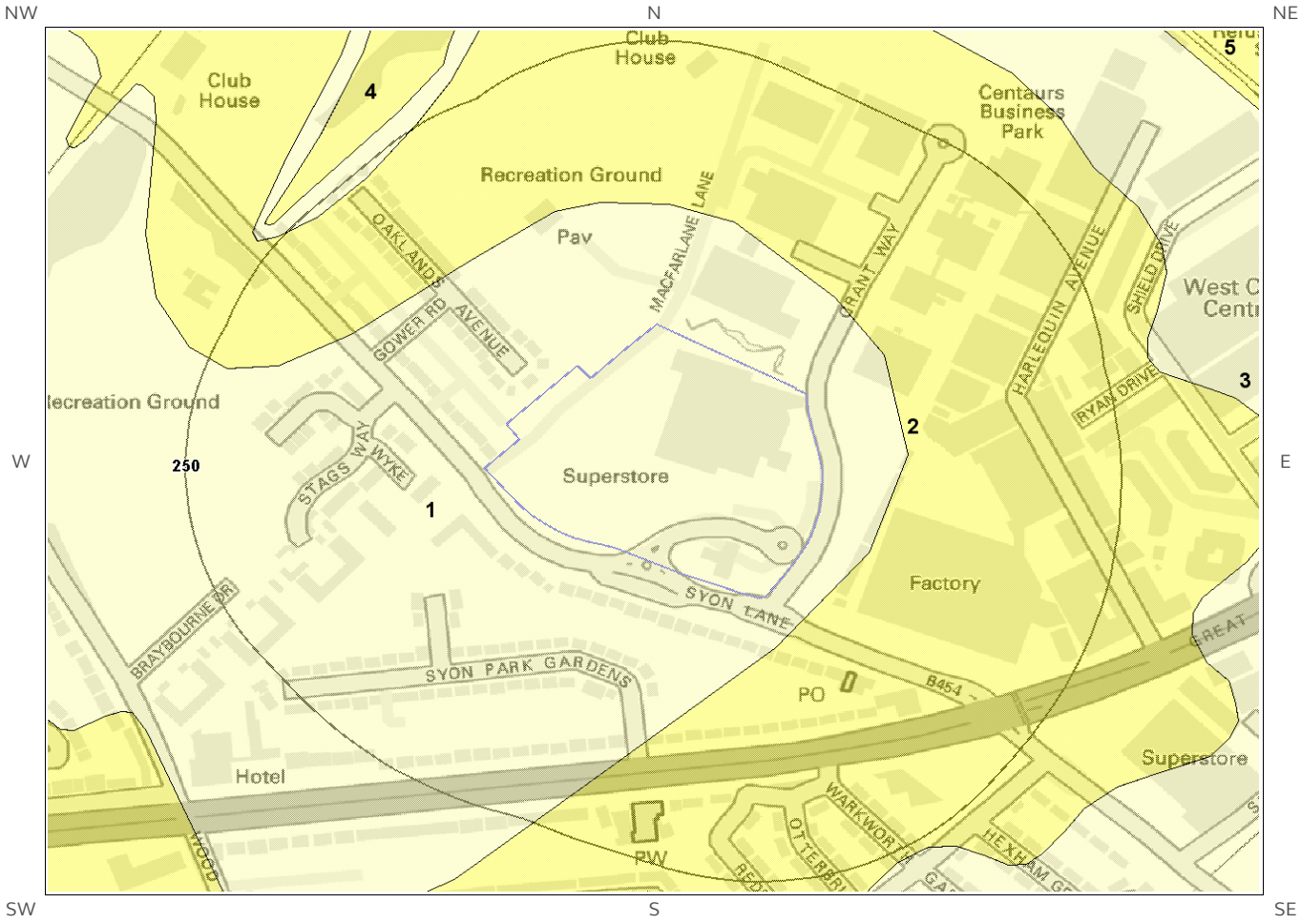
6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Moderate

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Moderate	Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.
2	42.0	NE	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

* This includes an automatically generated 50m buffer zone around the site

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Slight possibility for collapsible deposit problems after major changes in loading or groundwater conditions. Normal maintenance to avoid large amounts of water entering the ground through pipe leakage or soak-aways should reduce the likelihood of problems due to collapsible deposits. For new build, assess the possibility of collapsible (loessic) deposits in ground investigation. For existing property, no significant increase in insurance risk from collapsible deposits is likely.
2	37.0	SE	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

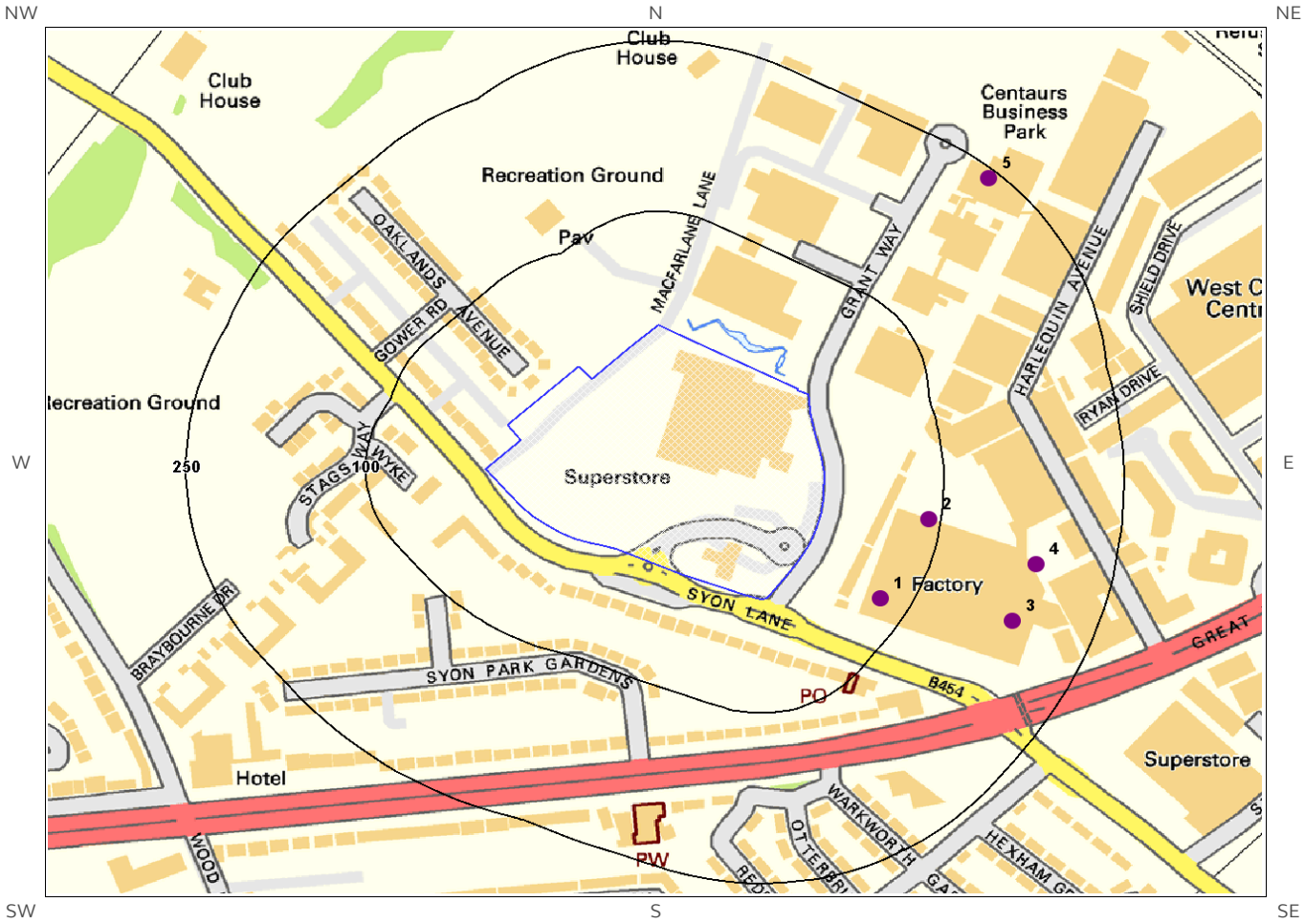
6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

ID	Distance (m)	Direction	Hazard Rating	Details
2	37.0	SE	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map



Borehole Records Legend

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Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 5

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	76.0	SE	516170 177470	TQ17NE481	-1.0	GILLETTE UK LIMITED 1
2	89.0	E	516210 177540	TQ17NE482	-1.0	GILLETTE UK LIMITED 2
3	182.0	SE	516280 177450	TQ17NE484	-1.0	GILLETTE UK LIMITED 4
4	185.0	E	516300 177500	TQ17NE483	-1.0	GILLETTE UK LIMITED 3
5	242.0	NE	516260 177840	TQ17NE140	198.12	SYON LANE OSTERLEY

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#5: scans.bgs.ac.uk/sobi_scans/boreholes/580785

8 Estimated Background Soil Chemistry

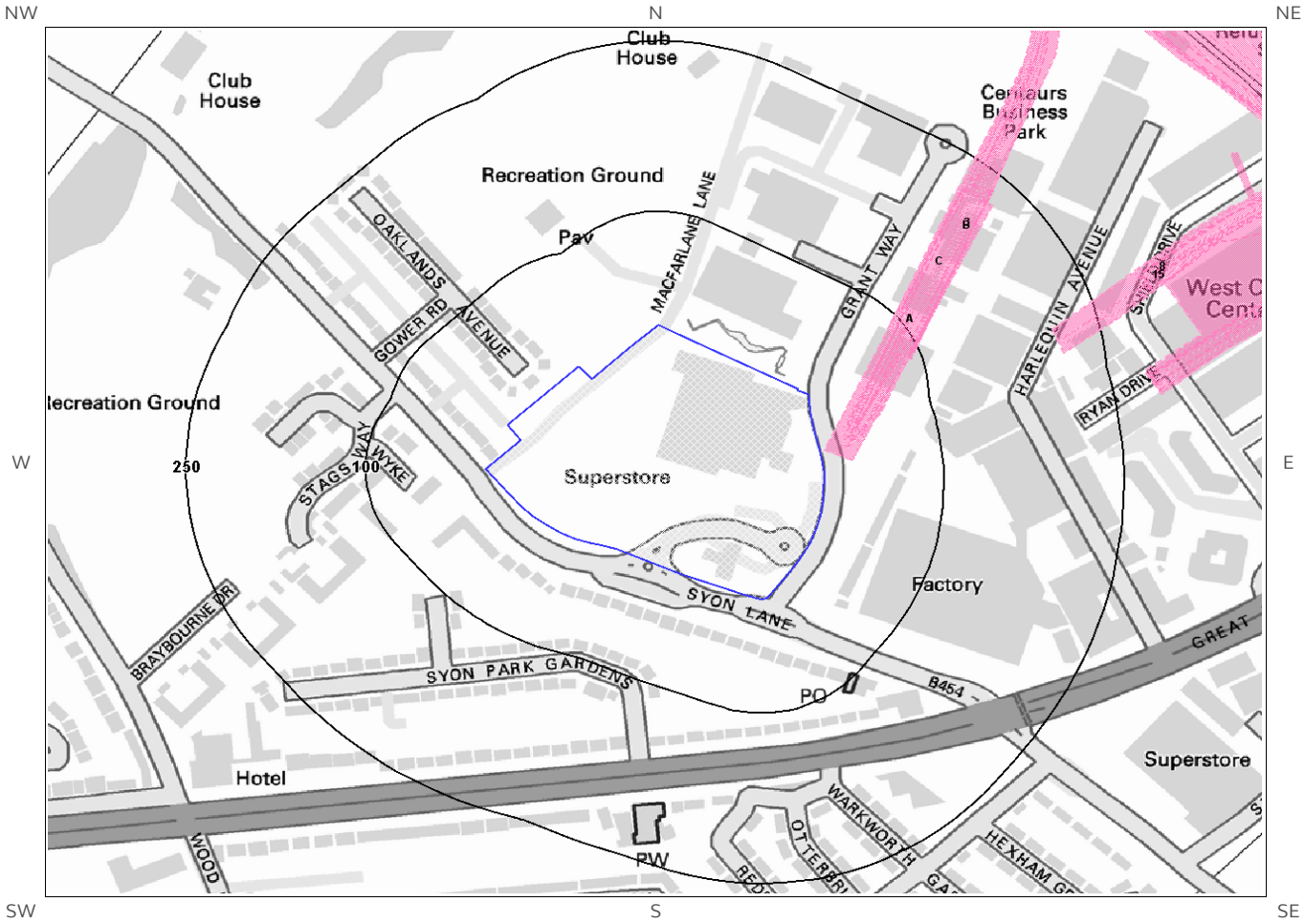
Records of background estimated soil chemistry within 250m of the study site boundary: 6

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	London	No data	No data	No data	No data	No data
0.0	On Site	London	No data	No data	No data	No data	No data
37.0	SE	London	No data	No data	No data	No data	No data
46.0	SE	London	No data	No data	No data	No data	No data

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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- Site Outline
- Search Buffers (m) — 250 / 500
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1A	3	E	516193 177712	Railway Sidings	1974
2A	3	E	516193 177712	Railway Sidings	1966
9C	19	E	516224 177800	Railway Sidings	1960
3	21	E	516425 177950	Railway Sidings	1938
4B	23	E	516294 177943	Railway Sidings	1948
5B	23	E	516294 177943	Railway Sidings	1948

ID	Distance (m)	Direction	NGR	Details	Date
10D	23	E	516224 177800	Railway Sidings	1960
6	27	E	516347 178041	Railway Sidings	1935
11D	27	E	516228 177805	Railway Sidings	1974
12D	27	E	516228 177805	Railway Sidings	1960
7C	28	E	516213 177757	Railway Sidings	1961
13	28	E	516383 177998	Railway Sidings	1935
14	34	E	n/a	Railway	1935
8	211	E	516404 177761	Railway Sidings	1966
15	216	E	516411 177756	Railway Sidings	1960
16E	217	E	516601 177830	Railway Sidings	1960
17E	217	E	516601 177830	Railway Sidings	1960

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project?	No
Is the study site within 500m of the route of the Crossrail 1 rail project?	No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a ***Groundsure HS2 and Crossrail 1 Report****.*

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

Contact Details

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Keyworth, Nottingham NG12 5GG
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Fax: 0115 936 3276.
Email:**enquiries@bgs.ac.uk**
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
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Leicestershire
LE12 6HX

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
https://www.gov.uk/government/organisations/public-health-england
Email: **enquiries@phe.gov.uk**
Main switchboard: 020 7654 8000

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DY5 3LH
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Email:**enquiries.gs@jpb.co.uk**
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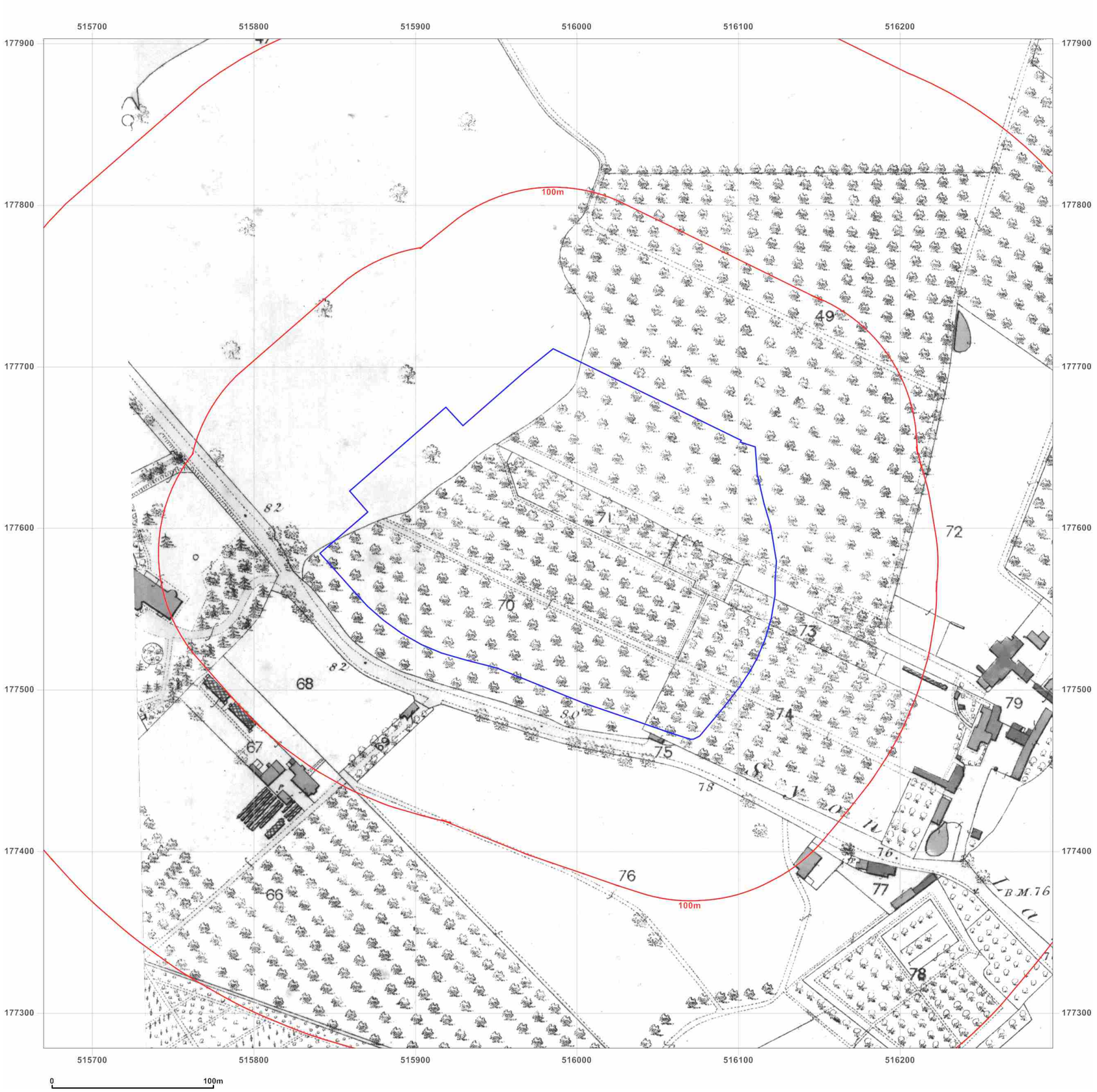

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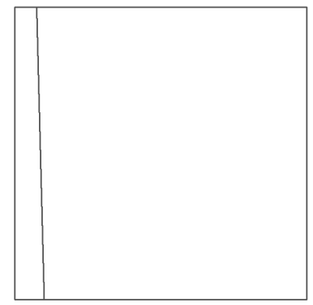

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Revised 1865
Edition N/A
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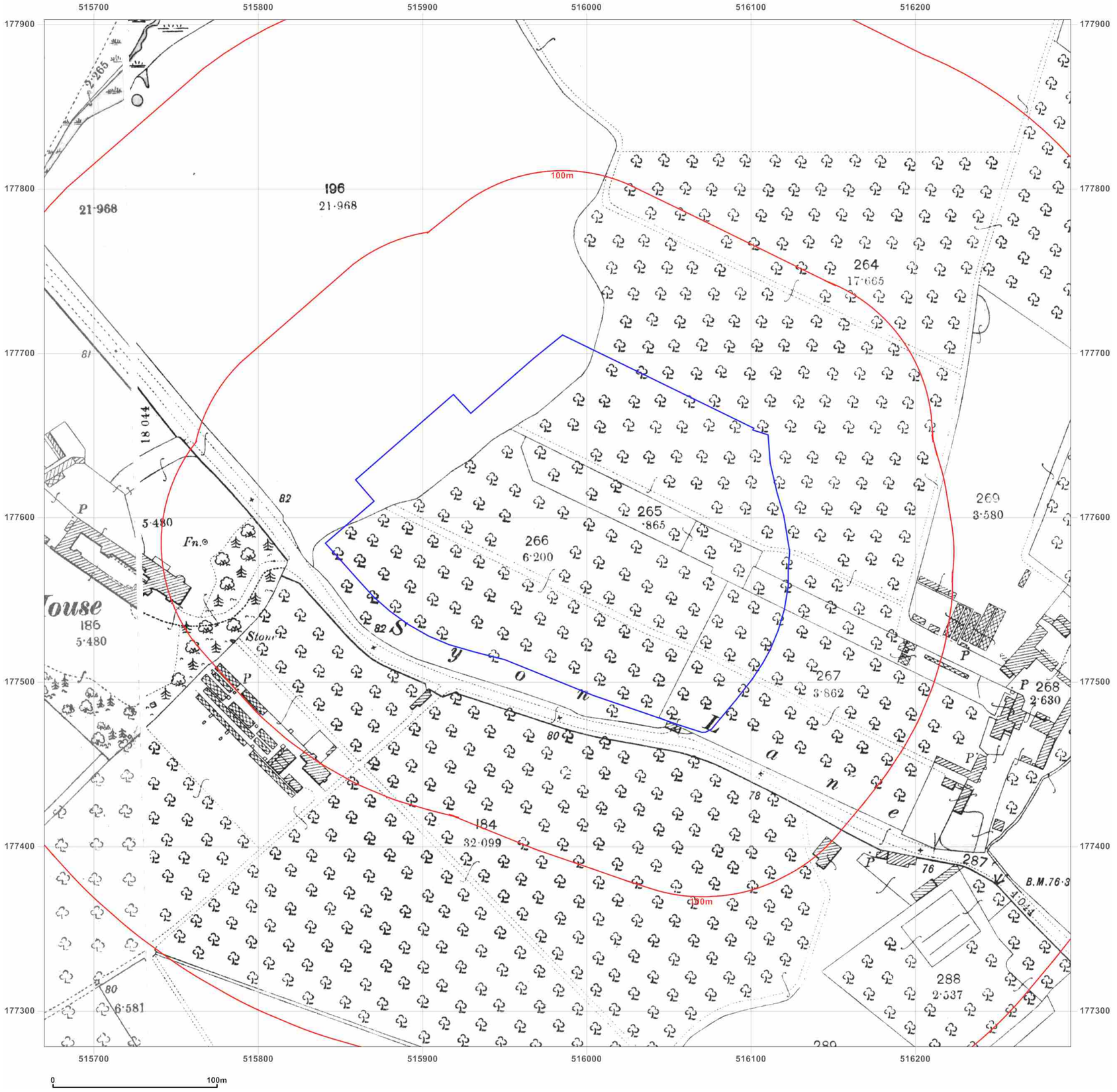

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Report Ref: WTM1-5538641
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Map Name: County Series
Map date: **1896**
Scale: 1:2,500
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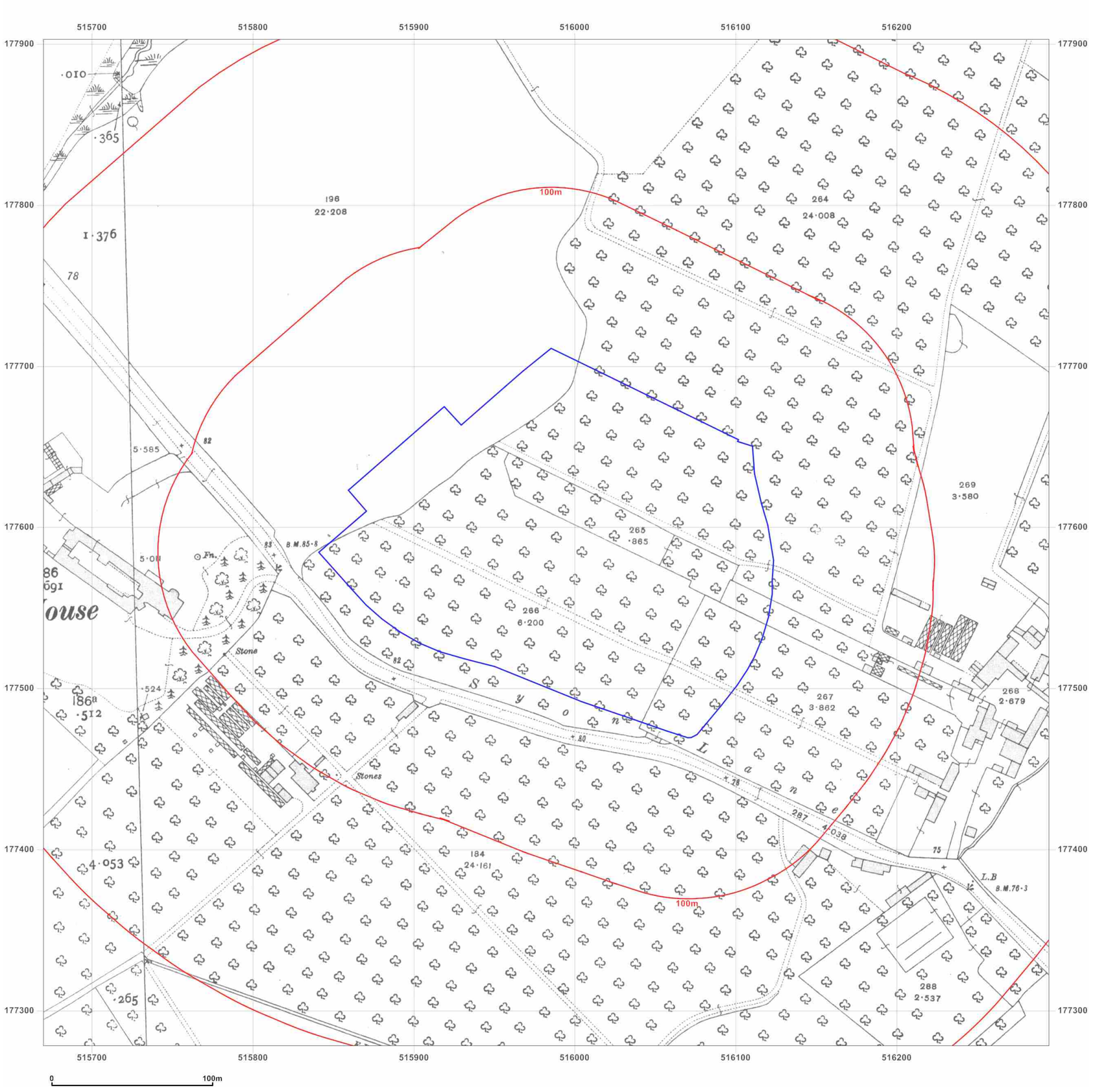

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Map Name: County Series

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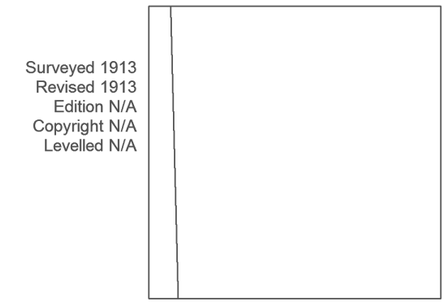

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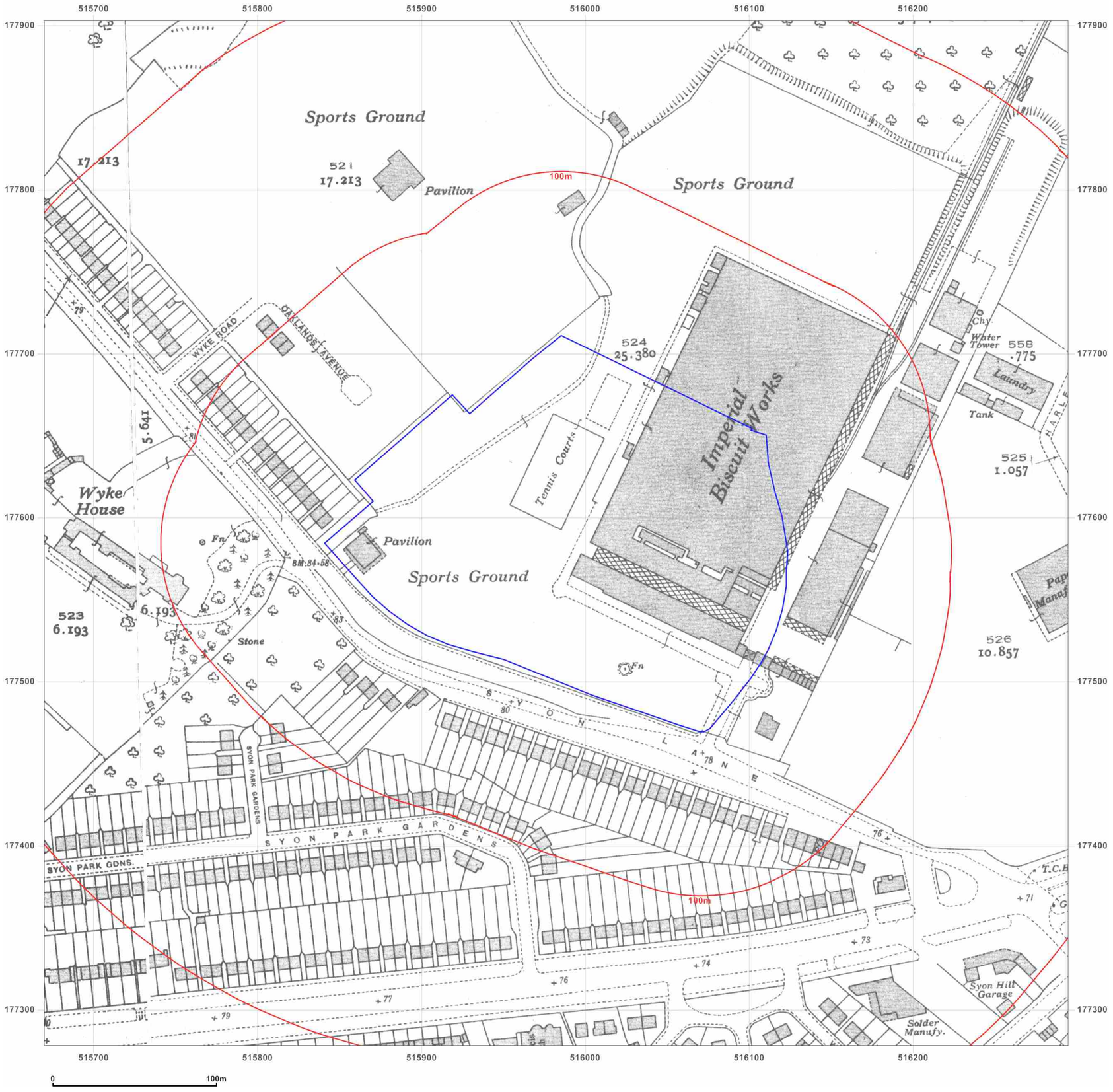

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Grid Ref: 515982, 177590

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Map date: **1935**
Scale: 1:2,500
Printed at: 1:2,500

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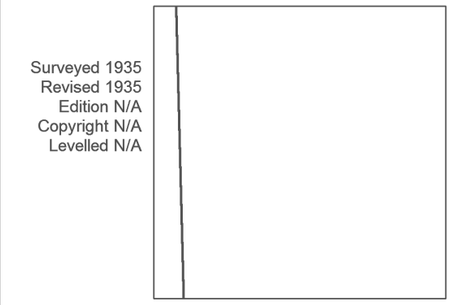

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1960**

Scale: 1:1,250

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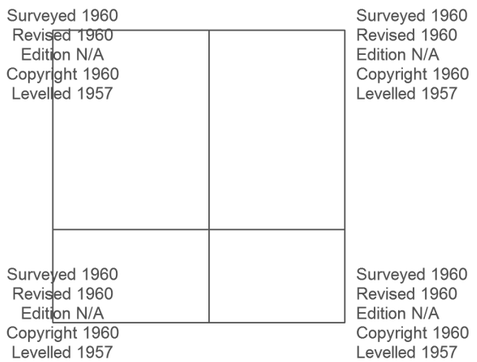

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1960**

Scale: 1:2,500

Printed at: 1:2,500

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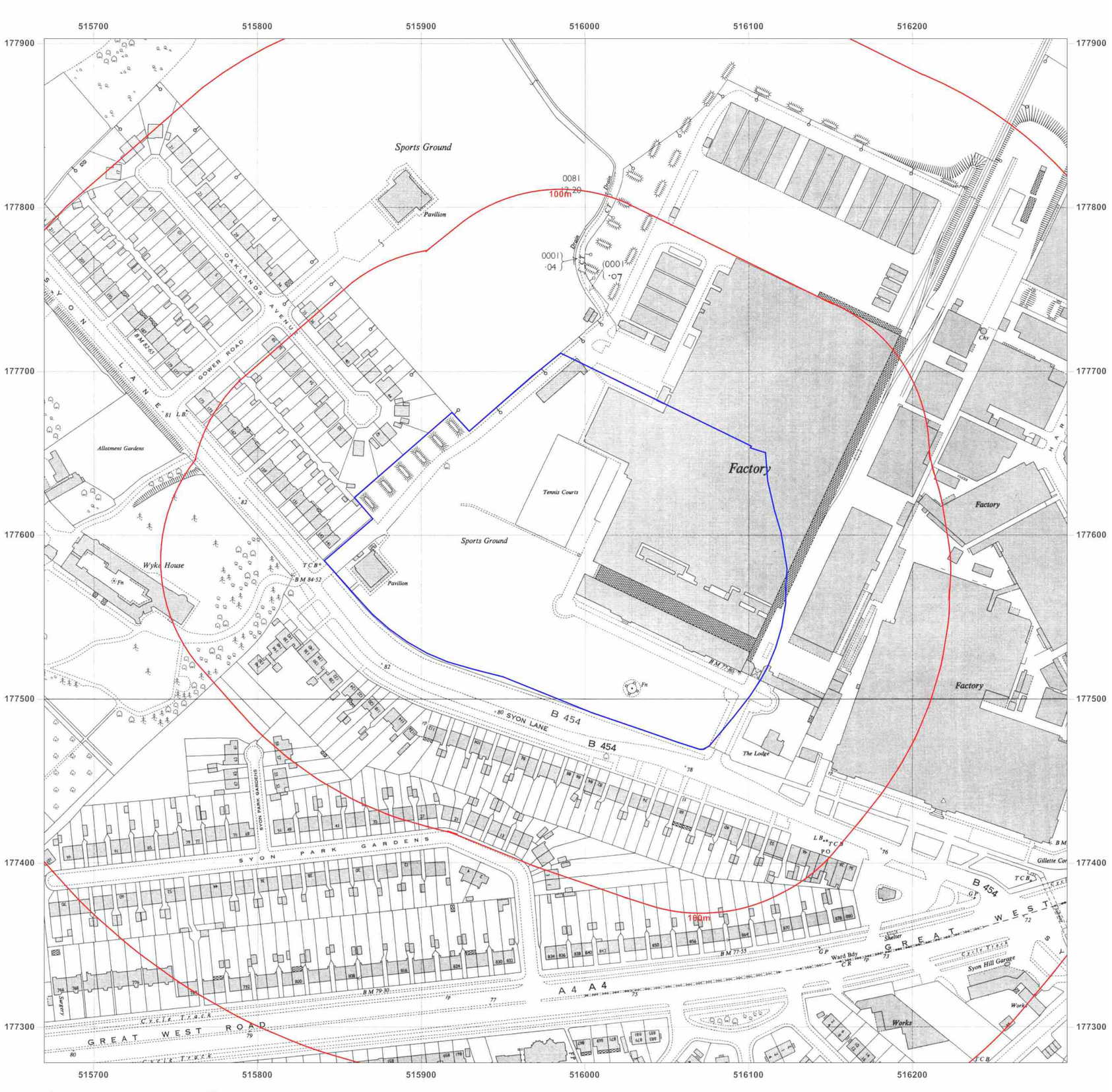

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1960-1961**

Scale: 1:2,500

Printed at: 1:2,500

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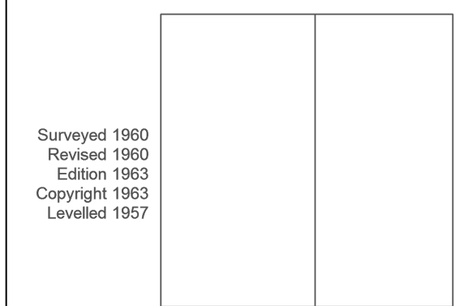

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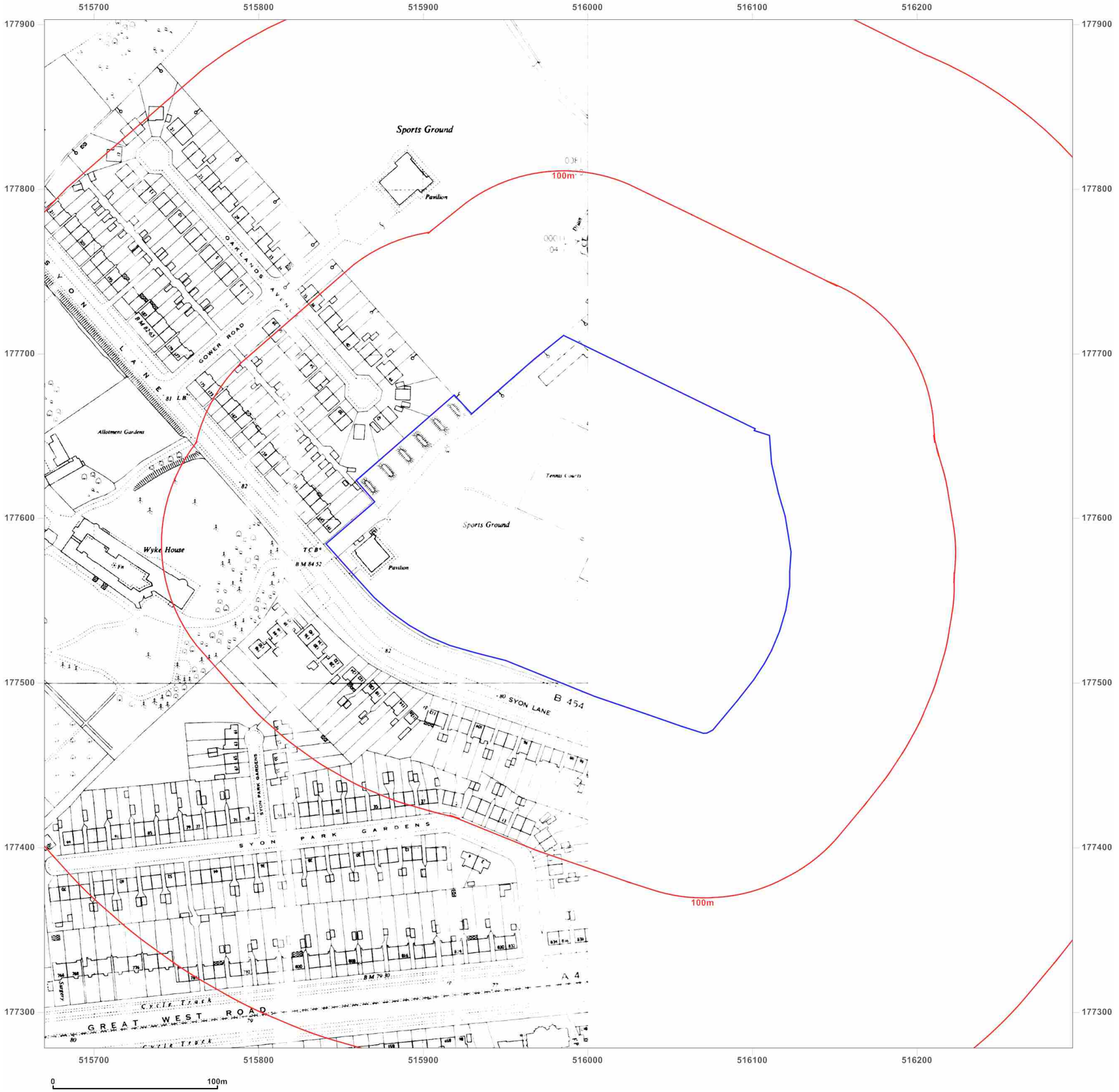

Site Details:

TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

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

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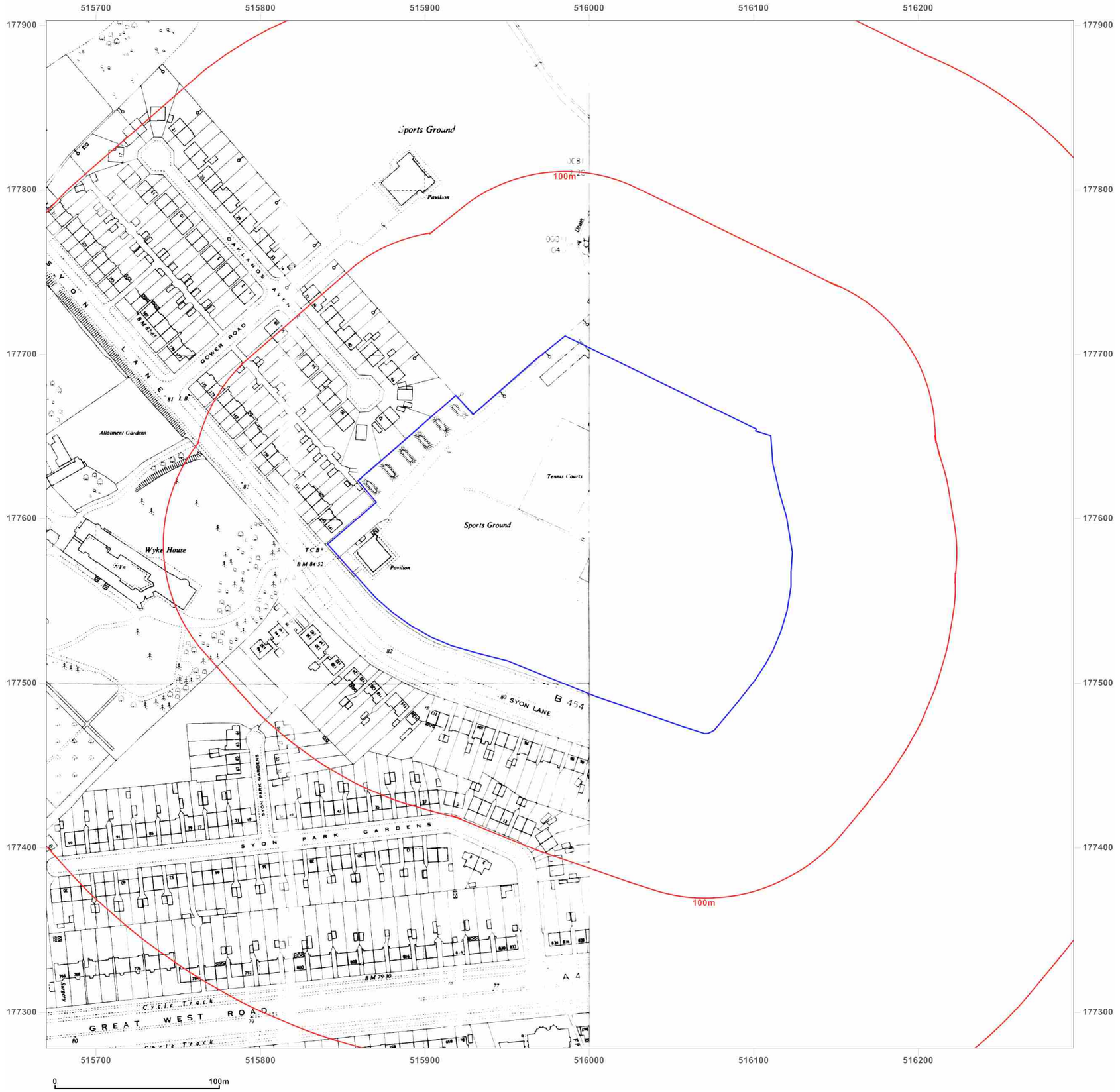

Site Details:

TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised 1965
Edition 1963
Copyright 1963
Levelled 1957

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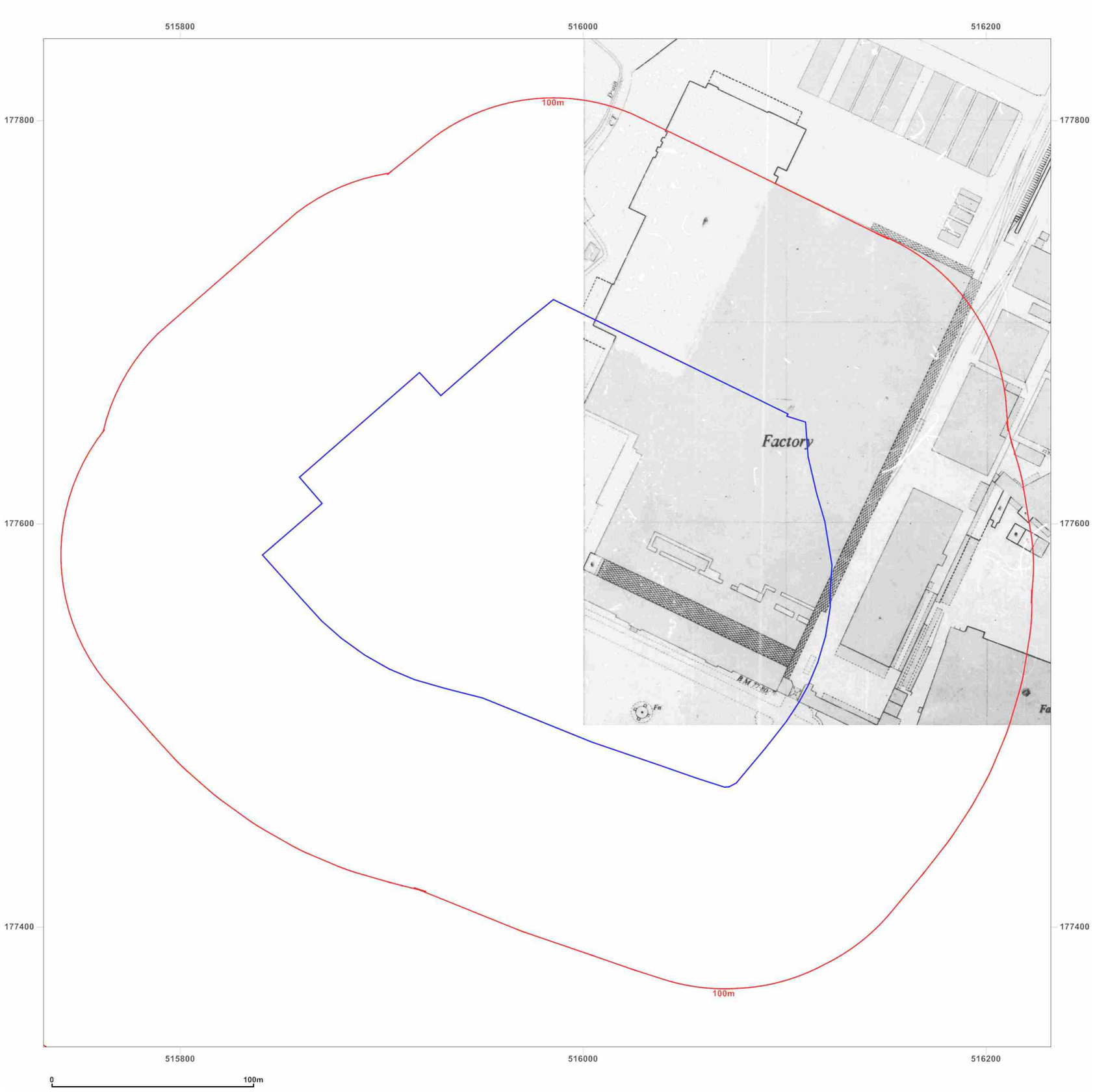

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Site Details:

TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1974**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1974
Levelled N/A

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1977-1979**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1977
Levelled N/A

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

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1979-1984**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1957 Revised 1983 Edition N/A Copyright 1983 Levelled 1957	
Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A	Surveyed 1957 Revised 1984 Edition N/A Copyright 1984 Levelled 1957

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1986-1991**

Scale: 1:1,250

Printed at: 1:2,000

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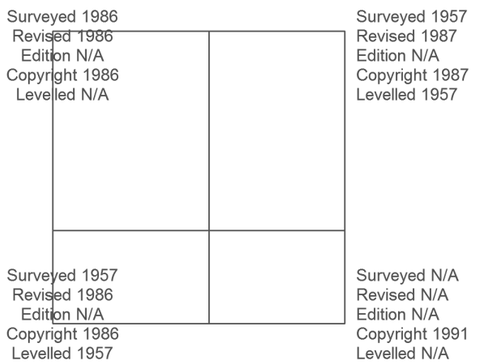

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1988-1992**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A Revised N/A Edition N/A Copyright 1991 Levelled N/A	Surveyed 1960 Revised 1988 Edition N/A Copyright 1988 Levelled 1957
Surveyed N/A Revised N/A Edition N/A Copyright 1991 Levelled N/A	Surveyed N/A Revised N/A Edition N/A Copyright 1992 Levelled N/A

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

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W E
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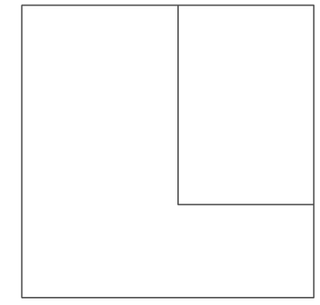

Surveyed N/A
Revised 1995
Edition N/A
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Levelled N/A

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1991-1995**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

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Edition N/A
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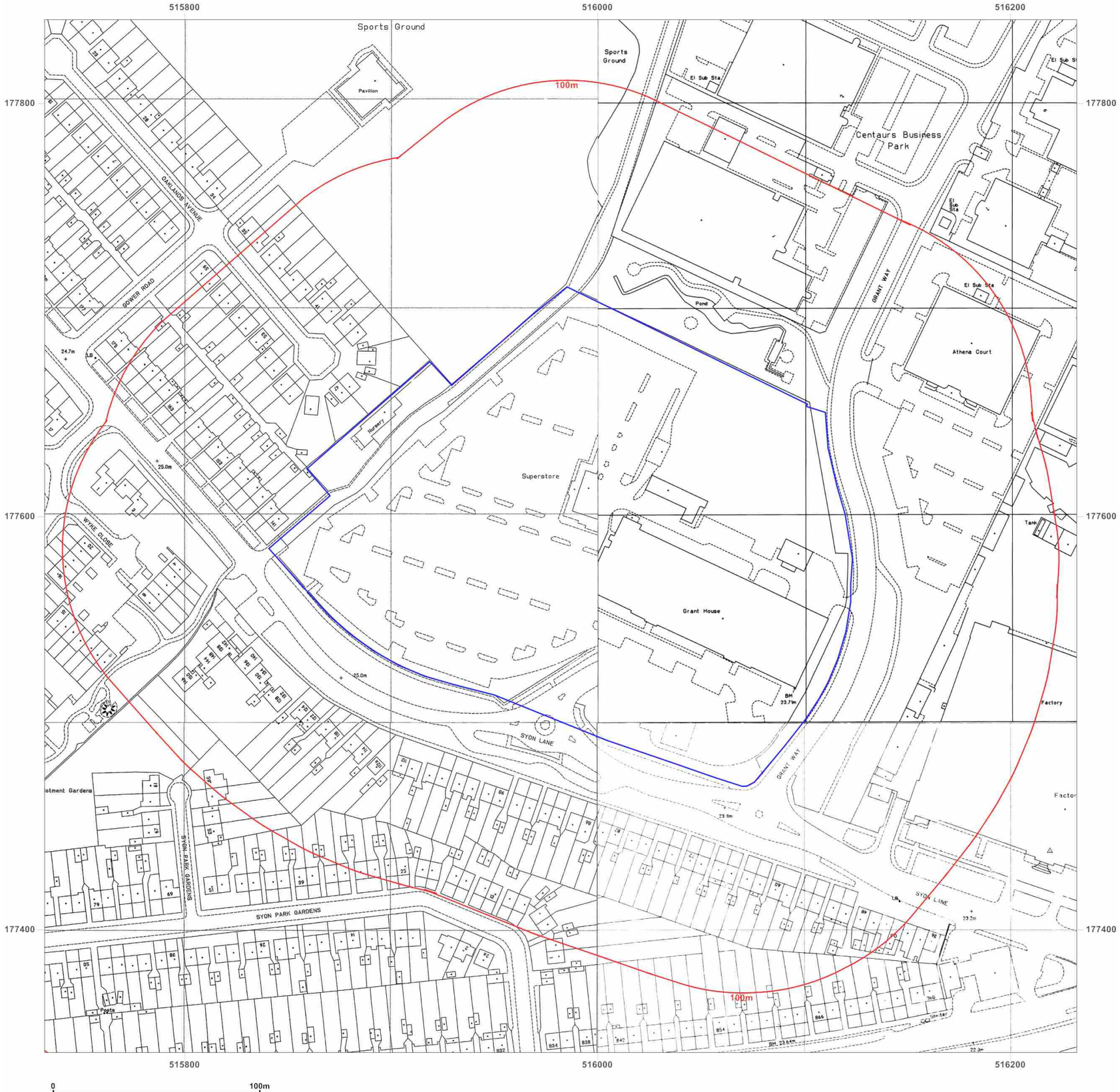

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Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1991-1995**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1995 Revised 1995 Edition N/A Copyright 1995 Levelled N/A		Surveyed 1991 Revised 1991 Edition N/A Copyright 1991 Levelled N/A
Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A		Surveyed N/A Revised N/A Edition N/A Copyright 1995 Levelled N/A

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

N
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Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

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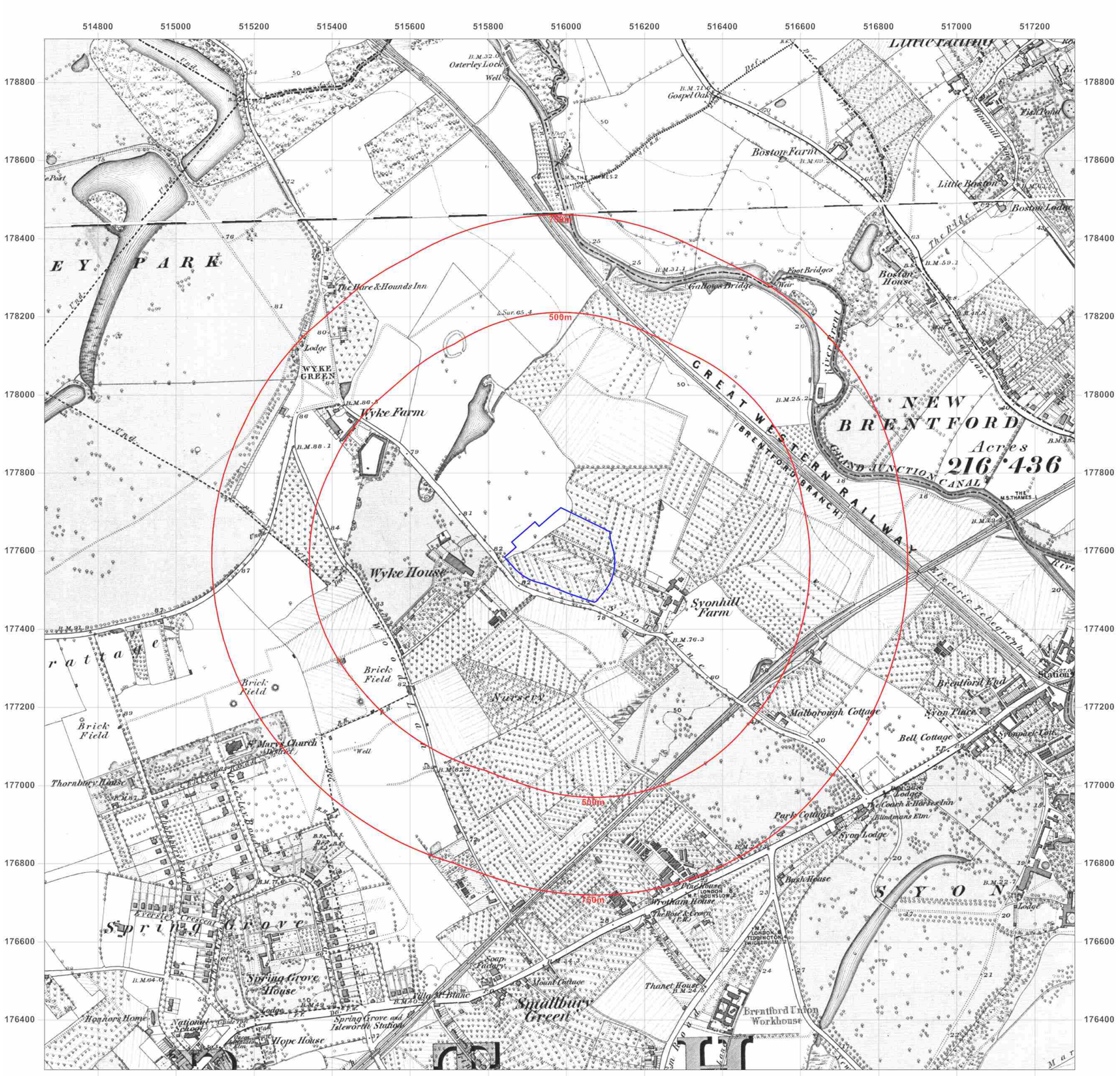

Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1865-1868**

Scale: 1:10,560

Printed at: 1:10,560

N
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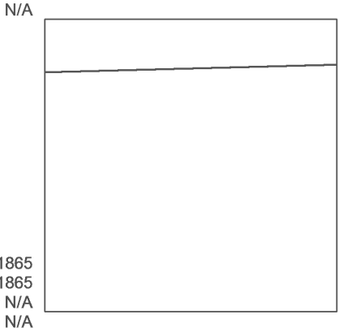
Surveyed 1865
Revised 1865
Edition 1868
Copyright N/A
Levelled N/A



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

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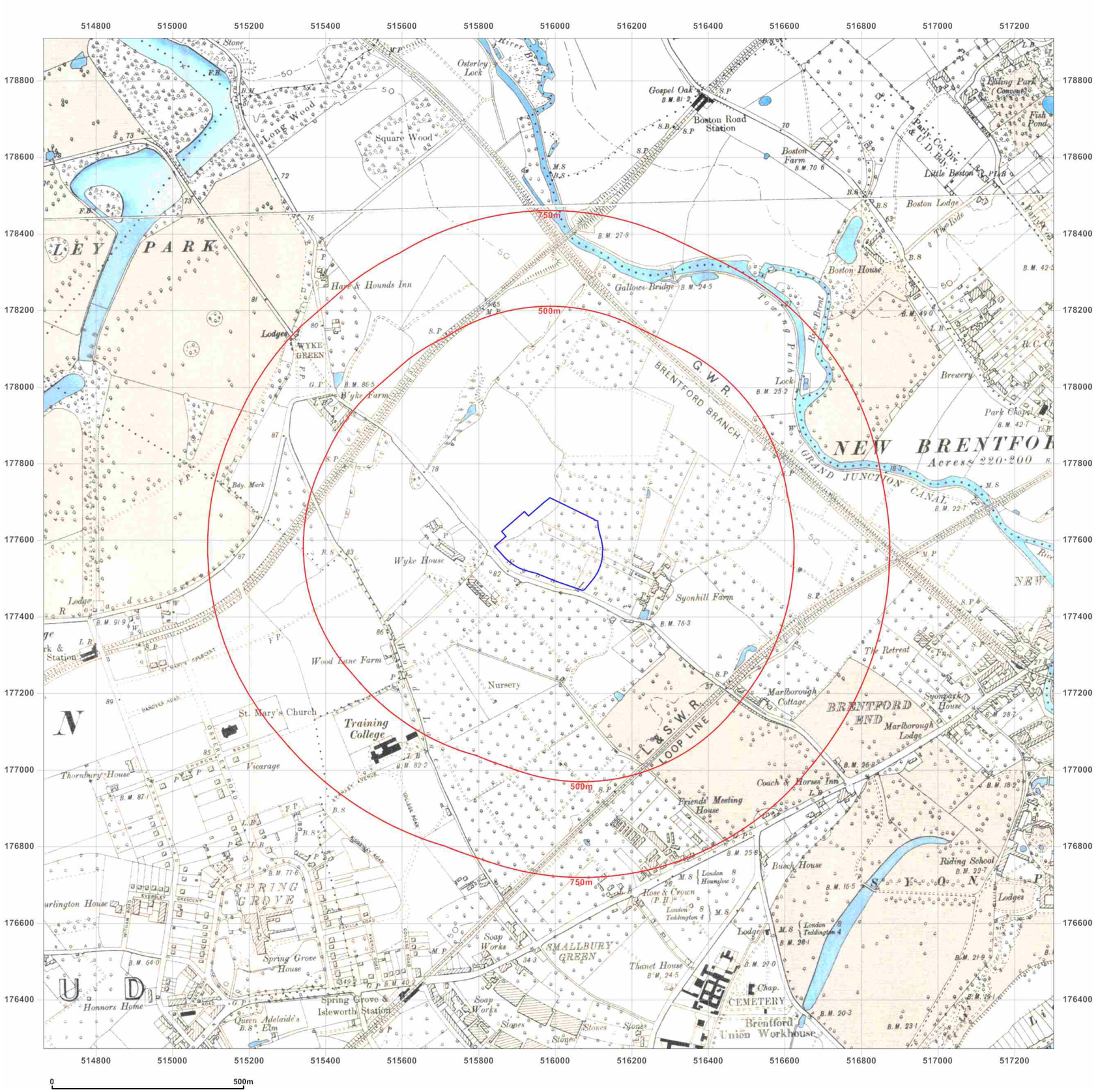

Waterman

Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1894**

Scale: 1:10,560

Printed at: 1:10,560

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

Surveyed 1865
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

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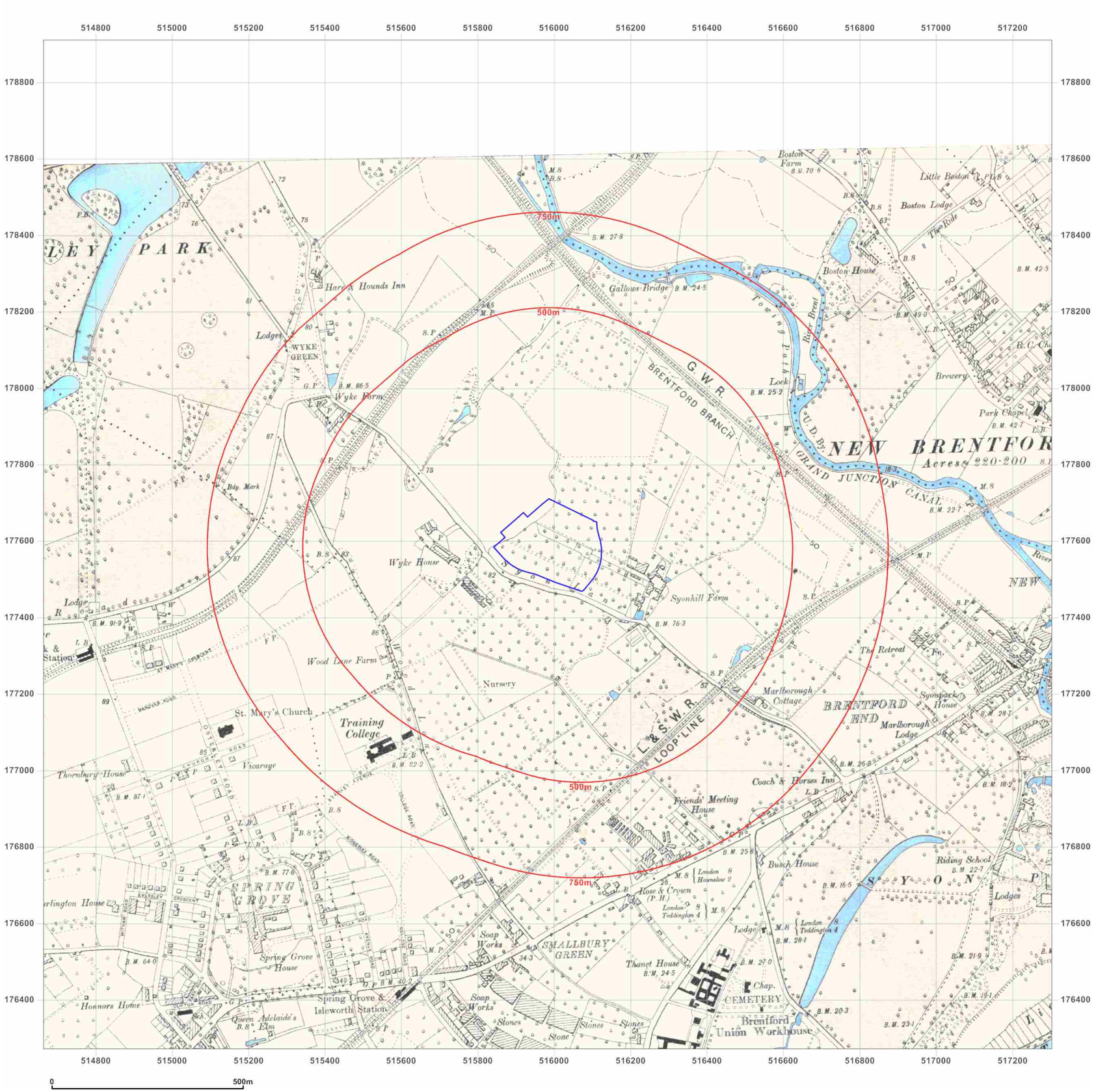

Site Details:

TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1894**

Scale: 1:10,560

Printed at: 1:10,560

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

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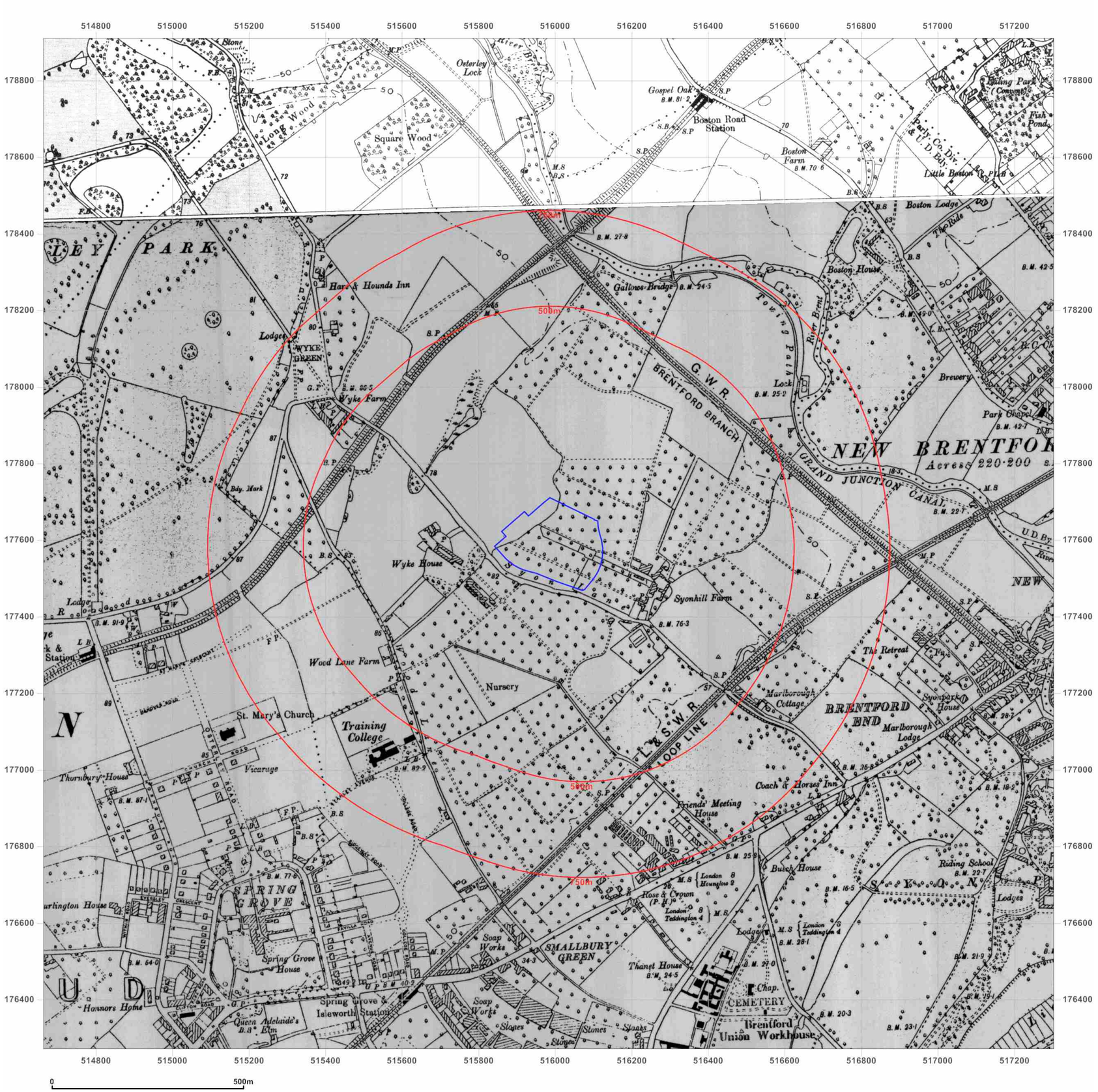

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Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1896**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1864
Revised 1896
Edition 1896
Copyright N/A
Levelled N/A

Surveyed 1865
Revised 1896
Edition 1896
Copyright N/A
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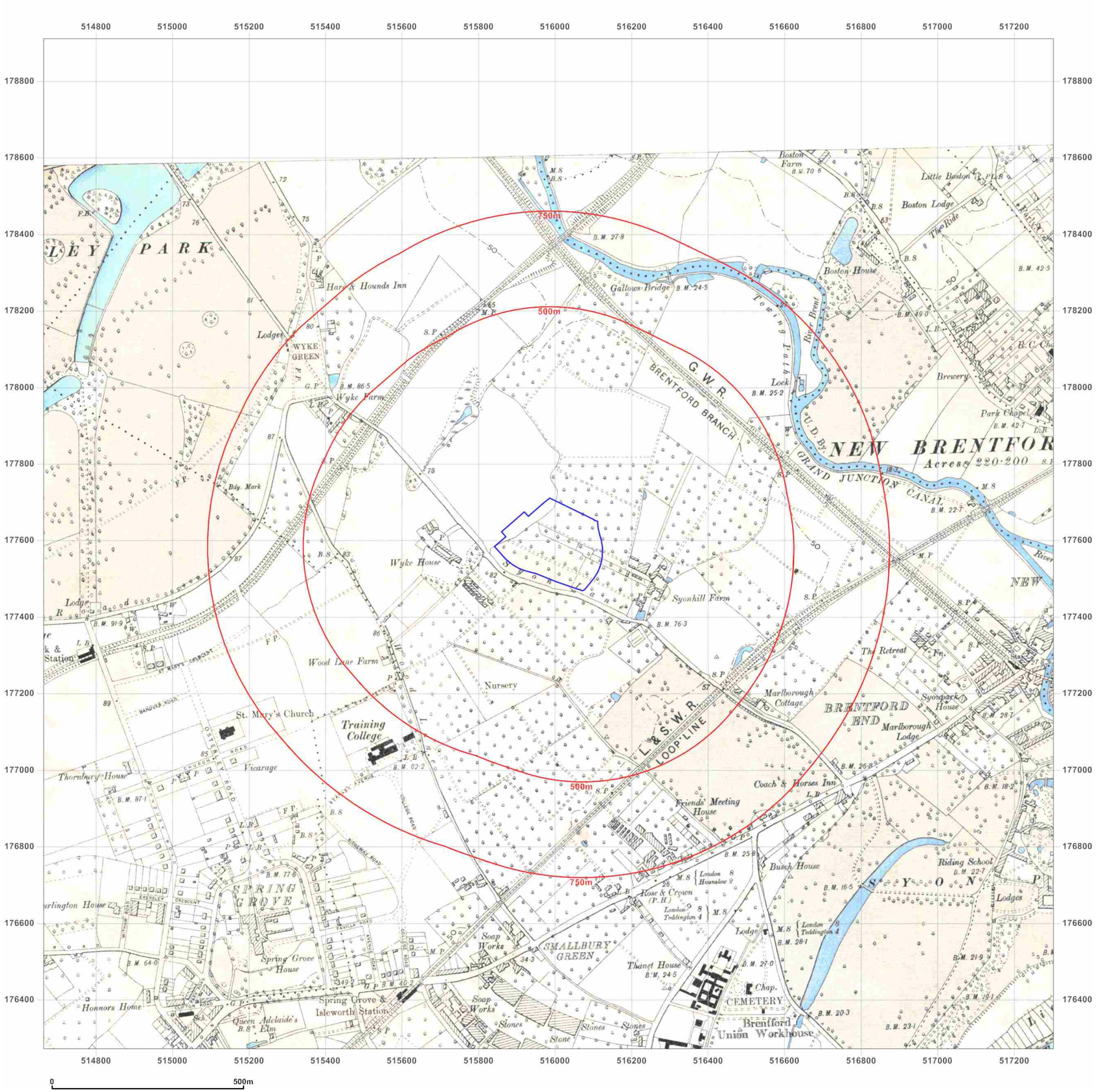

Site Details:

TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1898**

Scale: 1:10,560

Printed at: 1:10,560

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

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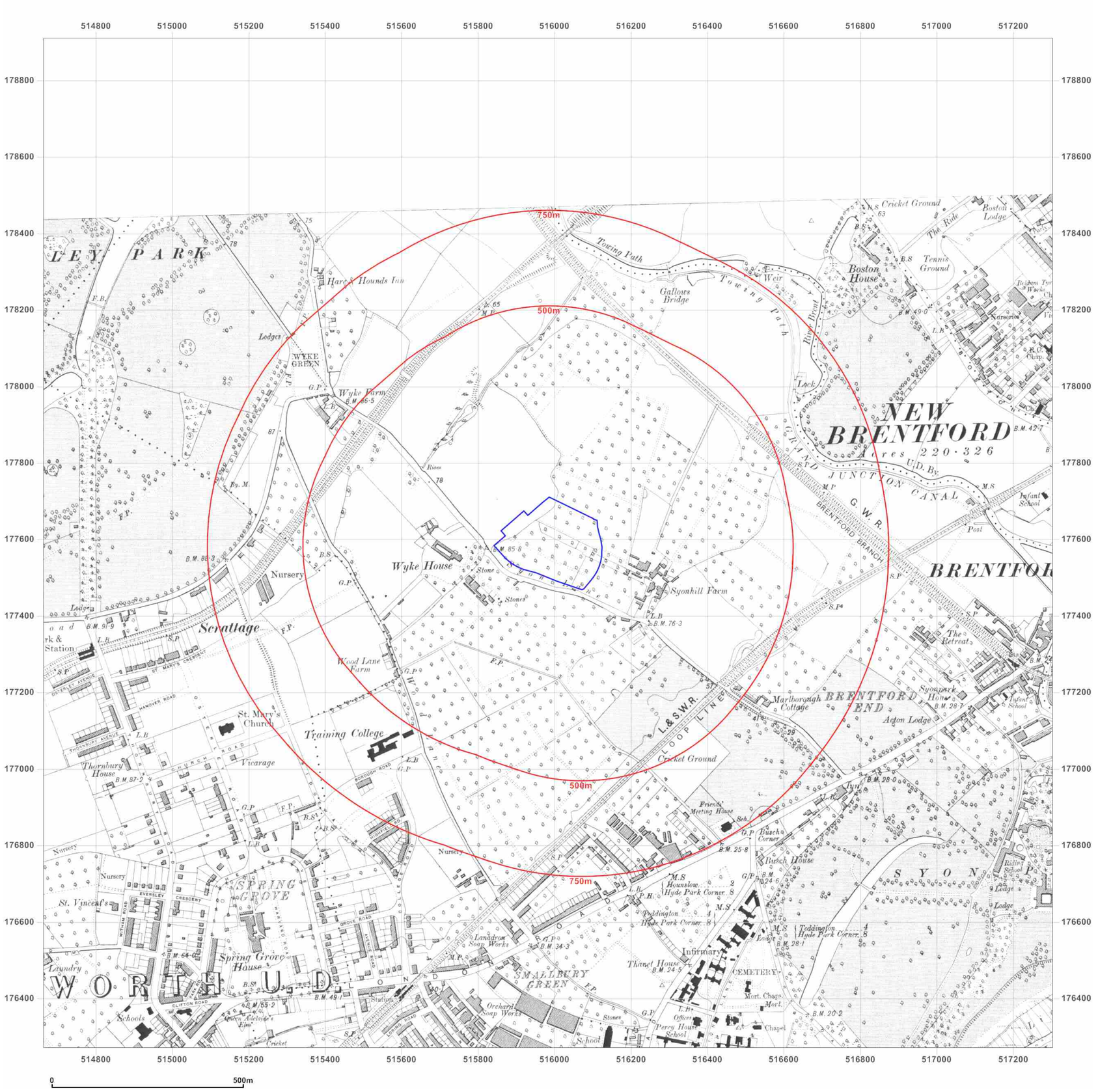

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1912**

Scale: 1:10,560

Printed at: 1:10,560

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

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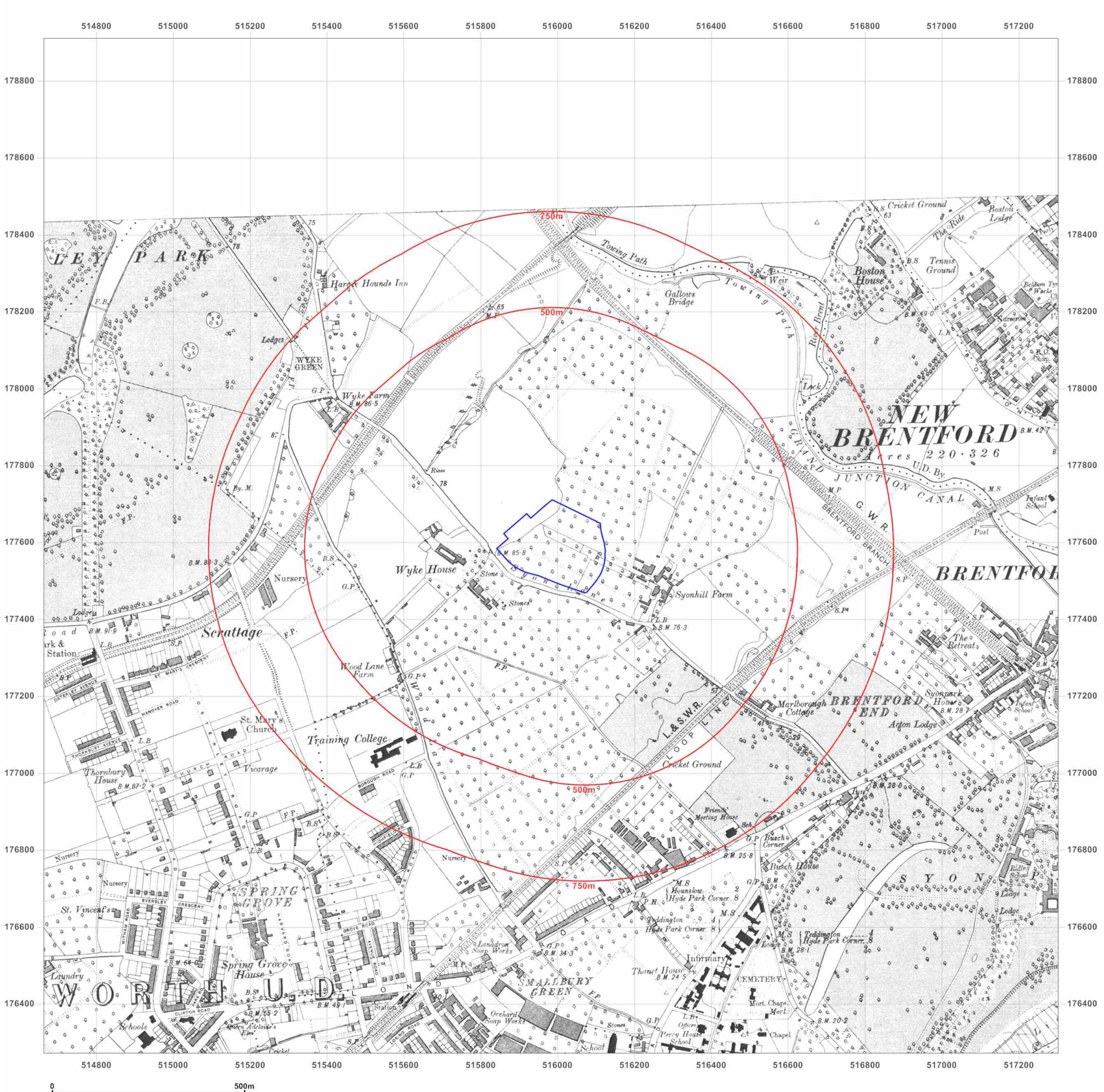

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1912**

Scale: 1:10,560

Printed at: 1:10,560

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

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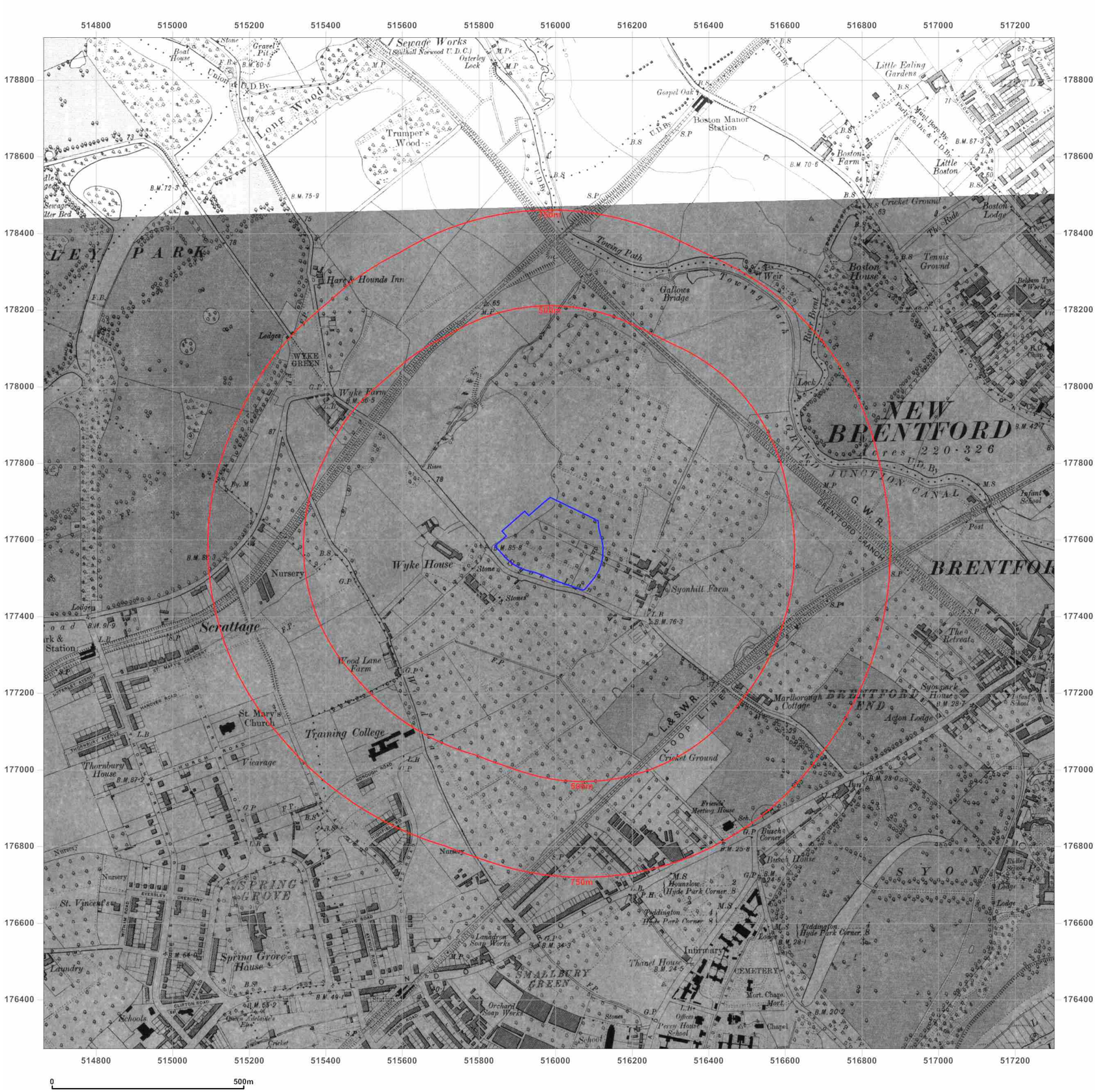

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Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1920**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1864
Revised 1913
Edition 1920
Copyright N/A
Levelled 1912

Surveyed 1866
Revised 1911
Edition 1920
Copyright N/A
Levelled 1911

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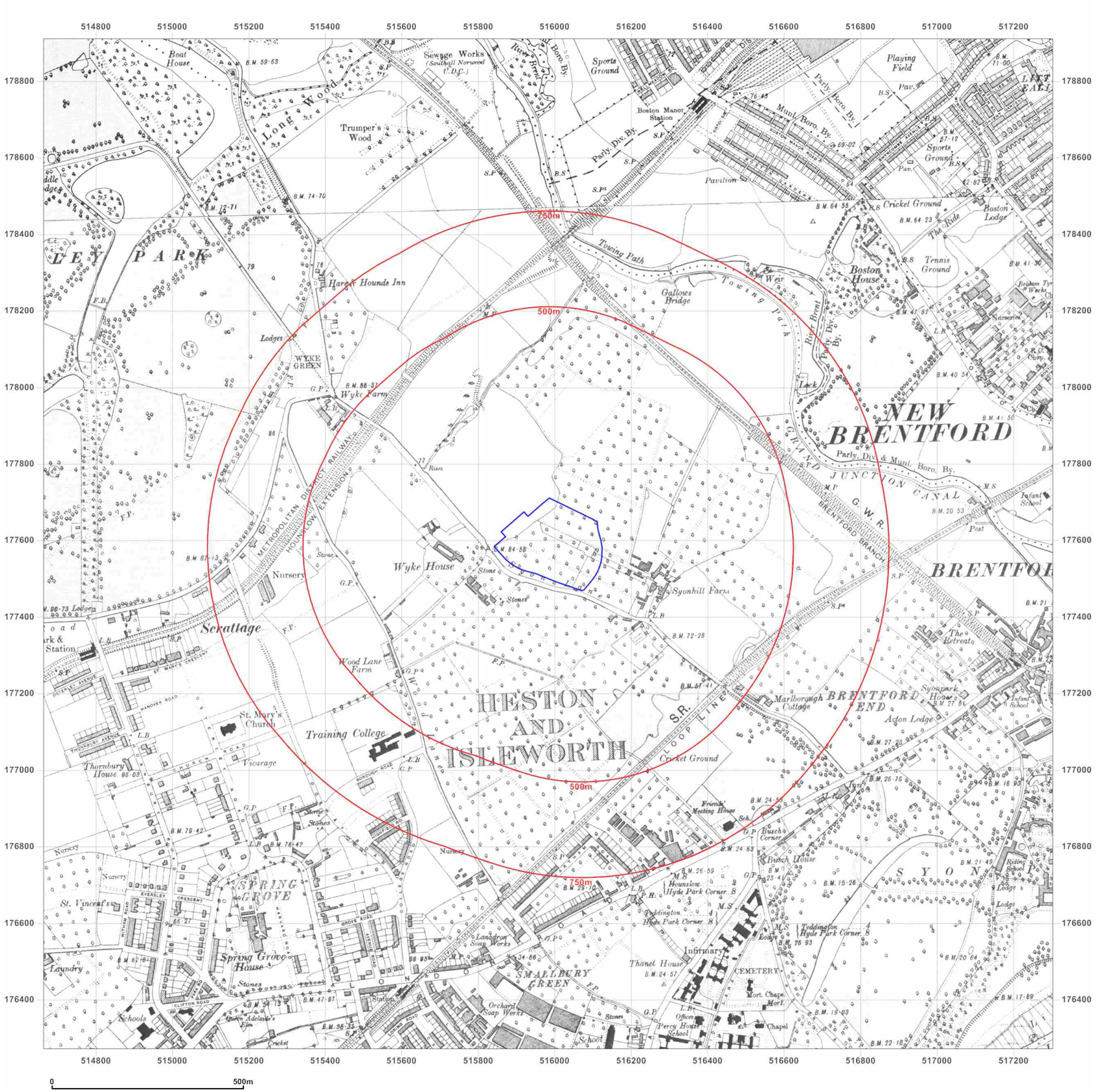

Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1933-1934**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1864
Revised 1934
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
Revised 1933
Edition N/A
Copyright N/A
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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: County Series

Map date: **1935-1938**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1864
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 17 October 2018

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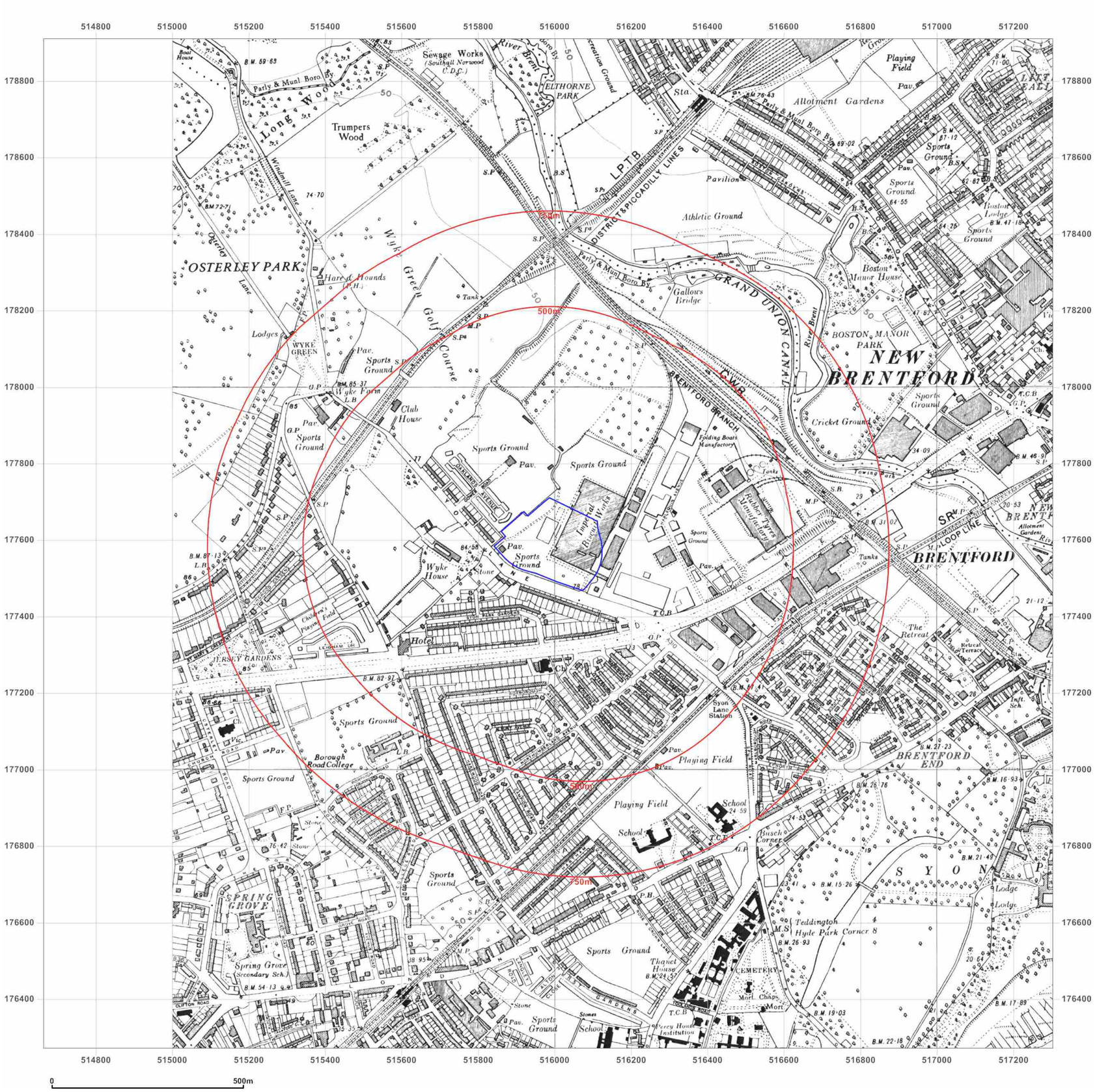
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177400
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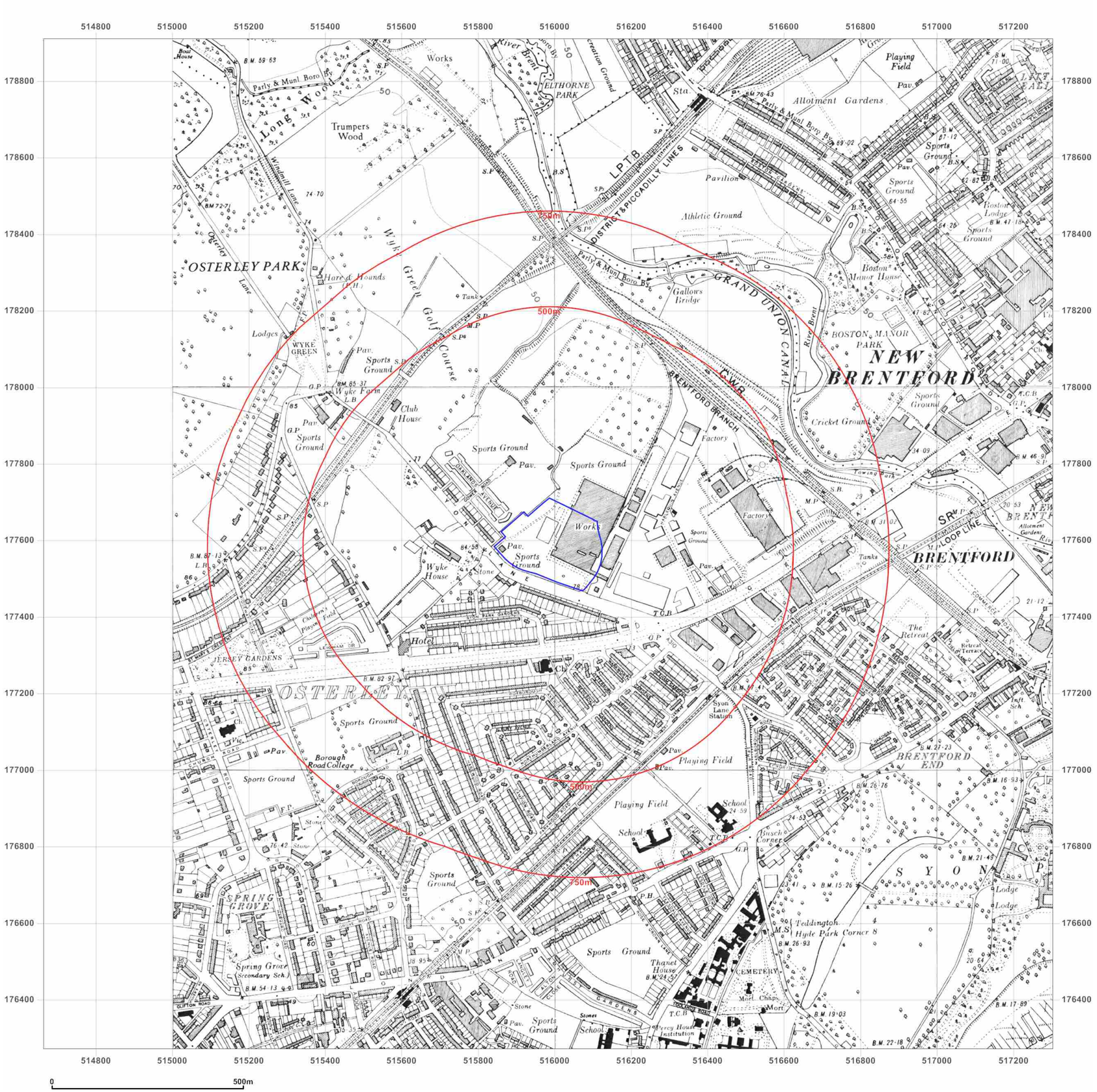
176800
176600
176400
OSTERLEY PARK
Long Wood
Trumpers Wood
Windmill Lane
Orchard Lane
Wyke Green Golf Course
Hare & Hounds (P.H.)
Lodges
WYKE GREEN
Wyke Farm
Wyke House
Club House
Sewage Works (Southall Norwood U.D.C.)
River Brent
ELTHORNE PARK
Recreation Ground
Sta.
Allotment Gardens
Playing Field
Sports Ground
Pavilion
Athletic Ground
LPTB
DISTRICT & PICCADILLY LINES
GRAND UNION CANAL
Gallows Bridge
Bostom Manor House
BOSTON MANOR PARK
NEW BRENTFORD
Cricket Ground
Folding Boats Manufactory
Rubber Tyres Manufactory
Tanks
BRENTFORD BRANCH
G.W.R.
Engine Shed & Repair Works
BRENTFORD
SR LOOP LINE
The Retreat
Retreat Terrace
Syon Lane Station
BRENTFORD END
Borough Road College
Playing Field
School
Busch's Corner
S Y O N P
Teddington Hyde Park Corner 8
CEMETERY
Mort. Chaps.
Thanet House
Jersey House Institution
SPRING GROVE
Spring Grove Secondary Sch.
Hotel
JERSEY GARDENS
Wyke Green Infant Sch.
Infant. Sch.
Allotment Gardens
Retreat Terrace
Boston Lodge
Lodge
Tank
Stone
Stones
Pav.
Sports Ground
Playing Field
Tanks
Folding Boats Manufactory
Rubber Tyres Manufactory
Engine Shed & Repair Works
Allotment Gardens
Retreat Terrace
Boston Lodge
Lodge
Infant. Sch.
Wyke Green Infant Sch.
Mort. Chaps.
Mort
Stones



Site Details:

TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: Provisional

Map date: **1948**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed N/A
Revised 1948
Edition N/A
Copyright N/A
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waterman

Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: Provisional

Map date: **1960-1961**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed N/A
Revised 1959
Edition N/A
Copyright 1960
Levelled N/A

Surveyed 1940
Revised 1961
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: Provisional

Map date: **1966**

Scale: 1:10,560

Printed at: 1:10,560

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

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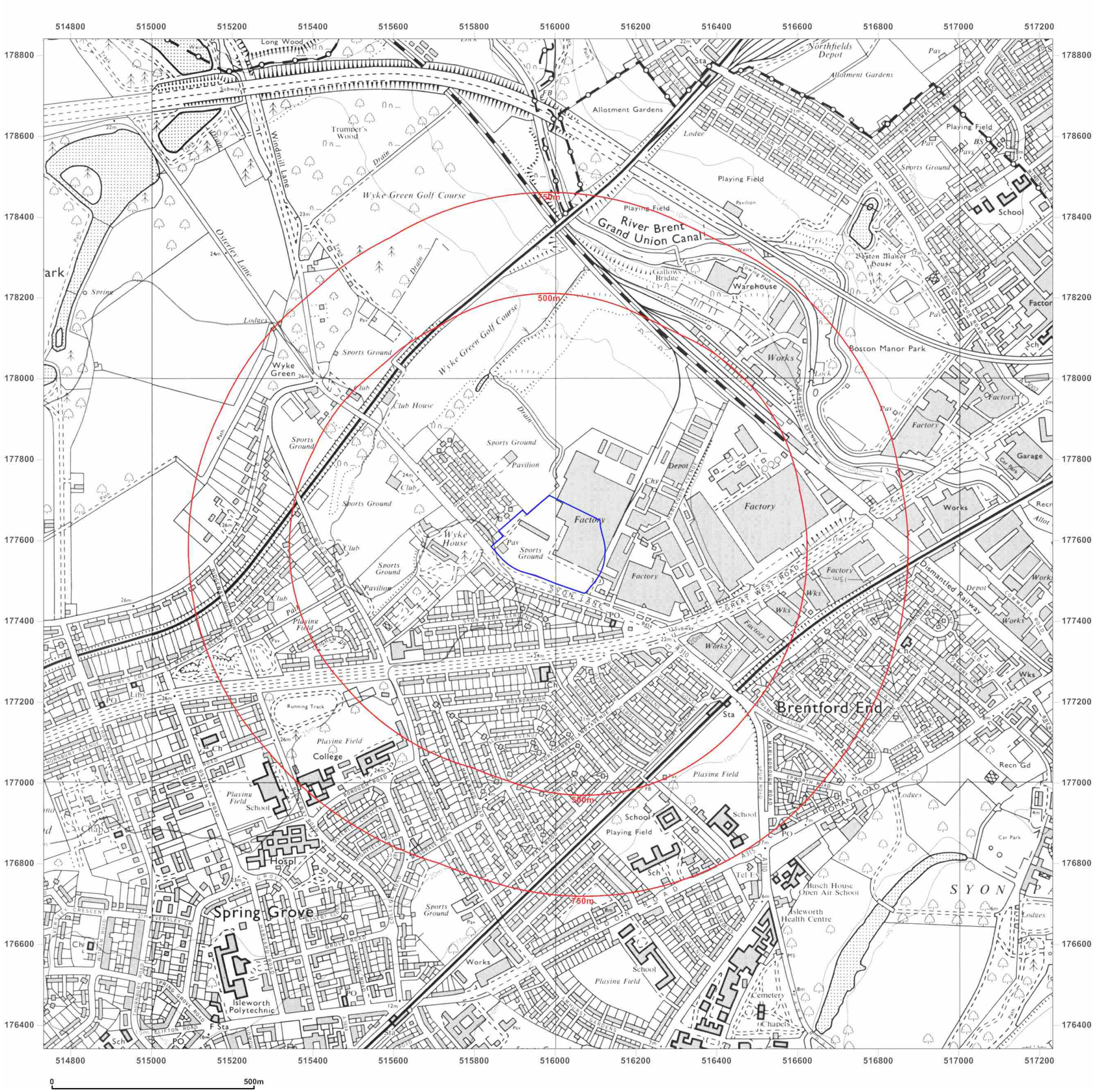

Surveyed 1974
Revised 1974
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1973
Revised 1974
Edition N/A
Copyright N/A
Levelled N/A

Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1974**

Scale: 1:10,000

Printed at: 1:10,000

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Production date: 17 October 2018

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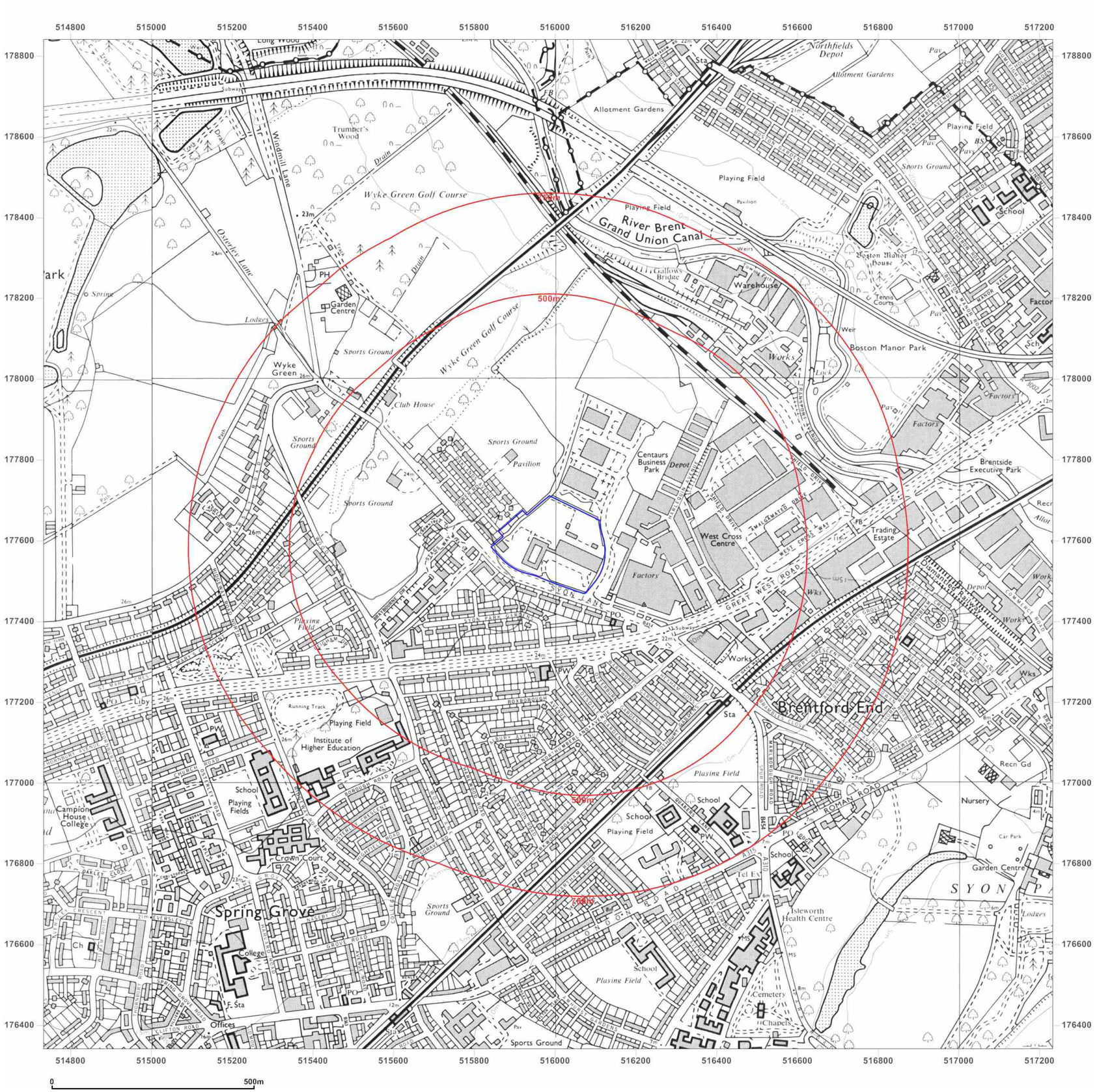

Site Details:

TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **1985-1987**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1984
Revised 1985
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1982
Revised 1987
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 17 October 2018

Map legend available at:
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Site Details:

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Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

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2002

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Map legend available at:
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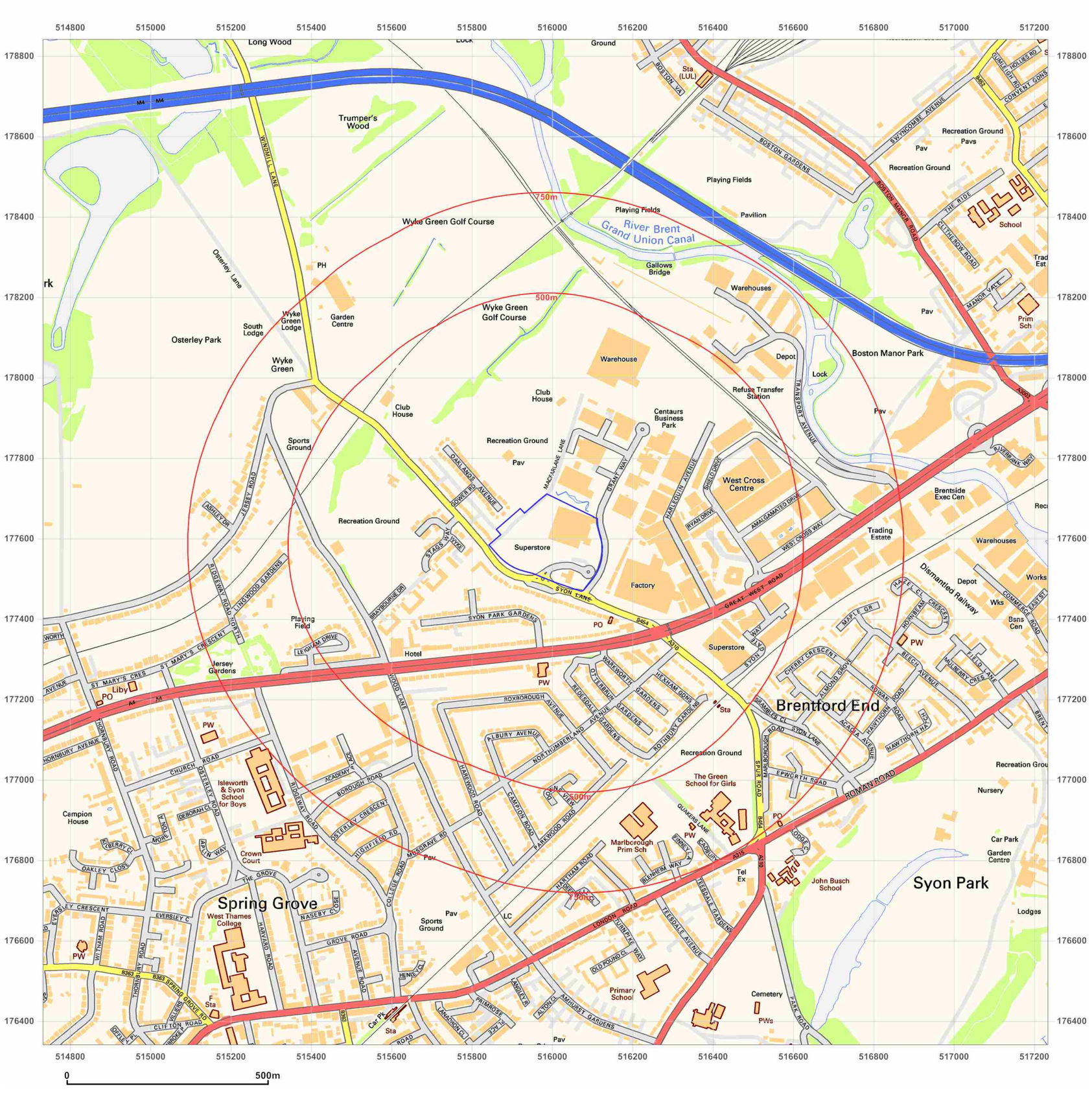

Site Details:

TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

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Production date: 17 October 2018

Map legend available at:
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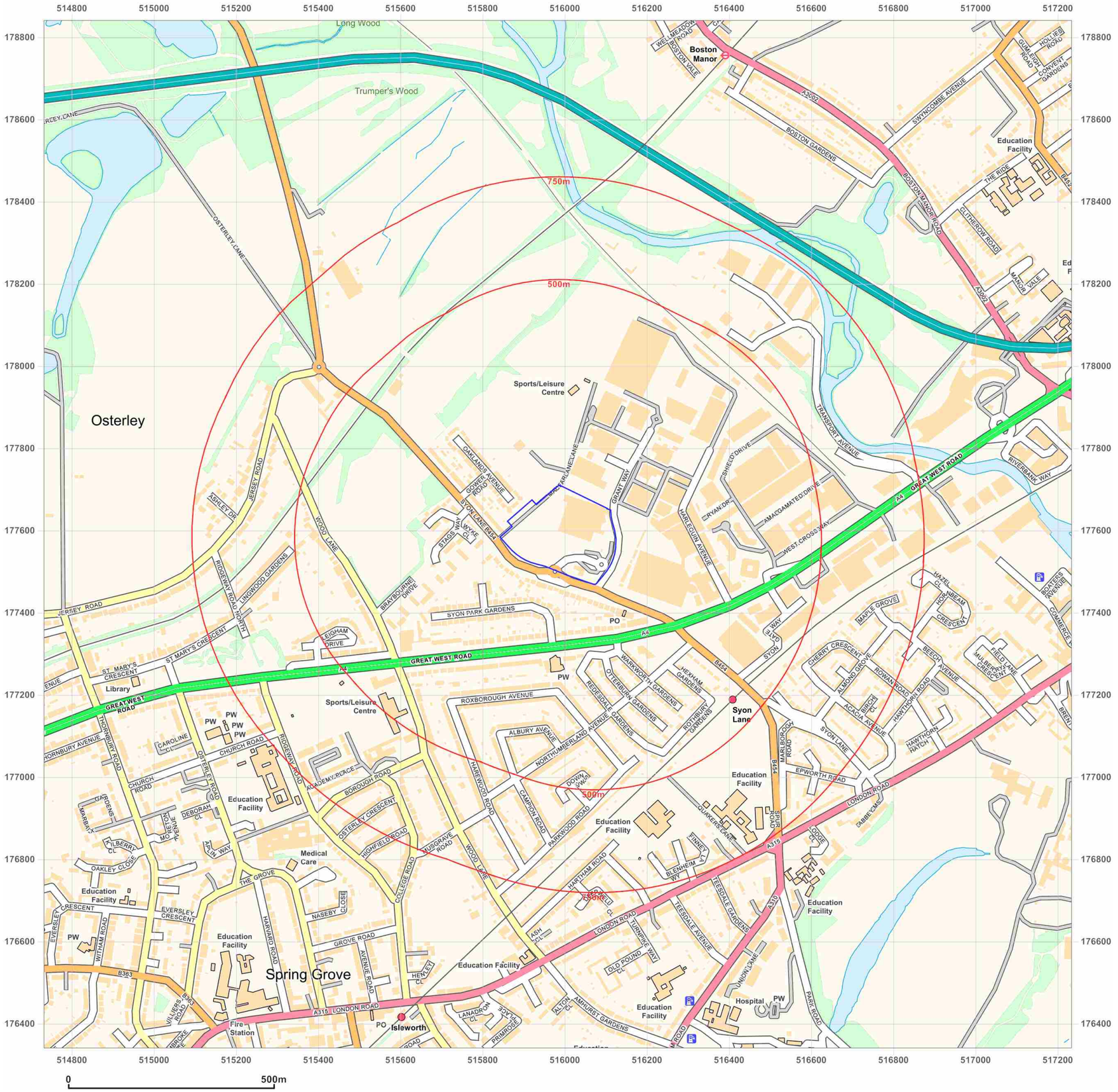

Site Details:

TESCO STORES LTD, TESCO SUPERSTORE, SYON LANE, ISLEWORTH, TW7 5NZ

Client Ref: 93729
Report Ref: WTM1-5538641
Grid Ref: 515982, 177590

Map Name: National Grid
Map date: **2014**
Scale: 1:10,000
Printed at: 1:10,000

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2014

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Production date: 17 October 2018

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Housing, Planning and Communities

Land Quality Team

London Borough of Hounslow,
Hounslow House, 7 Bath Road, TW3 3EB

John Coates

Waterman I&E
Pickfords Wharf
Clink Street
SE1 9DG

Your contact is: Land Quality Team
Direct Line: 020 8583 6794/ 5062
Fax: 020 8583 5350
E-Mail: landquality@hounslow.gov.uk
Our ref: **EIR1252**

Your ref: **WIE15238**

Date: 01 August 2019

Dear Jon Coates,

RE: ENVIRONMENTAL INFORMATION SEARCH

Tesco, Osterley Park, Syon Lane, Isleworth, TW7 5NZ,

Thank you for your recent request for environmental information. The attached report is a complete search of our digital database for any records held on or within 250 metres of the site named above. This information includes:

- Industrial history from 8 epochs of maps and land use surveys, ranging from 1865 to 1971.
- Details from our public register of known former landfill sites.
- Details from our public register of Contaminated Land.
- A list of publicly accessible site reports held at the Civic Centre.

Our data collection is ongoing so there may be some cases where we currently hold little or no information about a site.

The information provided has been obtained from records held by the Council, which includes records based on information provided to the Council. The information is believed to be correct but no responsibility is accepted for the accuracy of the information provided. Some information has been extracted from historical maps and the accuracy of the boundaries cannot be assured.

Our charge for providing this information is £136.00 This charge covers our standard search fee and VAT. We understand that you paid this charge when you requested the report.

We trust the enclosed information satisfies your request.

Yours sincerely

Ann Zhang

On behalf of the Land Quality Team
London Borough of Hounslow

Report checked by:…A. Devine…… Date:……01/08/19……

Additional Sources of Information
PLEASE READ.

London Borough of Hounslow Pollution Control Team

The Pollution Control Team of the London Borough of Hounslow holds the following information:

- Details of Part B prescribed processes
- Nuisance issues (including noise, odour and dust problems/complaints)

Any requests for information of this nature have been forwarded to the Pollution Control Team. A member of the team will address your questions and respond to you directly. If you would like to contact an officer directly, please do so using the following:

London Borough of Hounslow Pollution Control Team
Hounslow House, 7 Bath Road,
Hounslow, TW3 3EB

Tel: 020 8583 2000
Email: pollution@hounslow.gov.uk

London Borough of Hounslow Development Control Team

The London Borough of Hounslow's Development Control Team maintain records for sites in the borough developed under the Town and Country Planning Act 1990. Any requests for information of this nature have been forwarded to the Development Control Team; a member of that team will address your questions and respond to you directly. If you would like to contact the Development Control Team, please do so using the following:

London Borough of Hounslow
Development Control Team
Hounslow House, 7 Bath Road,
Hounslow, TW3 3EB

Tel: 020 8583 2000
Email: planningcomments@hounslow.gov.uk

London Borough of Hounslow Building Control Department

The Building Control Department maintain records for sites inspected under the Building Regulations 2000 (as amended). Any requests for information of this nature have been forwarded to the Building Control Department. A member of the team will address your questions and respond to you directly. If you would like to contact an officer directly, please do so using the following:

London Borough of Hounslow
Building Control Department
Hounslow House, 7 Bath Road,
Hounslow, TW3 3EB

Tel: 020 8583 2000
Email: buildingcontrol@hounslow.gov.uk

Environment Agency Information

The following information is held by the Environment Agency:

- Pollution Incidents and related prosecutions
- Groundwater Abstractions
- Surface Water Courses

Requests for this information should be directed to the Environment Agency as the appropriate authority for this information. They can be contacted using the following:

External Relations Team
Apollo Court
2 Bishop's Square Business Park
St Albans Road West
Hatfield
Herts. AL10 9EX

Tel: 0370 8506 506

British Geological Survey

The British Geological Survey maintain geological records for the United Kingdom and can provide services and advise on many aspects of geoscience. Some of their services include:

- Information on natural ground stability
- Geology Maps
- Information Radon protective measures
- Geological Assessments

They can be contacted using the following:

British Geological Survey
Keyworth
Nottingham
NG12 5GG

Tel: 0115 936 3143
Fax: 0115 936 3276
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk

Radon Enquiries

All enquiries regarding radon should be directed to the Health Protection Agency (Centre for Radiation, Chemical and Environmental Hazards). They can be contacted using the following:

Public Health England
Radiation Protection Division
Chiltern
Didcott
Oxon OX11 0RQ

Tel: 01235 831 600
Fax: 01235 833 891

Archaeological Issues

All enquiries regarding archaeological issues should be directed to English Heritage. They can be contacted using the following

English Heritage
Customer Services Department
PO Box 569
Swindon SN2 2YP

Tel: 0870 333 1181
customers@english-heritage.org.uk

London Borough of Hounslow

GIS SEARCH
DATE: 30 July 2019 TIME: 12:06

Site Coordinates (British National Grid): 515981, 177606
Site Area: 48921.00 sq.metres
Buffer Search Type: Polygon buffer search
Buffer Search Radius: 50 and 250 metres
Selection Summary: A total of 276 features were selected on 9 out of 13 target layers.

Site Overview Map

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100019263 2015. All maps oriented north

0 metres 200

Legend
Site Boundary:
50m Search Buffer:
Optional Buffers:

Statutory Contaminated Land

To date, the London Borough of Hounslow has not been required to determine any land within its administrative boundary as Contaminated Land as defined under Part 2A of the Environmental Protection Act 1990.

Status under Part 2A of the Environmental Protection Act 1990

The site named above does not currently appear in our priority group of sites highlighted for further investigation under Part 2A of the EPA 1990 due to its lower risk end use. Should the land-use on this site change or, if evidence of contamination becomes available, then its status within our overall prioritisation will be reviewed.

Former landfill sites

Hounslow Council has undertaken substantial work in the past to identify closed landfill sites. In the early 1990s a Landfill Public Register was produced by the then Landfill Team. The register is supported by supplementary information collected from historical land use surveys and intrusive investigations. Wherever available, our latest monitoring data and summaries of any remedial works are included. Our public register documents former landfill sites that are no longer in operation; there are no licensed landfill sites operating in the borough at the present time.

No records were selected on this layer.

Industrial History

As part of our statutory duties in relation to Part 2A of the Environmental Protection Act 1990, we have conducted a detailed review of historical maps and land use surveys. This research has identified former industrial land uses on, and adjacent to the site that have the potential to cause contamination. These former uses are summarised below:

Number of features selected: 123 within 250 metres

Industrial History 1865

Source: Ordnance Survey County Series Maps, 1st edition. Original map scale: 1:2500

Number of features selected: 3

Map overview of selected features

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0 metres 200

Industrial History 1865
Regions -

ID	Description	Survey Date	Comments
On site			
None			
Off site - Within 50m			
None			

ID	Description	Survey Date	Comments
Off site - Within 50 - 100m			
None			
Off site - Within 100 - 250m			
0311	Land Formerly Covered by Water	1865	Pond
0312	Land Formerly Covered by Water	1865	Pond
0314	Land Formerly Covered by Water	1865	Pond

Industrial History 1894

Source: Ordnance Survey County Series Maps, 2nd edition. Original map scale: 1:2500

No records were selected on this layer.

Industrial History 1913

Source: Ordnance Survey County Series Maps, 3rd edition. Original map scale: 1:2500

Number of features selected: 1 within 250 metres

Map overview of selected features

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0 metres 200

Industrial History 1913
Regions -

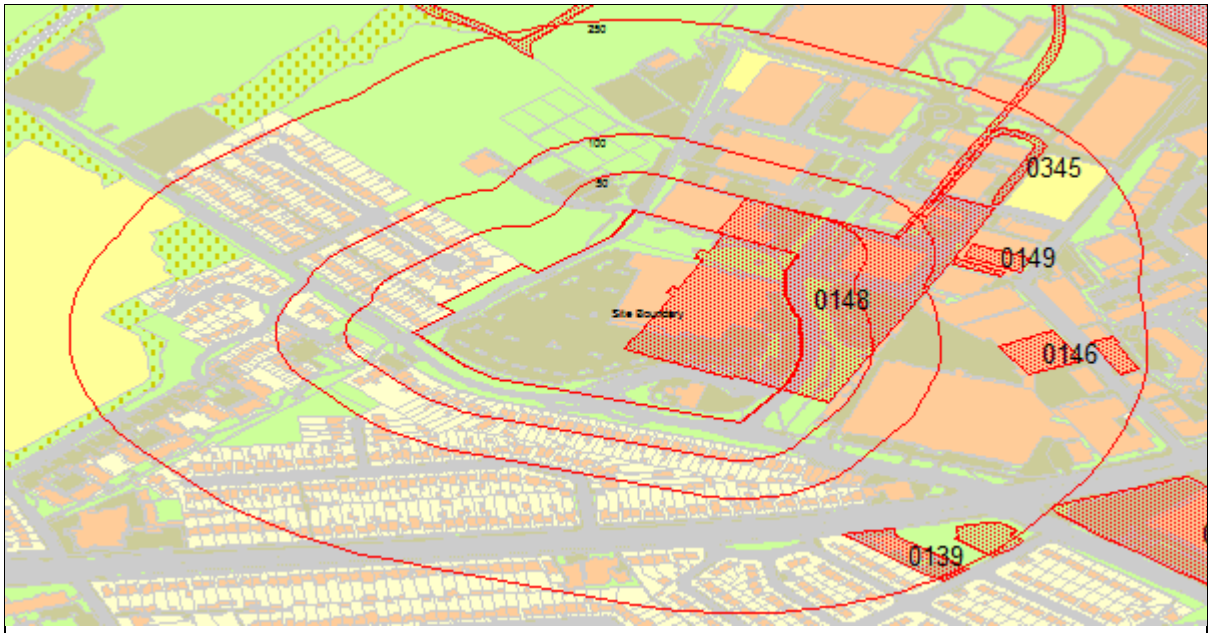
ID	Description	Survey Date	Comments
On site			
None			
Off site - Within 50m			
None			
Off site - Within 50 - 100m			
None			
Off site - Within 100 - 250m			
0356	Land formerly covered by water	1913	Pond

Industrial History 1934

Source: Ordnance Survey County Series Maps, 4th edition. Original map scale: 1:2500

Number of features selected: 11 within 250 metres

Map overview of selected features



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0 metres 200

Industrial History 1934
Regions -

ID	Description	Survey Date	Comments
On site			
0148	Industrial Area	1934	Imperial Biscuit Works
Off site - Within 50m			
None			
Off site - Within 50 - 100m			
0024	Railway Land	1934	No data
Off site - Within 100 - 250m			
0139	Industrial Area	1934	Solder Manufactory

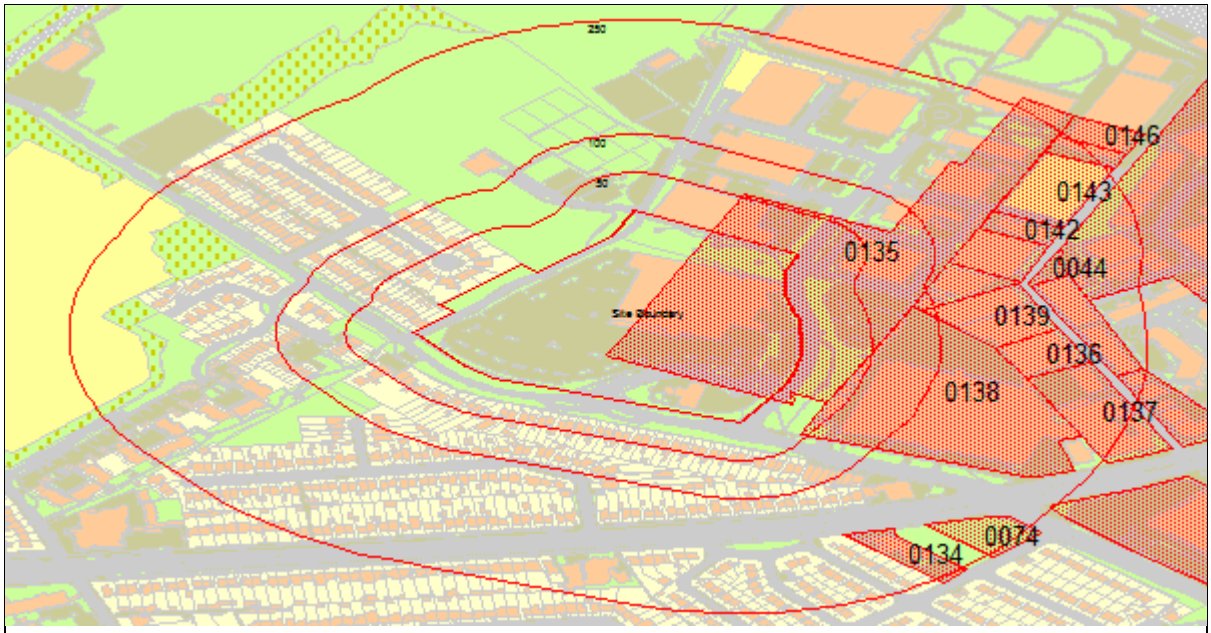
ID	Description	Survey Date	Comments
0140	Industrial Area	1934	Isleworth Winery
0146	Industrial Area	1934	Paper Manufactory
0147	Industrial Area	1934	Engineering Works
0149	Industrial Area	1934	Laundry
0150	Industrial Area	1934	Tanks, Contents not specified
0281	Garages	1934	Syon Hill Garage
0345	Other use of interest	1934	Made ground,
0346	Other use of interest	1934	Made Ground

Industrial History 1947

Source: Council Held Land Use Surveys. Original map scale: 1:2500

Number of features selected: 18 within 250 metres

Map overview of selected features



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0 metres 200

Industrial History 1947
Regions -

ID	Description	Survey Date	Comments
On site			
0135	Industrial Area	1947	IMPERIAL BISCUIT WORKS
Off site - Within 50m			
0138	Industrial Area	1947	GILLETTES
Off site - Within 50 - 100m			
0139	Industrial Area	1947	GERRARD INDUSTRIES
0140	Industrial Area	1947	MINERAL WORKINGS
Off site - Within 100 - 250m			

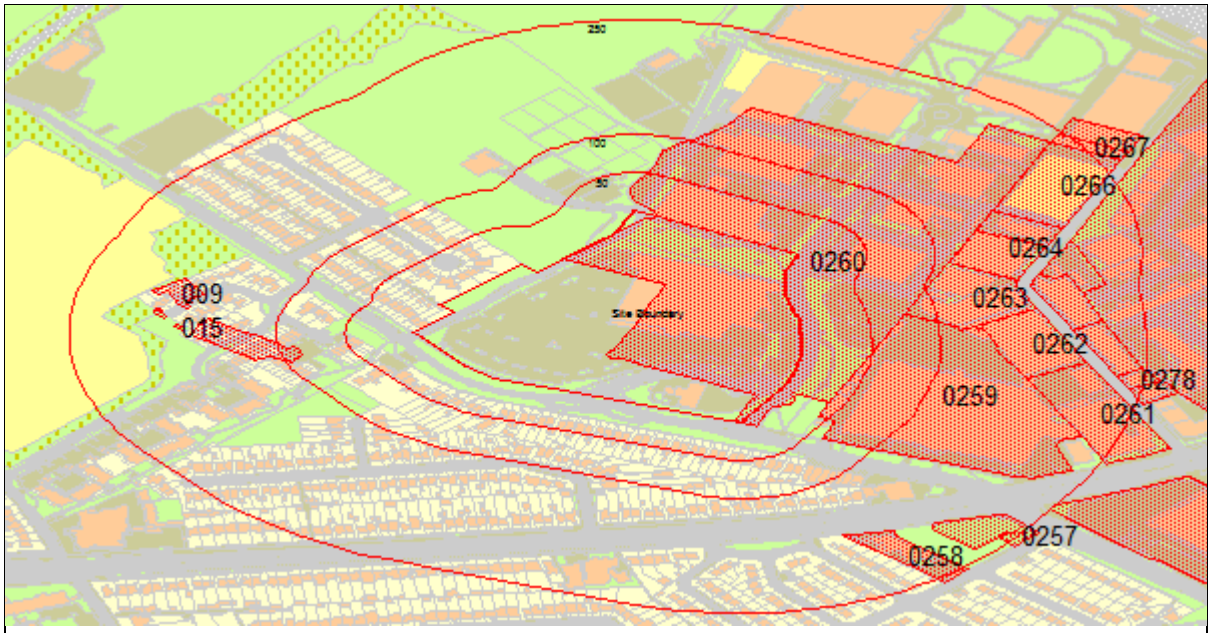
ID	Description	Survey Date	Comments
0044	Electricity Sub Station	1947	No data
0074	Garage	1947	SYON HILL GARAGE
0134	Industrial Area	1947	SOLDER MANUFACTURE
0136	Industrial Area	1947	PAPER MANUFACTURE
0137	Industrial Area	1947	GENERAL ENGINEERING
0141	Industrial Area	1947	EXPRESS DAIRY
0142	Industrial Area	1947	DRILL MAKERS
0143	Industrial Area	1947	THREAD MANUFACTURE
0146	Industrial Area	1947	BOILER ENGINEERS
0147	Industrial Area	1947	GEAR ENGINEERING
0148	Industrial Area	1947	ISLEWORTH WINERY
0154	Industrial Area	1947	FIRE DRUM MANUFACTURE
0155	Industrial Area	1947	ALL TOOLS LTD
0156	Industrial Area	1947	RUBBER TYRE MANUFACTURE

Industrial History 1957

Source: Council Held Land Use Surveys. Original map scale: 1:2500

Number of features selected: 24 within 250 metres

Map overview of selected features



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Industrial History 1957
Regions -

ID	Description	Survey Date	Comments
On site			
0260	Industrial Area	1957	MacFarlane-Lang
Off site - Within 50m			
0259	Industrial Area	1957	Gillettes
Off site - Within 50 - 100m			
0263	Industrial Area	1957	Gerard Industries, Edwards Electrical - Boundary not clear
074	Mental Home	1957	No data

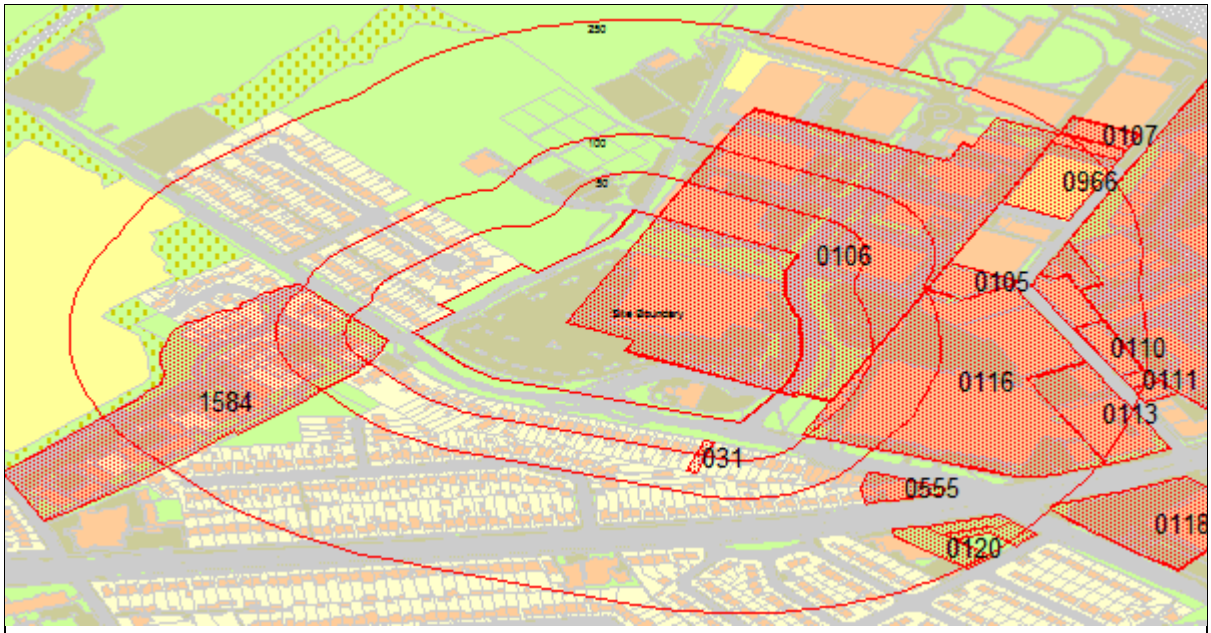
ID	Description	Survey Date	Comments
Off site - Within 100 - 250m			
0257	Industrial Area	1957	Engineers
0258	Industrial Area	1957	Soldering Fluxes
0261	Industrial Area	1957	Siemens Schuckert
0262	Industrial Area	1957	Toni Cosmetics
0264	Industrial Area	1957	Express Dairy
0265	Industrial Area	1957	Albion
0266	Industrial Area	1957	Central Agency
0267	Industrial Area	1957	C.M.Short
0269	Industrial Area	1957	No data
0275	Industrial Area	1957	Firestone (rubber Tyre factory
0276	Industrial Area	1957	All Tools
0277	Industrial Area	1957	Instruments LMK Ltd
0278	Industrial Area	1957	Electrical
0279	Industrial Area	1957	Eynstone
0514	Garage	1957	Syon Hill Garage
0590	Electricity Sub Station	1957	No data
0938	Unspecified Storage	1957	Brooke Bond
009	Mental Home	1957	unspecified outhouse
014	Mental Home	1957	unspecified outhouse
015	Mental Home	1957	unspecified outhouse

Industrial History 1966

Source: Greater London Council Land Use Survey. Original map scale: 1:1250

Number of features selected: 31 within 250 metres

Map overview of selected features



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Industrial History 1966
Regions -

ID	Description	Survey Date	Comments
On site			
0106	Industrial	1966	No data
0965	Food and Non Food Storage, furniture and other storage	1966	No data
1680	Road haulage depots, Taxi garages, Bus garages, Vehicle Depots	1966	No data
Off site - Within 50m			
0116	Industrial	1966	No data
0975	Food and Non Food Storage, furniture and other storage	1966	No data

ID	Description	Survey Date	Comments
1584	Hospitals, Nursing Homes, Sanatoria	1966	No data
031	Clinics, Health Centres, Surgeries and Consulting Rooms	1966	No data
Off site - Within 50 - 100m			
None			
Off site - Within 100 - 250m			
0105	Industrial	1966	No data
0107	Industrial	1966	No data
0108	Industrial	1966	No data
0109	Industrial	1966	No data
0110	Industrial	1966	No data
0111	Industrial	1966	No data
0113	Industrial	1966	No data
0115	Industrial	1966	No data
0118	Industrial	1966	No data
0120	Industrial	1966	No data
0121	Industrial	1966	No data
0555	Petrol filling stations	1966	No data
0556	Petrol filling stations	1966	No data
0669	Electrical power stations, transformers and sub stations	1966	No data
0966	Food and Non Food Storage, furniture and other storage	1966	No data
0967	Food and Non Food Storage, furniture and other storage	1966	No data
0968	Food and Non Food Storage, furniture and other storage	1966	No data
0970	Food and Non Food Storage, furniture and other storage	1966	No data

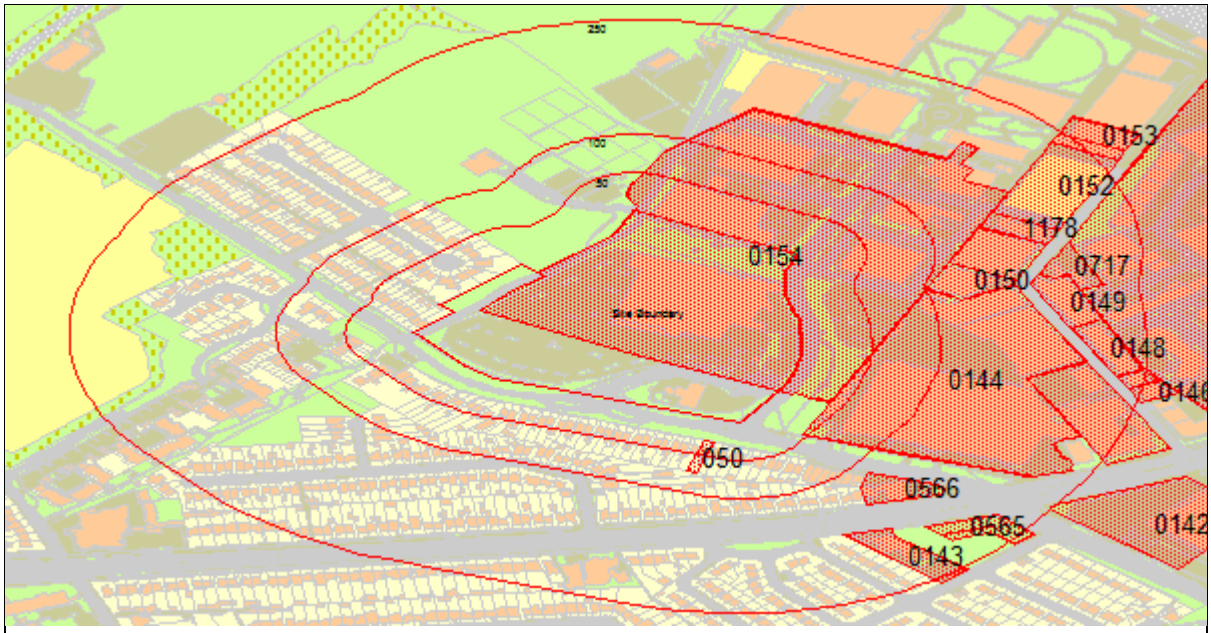
ID	Description	Survey Date	Comments
0971	Food and Non Food Storage, furniture and other storage	1966	No data
0972	Food and Non Food Storage, furniture and other storage	1966	No data
0974	Food and Non Food Storage, furniture and other storage	1966	No data
0977	Food and Non Food Storage, furniture and other storage	1966	No data
0979	Food and Non Food Storage, furniture and other storage	1966	No data
1682	Road haulage depots, Taxi garages, Bus garages, Vehicle Depots	1966	No data

Industrial History 1971

Source: Greater London Council Land Use Survey. Original map scale: 1:1250

Number of features selected: 35 within 250 metres

Map overview of selected features



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0 metres 200

Industrial History 1971
Regions -

ID	Description	Survey Date	Comments
On site			
0154	Industrial	1971	No data
1184	Food and Non food storage, furniture repositories and other storage	1971	No data
Off site - Within 50m			
0144	Industrial	1971	No data
1176	Food and Non food storage, furniture repositories and other storage	1971	No data

ID	Description	Survey Date	Comments
1938	Road haulage depots, taxi garages, bus garages, vehicle repair garages	1971	No data
050	Clinics, health centres, surgeries and consulting rooms	1971	No data
Off site - Within 50 - 100m			
None			
Off site - Within 100 - 250m			
0142	Industrial	1971	No data
0143	Industrial	1971	No data
0146	Industrial	1971	No data
0147	Industrial	1971	No data
0148	Industrial	1971	No data
0149	Industrial	1971	No data
0150	Industrial	1971	No data
0151	Industrial	1971	No data
0152	Industrial	1971	No data
0153	Industrial	1971	No data
0160	Industrial	1971	No data
0565	Petrol Filling Stations	1971	No data
0566	Petrol Filling Stations	1971	No data
0717	Electrical power stations, transformers and sub stations	1971	No data
1167	Food and Non food storage, furniture repositories and other storage	1971	No data
1169	Food and Non food storage, furniture repositories and other storage	1971	No data
1171	Food and Non food storage, furniture repositories and other storage	1971	No data

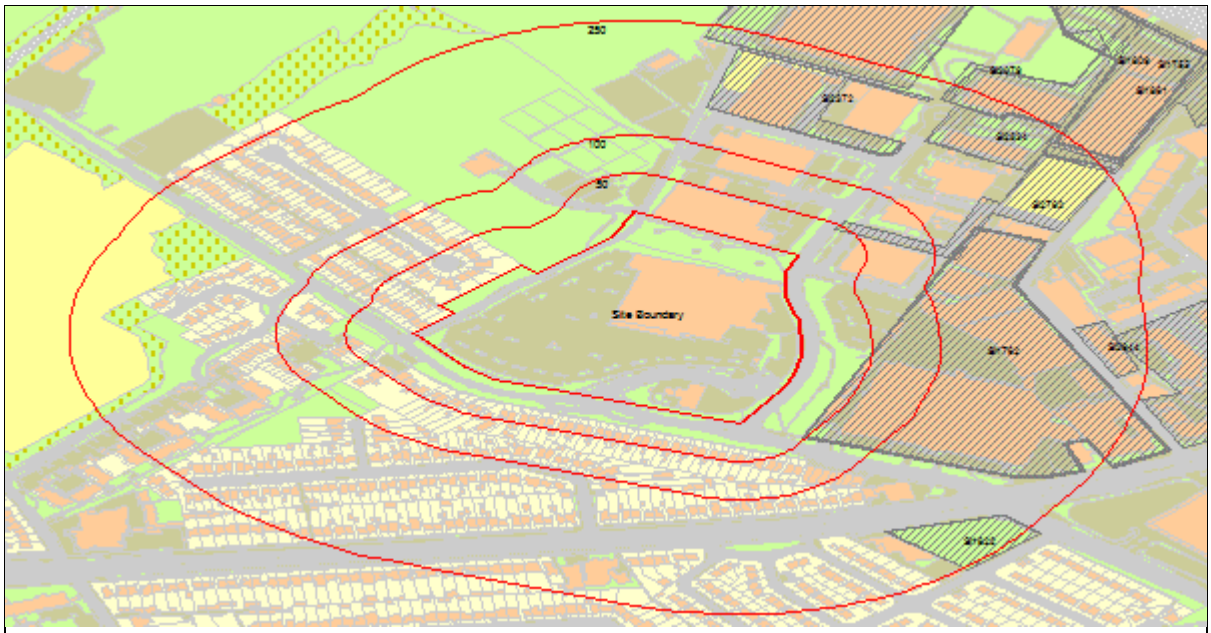
ID	Description	Survey Date	Comments
1172	Food and Non food storage, furniture repositories and other storage	1971	No data
1173	Food and Non food storage, furniture repositories and other storage	1971	No data
1174	Food and Non food storage, furniture repositories and other storage	1971	No data
1175	Food and Non food storage, furniture repositories and other storage	1971	No data
1177	Food and Non food storage, furniture repositories and other storage	1971	No data
1178	Food and Non food storage, furniture repositories and other storage	1971	No data
1179	Food and Non food storage, furniture repositories and other storage	1971	No data
1180	Food and Non food storage, furniture repositories and other storage	1971	No data
1181	Food and Non food storage, furniture repositories and other storage	1971	No data
1191	Food and Non food storage, furniture repositories and other storage	1971	No data
1937	Road haulage depots, taxi garages, bus garages, vehicle repair garages	1971	No data
1943	Road haulage depots, taxi garages, bus garages, vehicle repair garages	1971	No data

Site Reports

The following reports refer to sites within 250 metres of the site boundary but may not be specific to the site in question; please refer to the map below for details. All reports are public documents and, as such, can be viewed free of charge at the Civic Centre offices of the London Borough of Hounslow. If you wish to view any of the reports please contact the Land Quality Team so that the appropriate arrangements can be made. Photocopying facilities are available but are subject to charge.

Number of features selected: 35

Map overview of selected features



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100019263 2015. All maps oriented north

0 metres 200

Site Reports
Regions -

Total of 35 record(s) identified within 250 metres
0 record(s) identified on site.

Records identified within 50 metres buffer

Record 1
ID: SI1762
Name: Gillettes
Address: No Data
Type: Remediation Method Statement

Public: Y
Reference No: 1456

Report Reference: No data
Report Title: Isleworth Remediation - Overview and Way Forward
Consultant: P&G
Date: 22/09/2008
Report Description: No data

Record 2
ID: SI2762
Name: Unit 27 Central Way Feltham
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: P8978J589
Report Title: Geo-env and Geotech Assessment for Unit 27 Central Way
Consultant: Jomas
Date: 23/03/2016
Report Description: No data

Record 3
ID: SI2687
Name: Site Investigation Report
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 248308-85
Report Title: Ground Contamination Risk Assessment and Rem Strategy
Consultant: ARUP
Date: 05/12/2016
Report Description: No data

Record 4
ID: SI2686
Name: Desk Study
Address: No Data
Type: Desk Study

Public: Y
Reference No: No data
Report Reference: 235260-4-05
Report Title: Contaminated land desk study
Consultant: Ove Arup & Partners Ltd
Date: 09/08/2016
Report Description: Sky UK Limited
Multi-storey Car Park 2
Contaminated land desk study

Record 5
ID: SI3028
Name: SKY UK LIMITED GRANT WAY ISLEWORTH
Address: GRANT WAY
Type: Remediation Validation

Public: Y
Reference No: No data
Report Reference: 235360-MSCP2-R02
Report Title: Ground Contamination Remediation Verification Report
Consultant: Arup
Date: 24/01/2019
Report Description: No data

Records identified within 100 - 250 metres buffers

Record 6
ID: SI1755
Name: Harlequin 1 BskyB
Address: No Data
Type: Remediation Validation

Public: Y
Reference No: 1449
Report Reference: 39210-11
Report Title: Remediation Validation Report
Consultant: ARUP
Date: 01/06/2008
Report Description: No data

Record 7
ID: SI1822
Name: Environmental Assessment Report
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 4D/042/212
Report Title: Environmental Assessment Report
Consultant: SLR Consulting Limited
Date: 01/09/2002
Report Description: No data

Record 8
ID: SI1823
Name: Soil and Groundwater Investigation
Address: No Data
Type: Site Investigation Report

Public: Y
Reference No: No data
Report Reference: UK05/LO200196/CS
Report Title: SOIL AND GROUNDWATER INVESTIGATION
Consultant: AIG CONSULTANTS LIMITED
Date: 28/11/2005
Report Description: No data

Record 9
ID: SI1824
Name: QUANTITATIVE RISK ASSESSMENT REPORT

Address: No Data
Type: Site Investigation Report

Public: Y
Reference No: No data
Report Reference: UK06/LO200196/CS
Report Title: QUANTITATIVE RISK ASSESSMENT REPORT
Consultant: AIG CONSULTANTS LIMITED
Date: 01/04/2006
Report Description: No data

Record 10
ID: SI1825
Name: GROUND CONTAMINATION RISK ASSESSMENT REP
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 100466/SI/R001/01
Report Title: GROUND CONTAMINATION RISK ASSESSMENT REPORT
Consultant: AIG ENGINEERING GROUP LIMITED
Date: 01/08/2007
Report Description: No data

Record 11
ID: SI1826
Name: Remedial Action Plan
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 22748
Report Title: Remedial Action Plan
Consultant: RSK
Date: 14/12/2007
Report Description: No data

Record 12
ID: SI1827
Name: Proposed Remedial Works
Address: No Data
Type: Site Investigation Report

Public: Y
Reference No: No data
Report Reference: 22748/L03/tc
Report Title: Proposed Remedial Works
Consultant: RSK Group Plc
Date: 28/01/2008
Report Description: No data

Record 13
ID: SI1828
Name: Method Statement for Excavation
Address: No Data
Type: Site Investigation Report

Public: Y
Reference No: No data
Report Reference: 22748-L04 (00)
Report Title: method Statement for Excavation
Consultant: RSK Group Plc
Date: 01/02/2008
Report Description: No data

Record 14
ID: SI1829
Name: Validation Report
Address: No Data
Type: Site Investigation Report

Public: Y
Reference No: No data
Report Reference: 22748L04/ajc
Report Title: Validation Report
Consultant: RSK Group Plc
Date: 19/02/2009
Report Description: No data

Record 15
ID: SI1830
Name: Petroleum Officer Data
Address: No Data
Type: Site Investigation Report

Public: Y
Reference No: No data
Report Reference: FSR/PET/25/003795/DM
Report Title: Petroleum Officer Report
Consultant: Petroleum Officer
Date: 10/06/2008
Report Description: No data

Record 16
ID: SI1831
Name: Desk Study and Walkover Report
Address: No Data
Type: Site Investigation Report

Public: Y
Reference No: No data
Report Reference: 9.5787
Report Title: Desk Study and Site Walkover Report
Consultant: Constructive Evaluation Limited
Date: 01/03/2009
Report Description: No data

Record 17
ID: SI1832
Name: Site Investigation Report
Address: No Data
Type: Site Investigation Report

Public: Y
Reference No: No data
Report Reference: 9.5787
Report Title: Site Investigation Report
Consultant: Constructive Evaluation Ltd
Date: 01/05/2009
Report Description: No data

Record 18
ID: SI2079
Name: Ground Investigation Strategy Report
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 224956r
Report Title: Ground investigation strategy for contaminated land
Consultant: Arup
Date: 22/11/2012
Report Description: No data

Record 19
ID: SI2097
Name: Ground Contam Risk Assessment & Rem Stra
Address: No Data
Type: Remediation Strategy

Public: Y
Reference No: No data
Report Reference: 216523
Report Title: Ground Contamination Risk Assessment and Rem Strategy
Consultant: ARUP
Date: 01/02/2013
Report Description: Ground contamination risk

Record 20
ID: SI2105
Name: Hotspot Summary Removal Summary
Address: No Data
Type: Remediation Method Statement

Public: Y
Reference No: No data
Report Reference: 123256
Report Title: Hotspot Summary Removal Summary
Consultant: AA Environmental LLP (AAe)
Date: 25/03/2013
Report Description: No data

Record 21
ID: SI2248
Name: Ground Contam, RA and Rem Strategy
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 230925
Report Title: Ground Contamination Risk Assessment and Rem Strategy
Consultant: ARUP
Date: No data
Report Description: No data

Record 22
ID: SI2249
Name: Ground Contam RA and Rem Strategy
Address: No Data
Type: Remediation Method Statement

Public: Y
Reference No: No data
Report Reference: 230925
Report Title: Ground Contamination Risk Assessment and Rem Strategy
Consultant: ARUP
Date: 14/01/2014
Report Description: No data

Record 23
ID: SI2250
Name: CEMP Report
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: MG-ENV-FM-002 v19
Report Title: CEMP Report
Consultant: MACE
Date: 29/01/2014
Report Description: No data

Record 24
ID: SI2251
Name: Ground Contamination Verification Report
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 226467
Report Title: Ground Contamination Verification Report
Consultant: ARUP
Date: 11/12/2013
Report Description: No data

Record 25
ID: SI2331
Name: Verification Report
Address: No Data
Type: Remediation Validation

Public: Y
Reference No: No data
Report Reference: 226467
Report Title: Verification Report
Consultant: Arup
Date: 10/06/2014
Report Description: No data

Record 26
ID: SI2334
Name: Ground Contamination Report
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 233430/S001
Report Title: Ground Contamination Report
Consultant: Arup
Date: 31/03/2014
Report Description: No data

Record 27
ID: SI2372
Name: Contamination Statement
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 230925
Report Title: Contamination Statement
Consultant: ARUP
Date: 28/08/2014
Report Description: No data

Record 28
ID: SI2487
Name: Sky Car park Site Investigation
Address: Sky Redevelopment
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 235360
Report Title: Sky Car park Site Investigation
Consultant: Arup
Date: 01/09/2015
Report Description: No data

Record 29
ID: SI2692
Name: Former Syon Gate Service Station
Address: No Data
Type: Site Investigation

Public: Y
Reference No: No data
Report Reference: 15.8827
Report Title: Phase I Environmental Risk Assessment
Consultant: Constructive Evaluation
Date: No data
Report Description: No data

Record 30
ID: SI2843
Name: Desk Study
Address: No Data
Type: Desk Study

Public: Y
Reference No: No data
Report Reference: UK16-23406
Report Title: PHASE I ENVIRONMENTAL ASSESSMENT
Consultant: Ramboll Environ
Date: 01/08/2016
Report Description: No data

Record 31
ID: SI2944
Name: PHASE 1 DESK TOP STUDY– PRELIMINARY RISK
Address: No Data
Type: Desk Study

Public: Y
Reference No: No data
Report Reference: SES/AJAR/HR/1#1
Report Title: CONTAMINATED LAND RISK ASSESSMENT
Consultant: Soil Environment Services Ltd
Date: 12/12/2017
Report Description: No data

Record 32
ID: SI2946
Name: Ground Contamination Verification Report
Address: No Data
Type: Remediation Validation

Public: Y
Reference No: No data
Report Reference: 224956-RP-CL-004
Report Title: Ground Contamination Verification Report
Consultant: Ove Arup & Partners Ltd
Date: 22/11/2017
Report Description: No data

Record 33
ID: SI2947
Name: Remediation validation
Address: No Data
Type: Remediation Validation

Public: Y
Reference No: No data
Report Reference: 224956-03
Report Title: Ground Contamination Remediation Verification Report
Consultant: Ove Arup and Partners
Date: 19/05/2017
Report Description: No data

Record 34
ID: SI2949
Name: Verification Report Sky car park
Address: No Data
Type: Remediation Validation

Public: Y
Reference No: No data
Report Reference: 224956-RP-CL-003
Report Title: Ground Contamination Remediation Verification Report
Consultant: Ove Arup and Partners (
Date: 03/11/2017
Report Description: No data

Record 35
ID: SI3042
Name: Phase I Risk Assessment
Address: Great West Road
Type: Desk Study

Public: Y
Reference No: No data
Report Reference: No data
Report Title: Phase 1 Environmental Risk Assessment
Consultant: Constructive Evaluation
Date: 01/08/2018
Report Description: No data

Proximity to Borough Boundary

No records were selected on this layer.

End of detailed report

Appendix E Ground Gas and Groundwater Monitoring Results

- **Ground Gas Monitoring Equipment**
- **Ground Gas Monitoring Results**
- **Low-Flow Multiparameter Readings**

Table E.1: Ground gas monitoring equipment list

Equipment	Description	Range/Accuracy
Gas Analyser	GFM430 (Serial No. 10205)	0 -100 % / ± 0.1 %
Photo Ionisation Detector	MiniRAE 2000 (serial No. 110-900772)	0.1-2000ppm ± 10% or ±2ppm, whichever is greater

Project Name	Tesco, Syon Lane
Project Reference	WIE15238
Consultant	Andrew Le Masurier
Date	20/11/2018 - 21/11/2018
Time	09:30

Atmospheric Pressure	**Pre Monitoring:**		1003		**Post Monitoring:**		1002	
General Atmospheric Pressure Condition					Falling			
Weather Conditions	Warm		Sunny		Overcast	x	Rain	x
Wind Conditions	Still		Slight Breeze	x	Strong breeze			
Ground Conditions	Dry		Damp		Wet	x		
Site Conditions								

Exploratory hole identity			**BH1**		**Flow**	0.5		
	Ambient moitoring				**DP**	1		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	1.8	16.1	<0.1	<1	<1	4.12	4.84
30	<0.1	1.9	16.2	<0.1	<1	<1		
45	<0.1	1.9	16.3	<0.1	<1	<1		
60	<0.1	1.9	16.3	<0.1	<1	<1		
90	<0.1	1.9	16.3	<0.1	<1	<1		
120	<0.1	1.9	16.3	<0.1	<1	<1		
180	<0.1	1.9	16.3	<0.1	<1	<1		
Peak State	**<0.1**	**1.9**	**16.1**	**<0.1**	**<1**	**<1**		
Comments:	**PID: 6.3 ppm**							

Exploratory hole identity			**BH2A**		**Flow**	<0.1		
	Ambient moitoring				**DP**	<0.1		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.1	18.8	<0.1	<1	<1	3.77	5.12
30	<0.1	0.1	18.7	<0.1	<1	<1		
45	<0.1	0.1	18.7	<0.1	<1	<1		
60	<0.1	0.1	18.7	<0.1	<1	<1		
90	<0.1	0.1	18.7	<0.1	<1	<1		
120	<0.1	0.1	18.7	<0.1	<1	<1		
180	<0.1	0.1	18.7	<0.1	<1	<1		
Peak State	**<0.1**	**0.1**	**18.7**	**<0.1**	**<1**	**<1**		
Comments:	**PID <0.1**							

Exploratory hole identity			BH3		Flow	75 to 0 over 2.5 mins		
	Ambient moitoring				DP	400 to 0 over 2.5 mins		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.1	19.7	<0.1	<1	<1	1.27	4.15
30	<0.1	0.1	19.7	<0.1	<1	<1		
45	<0.1	0.1	19.7	<0.1	<1	<1		
60	<0.1	0.1	19.7	<0.1	<1	<1		
90	<0.1	0.1	19.7	<0.1	<1	<1		
120	<0.1	0.1	19.7	<0.1	<1	<1		
180	<0.1	0.1	19.7	<0.1	<1	<1		
Peak State	**<0.1**	**0.1**	**19.7**	**<0.1**	**<1**	**<1**		
Comments:	**PID: 0.4 ppm**							

Exploratory hole identity			WS1		Flow			
	Ambient moitoring				DP			
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A	N/A		
45	N/A	N/A	N/A	N/A	N/A	N/A		
60	N/A	N/A	N/A	N/A	N/A	N/A		
90	N/A	N/A	N/A	N/A	N/A	N/A		
120	N/A	N/A	N/A	N/A	N/A	N/A		
180	N/A	N/A	N/A	N/A	N/A	N/A		
Peak State	N/A	N/A	N/A	N/A	N/A	N/A		
Comments:	**Not accessible due to vehicle**							

Exploratory hole identity			WS3		Flow	<0.1		
	Ambient moitoring				DP	<0.1		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.7	12.6	<0.1	<1	3	Dry	2.05
30	<0.1	0.8	12	<0.1	<1	4		
45	<0.1	0.7	11.9	<0.1	<1	1		
60	<0.1	0.8	11.9	<0.1	<1	1		
90	<0.1	0.8	11.9	<0.1	<1	1		
120	<0.1	0.8	11.9	<0.1	<1	1		
180	<0.1	0.8	11.9	<0.1	<1	1		
Peak State	**<0.1**	**0.8**	**11.9**	**<0.1**	**<1**	**4**		
Comments:	**PID: <0.1 ppm**							

Exploratory hole identity			WS4		Flow	0.6		
	Ambient moitoring				DP	2		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.9	17	<0.1	<1	21	Dry	2.12
30	<0.1	0.9	16.8	<0.1	<1	11		
45	<0.1	0.9	16.8	<0.1	<1	4		
60	<0.1	0.9	16.8	<0.1	<1	2		
90	<0.1	0.9	16.8	<0.1	<1	1		
120	<0.1	0.9	16.7	<0.1	<1	2		
180	<0.1	0.9	16.8	<0.1	<1	2		
Peak State	**<0.1**	**0.9**	**16.7**	**<0.1**	**<1**	**21**		
Comments:	**PID: <0.1 ppm**							

Exploratory hole identity			WS7A		Flow	<0.1		
	Ambient moitoring				DP	<0.1		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.2	14	<0.1	<1	<1	Dry	1.19
30	<0.1	0.2	13.7	<0.1	<1	<1		
45	<0.1	0.2	13.7	<0.1	<1	<1		
60	<0.1	0.2	13.7	<0.1	<1	<1		
90	<0.1	0.2	13.7	<0.1	<1	<1		
120	<0.1	0.2	13.7	<0.1	<1	<1		
180	<0.1	0.2	13.6	<0.1	<1	<1		
Peak State	**<0.1**	**0.2**	**13.6**	**<0.1**	**<1**	**<1**		
Comments:	**PID: 0.7 ppm**							

Exploratory hole identity			WS8		Flow	<0.1		
	Ambient moitoring				DP	<0.1		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.3	16.6	<0.1	<1	11	Dry	1.84
30	<0.1	0.2	16.7	<0.1	<1	10		
45	<0.1	0.3	16.5	<0.1	<1	9		
60	<0.1	0.2	16.6	<0.1	<1	8		
90	<0.1	0.2	16.6	<0.1	<1	9		
120	<0.1	0.2	16.6	<0.1	<1	7		
180	<0.1	0.2	16.6	<0.1	<1	6		
Peak State	**<0.1**	**0.3**	**16.5**	**<0.1**	**<1**	**11**		
Comments:	**PID: 0.8 ppm**							

Project Name	Tesco, Syon Lane
Project Reference	WIE15238
Consultant	Andrew Le Masurier
Date	14/03/2019
Time	09:00

Atmospheric Pressure	**Pre Monitoring:**		999		**Post Monitoring:**		1001	
General Atmospheric Pressure Condition					Falling			
Weather Conditions	Warm		Sunny	x	Overcast		Rain	
Wind Conditions	Still		Slight Breeze	x	Strong breeze			
Ground Conditions	Dry		Damp		Wet	x		
Site Conditions								

Exploratory hole identity			**BH1**		**Flow**	<0.1		
	Ambient moitoring				**DP**	0		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	6.8	11.5	<0.1	<1	<1	4.04	4.92
30	<0.1	6.8	10.5	<0.1	<1	<1		
45	<0.1	6.8	10.3	<0.1	<1	<1		
60	<0.1	6.9	10.2	<0.1	<1	<1		
90	<0.1	6.9	10.2	<0.1	<1	<1		
120	<0.1	6.9	10.1	<0.1	<1	<1		
180	<0.1	6.9	10.1	<0.1	<1	<1		
Peak State	**<0.1**	**6.9**	**10.1**	**<0.1**	**<1**	**<1**		
Comments:	**PID: <0.1 ppm**							

Exploratory hole identity			**BH2A**		**Flow**	N/A		
	Ambient moitoring				**DP**	N/A		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	N/A	N/A	N/A	N/A	N/A	N/A	3.62	5.1
30	N/A	N/A	N/A	N/A	N/A	N/A		
45	N/A	N/A	N/A	N/A	N/A	N/A		
60	N/A	N/A	N/A	N/A	N/A	N/A		
90	N/A	N/A	N/A	N/A	N/A	N/A		
120	N/A	N/A	N/A	N/A	N/A	N/A		
180	N/A	N/A	N/A	N/A	N/A	N/A		
Peak State	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**		
Comments:	**PID: N/A**							

Exploratory hole identity			BH3		Flow	13.8 to 0 over 2.5 mins		
	Ambient moitoring				DP	123 to 0 over 2.5 mins		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	<0.1	12.1	<0.1	<1	<1	1.21	3.92
30	<0.1	<0.1	11.4	<0.1	<1	<1		
45	<0.1	<0.1	11.3	<0.1	<1	<1		
60	<0.1	<0.1	11.2	<0.1	<1	<1		
90	<0.1	<0.1	11.2	<0.1	<1	<1		
120	<0.1	<0.1	11.2	<0.1	<1	<1		
180	<0.1	<0.1	11.2	<0.1	<1	<1		
Peak State	**<0.1**	**<0.1**	**11.2**	**<0.1**	**<1**	**<1**		
Comments:	**PID: 0.4 ppm**							

Exploratory hole identity			WS1		Flow	N/A		
	Ambient moitoring				DP	N/A		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A	N/A		
45	N/A	N/A	N/A	N/A	N/A	N/A		
60	N/A	N/A	N/A	N/A	N/A	N/A		
90	N/A	N/A	N/A	N/A	N/A	N/A		
120	N/A	N/A	N/A	N/A	N/A	N/A		
180	N/A	N/A	N/A	N/A	N/A	N/A		
Peak State	N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**		
Comments:	**Not accessible due to vehicle**							

Exploratory hole identity			WS3		Flow	N/A		
	Ambient moitoring				DP	N/A		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A	N/A		
45	N/A	N/A	N/A	N/A	N/A	N/A		
60	N/A	N/A	N/A	N/A	N/A	N/A		
90	N/A	N/A	N/A	N/A	N/A	N/A		
120	N/A	N/A	N/A	N/A	N/A	N/A		
180	N/A	N/A	N/A	N/A	N/A	N/A		
Peak State	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**		
Comments:	**Not accessible due to vehicle**							

Exploratory hole identity			WS4		Flow	<0.1		
	Ambient moitoring				DP	0		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.5	19.6	<0.1	<1	<1	Dry	2.1
30	<0.1	0.5	19.5	<0.1	<1	<1		
45	<0.1	0.5	19.4	<0.1	<1	<1		
60	<0.1	0.5	19.4	<0.1	<1	<1		
90	<0.1	0.5	19.5	<0.1	<1	<1		
120	<0.1	0.4	19.5	<0.1	<1	<1		
180	<0.1	0.3	19.6	<0.1	<1	<1		
Peak State	**<0.1**	**0.5**	**19.4**	**<0.1**	**<1**	**<1**		
Comments:	**PID: <0.1 ppm**							

Exploratory hole identity			WS7A		Flow	<0.1		
	Ambient moitoring				DP	<0.1		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.1	20.1	<0.1	<1	<1	Dry	1.2
30	<0.1	0.1	20.1	<0.1	<1	<1		
45	<0.1	0.1	20	<0.1	<1	<1		
60	<0.1	0.1	19.9	<0.1	<1	<1		
90	<0.1	0.1	19.9	<0.1	<1	<1		
120	<0.1	0.1	20	<0.1	<1	<1		
180	<0.1	0.1	20	<0.1	<1	<1		
Peak State	**<0.1**	**0.1**	**19.9**	**<0.1**	**<1**	**<1**		
Comments:	**PID: <0.1 ppm**							

Exploratory hole identity			WS8		Flow	<0.1		
	Ambient moitoring				DP	<0.1		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	<0.1	19.8	<0.1	<1	<1	Dry	1.8
30	<0.1	<0.1	20.1	<0.1	<1	<1		
45	<0.1	<0.1	20.1	<0.1	<1	<1		
60	<0.1	<0.1	20.1	<0.1	<1	<1		
90	<0.1	<0.1	20.1	<0.1	<1	<1		
120	<0.1	<0.1	20.1	<0.1	<1	<1		
180	<0.1	<0.1	20.1	<0.1	<1	<1		
Peak State	**<0.1**	**<0.1**	**19.8**	**<0.1**	**<1**	**<1**		
Comments:	**PID: 10.1 ppm**							

Exploratory hole identity			BH11		Flow	<0.1		
	Ambient moitoring				DP	<0.1		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.1	19	<0.1	<1	<1	3.98	5.46
30	<0.1	0.1	19.9	<0.1	<1	<1		
45	<0.1	0.1	20	<0.1	<1	<1		
60	<0.1	0.1	20.1	<0.1	<1	<1		
90	<0.1	<0.1	20.1	<0.1	<1	<1		
120	<0.1	<0.1	20.2	<0.1	<1	<1		
180	<0.1	<0.1	20.2	<0.1	<1	<1		
Peak State	**<0.1**	**<0.1**	**19**	**<0.1**	**<1**	**<1**		
Comments:	**PID: 10.1 ppm**							

Exploratory hole identity			BH12		Flow	<0.1		
	Ambient moitoring				DP	<0.1		
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Water Level (m)**	**Base (m)**
15	<0.1	0.8	19.3	<0.1	<1	<1	3.82	4.92
30	<0.1	1	19.1	<0.1	<1	<1		
45	<0.1	1.2	18.7	<0.1	<1	<1		
60	<0.1	1.3	18.3	<0.1	<1	<1		
90	<0.1	1.5	18	<0.1	<1	<1		
120	<0.1	1.6	17.8	<0.1	<1	<1		
180	<0.1	1.6	17.8	<0.1	<1	<1		
Peak State	**<0.1**	**<0.1**	**17.8**	**<0.1**	**<1**	**<1**		
Comments:	**PID: <0.1 ppm**							

Low-Flow Test Report:

Test Date / Time: 11/20/2018 2:14:46 PM
Project: Tesco - Syon Lane
Operator Name:

Location Name: BH3 **Well Diameter: 5 cm** **Total Depth: 4.15 m** **Initial Depth to Water: 1.27 m**	**Flow Cell Volume: 90 ml** **Final Draw Down: 0 m**	**Instrument Used: SmarTROLL MP** **Serial Number: 439905**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
11/20/2018 2:14 PM	00:00	7.62 pH	13.13 °C	714.51 µS/cm	0.25 mg/L		-53.2 mV	127.00 cm
11/20/2018 2:15 PM	00:30	7.72 pH	13.30 °C	735.01 µS/cm	0.26 mg/L		-64.4 mV	127.00 cm
11/20/2018 2:15 PM	01:00	7.83 pH	13.65 °C	731.04 µS/cm	0.20 mg/L		-73.3 mV	127.00 cm
11/20/2018 2:16 PM	01:30	7.93 pH	13.88 °C	725.70 µS/cm	0.14 mg/L		-80.7 mV	127.00 cm
11/20/2018 2:16 PM	02:00	8.02 pH	13.95 °C	722.47 µS/cm	0.11 mg/L		-86.9 mV	127.00 cm
11/20/2018 2:17 PM	02:30	8.09 pH	14.03 °C	722.60 µS/cm	0.08 mg/L		-91.1 mV	127.00 cm
11/20/2018 2:17 PM	03:00	8.16 pH	14.08 °C	718.33 µS/cm	0.06 mg/L		-95.2 mV	127.00 cm
11/20/2018 2:18 PM	03:30	8.22 pH	14.08 °C	719.14 µS/cm	0.05 mg/L		-98.4 mV	127.00 cm
11/20/2018 2:18 PM	04:00	8.28 pH	14.13 °C	715.93 µS/cm	0.04 mg/L		-101.0 mV	127.00 cm
11/20/2018 2:19 PM	04:30	8.32 pH	14.14 °C	714.59 µS/cm	0.03 mg/L		-102.7 mV	127.00 cm

Samples

Sample ID:	Description:
BH3	

Low-Flow Test Report:

Test Date / Time: 11/20/2018 3:04:25 PM
Project: Tesco - Syon Lane
Operator Name:

Location Name: BH1 **Well Diameter: 5 cm** **Total Depth: 4.84 m** **Initial Depth to Water: 4.12 m**	**Flow Cell Volume: 90 ml** **Final Draw Down: 0 m**	**Instrument Used: SmarTROLL MP** **Serial Number: 439905**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
11/20/2018 3:04 PM	00:00	7.93 pH	12.53 °C	1,043.4 µS/cm	3.71 mg/L		-19.9 mV	412.00 cm
11/20/2018 3:04 PM	00:30	7.84 pH	12.94 °C	1,053.4 µS/cm	2.82 mg/L		-10.2 mV	412.00 cm
11/20/2018 3:05 PM	01:00	7.79 pH	13.22 °C	1,052.4 µS/cm	2.15 mg/L		-7.9 mV	412.00 cm
11/20/2018 3:05 PM	01:30	7.75 pH	13.52 °C	1,033.1 µS/cm	1.61 mg/L		-5.8 mV	412.00 cm
11/20/2018 3:06 PM	02:00	7.72 pH	13.81 °C	1,009.1 µS/cm	1.23 mg/L		-7.2 mV	412.00 cm
11/20/2018 3:06 PM	02:30	7.69 pH	14.04 °C	988.33 µS/cm	0.96 mg/L		-9.8 mV	412.00 cm
11/20/2018 3:07 PM	03:00	7.66 pH	14.22 °C	975.09 µS/cm	0.78 mg/L		-12.0 mV	412.00 cm
11/20/2018 3:07 PM	03:30	7.63 pH	14.37 °C	964.55 µS/cm	0.64 mg/L		-13.0 mV	412.00 cm
11/20/2018 3:08 PM	04:00	7.61 pH	14.49 °C	957.01 µS/cm	0.56 mg/L		-13.6 mV	412.00 cm

Samples

Sample ID:	Description:
BH1	2 x bottles, 2 x vials

Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 11/20/2018 4:00:36 PM
Project: Tesco - Syon Lane
Operator Name:

Location Name: BH2 **Well Diameter: 5 cm** **Total Depth: 5.12 m** **Initial Depth to Water: 3.77 m**	**Flow Cell Volume: 90 ml** **Final Draw Down: 0 m**	**Instrument Used: SmarTROLL MP** **Serial Number: 439905**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
11/20/2018 4:00 PM	00:00	7.67 pH	10.17 °C	1,716.6 µS/cm	7.39 mg/L		11.5 mV	377.00 cm
11/20/2018 4:01 PM	00:30	7.71 pH	10.27 °C	1,394.9 µS/cm	4.73 mg/L		1.1 mV	377.00 cm
11/20/2018 4:01 PM	01:00	7.75 pH	10.27 °C	1,447.0 µS/cm	3.20 mg/L		-11.0 mV	377.00 cm
11/20/2018 4:02 PM	01:30	7.77 pH	10.27 °C	1,627.7 µS/cm	2.22 mg/L		-16.3 mV	377.00 cm
11/20/2018 4:02 PM	02:00	7.79 pH	10.21 °C	1,476.8 µS/cm	1.62 mg/L		-20.0 mV	377.00 cm
11/20/2018 4:03 PM	02:30	7.80 pH	10.14 °C	1,570.2 µS/cm	1.25 mg/L		-22.2 mV	377.00 cm
11/20/2018 4:03 PM	03:00	7.80 pH	10.08 °C	1,477.2 µS/cm	1.02 mg/L		-23.2 mV	377.00 cm
11/20/2018 4:04 PM	03:30	7.81 pH	9.98 °C	1,433.9 µS/cm	0.88 mg/L		-23.2 mV	377.00 cm
11/20/2018 4:04 PM	04:00	7.82 pH	9.91 °C	1,558.0 µS/cm	0.82 mg/L		-22.7 mV	377.00 cm
11/20/2018 4:05 PM	04:30	7.82 pH	9.84 °C	1,479.1 µS/cm	0.80 mg/L		-21.4 mV	377.00 cm
11/20/2018 4:05 PM	05:00	7.83 pH	9.75 °C	1,485.0 µS/cm	0.85 mg/L		-20.5 mV	377.00 cm
11/20/2018 4:06 PM	05:30	7.84 pH	9.70 °C	1,423.2 µS/cm	0.91 mg/L		-18.5 mV	377.00 cm
11/20/2018 4:06 PM	06:00	7.85 pH	9.61 °C	1,511.8 µS/cm	1.00 mg/L		-16.3 mV	377.00 cm
11/20/2018 4:07 PM	06:30	7.86 pH	9.51 °C	1,557.0 µS/cm	1.11 mg/L		-14.2 mV	377.00 cm
11/20/2018 4:07 PM	07:00	7.87 pH	9.46 °C	1,470.4 µS/cm	1.24 mg/L		-12.1 mV	377.00 cm
11/20/2018 4:08 PM	07:30	7.88 pH	9.39 °C	1,594.4 µS/cm	1.40 mg/L		-10.3 mV	377.00 cm
11/20/2018 4:08 PM	08:00	7.89 pH	9.32 °C	1,458.3 µS/cm	1.58 mg/L		-6.8 mV	377.00 cm
11/20/2018 4:09 PM	08:30	7.91 pH	9.24 °C	1,287.1 µS/cm	1.80 mg/L		-4.6 mV	377.00 cm

11/20/2018 4:09 PM	09:00	7.92 pH	9.18 °C	1,551.8 µS/cm	2.05 mg/L		-3.7 mV	377.00 cm
11/20/2018 4:10 PM	09:30	7.94 pH	9.13 °C	1,474.0 µS/cm	2.31 mg/L		4.3 mV	377.00 cm
11/20/2018 4:10 PM	10:00	7.95 pH	9.04 °C	1,585.1 µS/cm	2.59 mg/L		3.1 mV	377.00 cm
11/20/2018 4:11 PM	10:30	7.97 pH	8.99 °C	1,360.4 µS/cm	2.88 mg/L		5.8 mV	377.00 cm
11/20/2018 4:11 PM	11:00	7.98 pH	8.94 °C	1,284.5 µS/cm	3.15 mg/L		7.1 mV	377.00 cm
11/20/2018 4:12 PM	11:30	7.99 pH	8.90 °C	1,195.2 µS/cm	3.86 mg/L		8.5 mV	377.00 cm
11/20/2018 4:12 PM	12:00	8.01 pH	8.95 °C	1,615.9 µS/cm	4.83 mg/L		10.4 mV	377.00 cm
11/20/2018 4:13 PM	12:30	8.02 pH	8.99 °C	107.56 µS/cm	6.44 mg/L		12.6 mV	377.00 cm

Samples

Sample ID:	Description:
BH2	2 x bottles, 2 x vials

Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 3/14/2019 10:32:32 AM
Project: Tesco - Osterley
Operator Name:

Location Name: BH03 **Well Diameter: 5 cm** **Total Depth: 3.92 m** **Initial Depth to Water: 1.21 m**	**Flow Cell Volume: 90 ml** **Final Draw Down: 0 m**	**Instrument Used: SmarTROLL MP** **Serial Number: 526189**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
3/14/2019 10:32 AM	00:00	8.42 pH	12.83 °C	560.13 µS/cm	3.08 mg/L		248.8 mV	159.00 cm
3/14/2019 10:33 AM	00:30	8.44 pH	12.70 °C	561.17 µS/cm	0.75 mg/L		235.6 mV	159.00 cm
3/14/2019 10:33 AM	01:00	8.39 pH	12.51 °C	570.67 µS/cm	0.75 mg/L		225.6 mV	159.00 cm
3/14/2019 10:34 AM	01:30	8.35 pH	12.24 °C	578.92 µS/cm	1.17 mg/L		217.1 mV	159.00 cm
3/14/2019 10:34 AM	02:00	8.28 pH	11.98 °C	569.65 µS/cm	1.00 mg/L		210.7 mV	159.00 cm
3/14/2019 10:35 AM	02:30	8.24 pH	11.79 °C	567.17 µS/cm	0.90 mg/L		204.5 mV	159.00 cm
3/14/2019 10:35 AM	03:00	8.21 pH	11.67 °C	567.60 µS/cm	0.94 mg/L		199.4 mV	159.00 cm
3/14/2019 10:36 AM	03:30	8.18 pH	11.54 °C	569.30 µS/cm	1.15 mg/L		195.2 mV	159.00 cm

Samples

Sample ID:	Description:
BH03	2 x 500ml glass bottles, 2 x 30ml glass vials

Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 3/14/2019 11:05:50 AM
Project: Tesco - Osterley
Operator Name:

Location Name: BH01 **Well Diameter: 5 cm** **Total Depth: 4.92 m**	**Flow Cell Volume: 90 ml**	**Instrument Used: SmarTROLL MP** **Serial Number: 526189**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
3/14/2019 11:05 AM	00:00	8.17 pH	11.91 °C	907.01 µS/cm	5.43 mg/L		272.6 mV	
3/14/2019 11:06 AM	00:30	8.13 pH	11.92 °C	912.90 µS/cm	2.96 mg/L		252.4 mV	
3/14/2019 11:06 AM	01:00	8.06 pH	11.93 °C	912.67 µS/cm	2.27 mg/L		239.8 mV	
3/14/2019 11:07 AM	01:30	8.00 pH	11.96 °C	905.71 µS/cm	1.97 mg/L		228.7 mV	
3/14/2019 11:07 AM	02:00	7.94 pH	12.00 °C	891.07 µS/cm	1.98 mg/L		219.6 mV	
3/14/2019 11:08 AM	02:30	7.88 pH	12.01 °C	878.42 µS/cm	1.94 mg/L		213.2 mV	
3/14/2019 11:08 AM	03:00	7.82 pH	12.04 °C	869.36 µS/cm	1.97 mg/L		207.9 mV	
3/14/2019 11:09 AM	03:30	7.75 pH	12.05 °C	862.00 µS/cm	2.19 mg/L		203.9 mV	
3/14/2019 11:09 AM	04:00	7.69 pH	12.06 °C	856.78 µS/cm	2.40 mg/L		200.7 mV	
3/14/2019 11:10 AM	04:30	7.64 pH	12.04 °C	852.50 µS/cm	2.53 mg/L		198.1 mV	
3/14/2019 11:10 AM	05:00	7.58 pH	12.04 °C	853.88 µS/cm	2.72 mg/L		196.6 mV	
3/14/2019 11:11 AM	05:30	7.52 pH	12.02 °C	854.06 µS/cm	2.82 mg/L		195.0 mV	
3/14/2019 11:11 AM	06:00	7.44 pH	12.01 °C	860.83 µS/cm	3.09 mg/L		194.4 mV	
3/14/2019 11:12 AM	06:30	7.39 pH	11.99 °C	863.52 µS/cm	3.44 mg/L		193.3 mV	
3/14/2019 11:12 AM	07:00	7.35 pH	11.95 °C	861.20 µS/cm	3.67 mg/L		192.3 mV	
3/14/2019 11:13 AM	07:30	7.32 pH	11.91 °C	855.82 µS/cm	3.74 mg/L		191.3 mV	
3/14/2019 11:13 AM	08:00	7.29 pH	11.88 °C	857.62 µS/cm	3.77 mg/L		190.9 mV	

Samples

Sample ID:	Description:
BH01	2 x 500ml glass bottles, 2 x 30ml glass vials

Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 3/14/2019 12:30:15 PM
Project: Tesco - Osterley
Operator Name:

Location Name: BH12 **Well Diameter: 5 cm** **Total Depth: 4.92 m** **Initial Depth to Water: 3.82 m**	**Flow Cell Volume: 90 ml** **Final Draw Down: 0 m**	**Instrument Used: SmarTROLL MP** **Serial Number: 526189**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
3/14/2019 12:30 PM	00:00	7.33 pH	13.09 °C	754.87 µS/cm	3.28 mg/L		261.9 mV	256.00 cm
3/14/2019 12:30 PM	00:30	7.30 pH	12.70 °C	750.19 µS/cm	2.24 mg/L		242.6 mV	256.00 cm
3/14/2019 12:31 PM	01:00	7.26 pH	12.42 °C	754.84 µS/cm	1.91 mg/L		231.4 mV	256.00 cm
3/14/2019 12:31 PM	01:30	7.23 pH	12.21 °C	758.69 µS/cm	1.90 mg/L		222.2 mV	256.00 cm
3/14/2019 12:32 PM	02:00	7.19 pH	12.09 °C	760.88 µS/cm	1.73 mg/L		215.3 mV	256.00 cm
3/14/2019 12:32 PM	02:30	7.16 pH	12.01 °C	762.76 µS/cm	1.37 mg/L		210.0 mV	256.00 cm
3/14/2019 12:33 PM	03:00	7.13 pH	12.02 °C	762.86 µS/cm	1.65 mg/L		206.0 mV	256.00 cm
3/14/2019 12:33 PM	03:30	7.10 pH	11.95 °C	764.53 µS/cm	1.47 mg/L		202.9 mV	256.00 cm

Samples

Sample ID:	Description:
BH12	2 x 500ml glass bottles, 2 x 30cl glass vials

Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 3/14/2019 12:59:16 PM
Project: Tesco - Osterley
Operator Name:

Location Name: BH02 **Well Diameter: 5 cm** **Total Depth: 5.90 m** **Initial Depth to Water: 3.68 m**	**Flow Cell Volume: 90 ml** **Final Draw Down: 0 m**	**Instrument Used: SmarTROLL MP** **Serial Number: 526189**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
3/14/2019 12:59 PM	00:00	7.19 pH	12.34 °C	551.21 µS/cm	4.70 mg/L		273.9 mV	489.00 cm
3/14/2019 12:59 PM	00:30	7.19 pH	12.01 °C	543.96 µS/cm	2.50 mg/L		251.2 mV	489.00 cm
3/14/2019 1:00 PM	01:00	7.19 pH	11.89 °C	547.11 µS/cm	1.81 mg/L		236.9 mV	489.00 cm
3/14/2019 1:00 PM	01:30	7.19 pH	11.83 °C	548.19 µS/cm	1.61 mg/L		224.6 mV	489.00 cm
3/14/2019 1:01 PM	02:00	7.19 pH	11.82 °C	548.55 µS/cm	1.54 mg/L		215.2 mV	489.00 cm
3/14/2019 1:01 PM	02:30	7.19 pH	11.80 °C	550.46 µS/cm	1.45 mg/L		207.8 mV	489.00 cm
3/14/2019 1:02 PM	03:00	7.19 pH	11.82 °C	551.77 µS/cm	1.45 mg/L		201.1 mV	489.00 cm
3/14/2019 1:02 PM	03:30	7.19 pH	11.86 °C	552.39 µS/cm	1.49 mg/L		196.2 mV	489.00 cm
3/14/2019 1:03 PM	04:00	7.17 pH	11.87 °C	552.49 µS/cm	1.49 mg/L		192.8 mV	489.00 cm

Samples

Sample ID:	Description:
BH02	2 x 500ml glass bottles, 2 x 30ml glass vials

Appendix F Environmental Laboratory Analysis

- **Soils**
- **Groundwater**

Jon Coates
Waterman Infrastructure & Environment Ltd
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e: jon.coates@watermangroup.com

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Analytical Report Number : 18-16240

Replaces Analytical Report Number : 18-16240, issue no. 1

Project / Site name:	Syon Lane	**Samples received on:**	26/10/2018
Your job number:	WIE15238-100	**Samples instructed on:**	30/10/2018
Your order number:		**Analysis completed by:**	13/12/2018
Report Issue Number:	2	**Report issued on:**	14/12/2018
Samples Analysed:	2 bulk samples - 3 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-16240

Project / Site name: Syon Lane

Lab Sample Number				1078192	1078193	1078194		
Sample Reference				HP1	WS2	WS2		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.70-0.90	0.20-0.40	1.80-2.00		
Date Sampled				25/10/2018	26/10/2018	26/10/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	59	< 0.1		
Moisture Content	%	N/A	NONE	6.9	8.9	3.5		
Total mass of sample received	kg	0.001	NONE	0.42	2.0	1.4		
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile & Amosite & Crocidolite	-		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	-		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	-		
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	-		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.8	10.5	8.9		
Organic Matter	%	0.1	MCERTS	1.6	0.6	< 0.1		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.44	< 0.05		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.98	< 0.05		
Pyrene	mg/kg	0.05	MCERTS	< 0.05	1.2	< 0.05		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.53	< 0.05		
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.44	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.55	< 0.05		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.27	< 0.05		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.36	< 0.05		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9	4.8	< 0.9		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	9.9	15		
Barium (aqua regia extractable)	mg/kg	1	MCERTS	88	130	26		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.78	0.50	0.64		
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	3.2	0.5		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	28	45		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	20	7.5		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	57	7.1		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.0	< 0.3	< 0.3		
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.0	1.2	0.99		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	17	35		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	36	33	44		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	85	28		

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Analytical Report Number: 18-16240

Project / Site name: Syon Lane

Lab Sample Number				1078192	1078193	1078194		
Sample Reference				HP1	WS2	WS2		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.70-0.90	0.20-0.40	1.80-2.00		
Date Sampled				25/10/2018	26/10/2018	26/10/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	3.3	11		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	7.5	18		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	29	20		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	210	< 8.0		
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	120	< 8.4		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	250	54		
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	370	54		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	1.0	3.6		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	4.7	9.6		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	15	17		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	150	< 10		
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	150	< 8.4		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	170	36		
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	320	36		

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Analytical Report Number: 18-16240

Project / Site name: Syon Lane

Lab Sample Number				1078192	1078193	1078194		
Sample Reference				HP1	WS2	WS2		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.70-0.90	0.20-0.40	1.80-2.00		
Date Sampled				25/10/2018	26/10/2018	26/10/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
Chloroethane	µg/kg	1	NONE	< 1.0	-	< 1.0		
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-	< 1.0		
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-	< 1.0		
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0		
Benzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0		
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Styrene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Tribromomethane	µg/kg	1	NONE	< 1.0	-	< 1.0		
o-Xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-	< 1.0		
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0		

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Analytical Report Number: 18-16240

Project / Site name: Syon Lane

Lab Sample Number				1078192	1078193	1078194		
Sample Reference				HP1	WS2	WS2		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.70-0.90	0.20-0.40	1.80-2.00		
Date Sampled				25/10/2018	26/10/2018	26/10/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	ND	-	ND		
VOC % Match	%	N/A	NONE	-	-	-		

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Analytical Report Number: 18-16240

Project / Site name: Syon Lane

Lab Sample Number				1078192	1078193	1078194		
Sample Reference				HP1	WS2	WS2		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.70-0.90	0.20-0.40	1.80-2.00		
Date Sampled				25/10/2018	26/10/2018	26/10/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1		
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-	< 0.2		
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1		
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1		
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1		
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	< 0.2		
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1		
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1		
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	< 0.1		
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1		
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-	< 0.1		
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1		
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1		
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3		
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2		
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3		
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05		

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Analytical Report Number: 18-16240

Project / Site name: Syon Lane

Lab Sample Number				1078192	1078193	1078194		
Sample Reference				HP1	WS2	WS2		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.70-0.90	0.20-0.40	1.80-2.00		
Date Sampled				25/10/2018	26/10/2018	26/10/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	-	ND		
SVOC % Match	%	N/A	NONE	-	-	-		

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Analytical Report Number: 18-16240
Project / Site name: Syon Lane
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1078193	WS2	0.20-0.40	136	Loose Fibres	**Chrysotile & Amosite & Crocidolite**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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Analytical Report Number: 18-16240

Project / Site name: Syon Lane

Lab Sample Number				1078190	1078191			
Sample Reference				HP1-1	HP1-2			
Sample Number				None Supplied	None Supplied			
Depth (m)				None Supplied	None Supplied			
Date Sampled				25/10/2018	25/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Asbestos Identification Name	Type	N/A	ISO 17025	Chrysotile-Hard/Cement Type Material	Chrysotile-Hard/Cement Type Material			

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Analytical Report Number : 18-16240

Project / Site name: Syon Lane

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1078192	HP1	None Supplied	0.70-0.90	Light brown clay.
1078193	WS2	None Supplied	0.20-0.40	Grey loam and sand with stones and gravel.
1078194	WS2	None Supplied	1.80-2.00	Light brown sand with gravel.

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Analytical Report Number : 18-16240

Project / Site name: Syon Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE

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Analytical Report Number : 18-16240

Project / Site name: Syon Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-16642

Project / Site name:	Syon Lane	**Samples received on:**	30/10/2018
Your job number:	WIE15238-100	**Samples instructed on:**	01/11/2018
Your order number:		**Analysis completed by:**	07/11/2018
Report Issue Number:	1	**Report issued on:**	07/11/2018
Samples Analysed:	12 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080648	1080649	1080650	1080651	1080652
Sample Reference				WS3	BH02A	BH02A	BH02A	WS8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	2.80-3.00	3.30-3.50	5.50-5.70	0.05-0.15
Date Sampled				26/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	46	27	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	12	6.0	4.5	18	5.5
Total mass of sample received	kg	0.001	NONE	1.4	2.0	2.0	1.5	2.0
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	7.9	8.0	8.0	10.1
Organic Matter	%	0.1	MCERTS	0.4	0.2	0.2	1.7	3.4
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.37
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.14
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.8
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	2.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.0
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.0
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.1
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.52
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.84
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.41
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.61
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9	< 0.9	< 0.9	< 0.9	10

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080648	1080649	1080650	1080651	1080652
Sample Reference				WS3	BH02A	BH02A	BH02A	WS8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	2.80-3.00	3.30-3.50	5.50-5.70	0.05-0.15
Date Sampled				26/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	-	12	-	9.9
Barium (aqua regia extractable)	mg/kg	1	MCERTS	80	-	12	-	80
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	-	0.40	-	0.57
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	-	0.2	-	2.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	-	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	41	-	20	-	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	-	6.9	-	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	-	5.6	-	41
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	< 0.25	-	1.0	-	< 0.25
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	36	-	24	-	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	59	-	26	-	35
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	35	-	18	-	56
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	11
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	39
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	190	< 8.0	190
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	52	< 8.4	390
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	200	< 10	240
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	250	< 10	630
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	8.7
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	40
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	110	< 10	260
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	61	< 8.4	1300
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	120	< 10	300
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	180	< 10	1600

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080648	1080649	1080650	1080651	1080652
Sample Reference				WS3	BH02A	BH02A	BH02A	WS8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	2.80-3.00	3.30-3.50	5.50-5.70	0.05-0.15
Date Sampled				26/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	-	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080648	1080649	1080650	1080651	1080652
Sample Reference				WS3	BH02A	BH02A	BH02A	WS8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	2.80-3.00	3.30-3.50	5.50-5.70	0.05-0.15
Date Sampled				26/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	ND	-	ND
VOC % Match	%	N/A	NONE	-	-	-	-	-

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080648	1080649	1080650	1080651	1080652
Sample Reference				WS3	BH02A	BH02A	BH02A	WS8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	2.80-3.00	3.30-3.50	5.50-5.70	0.05-0.15
Date Sampled				26/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	0.37
Anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	0.14
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	1.8
Pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	2.3
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	1.0
Chrysene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	1.0
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	1.1
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	0.52
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	0.84
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	0.41
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	0.61

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080648	1080649	1080650	1080651	1080652
Sample Reference				WS3	BH02A	BH02A	BH02A	WS8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	2.80-3.00	3.30-3.50	5.50-5.70	0.05-0.15
Date Sampled				26/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	2-Dodecen-1-yl(-)succinic anhydride	-	Octacosane
SVOC % Match	%	N/A	NONE	-	-	93	-	95
SVOCs TICs Compound Name		N/A	NONE	-	-	Pyridine-3-carboxamide, oxime, N-(2-trifluoromethylphenyl)-	-	Heptadecane
SVOC % Match	%	N/A	NONE	-	-	91	-	95
SVOCs TICs Compound Name		N/A	NONE	-	-	1,2-Benzisothiazole, 3-(hexahydro-1H-azepin-1-yl)-, 1,1-dioxide	-	Cyclohexane-1,3-dione, 2-allylaminomethylene-5,5-dimethyl-
SVOC % Match	%	N/A	NONE	-	-	91	-	95
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	1-Naphthalenecarboxylic acid, 2-benzoyl-
SVOC % Match	%	N/A	NONE	-	-	-	-	94
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Naphthalene, 1,6,7-trimethyl-
SVOC % Match	%	N/A	NONE	-	-	-	-	93
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Tetracosane, 1-bromo-
SVOC % Match	%	N/A	NONE	-	-	-	-	93
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Podocarp-13-en-12-ol #
SVOC % Match	%	N/A	NONE	-	-	-	-	93
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	5,5'-Di(ethoxycarbonyl)-3,3'-dimethyl-4,4'-dipropyl-2,2'-dipyrrylmethane
SVOC % Match	%	N/A	NONE	-	-	-	-	93
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Octadecane
SVOC % Match	%	N/A	NONE	-	-	-	-	91
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	E-8-Methyl-9-tetradecen-1-ol acetate
SVOC % Match	%	N/A	NONE	-	-	-	-	91

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080648	1080649	1080650	1080651	1080652
Sample Reference				WS3	BH02A	BH02A	BH02A	WS8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	2.80-3.00	3.30-3.50	5.50-5.70	0.05-0.15
Date Sampled				26/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-
Glycols								
1,2-Butanediol	mg/kg	10	NONE	-	-	-	-	< 10
1,2-Propanediol	mg/kg	10	NONE	-	-	-	-	< 10
1,3-Butanediol	mg/kg	10	NONE	-	-	-	-	< 10
1,3-Propanediol	mg/kg	10	NONE	-	-	-	-	< 10
1,4-Butanediol	mg/kg	10	NONE	-	-	-	-	< 10
1,5-Pentanediol	mg/kg	10	NONE	-	-	-	-	< 10
Diethylene Glycol	mg/kg	10	NONE	-	-	-	-	< 10
Ethylene Glycol	mg/kg	10	NONE	-	-	-	-	< 10
Triethylene Glycol	mg/kg	10	NONE	-	-	-	-	< 10

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080653	1080654	1080655	1080656	1080657
Sample Reference				WS8	WS6	WS6	WS4	WS4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.10-0.30	1.00-1.20	0.50-0.70	1.70-2.00
Date Sampled				29/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	12	14	17	7.1	7.7
Total mass of sample received	kg	0.001	NONE	1.7	2.0	0.20	2.0	1.6
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-	Not-detected	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.0	8.4	7.8	8.1	7.7
Organic Matter	%	0.1	MCERTS	0.4	2.0	0.5	2.4	0.4
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.31	< 0.05	0.43	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.84	< 0.05	1.0	-
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.78	< 0.05	0.92	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.60	< 0.05	0.58	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.49	< 0.05	0.55	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.79	< 0.05	0.74	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.36	< 0.05	0.35	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.69	< 0.05	0.67	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.39	< 0.05	0.38	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.50	< 0.05	0.47	-
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9	5.8	< 0.9	6.1	-

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080653	1080654	1080655	1080656	1080657
Sample Reference				WS8	WS6	WS6	WS4	WS4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.10-0.30	1.00-1.20	0.50-0.70	1.70-2.00
Date Sampled				29/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.8	15	-	15	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	91	100	-	84	79
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.90	0.81	-	0.75	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.5	-	1.0	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	31	26	-	23	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	50	-	39	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	200	-	160	11
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1.2	-	0.8	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.31	0.99	-	0.70	< 0.25
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	19	-	17	37
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	42	39	-	38	52
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	52	94	-	92	30
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	13	< 10	< 10	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	17	< 10	13	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	17	< 10	13	-

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080653	1080654	1080655	1080656	1080657
Sample Reference				WS8	WS6	WS6	WS4	WS4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.10-0.30	1.00-1.20	0.50-0.70	1.70-2.00
Date Sampled				29/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
Chloroethane	µg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0	-
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0	-
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0	-
Benzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Styrene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Tribromomethane	µg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0	-
o-Xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	< 1.0	-

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080653	1080654	1080655	1080656	1080657
Sample Reference				WS8	WS6	WS6	WS4	WS4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.10-0.30	1.00-1.20	0.50-0.70	1.70-2.00
Date Sampled				29/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	ND	-	ND	ND	-
VOC % Match	%	N/A	NONE	-	-	-	-	-

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080653	1080654	1080655	1080656	1080657
Sample Reference				WS8	WS6	WS6	WS4	WS4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.10-0.30	1.00-1.20	0.50-0.70	1.70-2.00
Date Sampled				29/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-	< 0.2	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	< 0.2	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	< 0.1	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-	< 0.1	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.43	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	1.0	-
Pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.92	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3	< 0.3	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.58	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.55	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.74	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.35	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.67	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.38	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.47	-

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080653	1080654	1080655	1080656	1080657
Sample Reference				WS8	WS6	WS6	WS4	WS4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.10-0.30	1.00-1.20	0.50-0.70	1.70-2.00
Date Sampled				29/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	Ethanol, 2-(2-butoxyethoxy)-, acetate	-	0	Chrysene, 2-methyl-	-
SVOC % Match	%	N/A	NONE	93	-	0	96	-
SVOCs TICs Compound Name		N/A	NONE	Antra-9,10-quinone, 1-(3-hydrohy-3-phenyl-1-triazenyl)-	-	0	Benzo[e]pyrene	-
SVOC % Match	%	N/A	NONE	92	-	0	96	-
SVOCs TICs Compound Name		N/A	NONE	Cyclohexane-1,3-dione, 2-allylaminomethylene-5,5-dimethyl-	-	0	Phenanthrene, 1-methyl-	-
SVOC % Match	%	N/A	NONE	91	-	0	95	-
SVOCs TICs Compound Name		N/A	NONE	3,13-Dihydroxy-5,8,11,18,23-pentaoxa-1,15-diazabicyclo[13.5.5]pentacosane	-	-	Ethanol, 2-(2-butoxyethoxy)-, acetate	-
SVOC % Match	%	N/A	NONE	90	-	-	91	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	Cyclohexane-1,3-dione, 2-allylaminomethylene-5,5-dimethyl-	-
SVOC % Match	%	N/A	NONE	-	-	-	90	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1080653	1080654	1080655	1080656	1080657
Sample Reference				WS8	WS6	WS6	WS4	WS4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.10-0.30	1.00-1.20	0.50-0.70	1.70-2.00
Date Sampled				29/10/2018	29/10/2018	29/10/2018	29/10/2018	29/10/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	-	-	-	-
Glycols								
1,2-Butanediol	mg/kg	10	NONE	-	-	-	< 10	-
1,2-Propanediol	mg/kg	10	NONE	-	-	-	< 10	-
1,3-Butanediol	mg/kg	10	NONE	-	-	-	< 10	-
1,3-Propanediol	mg/kg	10	NONE	-	-	-	< 10	-
1,4-Butanediol	mg/kg	10	NONE	-	-	-	< 10	-
1,5-Pentanediol	mg/kg	10	NONE	-	-	-	< 10	-
Diethylene Glycol	mg/kg	10	NONE	-	-	-	< 10	-
Ethylene Glycol	mg/kg	10	NONE	-	-	-	< 10	-
Triethylene Glycol	mg/kg	10	NONE	-	-	-	< 10	-

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1081587	1081588			
Sample Reference				BH02A	WS3			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.40-0.60	1.55-1.75			
Date Sampled				26/10/2018	26/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	16	6.8			
Total mass of sample received	kg	0.001	NONE	2.0	1.4			
Asbestos in Soil	Type	N/A	ISO 17025	-	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.4	7.8			
Organic Matter	%	0.1	MCERTS	1.8	0.5			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Fluoranthene	mg/kg	0.05	MCERTS	0.32	< 0.05			
Pyrene	mg/kg	0.05	MCERTS	0.30	< 0.05			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.21	< 0.05			
Chrysene	mg/kg	0.05	MCERTS	0.23	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.25	< 0.05			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.15	< 0.05			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.18	< 0.05			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05			
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	1.6	< 0.9			

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1081587	1081588			
Sample Reference				BH02A	WS3			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.40-0.60	1.55-1.75			
Date Sampled				26/10/2018	26/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.4	9.9			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	90	47			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.74	0.85			
Boron (water soluble)	mg/kg	0.2	MCERTS	1.7	0.7			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	23			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	9.2			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	44	11			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3			
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	< 0.25	< 0.25			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	19			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	40	45			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	51	25			
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0			
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0			
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10			
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	13			
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	13			

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1081587	1081588			
Sample Reference				BH02A	WS3			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.40-0.60	1.55-1.75			
Date Sampled				26/10/2018	26/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-			
Chloroethane	µg/kg	1	NONE	< 1.0	-			
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-			
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-			
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-			
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-			
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-			
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-			
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-			
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-			
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-			
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-			
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-			
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-			
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-			
Benzene	µg/kg	1	MCERTS	< 1.0	-			
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-			
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-			
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-			
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-			
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-			
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-			
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-			
Toluene	µg/kg	1	MCERTS	< 1.0	-			
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-			
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-			
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-			
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-			
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-			
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-			
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-			
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-			
Styrene	µg/kg	1	MCERTS	< 1.0	-			
Tribromomethane	µg/kg	1	NONE	< 1.0	-			
o-Xylene	µg/kg	1	MCERTS	< 1.0	-			
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-			
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-			
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-			
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-			
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-			
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-			
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-			
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-			
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-			
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-			
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-			
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-			
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-			
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-			
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-			
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-			
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-			
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-			
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-			

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1081587	1081588			
Sample Reference				BH02A	WS3			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.40-0.60	1.55-1.75			
Date Sampled				26/10/2018	26/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	ND	-			
VOC % Match	%	N/A	NONE	-	-			

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1081587	1081588			
Sample Reference				BH02A	WS3			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.40-0.60	1.55-1.75			
Date Sampled				26/10/2018	26/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-			
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-			
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-			
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-			
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-			
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-			
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-			
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-			
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-			
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-			
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-			
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-			
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-			
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-			
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-			
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-			
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-			
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-			
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-			
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-			
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-			
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-			
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-			
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-			
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-			
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-			
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-			
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-			
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-			
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-			
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-			
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-			
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-			
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-			
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-			
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-			
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-			
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-			
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-			
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-			
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-			
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-			
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-			
Fluoranthene	mg/kg	0.05	MCERTS	0.32	-			
Pyrene	mg/kg	0.05	MCERTS	0.30	-			
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.21	-			
Chrysene	mg/kg	0.05	MCERTS	0.23	-			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.25	-			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.15	-			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.18	-			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-			

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1081587	1081588			
Sample Reference				BH02A	WS3			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.40-0.60	1.55-1.75			
Date Sampled				26/10/2018	26/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	Phenanthrene, 1-methyl-	-			
SVOC % Match	%	N/A	NONE	95	-			
SVOCs TICs Compound Name		N/A	NONE	Ethanol, 2-(2-butoxyethoxy)-, acetate	-			
SVOC % Match	%	N/A	NONE	91	-			
SVOCs TICs Compound Name		N/A	NONE	1,4-Dicyano-2-(5-hexenyl)benzene	-			
SVOC % Match	%	N/A	NONE	90	-			
SVOCs TICs Compound Name		N/A	NONE	Perylene	-			
SVOC % Match	%	N/A	NONE	90	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			

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Analytical Report Number: 18-16642

Project / Site name: Syon Lane

Lab Sample Number				1081587	1081588			
Sample Reference				BH02A	WS3			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.40-0.60	1.55-1.75			
Date Sampled				26/10/2018	26/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-			
PCB Congener 52	mg/kg	0.001	MCERTS	-	-			
PCB Congener 101	mg/kg	0.001	MCERTS	-	-			
PCB Congener 118	mg/kg	0.001	MCERTS	-	-			
PCB Congener 138	mg/kg	0.001	MCERTS	-	-			
PCB Congener 153	mg/kg	0.001	MCERTS	-	-			
PCB Congener 180	mg/kg	0.001	MCERTS	-	-			
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	-			
Glycols								
1,2-Butanediol	mg/kg	10	NONE	-	-			
1,2-Propanediol	mg/kg	10	NONE	-	-			
1,3-Butanediol	mg/kg	10	NONE	-	-			
1,3-Propanediol	mg/kg	10	NONE	-	-			
1,4-Butanediol	mg/kg	10	NONE	-	-			
1,5-Pentanediol	mg/kg	10	NONE	-	-			
Diethylene Glycol	mg/kg	10	NONE	-	-			
Ethylene Glycol	mg/kg	10	NONE	-	-			
Triethylene Glycol	mg/kg	10	NONE	-	-			

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Analytical Report Number : 18-16642

Project / Site name: Syon Lane

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1080648	WS3	None Supplied	1.00-1.20	Light brown clay with gravel.
1080649	BH02A	None Supplied	2.80-3.00	Light brown sand with gravel and stones.
1080650	BH02A	None Supplied	3.30-3.50	Light brown sand with stones and gravel.
1080651	BH02A	None Supplied	5.50-5.70	Grey clay with gravel.
1080652	WS8	None Supplied	0.05-0.15	Brown sand with gravel and tar.
1080653	WS8	None Supplied	1.00-1.20	Light brown clay and sand with gravel.
1080654	WS6	None Supplied	0.10-0.30	Brown clay and loam with gravel.
1080655	WS6	None Supplied	1.00-1.20	Brown clay with gravel.
1080656	WS4	None Supplied	0.50-0.70	Brown loam and sand with vegetation and gravel.
1080657	WS4	None Supplied	1.70-2.00	Light brown clay with gravel.
1081587	BH02A	None Supplied	0.40-0.60	Brown sandy clay with gravel and vegetation.
1081588	WS3	None Supplied	1.55-1.75	Light brown sandy clay with gravel.

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Analytical Report Number : 18-16642

Project / Site name: Syon Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Determination of glycols in soil by GC-MS.	Determination of glycols in soil by GC-MS.	In-house method	L059B-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS

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Analytical Report Number : 18-16642

Project / Site name: Syon Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-16969

Project / Site name:	Syon Lane	**Samples received on:**	01/11/2018
Your job number:	WIE15238-100	**Samples instructed on:**	02/11/2018
Your order number:	PO 94071	**Analysis completed by:**	09/11/2018
Report Issue Number:	1	**Report issued on:**	09/11/2018
Samples Analysed:	1 soil sample		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-16969

Project / Site name: Syon Lane
Your Order No: PO 94071

Lab Sample Number				1082751				
Sample Reference				WS4				
Sample Number				None Supplied				
Depth (m)				1.00-1.20				
Date Sampled				29/10/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	7.5				
Total mass of sample received	kg	0.001	NONE	2.0				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.3				
Organic Matter	%	0.1	MCERTS	1.2				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	1.1				
Anthracene	mg/kg	0.05	MCERTS	0.19				
Fluoranthene	mg/kg	0.05	MCERTS	1.8				
Pyrene	mg/kg	0.05	MCERTS	1.6				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1				
Chrysene	mg/kg	0.05	MCERTS	0.94				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.1				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.50				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.91				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.62				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.81				
Coronene	mg/kg	0.05	NONE	< 0.05				
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	11				

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Analytical Report Number: 18-16969

Project / Site name: Syon Lane
Your Order No: PO 94071

Lab Sample Number				1082751				
Sample Reference				WS4				
Sample Number				None Supplied				
Depth (m)				1.00-1.20				
Date Sampled				29/10/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10				
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	14				
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	14				

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Analytical Report Number: 18-16969

Project / Site name: Syon Lane
Your Order No: PO 94071

Lab Sample Number				1082751				
Sample Reference				WS4				
Sample Number				None Supplied				
Depth (m)				1.00-1.20				
Date Sampled				29/10/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0				
Chloroethane	µg/kg	1	NONE	< 1.0				
Bromomethane	µg/kg	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/kg	1	NONE	< 1.0				
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0				
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloromethane	µg/kg	1	MCERTS	< 1.0				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0				
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0				
Benzene	µg/kg	1	MCERTS	< 1.0				
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloroethene	µg/kg	1	MCERTS	< 1.0				
Dibromomethane	µg/kg	1	MCERTS	< 1.0				
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/kg	1	NONE	< 1.0				
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0				
Chlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-Xylene	µg/kg	1	MCERTS	< 1.0				
Styrene	µg/kg	1	MCERTS	< 1.0				
Tribromomethane	µg/kg	1	NONE	< 1.0				
o-Xylene	µg/kg	1	MCERTS	< 1.0				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0				
Bromobenzene	µg/kg	1	MCERTS	< 1.0				
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0				

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Analytical Report Number: 18-16969

Project / Site name: Syon Lane
Your Order No: PO 94071

Lab Sample Number				1082751				
Sample Reference				WS4				
Sample Number				None Supplied				
Depth (m)				1.00-1.20				
Date Sampled				29/10/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	ND				
VOC % Match	%	N/A	NONE	-				

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Analytical Report Number: 18-16969

Project / Site name: Syon Lane
Your Order No: PO 94071

Lab Sample Number				1082751				
Sample Reference				WS4				
Sample Number				None Supplied				
Depth (m)				1.00-1.20				
Date Sampled				29/10/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1				
Phenol	mg/kg	0.2	ISO 17025	< 0.2				
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2				
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1				
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1				
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3				
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05				
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3				
4-Methylphenol	mg/kg	0.2	NONE	< 0.2				
Isophorone	mg/kg	0.2	MCERTS	< 0.2				
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3				
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3				
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3				
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3				
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1				
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1				
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1				
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1				
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2				
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1				
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1				
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1				
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2				
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2				
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3				
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Azobenzene	mg/kg	0.3	MCERTS	< 0.3				
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2				
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Phenanthrene	mg/kg	0.05	MCERTS	1.1				
Anthracene	mg/kg	0.05	MCERTS	0.19				
Carbazole	mg/kg	0.3	MCERTS	< 0.3				
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3				
Fluoranthene	mg/kg	0.05	MCERTS	1.8				
Pyrene	mg/kg	0.05	MCERTS	1.6				
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1				
Chrysene	mg/kg	0.05	MCERTS	0.94				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.1				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.50				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.91				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.62				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.81				

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Analytical Report Number: 18-16969

Project / Site name: Syon Lane
Your Order No: PO 94071

Lab Sample Number				1082751				
Sample Reference				WS4				
Sample Number				None Supplied				
Depth (m)				1.00-1.20				
Date Sampled				29/10/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

SVOCs TICs

SVOCs TICs Compound Name		N/A	NONE	Benzo[e]pyrene				
SVOC % Match	%	N/A	NONE	94				
SVOCs TICs Compound Name		N/A	NONE	Fluoranthene, 2-methyl-				
SVOC % Match	%	N/A	NONE	92				
SVOCs TICs Compound Name		N/A	NONE	Anthracene, 1-methyl-				
SVOC % Match	%	N/A	NONE	90				
SVOCs TICs Compound Name		N/A	NONE	1-[p-Bromophenyl]-4-nitro-1,3-butadiene				
SVOC % Match	%	N/A	NONE	90				

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Analytical Report Number : 18-16969

Project / Site name: Syon Lane

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1082751	WS4	None Supplied	1.00-1.20	Light brown sand with gravel and rubble.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 18-16969

Project / Site name: Syon Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-17017

Project / Site name:	Syon Lane - Tsc	**Samples received on:**	01/11/2018
Your job number:	WIE15238-100	**Samples instructed on:**	05/11/2018
Your order number:	PO 94071	**Analysis completed by:**	09/11/2018
Report Issue Number:	1	**Report issued on:**	09/11/2018
Samples Analysed:	2 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-17017

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1083176	1083177			
Sample Reference				WS07A	WS07A			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.10-0.30	0.70-0.90			
Date Sampled				30/10/2018	30/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	5.5	14			
Total mass of sample received	kg	0.001	NONE	2.0	1.7			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	11.2	8.4			
Organic Matter	%	0.1	MCERTS	2.0	0.6			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	0.29	< 0.05			
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Phenanthrene	mg/kg	0.05	MCERTS	2.8	< 0.05			
Anthracene	mg/kg	0.05	MCERTS	0.63	< 0.05			
Fluoranthene	mg/kg	0.05	MCERTS	5.2	< 0.05			
Pyrene	mg/kg	0.05	MCERTS	4.3	< 0.05			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.0	< 0.05			
Chrysene	mg/kg	0.05	MCERTS	1.7	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.8	< 0.05			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.99	< 0.05			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.5	< 0.05			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.76	< 0.05			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.24	< 0.05			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.93	< 0.05			
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05			
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	23	< 0.9			

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Analytical Report Number: 18-17017

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1083176	1083177			
Sample Reference				WS07A	WS07A			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.10-0.30	0.70-0.90			
Date Sampled				30/10/2018	30/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.1	-			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	85	-			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.65	-			
Boron (water soluble)	mg/kg	0.2	MCERTS	3.1	-			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	-			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21	-			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	38	-			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-			
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.36	-			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	-			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	32	-			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	56	-			
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0			
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0			
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	13	< 2.0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	42	< 8.0			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	240	< 8.0			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	230	< 8.4			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	290	< 10			
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	520	< 10			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	14	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	61	< 10			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	360	< 10			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	570	< 8.4			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	430	< 10			
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	1000	< 10			

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Analytical Report Number : 18-17017

Project / Site name: Syon Lane - Tsc

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1083176	WS07A	None Supplied	0.10-0.30	Brown gravelly sand with brick.
1083177	WS07A	None Supplied	0.70-0.90	Light brown clay and sand with gravel.

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Analytical Report Number : 18-17017

Project / Site name: Syon Lane - Tsc

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
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Analytical Report Number : 18-17271

Project / Site name:	Syon Lane - Tsc	**Samples received on:**	06/11/2018
Your job number:	WIE15238-100	**Samples instructed on:**	06/11/2018
Your order number:	PO 94071	**Analysis completed by:**	13/11/2018
Report Issue Number:	1	**Report issued on:**	13/11/2018
Samples Analysed:	2 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-17271

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1084599	1084600			
Sample Reference				WS1	WS1			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.05-0.15	1.00-1.20			
Date Sampled				29/10/2018	29/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	7.8	13			
Total mass of sample received	kg	0.001	NONE	1.7	1.6			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	10.9	8.2			
Organic Matter	%	0.1	MCERTS	2.3	0.5			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	0.19	< 0.05			
Fluorene	mg/kg	0.05	MCERTS	0.21	< 0.05			
Phenanthrene	mg/kg	0.05	MCERTS	3.8	< 0.05			
Anthracene	mg/kg	0.05	MCERTS	1.2	< 0.05			
Fluoranthene	mg/kg	0.05	MCERTS	6.3	< 0.05			
Pyrene	mg/kg	0.05	MCERTS	6.4	< 0.05			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.2	< 0.05			
Chrysene	mg/kg	0.05	MCERTS	2.5	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.8	< 0.05			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.5	< 0.05			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.1	< 0.05			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.1	< 0.05			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.29	< 0.05			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.2	< 0.05			
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05			
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	33	< 0.9			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.0	8.2			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	88	78			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.29	0.72			
Boron (water soluble)	mg/kg	0.2	MCERTS	3.3	1.0			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	37			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	9.6			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	37	10			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.26	< 0.25			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	27			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	31	59			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	50	44			

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Analytical Report Number: 18-17271

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1084599	1084600			
Sample Reference				WS1	WS1			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.05-0.15	1.00-1.20			
Date Sampled				29/10/2018	29/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0			
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0			
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	9.1	< 2.0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	33	< 8.0			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	180	< 8.0			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	260	< 8.4			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	230	< 10			
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	490	< 10			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	18	< 10			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	110	< 10			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	240	< 8.4			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	130	< 10			
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	370	< 10			

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Analytical Report Number: 18-17271

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1084599	1084600			
Sample Reference				WS1	WS1			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.05-0.15	1.00-1.20			
Date Sampled				29/10/2018	29/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-			
Chloroethane	µg/kg	1	NONE	< 1.0	-			
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-			
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-			
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-			
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-			
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-			
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-			
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-			
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-			
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-			
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-			
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-			
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-			
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-			
Benzene	µg/kg	1	MCERTS	< 1.0	-			
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-			
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-			
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-			
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-			
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-			
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-			
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-			
Toluene	µg/kg	1	MCERTS	< 1.0	-			
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-			
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-			
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-			
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-			
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-			
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-			
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-			
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-			
Styrene	µg/kg	1	MCERTS	< 1.0	-			
Tribromomethane	µg/kg	1	NONE	< 1.0	-			
o-Xylene	µg/kg	1	MCERTS	< 1.0	-			
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-			
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-			
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-			
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-			
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-			
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-			
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-			
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-			
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-			
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-			
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-			
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-			
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-			
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-			
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-			
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-			
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-			
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-			
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-			

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-17271

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1084599	1084600			
Sample Reference				WS1	WS1			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.05-0.15	1.00-1.20			
Date Sampled				29/10/2018	29/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	ND	-			
VOC % Match	%	N/A	NONE	-	-			

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Analytical Report Number: 18-17271

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1084599	1084600			
Sample Reference				WS1	WS1			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.05-0.15	1.00-1.20			
Date Sampled				29/10/2018	29/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-			
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-			
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-			
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-			
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-			
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-			
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-			
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-			
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-			
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-			
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-			
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-			
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-			
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-			
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-			
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-			
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-			
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-			
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-			
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-			
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-			
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-			
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-			
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-			
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-			
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-			
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-			
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-			
Acenaphthene	mg/kg	0.05	MCERTS	0.19	-			
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-			
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-			
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-			
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-			
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-			
Fluorene	mg/kg	0.05	MCERTS	0.21	-			
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-			
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-			
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-			
Phenanthrene	mg/kg	0.05	MCERTS	3.8	-			
Anthracene	mg/kg	0.05	MCERTS	1.2	-			
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-			
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-			
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-			
Fluoranthene	mg/kg	0.05	MCERTS	6.3	-			
Pyrene	mg/kg	0.05	MCERTS	6.4	-			
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.2	-			
Chrysene	mg/kg	0.05	MCERTS	2.5	-			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.8	-			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.5	-			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.1	-			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.1	-			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.29	-			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.2	-			

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Analytical Report Number: 18-17271

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1084599	1084600			
Sample Reference				WS1	WS1			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.05-0.15	1.00-1.20			
Date Sampled				29/10/2018	29/10/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	Z-11,13-Tetradecadien-1-ol acetate	-			
SVOC % Match	%	N/A	NONE	97	-			
SVOCs TICs Compound Name		N/A	NONE	11H-Benzo[b]fluorene	-			
SVOC % Match	%	N/A	NONE	96	-			
SVOCs TICs Compound Name		N/A	NONE	1-Naphthalenecarboxylic acid, 2-benzoyl-	-			
SVOC % Match	%	N/A	NONE	96	-			
SVOCs TICs Compound Name		N/A	NONE	Naphthalene, 1,6,7-trimethyl-	-			
SVOC % Match	%	N/A	NONE	93	-			
SVOCs TICs Compound Name		N/A	NONE	Phenanthrene, 1-methyl-	-			
SVOC % Match	%	N/A	NONE	93	-			
SVOCs TICs Compound Name		N/A	NONE	di-p-Tolylacetylene	-			
SVOC % Match	%	N/A	NONE	93	-			
SVOCs TICs Compound Name		N/A	NONE	Fluoranthene, 2-methyl-	-			
SVOC % Match	%	N/A	NONE	93	-			
SVOCs TICs Compound Name		N/A	NONE	Benz[a]anthracene, 1-methyl-	-			
SVOC % Match	%	N/A	NONE	93	-			
SVOCs TICs Compound Name		N/A	NONE	Antra-9,10-quinone, 1-(3-hydrohy-3-phenyl-1-triazenyl)-	-			
SVOC % Match	%	N/A	NONE	92	-			
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	< 0.001			
PCB Congener 52	mg/kg	0.001	MCERTS	-	< 0.001			
PCB Congener 101	mg/kg	0.001	MCERTS	-	< 0.001			
PCB Congener 118	mg/kg	0.001	MCERTS	-	< 0.001			
PCB Congener 138	mg/kg	0.001	MCERTS	-	< 0.001			
PCB Congener 153	mg/kg	0.001	MCERTS	-	< 0.001			
PCB Congener 180	mg/kg	0.001	MCERTS	-	< 0.001			
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	< 0.007			

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Analytical Report Number : 18-17271

Project / Site name: Syon Lane - Tsc

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1084599	WS1	None Supplied	0.05-0.15	Brown clay and sand with gravel.
1084600	WS1	None Supplied	1.00-1.20	Brown clay and sand with gravel.

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Analytical Report Number : 18-17271

Project / Site name: Syon Lane - Tsc

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

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Analytical Report Number : 18-17271

Project / Site name: Syon Lane - Tsc

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-17707

Project / Site name:	34740 - Syon Lane	**Samples received on:**	07/11/2018
Your job number:	WIE15238-100	**Samples instructed on:**	08/11/2018
Your order number:	PO 94071	**Analysis completed by:**	16/11/2018
Report Issue Number:	1	**Report issued on:**	16/11/2018
Samples Analysed:	1 bulk sample - 4 soil samples		

Signed:

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-17707

Project / Site name: 34740 - Syon Lane
Your Order No: PO 94071

Lab Sample Number				1087319	1087320	1087321	1087322	
Sample Reference				HP05	HP05	HP06	HP06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.05-0.10	0.45-0.50	0.25-0.30	0.45-0.50	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	7.3	8.5	12	12	
Total mass of sample received	kg	0.001	NONE	1.7	2.0	2.0	2.0	
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile & Amosite	Chrysotile	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Detected	
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.002	< 0.001	
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.002	< 0.001	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	7.8	8.0	8.7	
Organic Matter	%	0.1	MCERTS	11	2.3	4.6	1.8	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	1.3	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	1.7	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	7.2	< 0.05	0.23	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	6.0	< 0.05	0.28	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	51	1.7	2.1	0.43	
Anthracene	mg/kg	0.05	MCERTS	18	0.47	0.52	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	87	4.8	4.0	0.99	
Pyrene	mg/kg	0.05	MCERTS	75	4.8	3.3	0.80	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	50	2.2	1.6	0.46	
Chrysene	mg/kg	0.05	MCERTS	39	2.0	1.4	0.43	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	66	2.6	1.7	0.58	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	29	0.88	0.56	0.22	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	61	1.8	1.2	0.40	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	26	1.3	0.90	0.33	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	7.5	0.44	0.36	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	32	1.7	1.1	0.34	
Coronene	mg/kg	0.05	NONE	7.0	< 0.05	< 0.05	< 0.05	
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	570	25	19	5.0	

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Analytical Report Number: 18-17707

Project / Site name: 34740 - Syon Lane
Your Order No: PO 94071

Lab Sample Number				1087319	1087320	1087321	1087322	
Sample Reference				HP05	HP05	HP06	HP06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.05-0.10	0.45-0.50	0.25-0.30	0.45-0.50	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.7	12	13	-	
Barium (aqua regia extractable)	mg/kg	1	MCERTS	300	80	260	-	
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	6.3	0.81	0.60	-	
Boron (water soluble)	mg/kg	0.2	MCERTS	2.3	1.2	1.1	-	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3	-	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	-	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	48	28	24	-	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	19	33	-	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	48	45	320	-	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	< 0.25	< 0.25	0.40	-	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	5.7	22	19	-	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	3.1	< 1.0	< 1.0	-	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	99	42	42	-	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	38	49	130	-	
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	77	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	420	240	69	15	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	430	530	200	64	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	490	240	69	15	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	920	770	260	79	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	2.7	27	< 1.0	1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	72	110	4.4	2.4	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	730	710	32	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	2100	1900	200	59	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	1400	1500	500	170	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	2900	2800	240	70	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	4300	4300	730	240	

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Analytical Report Number: 18-17707

Project / Site name: 34740 - Syon Lane
Your Order No: PO 94071

Lab Sample Number				1087319	1087320	1087321	1087322	
Sample Reference				HP05	HP05	HP06	HP06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.05-0.10	0.45-0.50	0.25-0.30	0.45-0.50	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
Chloroethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-	< 1.0	-	
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	
Benzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Styrene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Tribromomethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	
o-Xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	

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Analytical Report Number: 18-17707

Project / Site name: 34740 - Syon Lane
Your Order No: PO 94071

Lab Sample Number				1087319	1087320	1087321	1087322	
Sample Reference				HP05	HP05	HP06	HP06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.05-0.10	0.45-0.50	0.25-0.30	0.45-0.50	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	None Detected	-	None Detected	-	
VOC % Match	%	N/A	NONE	0	-	0	-	

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Project / Site name: 34740 - Syon Lane
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Lab Sample Number				1087319	1087320	1087321	1087322	
Sample Reference				HP05	HP05	HP06	HP06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.05-0.10	0.45-0.50	0.25-0.30	0.45-0.50	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	
Phenol	mg/kg	0.2	ISO 17025	0.9	-	< 0.2	-	
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	
2-Methylphenol	mg/kg	0.3	MCERTS	1.9	-	< 0.3	-	
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	
4-Methylphenol	mg/kg	0.2	NONE	5.4	-	< 0.2	-	
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	0.8	-	< 0.3	-	
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	
Naphthalene	mg/kg	0.05	MCERTS	1.3	-	< 0.05	-	
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
2-Methylnaphthalene	mg/kg	0.1	NONE	4.6	-	< 0.1	-	
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	
Acenaphthylene	mg/kg	0.05	MCERTS	1.7	-	< 0.05	-	
Acenaphthene	mg/kg	0.05	MCERTS	7.2	-	0.23	-	
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
Dibenzofuran	mg/kg	0.2	MCERTS	4.0	-	< 0.2	-	
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3	-	
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
Fluorene	mg/kg	0.05	MCERTS	6.0	-	0.28	-	
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	
Phenanthrene	mg/kg	0.05	MCERTS	51	-	2.1	-	
Anthracene	mg/kg	0.05	MCERTS	18	-	0.52	-	
Carbazole	mg/kg	0.3	MCERTS	6.2	-	< 0.3	-	
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	
Anthraquinone	mg/kg	0.3	MCERTS	8.6	-	< 0.3	-	
Fluoranthene	mg/kg	0.05	MCERTS	87	-	4.0	-	
Pyrene	mg/kg	0.05	MCERTS	75	-	3.3	-	
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3	-	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	50	-	1.6	-	
Chrysene	mg/kg	0.05	MCERTS	39	-	1.4	-	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	66	-	1.7	-	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	29	-	0.56	-	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	61	-	1.2	-	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	26	-	0.90	-	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	7.5	-	0.36	-	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	32	-	1.1	-	

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Analytical Report Number: 18-17707

Project / Site name: 34740 - Syon Lane
Your Order No: PO 94071

Lab Sample Number				1087319	1087320	1087321	1087322	
Sample Reference				HP05	HP05	HP06	HP06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.05-0.10	0.45-0.50	0.25-0.30	0.45-0.50	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	1(2H)-Phenanthrenone, 3,4,9,10-tetrahydro-7-methoxy-	-	9-Octadecenamide, (Z)-	-	
SVOC % Match	%	N/A	NONE	98	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	Benzo[e]pyrene	-	Z-11,13-Tetradecadien-1-ol acetate	-	
SVOC % Match	%	N/A	NONE	98	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	Naphthalene, 2-methyl-	-	1-Naphthalenecarboxylic acid, 2-benzoyl-	-	
SVOC % Match	%	N/A	NONE	97	-	96	-	
SVOCs TICs Compound Name		N/A	NONE	Naphthalene, 2,3-dimethyl-	-	Pyrene, 1-methyl-	-	
SVOC % Match	%	N/A	NONE	97	-	95	-	
SVOCs TICs Compound Name		N/A	NONE	Naphthalene, 1,4,6-trimethyl-	-	Phenanthrene, 1-methyl-	-	
SVOC % Match	%	N/A	NONE	97	-	93	-	
SVOCs TICs Compound Name		N/A	NONE	Phenol, 3-methyl-	-	Fluoranthene, 2-methyl-	-	
SVOC % Match	%	N/A	NONE	96	-	93	-	
SVOCs TICs Compound Name		N/A	NONE	Naphthalene, 1,4-dimethyl-	-	Antra-9,10-quinone, 1-(3-hydrohy-3-phenyl-1-triazenyl)-	-	
SVOC % Match	%	N/A	NONE	96	-	93	-	
SVOCs TICs Compound Name		N/A	NONE	Naphthalene, 2,3,6-trimethyl-	-	Cyclohexane-1,3-dione, 2-allylaminomethylene-5,5-dimethyl-	-	
SVOC % Match	%	N/A	NONE	96	-	92	-	
SVOCs TICs Compound Name		N/A	NONE	Anthracene, 1-methyl-	-	Benz[e]acephenanthrylene	-	
SVOC % Match	%	N/A	NONE	96	-	91	-	
SVOCs TICs Compound Name		N/A	NONE	1H-Cyclopropa[l]phenanthrene,1a,9b-dihydro-	-	-	-	
SVOC % Match	%	N/A	NONE	96	-	-	-	

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Analytical Report Number: 18-17707

Project / Site name: 34740 - Syon Lane
Your Order No: PO 94071

Lab Sample Number				1087319	1087320	1087321	1087322	
Sample Reference				HP05	HP05	HP06	HP06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.05-0.10	0.45-0.50	0.25-0.30	0.45-0.50	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Organochlorine Pesticides (OCP)								
Aldrin	ug/kg	10	NONE	< 10	-	-	< 10	
BHC-alpha (benzene hexachloride)	ug/kg	10	NONE	< 10	-	-	< 10	
BHC-beta	ug/kg	10	NONE	< 10	-	-	< 10	
BHC-delta	ug/kg	10	NONE	< 10	-	-	< 10	
BHC-gamma (Lindane, gamma HCH)	ug/kg	10	NONE	< 10	-	-	< 10	
Chlordane-cis	ug/kg	10	NONE	< 10	-	-	< 10	
Chlordane-trans	ug/kg	10	NONE	< 10	-	-	< 10	
Chlorothalonil	ug/kg	10	NONE	< 10	-	-	< 10	
DDD-o,p'	ug/kg	1	NONE	< 1.0	-	-	< 1.0	
DDD-p,p'	ug/kg	1	NONE	< 1.0	-	-	< 1.0	
DDE-o, p'	ug/kg	1	NONE	< 1.0	-	-	< 1.0	
DDE-p,p'	ug/kg	1	NONE	< 1.0	-	-	< 1.0	
DDT-o,p'	ug/kg	1	NONE	< 1.0	-	-	< 1.0	
DDT-p,p'	ug/kg	1	NONE	< 1.0	-	-	1.0	
Dichlorobenzonitrile, 2,6-	ug/kg	10	NONE	< 10	-	-	< 10	
Dieldrin	ug/kg	10	NONE	< 10	-	-	< 10	
Endosulfan I (alpha isomer)	ug/kg	10	NONE	< 10	-	-	< 10	
Endosulfan II (beta isomer)	ug/kg	10	NONE	< 10	-	-	< 10	
Endosulfan sulfate	ug/kg	10	NONE	< 10	-	-	< 10	
Endrin	ug/kg	10	NONE	< 10	-	-	< 10	
Endrin aldehyde	ug/kg	10	NONE	< 10	-	-	< 10	
Endrin ketone	ug/kg	10	NONE	< 10	-	-	< 10	
Heptachlor	ug/kg	10	NONE	< 10	-	-	< 10	
Heptachlor exo-epoxide	ug/kg	10	NONE	< 10	-	-	< 10	
Hexachlorobenzene	ug/kg	10	NONE	< 10	-	-	< 10	
Hexachlorobutadiene	ug/kg	10	NONE	< 10	-	-	< 10	
Isodrin	ug/kg	10	NONE	< 10	-	-	< 10	
Methoxychlor, p,p'-	ug/kg	10	NONE	< 10	-	-	< 10	
Pentachlorobenzene	ug/kg	10	NONE	< 10	-	-	< 10	
Tecnazene	ug/kg	10	NONE	< 10	-	-	< 10	
Tetrachlorobenzene, 1,2,4,5-	ug/kg	10	NONE	< 10	-	-	< 10	
Trichlorobenzene, 1,2,3-	ug/kg	10	NONE	< 10	-	-	< 10	
Trichlorobenzene, 1,3,5-	ug/kg	10	NONE	< 10	-	-	< 10	
Trifluralin	ug/kg	10	NONE	< 10	-	-	< 10	

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Project / Site name: 34740 - Syon Lane
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Lab Sample Number				1087319	1087320	1087321	1087322	
Sample Reference				HP05	HP05	HP06	HP06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.05-0.10	0.45-0.50	0.25-0.30	0.45-0.50	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Organophosphorus Pesticides (OPP)								
Azinphos-ethyl	ug/kg	10	NONE	< 10	-	-	< 10	
Azinphos-methyl	ug/kg	10	NONE	< 10	-	-	< 10	
Carbophenothion	ug/kg	10	NONE	< 10	-	-	< 10	
Chlorfenvinphos (mixture of z and e isomers)	ug/kg	10	NONE	< 10	-	-	< 10	
Chlorpyrifos	ug/kg	10	NONE	< 10	-	-	< 10	
Demeton-O	ug/kg	10	NONE	< 10	-	-	< 10	
Demeton-S	ug/kg	10	NONE	< 10	-	-	< 10	
Diazinon	ug/kg	10	NONE	< 10	-	-	< 10	
Dichlorvos	ug/kg	10	NONE	< 10	-	-	< 10	
Dimethoate	ug/kg	10	NONE	< 10	-	-	< 10	
Dimethylvinphos	ug/kg	10	NONE	< 10	-	-	< 10	
Ethion	ug/kg	10	NONE	< 10	-	-	< 10	
Etrimfos	ug/kg	10	NONE	< 10	-	-	< 10	
Fenitrothion	ug/kg	10	NONE	< 10	-	-	< 10	
Fenthion	ug/kg	10	NONE	< 10	-	-	< 10	
Malathion	ug/kg	10	NONE	< 10	-	-	< 10	
Methacrifos	ug/kg	10	NONE	< 10	-	-	< 10	
Mevinphos , E-	ug/kg	10	NONE	< 10	-	-	< 10	
Mevinphos, Z-	ug/kg	10	NONE	< 10	-	-	< 10	
Parathion	ug/kg	10	NONE	< 10	-	-	< 10	
Parathion-methyl	ug/kg	10	NONE	< 10	-	-	< 10	
Phorate	ug/kg	10	NONE	< 10	-	-	< 10	
Phosalone	ug/kg	10	NONE	< 10	-	-	< 10	
Phosphamidon I	ug/kg	10	NONE	< 10	-	-	< 10	
Pirimiphos-ethyl	ug/kg	10	NONE	< 10	-	-	< 10	
Pirimiphos-methyl	ug/kg	10	NONE	< 10	-	-	< 10	
Propetamphos	ug/kg	10	NONE	< 10	-	-	< 10	
Triazophos	ug/kg	10	NONE	< 10	-	-	< 10	
Organonitrogen Pesticides (ONP)								
Pendimethalin	ug/kg	10	NONE	< 10	-	-	< 10	
Propyzamide	ug/kg	10	NONE	< 10	-	-	< 10	
Triadimefon	ug/kg	10	NONE	< 10	-	-	< 10	

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Analytical Report Number: 18-17707

Project / Site name: 34740 - Syon Lane
Your Order No: PO 94071

Lab Sample Number				1087319	1087320	1087321	1087322	
Sample Reference				HP05	HP05	HP06	HP06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.05-0.10	0.45-0.50	0.25-0.30	0.45-0.50	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Environmental Forensics								
Triazine Herbicides								
Atrazine	mg/kg	0.1	NONE	-	-	< 0.10	-	
Simazine	mg/kg	0.1	NONE	-	-	< 0.10	-	
Prometryn	mg/kg	0.1	NONE	-	-	< 0.10	-	
Propazine	mg/kg	0.1	NONE	-	-	< 0.10	-	
Terbuthylazine	mg/kg	0.1	NONE	-	-	< 0.10	-	
Terbutryn	mg/kg	0.1	NONE	-	-	< 0.10	-	
Trietazine	mg/kg	0.1	NONE	-	-	< 0.10	-	
Cyanazine	mg/kg	0.1	NONE	-	-	< 0.10	-	
Acid Herbicides								
2,4,5-T	ug/kg	20	NONE	-	-	< 20	-	
2,4,5-TP	ug/kg	20	NONE	-	-	< 20	-	
2,4-D	ug/kg	20	NONE	-	-	< 20	-	
2,4-DB	ug/kg	20	NONE	-	-	< 20	-	
Dicamba	ug/kg	20	NONE	-	-	< 20	-	
Dichlorprop	ug/kg	20	NONE	-	-	< 20	-	
Dinoseb	ug/kg	20	NONE	-	-	< 20	-	
MCPA	ug/kg	20	NONE	-	-	< 20	-	
MCPB	ug/kg	20	NONE	-	-	< 20	-	
MCPP (Mecoprop)	ug/kg	20	NONE	-	-	< 20	-	
Picloram	ug/kg	20	NONE	-	-	< 20	-	
Phenylurea herbicides								
Isoproturon	ug/kg	10	NONE	-	-	< 10	-	
Chlortoluron	ug/kg	10	NONE	-	-	< 10	-	
Linuron	ug/kg	10	NONE	-	-	< 10	-	
Diuron	ug/kg	10	NONE	-	-	< 10	-	
Diflubenzuron	ug/kg	10	NONE	-	-	< 10	-	
Flumeturon	ug/kg	10	NONE	-	-	< 10	-	
Siduron	ug/kg	10	NONE	-	-	< 10	-	
Terbuthiuron	ug/kg	10	NONE	-	-	< 10	-	
Thidiazuron	ug/kg	10	NONE	-	-	< 10	-	

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Analytical Report Number: 18-17707
Project / Site name: 34740 - Syon Lane
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1087321	HP06	0.25-0.30	137	Loose Fibrous Debris	**Chrysotile & Amosite**	0.002	**0.002**
1087322	HP06	0.45-0.50	142	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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Analytical Report Number: 18-17707

Project / Site name: 34740 - Syon Lane

Lab Sample Number				1087323				
Sample Reference				HP05				
Sample Number				None Supplied				
Depth (m)				0.75				
Date Sampled				07/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Asbestos Identification Name	Type	N/A	ISO 17025	Chrysotile-Hard/Cement Type Material				

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Analytical Report Number : 18-17707

Project / Site name: 34740 - Syon Lane

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1087319	HP05	None Supplied	0.05-0.10	Brown loam and sand with gravel and vegetation.
1087320	HP05	None Supplied	0.45-0.50	Brown clay and loam with gravel and vegetation.
1087321	HP06	None Supplied	0.25-0.30	Brown loam and sand with gravel.
1087322	HP06	None Supplied	0.45-0.50	Brown loam and sand with gravel and vegetation.

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Analytical Report Number : 18-17707

Project / Site name: 34740 - Syon Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
EF - Phenylurea herbicides in soil by LC-MS/MS	Phenylurea herbicides by LC-MS/MS	In-house method	UK	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Organochlorine Pesticides in soil by GC MS/MS	Detemination of Pesticides in soil by GC MS/MS	Organochlorine Pesticides in soil by GC MS/MS	L055B-PL	D	NONE
Organonitrogen Pesticides in soil by GC MS/MS	Detemination of Pesticides in soil by GC MS/MS	Organonitrogen Pesticides in soil by GC MS/MS	L055B-PL	D	NONE
Organophosphorus Pesticides in soil by GC MS/MS	Detemination of Pesticides in soil by GC MS/MS	Organophosphorus Pesticides in soil by GC MS/MS	L055B-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE

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Analytical Report Number : 18-17707

Project / Site name: 34740 - Syon Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TO - Acid Herbicides in soil by LC-MS/MS	Determination of Acid herbicides in waters by LC-MS/MS	In-house method		W	NONE
TO - Triazine pesticides in soil	Determination of Triazines by LC-MS(/MS).	In-house method based on USEPA method 615.		W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-17769-A

Replaces Analytical Report Number : 18-17769, issue no. 1

Project / Site name:	34745 Brentford	**Samples received on:**	07/11/2018
Your job number:	WIE15238-100	**Samples instructed on:**	08/11/2018
Your order number:		**Analysis completed by:**	15/11/2018
Report Issue Number:	2	**Report issued on:**	16/11/2018
Samples Analysed:	2 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-17769-A

Project / Site name: 34745 Brentford

Lab Sample Number				1087683	1087684			
Sample Reference				HP03	HP03			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.10-0.20	0.40-0.60			
Date Sampled				06/11/2018	06/11/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	8.8	4.4			
Total mass of sample received	kg	0.001	NONE	1.5	2.0			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.2	8.4			
Organic Matter	%	0.1	MCERTS	7.6	3.8			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05			
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05			
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05			
Phenanthrene	mg/kg	0.05	MCERTS	-	1.3			
Anthracene	mg/kg	0.05	MCERTS	-	0.25			
Fluoranthene	mg/kg	0.05	MCERTS	-	2.8			
Pyrene	mg/kg	0.05	MCERTS	-	2.4			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	1.3			
Chrysene	mg/kg	0.05	MCERTS	-	1.2			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	1.3			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	0.60			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	0.97			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.74			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	0.25			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.93			
Coronene	mg/kg	0.05	NONE	-	< 0.05			
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	-	14			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.7	13			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	100	130			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.54	0.88			
Boron (water soluble)	mg/kg	0.2	MCERTS	2.5	1.6			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.3			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	23			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	53	59			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	220			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.3	1.2			
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.7	1.0			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	23			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.1	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	32	41			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	110			

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Analytical Report Number: 18-17769-A

Project / Site name: 34745 Brentford

Lab Sample Number				1087683	1087684			
Sample Reference				HP03	HP03			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.10-0.20	0.40-0.60			
Date Sampled				06/11/2018	06/11/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	< 1.0			
Toluene	µg/kg	1	MCERTS	-	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0			
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0			
o-xylene	µg/kg	1	MCERTS	-	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0			
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10			
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	< 10			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	11			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	46			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	18			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	59			
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	76			

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Analytical Report Number: 18-17769-A

Project / Site name: 34745 Brentford

Lab Sample Number				1087683	1087684			
Sample Reference				HP03	HP03			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.10-0.20	0.40-0.60			
Date Sampled				06/11/2018	06/11/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0			
Chloroethane	µg/kg	1	NONE	-	< 1.0			
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0			
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0			
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0			
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0			
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0			
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0			
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0			
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0			
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0			
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0			
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0			
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0			
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0			
Benzene	µg/kg	1	MCERTS	-	< 1.0			
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0			
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0			
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0			
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0			
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0			
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0			
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0			
Toluene	µg/kg	1	MCERTS	-	< 1.0			
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0			
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0			
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0			
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0			
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0			
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0			
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0			
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0			
Styrene	µg/kg	1	MCERTS	-	< 1.0			
Tribromomethane	µg/kg	1	NONE	-	< 1.0			
o-Xylene	µg/kg	1	MCERTS	-	< 1.0			
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0			
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0			
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0			
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0			
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0			
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0			
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0			
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0			
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0			
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0			
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0			
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0			
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0			
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0			
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0			
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0			
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0			
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0			
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0			

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Analytical Report Number: 18-17769-A

Project / Site name: 34745 Brentford

Lab Sample Number				1087683	1087684			
Sample Reference				HP03	HP03			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.10-0.20	0.40-0.60			
Date Sampled				06/11/2018	06/11/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	ND			
VOC % Match	%	N/A	NONE	-	-			

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Analytical Report Number: 18-17769-A

Project / Site name: 34745 Brentford

Lab Sample Number				1087683	1087684			
Sample Reference				HP03	HP03			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.10-0.20	0.40-0.60			
Date Sampled				06/11/2018	06/11/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	< 0.1			
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2			
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1			
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2			
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2			
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1			
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2			
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1			
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3			
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05			
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3			
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2			
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2			
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3			
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3			
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3			
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3			
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05			
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3			
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1			
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1			
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1			
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1			
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2			
2-Methylnaphthalene	mg/kg	0.1	NONE	-	< 0.1			
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1			
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1			
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1			
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05			
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2			
Dibenzofuran	mg/kg	0.2	MCERTS	-	< 0.2			
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3			
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2			
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2			
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05			
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3			
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2			
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3			
Phenanthrene	mg/kg	0.05	MCERTS	-	1.3			
Anthracene	mg/kg	0.05	MCERTS	-	0.25			
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3			
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2			
Anthraquinone	mg/kg	0.3	MCERTS	-	< 0.3			
Fluoranthene	mg/kg	0.05	MCERTS	-	2.8			
Pyrene	mg/kg	0.05	MCERTS	-	2.4			
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	1.3			
Chrysene	mg/kg	0.05	MCERTS	-	1.2			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	1.3			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	0.60			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	0.97			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.74			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	0.25			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.93			

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Analytical Report Number: 18-17769-A

Project / Site name: 34745 Brentford

Lab Sample Number				1087683	1087684			
Sample Reference				HP03	HP03			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.10-0.20	0.40-0.60			
Date Sampled				06/11/2018	06/11/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

SVOCs TICs

SVOCs TICs Compound Name		N/A	NONE	-	Benzo[e]pyrene			
SVOC % Match	%	N/A	NONE	-	95			
SVOCs TICs Compound Name		N/A	NONE	-	Perylene			
SVOC % Match	%	N/A	NONE	-	93			
SVOCs TICs Compound Name		N/A	NONE	-	Phenanthrene, 2-methyl-			
SVOC % Match	%	N/A	NONE	-	92			
SVOCs TICs Compound Name		N/A	NONE	-	Phenanthrene, 3,6-dimethyl-			
SVOC % Match	%	N/A	NONE	-	91			
SVOCs TICs Compound Name		N/A	NONE	-	11H-Benzo[b]fluorene			
SVOC % Match	%	N/A	NONE	-	90			
SVOCs TICs Compound Name		N/A	NONE	-	Benz[e]acephenanthrylene			
SVOC % Match	%	N/A	NONE	-	90			

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Analytical Report Number : 18-17769-A

Project / Site name: 34745 Brentford

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1087683	HP03	None Supplied	0.10-0.20	Brown loam and sand with gravel and vegetation.
1087684	HP03	None Supplied	0.40-0.60	Brown loam and sand with gravel.

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Analytical Report Number : 18-17769-A

Project / Site name: 34745 Brentford

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE

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Analytical Report Number : 18-17769-A

Project / Site name: 34745 Brentford

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-17888

Replaces Analytical Report Number : 18-17888, issue no. 1

Project / Site name:	Syon Lane - Tsc	**Samples received on:**	08/11/2018
Your job number:	WIE15238-100	**Samples instructed on:**	09/11/2018
Your order number:	PO 94071	**Analysis completed by:**	16/11/2018
Report Issue Number:	2	**Report issued on:**	13/12/2018
Samples Analysed:	1 bulk sample - 4 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-17888

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1088275	1088276	1088277	1088278	
Sample Reference				HP2	HP2	HP04	HP04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10-0.15	0.45-0.50	0.10-0.15	0.90-1.00	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	9.9	< 0.1	20	
Moisture Content	%	N/A	NONE	9.6	3.8	12	7.3	
Total mass of sample received	kg	0.001	NONE	2.0	2.0	1.8	2.0	
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile & Crocidolite	-	-	-	
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Not-detected	
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.009	-	-	-	
Asbestos Quantification Total	%	0.001	ISO 17025	0.009	-	-	-	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.3	6.9	7.2	7.8	
Organic Matter	%	0.1	MCERTS	2.6	0.5	3.2	0.5	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	
Phenanthrene	mg/kg	0.05	MCERTS	0.50	-	-	-	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	
Fluoranthene	mg/kg	0.05	MCERTS	1.8	-	-	-	
Pyrene	mg/kg	0.05	MCERTS	1.9	-	-	-	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.5	-	-	-	
Chrysene	mg/kg	0.05	MCERTS	1.2	-	-	-	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.1	-	-	-	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.62	-	-	-	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.5	-	-	-	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.88	-	-	-	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.27	-	-	-	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.0	-	-	-	
Coronene	mg/kg	0.05	NONE	< 0.05	-	-	-	
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	13	-	-	-	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	-	-	20	
Barium (aqua regia extractable)	mg/kg	1	MCERTS	200	-	-	44	
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.75	-	-	0.76	
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	-	-	0.6	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	-	< 0.2	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	-	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	-	-	35	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	56	-	-	18	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	190	-	-	21	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.6	-	-	< 0.3	
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.71	-	-	2.6	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	-	-	41	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	39	-	-	52	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	-	-	45	

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Analytical Report Number: 18-17888

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1088275	1088276	1088277	1088278	
Sample Reference				HP2	HP2	HP04	HP04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10-0.15	0.45-0.50	0.10-0.15	0.90-1.00	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	
o-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	< 2.0	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	< 8.0	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	-	< 8.0	< 8.0	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	-	< 8.4	< 8.4	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	-	< 10	< 10	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	-	< 10	< 10	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	2.5	-	< 2.0	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	13	-	< 10	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	50	-	15	< 10	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	-	< 8.4	< 8.4	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	65	-	23	< 10	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	65	-	23	< 10	

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Analytical Report Number: 18-17888

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1088275	1088276	1088277	1088278	
Sample Reference				HP2	HP2	HP04	HP04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10-0.15	0.45-0.50	0.10-0.15	0.90-1.00	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
Chloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Tribromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	

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Analytical Report Number: 18-17888

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1088275	1088276	1088277	1088278	
Sample Reference				HP2	HP2	HP04	HP04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10-0.15	0.45-0.50	0.10-0.15	0.90-1.00	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	ND	ND	ND	
VOC % Match	%	N/A	NONE	-	-	-	-	

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Analytical Report Number: 18-17888

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1088275	1088276	1088277	1088278	
Sample Reference				HP2	HP2	HP04	HP04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10-0.15	0.45-0.50	0.10-0.15	0.90-1.00	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	< 0.2	< 0.2	
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	< 0.2	< 0.2	
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
2-Methylnaphthalene	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
Dibenzofuran	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	< 0.3	
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
Phenanthrene	mg/kg	0.05	MCERTS	-	< 0.05	0.35	0.33	
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	
Anthraquinone	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	
Fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	1.0	0.51	
Pyrene	mg/kg	0.05	MCERTS	-	< 0.05	0.94	0.42	
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	< 0.3	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	0.55	0.19	
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	0.52	0.25	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	0.75	0.29	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	0.24	0.12	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	0.58	0.20	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	0.31	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	0.39	< 0.05	

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Analytical Report Number: 18-17888

Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Lab Sample Number				1088275	1088276	1088277	1088278	
Sample Reference				HP2	HP2	HP04	HP04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10-0.15	0.45-0.50	0.10-0.15	0.90-1.00	
Date Sampled				07/11/2018	07/11/2018	07/11/2018	07/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	ND	Benz[e]acephenanthrylene	ND	
SVOC % Match	%	N/A	NONE	-	-	95	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Cyclohexadecane	-	
SVOC % Match	%	N/A	NONE	-	-	91	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Z-11,13-Tetradecadien-1-ol acetate	-	
SVOC % Match	%	N/A	NONE	-	-	91	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Ethanol, 2-(2-butoxyethoxy)-, acetate	-	
SVOC % Match	%	N/A	NONE	-	-	90	-	

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Analytical Report Number: 18-17888
Project / Site name: Syon Lane - Tsc
Your Order No: PO 94071

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1088275	HP2	0.10-0.15	137	Loose Fibrous Debris & Bitumen	**Chrysotile & Crocidolite**	0.009	**0.009**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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Analytical Report Number: 18-17888

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1088279				
Sample Reference				HP2				
Sample Number				None Supplied				
Depth (m)				0.65				
Date Sampled				07/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Asbestos Identification Name	Type	N/A	ISO 17025	Chrysotile-Bitumen				

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Analytical Report Number : 18-17888

Project / Site name: Syon Lane - Tsc

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1088275	HP2	None Supplied	0.10-0.15	Brown loam and clay with gravel and vegetation.
1088276	HP2	None Supplied	0.45-0.50	Light brown sand with gravel and stones.
1088277	HP04	None Supplied	0.10-0.15	Brown loam and clay with vegetation and gravel
1088278	HP04	None Supplied	0.90-1.00	Light brown loam and sand with stones and gravel.

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Analytical Report Number : 18-17888

Project / Site name: Syon Lane - Tsc

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE

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Analytical Report Number : 18-17888

Project / Site name: Syon Lane - Tsc

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-19018

Project / Site name:	Syon Lane - Tsc	**Samples received on:**	16/11/2018
Your job number:	WIE15238-100	**Samples instructed on:**	19/11/2018
Your order number:		**Analysis completed by:**	26/11/2018
Report Issue Number:	1	**Report issued on:**	26/11/2018
Samples Analysed:	6 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-19018

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094561	1094562	1094563	1094564	1094565
Sample Reference				BH1	BH1	BH1	BH3	BH3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-0.90	1.50-1.70	2.20-2.40	0.50-0.70	1.30-1.50
Date Sampled				15/11/2018	15/11/2018	15/11/2018	15/11/2018	15/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	15
Moisture Content	%	N/A	NONE	9.1	11	7.5	9.4	4.0
Total mass of sample received	kg	0.001	NONE	1.7	1.8	1.5	1.5	2.0
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	-	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	10.0	8.4	8.1	9.8	8.7
Organic Matter	%	0.1	MCERTS	0.8	0.2	< 0.1	1.2	< 0.1
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.16	-
Anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.40	-
Pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.42	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.41	-
Chrysene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.30	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.38	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.24	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.34	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.23	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	< 0.05	0.31	-
Coronene	mg/kg	0.05	NONE	-	-	< 0.05	< 0.05	-
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	-	-	< 0.9	3.2	-

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Lab Sample Number				1094561	1094562	1094563	1094564	1094565
Sample Reference				BH1	BH1	BH1	BH3	BH3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-0.90	1.50-1.70	2.20-2.40	0.50-0.70	1.30-1.50
Date Sampled				15/11/2018	15/11/2018	15/11/2018	15/11/2018	15/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.3	-	19	15	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	77	-	57	66	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.48	-	1.4	0.35	-
Boron (water soluble)	mg/kg	0.2	MCERTS	2.3	-	0.3	3.2	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	< 4.0	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	-	31	21	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	-	14	17	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	45	-	14	25	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.39	-	< 0.25	< 0.25	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	-	36	16	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	33	-	53	36	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	46	-	38	170	-
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	3.4	< 2.0	< 2.0	2.6	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	8.4	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	48	< 8.0	< 8.0	40	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	35	< 8.4	< 8.4	65	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	61	< 10	< 10	49	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	95	< 10	< 10	110	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	2.7	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	39	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	91	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	68	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	130	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	200	< 10	< 10	< 10	< 10

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Analytical Report Number: 18-19018

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094561	1094562	1094563	1094564	1094565
Sample Reference				BH1	BH1	BH1	BH3	BH3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-0.90	1.50-1.70	2.20-2.40	0.50-0.70	1.30-1.50
Date Sampled				15/11/2018	15/11/2018	15/11/2018	15/11/2018	15/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0

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Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094561	1094562	1094563	1094564	1094565
Sample Reference				BH1	BH1	BH1	BH3	BH3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-0.90	1.50-1.70	2.20-2.40	0.50-0.70	1.30-1.50
Date Sampled				15/11/2018	15/11/2018	15/11/2018	15/11/2018	15/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	ND	-	-	-	ND
VOC % Match	%	N/A	NONE	-	-	-	-	-

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Lab Sample Number				1094561	1094562	1094563	1094564	1094565
Sample Reference				BH1	BH1	BH1	BH3	BH3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-0.90	1.50-1.70	2.20-2.40	0.50-0.70	1.30-1.50
Date Sampled				15/11/2018	15/11/2018	15/11/2018	15/11/2018	15/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-	-	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.38	-	-	-	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	0.28	-	-	-	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	5.2	-	-	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	1.3	-	-	-	< 0.05
Carbazole	mg/kg	0.3	MCERTS	0.5	-	-	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	8.6	-	-	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	8.2	-	-	-	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.8	-	-	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	3.9	-	-	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	5.0	-	-	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	2.5	-	-	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.3	-	-	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.2	-	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.61	-	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.5	-	-	-	< 0.05

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Analytical Report Number: 18-19018

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094561	1094562	1094563	1094564	1094565
Sample Reference				BH1	BH1	BH1	BH3	BH3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-0.90	1.50-1.70	2.20-2.40	0.50-0.70	1.30-1.50
Date Sampled				15/11/2018	15/11/2018	15/11/2018	15/11/2018	15/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	Pyrene, 1-methyl-	-	-	-	ND
SVOC % Match	%	N/A	NONE	96	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	2,5-Cyclohexadiene-1,4-dione, 2-(phenylthio)-	-	-	-	-
SVOC % Match	%	N/A	NONE	96	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Chrysene, 6-methyl-	-	-	-	-
SVOC % Match	%	N/A	NONE	96	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Benzo[e]pyrene	-	-	-	-
SVOC % Match	%	N/A	NONE	96	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	3-Bromo-5-ethoxy-4-hydroxybenzaldehyde	-	-	-	-
SVOC % Match	%	N/A	NONE	95	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Z-11,13-Tetradecadien-1-ol acetate	-	-	-	-
SVOC % Match	%	N/A	NONE	95	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Naphthalene, 2,3,6-trimethyl-	-	-	-	-
SVOC % Match	%	N/A	NONE	93	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Anthracene, 1-methyl-	-	-	-	-
SVOC % Match	%	N/A	NONE	93	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	2,4-Dioxabicyclo[3.3.0]octan-6-one, 7-(2-methoxycarbonyl-1-propyl)-3-phenyl	-	-	-	-
SVOC % Match	%	N/A	NONE	93	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Benzo[b]naphtho[2,1-d]thiophene	-	-	-	-
SVOC % Match	%	N/A	NONE	93	-	-	-	-

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Analytical Report Number: 18-19018

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094566				
Sample Reference				BH3				
Sample Number				None Supplied				
Depth (m)				3.40-3.60				
Date Sampled				15/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	17				
Total mass of sample received	kg	0.001	NONE	1.2				
Asbestos in Soil	Type	N/A	ISO 17025	-				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.7				
Organic Matter	%	0.1	MCERTS	1.6				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Pyrene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				
Coronene	mg/kg	0.05	NONE	< 0.05				
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9				

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Analytical Report Number: 18-19018

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094566				
Sample Reference				BH3				
Sample Number				None Supplied				
Depth (m)				3.40-3.60				
Date Sampled				15/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.4				
Barium (aqua regia extractable)	mg/kg	1	MCERTS	44				
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.89				
Boron (water soluble)	mg/kg	0.2	MCERTS	1.7				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	47				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	< 0.25				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	35				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	58				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	72				
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10				
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10				

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Analytical Report Number: 18-19018

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094566				
Sample Reference				BH3				
Sample Number				None Supplied				
Depth (m)				3.40-3.60				
Date Sampled				15/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-				
Chloroethane	µg/kg	1	NONE	-				
Bromomethane	µg/kg	1	ISO 17025	-				
Vinyl Chloride	µg/kg	1	NONE	-				
Trichlorofluoromethane	µg/kg	1	NONE	-				
1,1-Dichloroethene	µg/kg	1	NONE	-				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-				
1,1-Dichloroethane	µg/kg	1	MCERTS	-				
2,2-Dichloropropane	µg/kg	1	MCERTS	-				
Trichloromethane	µg/kg	1	MCERTS	-				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-				
1,2-Dichloroethane	µg/kg	1	MCERTS	-				
1,1-Dichloropropene	µg/kg	1	MCERTS	-				
Trans-1,2-dichloroethene	µg/kg	1	NONE	-				
Benzene	µg/kg	1	MCERTS	-				
Tetrachloromethane	µg/kg	1	MCERTS	-				
1,2-Dichloropropane	µg/kg	1	MCERTS	-				
Trichloroethene	µg/kg	1	MCERTS	-				
Dibromomethane	µg/kg	1	MCERTS	-				
Bromodichloromethane	µg/kg	1	MCERTS	-				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-				
Toluene	µg/kg	1	MCERTS	-				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-				
1,3-Dichloropropane	µg/kg	1	ISO 17025	-				
Dibromochloromethane	µg/kg	1	ISO 17025	-				
Tetrachloroethene	µg/kg	1	NONE	-				
1,2-Dibromoethane	µg/kg	1	ISO 17025	-				
Chlorobenzene	µg/kg	1	MCERTS	-				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-				
Ethylbenzene	µg/kg	1	MCERTS	-				
p & m-Xylene	µg/kg	1	MCERTS	-				
Styrene	µg/kg	1	MCERTS	-				
Tribromomethane	µg/kg	1	NONE	-				
o-Xylene	µg/kg	1	MCERTS	-				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-				
Isopropylbenzene	µg/kg	1	MCERTS	-				
Bromobenzene	µg/kg	1	MCERTS	-				
n-Propylbenzene	µg/kg	1	ISO 17025	-				
2-Chlorotoluene	µg/kg	1	MCERTS	-				
4-Chlorotoluene	µg/kg	1	MCERTS	-				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-				
tert-Butylbenzene	µg/kg	1	MCERTS	-				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-				
sec-Butylbenzene	µg/kg	1	MCERTS	-				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-				
p-Isopropyltoluene	µg/kg	1	ISO 17025	-				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-				
Butylbenzene	µg/kg	1	MCERTS	-				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-				
Hexachlorobutadiene	µg/kg	1	MCERTS	-				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-				

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Analytical Report Number: 18-19018

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094566				
Sample Reference				BH3				
Sample Number				None Supplied				
Depth (m)				3.40-3.60				
Date Sampled				15/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-				
VOC % Match	%	N/A	NONE	-				

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Analytical Report Number: 18-19018

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094566				
Sample Reference				BH3				
Sample Number				None Supplied				
Depth (m)				3.40-3.60				
Date Sampled				15/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-				
Phenol	mg/kg	0.2	ISO 17025	-				
2-Chlorophenol	mg/kg	0.1	MCERTS	-				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-				
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-				
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-				
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-				
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-				
2-Methylphenol	mg/kg	0.3	MCERTS	-				
Hexachloroethane	mg/kg	0.05	MCERTS	-				
Nitrobenzene	mg/kg	0.3	MCERTS	-				
4-Methylphenol	mg/kg	0.2	NONE	-				
Isophorone	mg/kg	0.2	MCERTS	-				
2-Nitrophenol	mg/kg	0.3	MCERTS	-				
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-				
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-				
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-				
Naphthalene	mg/kg	0.05	MCERTS	-				
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-				
4-Chloroaniline	mg/kg	0.1	NONE	-				
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-				
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-				
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-				
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-				
2-Methylnaphthalene	mg/kg	0.1	NONE	-				
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-				
Dimethylphthalate	mg/kg	0.1	MCERTS	-				
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-				
Acenaphthylene	mg/kg	0.05	MCERTS	-				
Acenaphthene	mg/kg	0.05	MCERTS	-				
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-				
Dibenzofuran	mg/kg	0.2	MCERTS	-				
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-				
Diethyl phthalate	mg/kg	0.2	MCERTS	-				
4-Nitroaniline	mg/kg	0.2	MCERTS	-				
Fluorene	mg/kg	0.05	MCERTS	-				
Azobenzene	mg/kg	0.3	MCERTS	-				
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-				
Hexachlorobenzene	mg/kg	0.3	MCERTS	-				
Phenanthrene	mg/kg	0.05	MCERTS	-				
Anthracene	mg/kg	0.05	MCERTS	-				
Carbazole	mg/kg	0.3	MCERTS	-				
Dibutyl phthalate	mg/kg	0.2	MCERTS	-				
Anthraquinone	mg/kg	0.3	MCERTS	-				
Fluoranthene	mg/kg	0.05	MCERTS	-				
Pyrene	mg/kg	0.05	MCERTS	-				
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-				
Chrysene	mg/kg	0.05	MCERTS	-				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-				

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Analytical Report Number: 18-19018

Project / Site name: Syon Lane - Tsc

Lab Sample Number				1094566				
Sample Reference				BH3				
Sample Number				None Supplied				
Depth (m)				3.40-3.60				
Date Sampled				15/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				
SVOCs TICs Compound Name		N/A	NONE	-				
SVOC % Match	%	N/A	NONE	-				

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Analytical Report Number : 18-19018

Project / Site name: Syon Lane - Tsc

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1094561	BH1	None Supplied	0.70-0.90	Brown loam and sand with rubble and gravel
1094562	BH1	None Supplied	1.50-1.70	Brown clay and sand with vegetation.
1094563	BH1	None Supplied	2.20-2.40	Brown clay and sand with gravel.
1094564	BH3	None Supplied	0.50-0.70	Brown loam and sand with gravel and metal.
1094565	BH3	None Supplied	1.30-1.50	Brown clay and sand with gravel and stones.
1094566	BH3	None Supplied	3.40-3.60	Grey clay with gravel.

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Analytical Report Number : 18-19018

Project / Site name: Syon Lane - Tsc

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

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Analytical Report Number : 18-19018

Project / Site name: Syon Lane - Tsc

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 19-32181

Replaces Analytical Report Number : 19-32181, issue no. 1

Project / Site name:	Tesco Osterley Suplementary GI	**Samples received on:**	08/03/2019
Your job number:	WIE15238-100	**Samples instructed on:**	08/03/2019
Your order number:		**Analysis completed by:**	20/03/2019
Report Issue Number:	2	**Report issued on:**	20/03/2019
Samples Analysed:	12 soil samples		

Signed:

Rexona Rahman
Head of Customer Services
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Lab Sample Number				1172986	1172987	1172988	1172989	1172990
Sample Reference				HP12	HP14	HP15	HP16	HP17
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.10	0.10	0.60
Date Sampled				06/03/2019	06/03/2019	06/03/2019	06/03/2019	06/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	42	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	9.8	14	11	19
Total mass of sample received	kg	0.001	NONE	1.5	1.8	1.5	1.5	1.5
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.5	8.2	7.0	7.9	7.5
Organic Matter	%	0.1	MCERTS	4.5	0.9	5.1	3.0	1.2
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Coronene	mg/kg	0.05	NONE	-	-	-	-	-
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	-	-	-	-	-

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Analytical Report Number: 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Lab Sample Number				1172986	1172987	1172988	1172989	1172990
Sample Reference				HP12	HP14	HP15	HP16	HP17
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.10	0.10	0.60
Date Sampled				06/03/2019	06/03/2019	06/03/2019	06/03/2019	06/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	-	14	-	14
Barium (aqua regia extractable)	mg/kg	1	MCERTS	100	-	100	-	65
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.65	-	0.69	-	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	-	0.9	-	2.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	-	0.3	-	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	-	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	-	20	-	38
Copper (aqua regia extractable)	mg/kg	1	MCERTS	50	-	69	-	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	190	-	250	-	31
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.4	-	2.2	-	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.69	-	0.71	-	0.39
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	-	17	-	32
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	36	-	38	-	61
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	87	-	110	-	78
Monoaromatics & Oxygenates								
Benzene	ug/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-

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Analytical Report Number: 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Lab Sample Number				1172986	1172987	1172988	1172989	1172990
Sample Reference				HP12	HP14	HP15	HP16	HP17
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.10	0.10	0.60
Date Sampled				06/03/2019	06/03/2019	06/03/2019	06/03/2019	06/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-

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Analytical Report Number: 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Lab Sample Number				1172991	1172992	1172993	1172994	1172995
Sample Reference				HP18	HP19	TP11	TP11	TP12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.70	0.30	2.20	0.80
Date Sampled				05/03/2019	05/03/2019	05/03/2019	05/03/2019	05/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	15	3.6	15	17
Total mass of sample received	kg	0.001	NONE	1.6	1.5	1.7	1.7	1.9
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	0.393	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	0.393	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	7.9	8.5	9.1	7.8
Organic Matter	%	0.1	MCERTS	4.0	1.9	7.4	1.6	1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	2.0	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	0.40	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	-	0.87	-	0.49
Anthracene	mg/kg	0.05	MCERTS	-	-	0.45	-	0.12
Fluoranthene	mg/kg	0.05	MCERTS	-	-	2.1	-	0.54
Pyrene	mg/kg	0.05	MCERTS	-	-	2.1	-	0.53
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	1.2	-	0.22
Chrysene	mg/kg	0.05	MCERTS	-	-	1.2	-	0.20
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	2.0	-	0.27
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	0.69	-	0.10
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	1.6	-	0.21
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	0.90	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	1.3	-	< 0.05
Coronene	mg/kg	0.05	NONE	-	-	< 0.05	-	< 0.05
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	-	-	17	-	2.7

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Analytical Report Number: 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Lab Sample Number				1172991	1172992	1172993	1172994	1172995
Sample Reference				HP18	HP19	TP11	TP11	TP12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.70	0.30	2.20	0.80
Date Sampled				05/03/2019	05/03/2019	05/03/2019	05/03/2019	05/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	15	6.3	-	5.2
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	110	69	-	90
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.76	0.78	0.28	-	0.70
Boron (water soluble)	mg/kg	0.2	MCERTS	2.3	1.7	0.4	-	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	-	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	22	19	-	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	53	34	20	-	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	200	79	30	-	38
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.2	0.5	< 0.3	-	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.50	0.45	0.66	-	< 0.25
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	18	11	-	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	42	36	-	37
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	56	52	-	53
Monoaromatics & Oxygenates								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0

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Analytical Report Number: 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Lab Sample Number				1172991	1172992	1172993	1172994	1172995
Sample Reference				HP18	HP19	TP11	TP11	TP12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.70	0.30	2.20	0.80
Date Sampled				05/03/2019	05/03/2019	05/03/2019	05/03/2019	05/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	230	-	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	680	-	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	230	-	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	900	-	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	37	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	94	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	130	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	960	-	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	2100	-	23
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	1200	-	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	3300	-	23

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Analytical Report Number: 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Lab Sample Number				1172996	1172997			
Sample Reference				TP13	BH11			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.20	0.10			
Date Sampled				05/03/2019	07/03/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	9.5	2.0			
Total mass of sample received	kg	0.001	NONE	1.8	1.7			
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected			
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-			
Asbestos Quantification Total	%	0.001	ISO 17025	-	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.4	8.5			
Organic Matter	%	0.1	MCERTS	3.5	7.6			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.05	MCERTS	0.57	0.41			
Acenaphthene	mg/kg	0.05	MCERTS	3.2	0.27			
Fluorene	mg/kg	0.05	MCERTS	2.7	0.35			
Phenanthrene	mg/kg	0.05	MCERTS	28	2.3			
Anthracene	mg/kg	0.05	MCERTS	11	0.97			
Fluoranthene	mg/kg	0.05	MCERTS	43	6.6			
Pyrene	mg/kg	0.05	MCERTS	38	6.2			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	19	3.5			
Chrysene	mg/kg	0.05	MCERTS	12	2.4			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	18	5.7			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	7.3	2.4			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	15	5.0			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	7.0	3.1			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	2.1	0.99			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	8.2	3.8			
Coronene	mg/kg	0.05	NONE	1.2	< 0.05			
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	220	44			

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Lab Sample Number				1172996	1172997			
Sample Reference				TP13	BH11			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.20	0.10			
Date Sampled				05/03/2019	07/03/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	< 1.0			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	92	34			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.66	0.16			
Boron (water soluble)	mg/kg	0.2	MCERTS	2.5	0.3			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	11			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43	13			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	100	15			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.51	< 0.25			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	8.3			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37	24			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	92	31			
Monoaromatics & Oxygenates								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0			
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0			

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Analytical Report Number: 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Lab Sample Number				1172996	1172997			
Sample Reference				TP13	BH11			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.20	0.10			
Date Sampled				05/03/2019	07/03/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	2.4	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	8.2	< 2.0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	23	< 8.0			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	110	160			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	85	1800			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	140	160			
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	220	2000			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	2.6	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	42	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	290	150			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	440	1600			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	200	4800			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	770	1800			
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	960	6500			

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Analytical Report Number: 19-32181
Project / Site name: Tesco Osterley Suplementary GI
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1172994	TP11	2.20	141	Loose Fibres & Hard/Cement Type Material	**Chrysotile**	0.393	**0.393**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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Analytical Report Number : 19-32181

Project / Site name: Tesco Osterley Suplementary GI

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1172986	HP12	None Supplied	0.20	Brown loam and clay with vegetation and gravel
1172987	HP14	None Supplied	0.30	Brown loam and clay with vegetation and gravel
1172988	HP15	None Supplied	0.10	Brown loam and clay with vegetation and gravel
1172989	HP16	None Supplied	0.10	Brown loam and clay with vegetation and gravel
1172990	HP17	None Supplied	0.60	Brown clay and loam with vegetation and gravel
1172991	HP18	None Supplied	0.20-0.30	Brown loam and clay with vegetation and gravel
1172992	HP19	None Supplied	0.70	Brown clay and sand.
1172993	TP11	None Supplied	0.30	Brown loam and gravel with tar and clinker
1172994	TP11	None Supplied	2.20	Brown clay and sand with gravel.
1172995	TP12	None Supplied	0.80	Brown clay.
1172996	TP13	None Supplied	0.20	Brown loam and sand with gravel.
1172997	BH11	None Supplied	0.10	Black tar with gravel. **

** Non MCerts Matrix

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Analytical Report Number : 19-32181

Project / Site name: Tesco Osterley Suplementary GI

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 19-32578

Replaces Analytical Report Number : 19-32578, issue no. 1

Project / Site name:	Tesco Osterley Supplementary GI	**Samples received on:**	11/03/2019
Your job number:	WIE15238-100	**Samples instructed on:**	12/03/2019
Your order number:		**Analysis completed by:**	20/03/2019
Report Issue Number:	2	**Report issued on:**	20/03/2019
Samples Analysed:	3 soil samples		

Signed:

Rexona Rahman
Head of Customer Services
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 19-32578

Project / Site name: Tesco Osterley Supplementary GI

Lab Sample Number				1175285	1175286	1175287		
Sample Reference				BH12	BH12	BH13A		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.20	2.50	0.50		
Date Sampled				08/03/2019	08/03/2019	08/03/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	48	< 0.1		
Moisture Content	%	N/A	NONE	11	1.8	9.0		
Total mass of sample received	kg	0.001	NONE	1.7	1.8	1.7		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.3	8.0	9.0		
Organic Matter	%	0.1	MCERTS	6.2	0.3	1.3		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Phenanthrene	mg/kg	0.05	MCERTS	0.61	< 0.05	0.55		
Anthracene	mg/kg	0.05	MCERTS	0.23	< 0.05	0.16		
Fluoranthene	mg/kg	0.05	MCERTS	1.4	< 0.05	0.93		
Pyrene	mg/kg	0.05	MCERTS	1.4	< 0.05	0.87		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.72	< 0.05	0.50		
Chrysene	mg/kg	0.05	MCERTS	0.87	< 0.05	0.48		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2	< 0.05	0.62		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.70	< 0.05	0.29		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3	< 0.05	0.48		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.76	< 0.05	0.30		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.3	< 0.05	0.38		
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	11	< 0.9	5.6		

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Analytical Report Number: 19-32578

Project / Site name: Tesco Osterley Supplementary GI

Lab Sample Number				1175285	1175286	1175287		
Sample Reference				BH12	BH12	BH13A		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.20	2.50	0.50		
Date Sampled				08/03/2019	08/03/2019	08/03/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.7	12	9.7		
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	77	94		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.59	0.81	0.80		
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	0.4	1.3		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.2	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	27	26		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	9.0	33		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	72	8.1	66		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.8	< 0.3	< 0.3		
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	< 0.25	< 0.25	0.94		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	31	22		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37	44	36		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	81	29	72		

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Analytical Report Number: 19-32578

Project / Site name: Tesco Osterley Supplementary GI

Lab Sample Number				1175285	1175286	1175287		
Sample Reference				BH12	BH12	BH13A		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.20	2.50	0.50		
Date Sampled				08/03/2019	08/03/2019	08/03/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	240	< 8.0	< 8.0		
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	450	< 8.4	< 8.4		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	240	< 10	< 10		
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	690	< 10	< 10		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	4.0		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	14	< 2.0	9.2		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	54	< 10	12		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	740	< 10	20		
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	1300	< 8.4	< 8.4		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	800	< 10	46		
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	2100	< 10	46		

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Analytical Report Number : 19-32578

Project / Site name: Tesco Osterley Supplementary GI

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1175285	BH12	None Supplied	0.20	Brown loam and clay with gravel and vegetation.
1175286	BH12	None Supplied	2.50	Brown sand with gravel and stones.
1175287	BH13A	None Supplied	0.50	Brown loam and clay with gravel.

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Analytical Report Number : 19-32578

Project / Site name: Tesco Osterley Supplementary GI

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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The results included within the report are representative of the samples submitted for analysis.

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Analytical Report Number : 19-32813

Project / Site name:	Tesco Osterley Supplementary GI	**Samples received on:**	08/03/2019
Your job number:	WIE15238-100	**Samples instructed on:**	13/03/2019
Your order number:	96705	**Analysis completed by:**	20/03/2019
Report Issue Number:	1	**Report issued on:**	20/03/2019
Samples Analysed:	1 soil sample		

Signed:

Rexona Rahman
Head of Customer Services
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 19-32813

Project / Site name: Tesco Osterley Supplementary GI
Your Order No: 96705

Lab Sample Number				1176613				
Sample Reference				BH11				
Sample Number				None Supplied				
Depth (m)				4.10				
Date Sampled				07/03/2019				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	65				
Moisture Content	%	N/A	NONE	3.1				
Total mass of sample received	kg	0.001	NONE	1.7				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.3				
Organic Matter	%	0.1	MCERTS	1.7				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Pyrene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				
Coronene	mg/kg	0.05	NONE	< 0.05				
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9				
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11				
Barium (aqua regia extractable)	mg/kg	1	MCERTS	14				
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.32				
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	7.7				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	8.1				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	2.0				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	33				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	16				

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Analytical Report Number: 19-32813

Project / Site name: Tesco Osterley Supplementary GI
Your Order No: 96705

Lab Sample Number				1176613				
Sample Reference				BH11				
Sample Number				None Supplied				
Depth (m)				4.10				
Date Sampled				07/03/2019				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	ug/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10				
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10				

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Analytical Report Number : 19-32813

Project / Site name: Tesco Osterley Supplementary GI

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1176613	BH11	None Supplied	4.10	Brown clay and sand with stones and gravel

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Analytical Report Number : 19-32813

Project / Site name: Tesco Osterley Supplementary GI

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Preliminary Report Number : 18-19596

Project / Site name:	Tesco, Syon Lane	**Samples received on:**	22/11/2018
Your job number:	WIE15238-100	**Samples instructed on:**	22/11/2018
Your order number:	94071	**Analysis completed by:**	Not Complete
Report Issue Number:	1.1	**Report issued on:**	14/12/2018
Samples Analysed:	3 water samples		

Signed:

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-19596

Project / Site name: Tesco, Syon Lane

Your Order No: 94071

Lab Sample Number				1097968	1097969	1097970		
Sample Reference				BH1	BH2	BH3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				20/11/2018	20/11/2018	20/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	8.3	8.5		
Sulphate as SO_4	µg/l	45	ISO 17025	105000	169000	113000		
Chloride	mg/l	0.15	ISO 17025	59	57	58		
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	3.88	783	5.48		
Nitrate as N	mg/l	0.01	ISO 17025	0.25	0.13	0.18		
Nitrate as NO_3	mg/l	0.05	ISO 17025	1.12	0.59	0.80		
Hardness - Total	mgCaCO3/l	1	ISO 17025	225	197	101		
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16		

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-19596

Project / Site name: Tesco, Syon Lane

Your Order No: 94071

Lab Sample Number				1097968	1097969	1097970		
Sample Reference				BH1	BH2	BH3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				20/11/2018	20/11/2018	20/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Barium (total)	µg/l	0.06	ISO 17025	260	960	270		
Beryllium (total)	µg/l	0.1	ISO 17025	0.9	1.9	1.3		
Cobalt (total)	µg/l	0.2	ISO 17025	23	21	30		
Copper (total)	µg/l	0.5	ISO 17025	15	2.9	52		
Lead (total)	µg/l	0.2	ISO 17025	16	0.7	28		
Manganese (total)	µg/l	0.05	ISO 17025	2100	5300	1300		
Mercury (total)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05		
Molybdenum (total)	µg/l	0.05	ISO 17025	0.35	0.58	1.8		
Nickel (total)	µg/l	0.5	ISO 17025	17	30	29		
Selenium (total)	µg/l	0.6	ISO 17025	13	75	16		
Vanadium (total)	µg/l	0.2	ISO 17025	7.5	< 0.2	26		
Zinc (total)	µg/l	0.5	ISO 17025	51	51	64		
Calcium (total)	mg/l	0.012	ISO 17025	110	1200	59		
Magnesium (total)	mg/l	0.005	ISO 17025	12	480	7.8		
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.28	0.71	1.06		
Barium (dissolved)	µg/l	0.06	ISO 17025	46	130	23		
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1		
Boron (dissolved)	µg/l	10	ISO 17025	59	9000	24		
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.02	< 0.02	< 0.02		
Calcium (dissolved)	mg/l	0.012	ISO 17025	75	50	34		
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0		
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.4	< 0.2		
Cobalt (dissolved)	µg/l	0.2	ISO 17025	4.4	0.2	0.4		
Copper (dissolved)	µg/l	0.5	ISO 17025	0.6	< 0.5	11		
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	9.1	18	3.9		
Manganese (dissolved)	µg/l	0.05	ISO 17025	1400	19	69		
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	0.08	< 0.05		
Molybdenum (dissolved)	µg/l	0.05	ISO 17025	0.84	20	3.9		
Nickel (dissolved)	µg/l	0.5	ISO 17025	5.0	1.7	1.6		
Selenium (dissolved)	µg/l	0.6	ISO 17025	9.9	96	12		
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.1	0.5		
Zinc (dissolved)	µg/l	0.5	ISO 17025	0.7	< 0.5	3.2		

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Analytical Report Number: 18-19596

Project / Site name: Tesco, Syon Lane

Your Order No: 94071

Lab Sample Number				1097968	1097969	1097970		
Sample Reference				BH1	BH2	BH3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				20/11/2018	20/11/2018	20/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	120	< 10	< 10		
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	70	< 10		
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	100	420	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	1000	2600	< 10		
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	1200	3100	< 10		
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	1200	3100	< 10		
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10		

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Analytical Report Number: 18-19596

Project / Site name: Tesco, Syon Lane

Your Order No: 94071

Lab Sample Number				1097968	1097969	1097970		
Sample Reference				BH1	BH2	BH3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				20/11/2018	20/11/2018	20/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-19596

Project / Site name: Tesco, Syon Lane

Your Order No: 94071

Lab Sample Number				1097968	1097969	1097970		
Sample Reference				BH1	BH2	BH3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				20/11/2018	20/11/2018	20/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND		
VOC % Match	%	10	NONE	-	-	-		

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Analytical Report Number: 18-19596

Project / Site name: Tesco, Syon Lane

Your Order No: 94071

Lab Sample Number				1097968	1097969	1097970		
Sample Reference				BH1	BH2	BH3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				20/11/2018	20/11/2018	20/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Diethyl phthalate	µg/l	0.05	NONE	8.1	< 0.05	< 0.05		
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		

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Analytical Report Number: 18-19596

Project / Site name: Tesco, Syon Lane

Your Order No: 94071

Lab Sample Number				1097968	1097969	1097970		
Sample Reference				BH1	BH2	BH3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				20/11/2018	20/11/2018	20/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	E-8-Methyl-9-tetradecen-1-ol acetate	7,9-Di-tert-butyl-1-oxaspiro(4,5)deca-6,9-diene-2,8-dione	ND		
SVOC % Match	%	N/A	NONE	93	99	-		
SVOCs TICs Compound Name		N/A	NONE	Cyclotetradecane, 1,7,11-trimethyl-4-(1-methylethyl)-	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1R)-	-		
SVOC % Match	%	N/A	NONE	93	98	-		
SVOCs TICs Compound Name		N/A	NONE	Pyridine-3-carboxamide, oxime, N-(2-trifluoromethylphenyl)-	Heptadecane	-		
SVOC % Match	%	N/A	NONE	92	98	-		
SVOCs TICs Compound Name		N/A	NONE	Undecane	1-Nonadecene	-		
SVOC % Match	%	N/A	NONE	91	97	-		
SVOCs TICs Compound Name		N/A	NONE	Tricosane	3,5-di-tert-Butyl-4-hydroxyphenylpropionic acid	-		
SVOC % Match	%	N/A	NONE	91	97	-		
SVOCs TICs Compound Name		N/A	NONE	Cyclohexanone, 2,2-dimethyl-5-(3-methyloxiranyl)-, [2.alpha.(R*),3.alpha.]-(.+-.)-	Octadecane	-		
SVOC % Match	%	N/A	NONE	90	96	-		
SVOCs TICs Compound Name		N/A	NONE	Tridecane	n-Hexadecanoic acid	-		
SVOC % Match	%	N/A	NONE	90	96	-		
SVOCs TICs Compound Name		N/A	NONE	-	Eicosane	-		
SVOC % Match	%	N/A	NONE	-	96	-		
SVOCs TICs Compound Name		N/A	NONE	-	Isoborneol	-		
SVOC % Match	%	N/A	NONE	-	95	-		
SVOCs TICs Compound Name		N/A	NONE	-	3-Cyclohexene-1-methanol, .alpha.,.alpha.4-trimethyl-	-		
SVOC % Match	%	N/A	NONE	-	95	-		
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 52	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 101	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 118	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 138	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 153	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 180	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	< 0.14	< 0.14		
Miscellaneous Organics								
Product ID		N/A	NONE	To follow	To follow	-		

U/S = Unsuitable Sample I/S = Insufficient Sample

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Preliminary Report Number : 18-19596

Project / Site name: Tesco, Syon Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (total)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-OES (total)	Determination of metals in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW (Al, Fe, Cu, Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
PCB's By GC-MS in water	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L028-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Product ID	Determination of product ID by interpretation against standard chromatograms - Water.	In-house method	L070-PL/UK	W	NONE
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE

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Preliminary Report Number : 18-19596

Project / Site name: Tesco, Syon Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 19-33310

Project / Site name:	Syon Lane Tesco	**Samples received on:**	18/03/2019
Your job number:	WIE15238-100	**Samples instructed on:**	18/03/2019
Your order number:	96705	**Analysis completed by:**	25/03/2019
Report Issue Number:	1	**Report issued on:**	25/03/2019
Samples Analysed:	5 water samples		

Signed:

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 19-33310

Project / Site name: Syon Lane Tesco

Your Order No: 96705

Lab Sample Number				1179092	1179093	1179094	1179095	1179096
Sample Reference				BH01	BH02	BH03	BH11	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				14/03/2019	14/03/2019	14/03/2019	14/03/2019	14/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	6.8	7.5	8.7	7.7	6.8
Sulphate as SO_4	µg/l	45	ISO 17025	61500	20000	54800	101000	77900
Sulphate as SO_4	mg/l	0.045	ISO 17025	61.5	20.0	54.8	101	77.9
Chloride	mg/l	0.15	ISO 17025	100	58	75	50	54
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	3.21	10.1	6.11	2.71	1.42
Nitrate as N	mg/l	0.01	ISO 17025	7.04	0.51	0.36	3.00	6.62
Nitrate as NO_3	mg/l	0.05	ISO 17025	31.2	2.26	1.61	13.3	29.3
Hardness - Total	mgCaCO3/l	1	ISO 17025	261	98.4	62.1	227	260
Heavy Metals / Metalloids								
Calcium (dissolved)	mg/l	0.012	ISO 17025	85	33	21	71	86
Magnesium (dissolved)	mg/l	0.005	ISO 17025	12	4.1	2.1	12	11
Monoaromatics & Oxygenates								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	81	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	120	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	460	190	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	460	390	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	460	390	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	15	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	15	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	15	< 10	< 10	< 10

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Analytical Report Number: 19-33310

Project / Site name: Syon Lane Tesco

Your Order No: 96705

Lab Sample Number				1179092	1179093	1179094	1179095	1179096
Sample Reference				BH01	BH02	BH03	BH11	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				14/03/2019	14/03/2019	14/03/2019	14/03/2019	14/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 19-33310

Project / Site name: Syon Lane Tesco

Your Order No: 96705

Lab Sample Number				1179092	1179093	1179094	1179095	1179096
Sample Reference				BH01	BH02	BH03	BH11	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				14/03/2019	14/03/2019	14/03/2019	14/03/2019	14/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	None Detected	None Detected	None Detected	None Detected	None Detected
VOC % Match	%	10	NONE	0	0	0	0	0

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Analytical Report Number: 19-33310

Project / Site name: Syon Lane Tesco

Your Order No: 96705

Lab Sample Number				1179092	1179093	1179094	1179095	1179096
Sample Reference				BH01	BH02	BH03	BH11	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				14/03/2019	14/03/2019	14/03/2019	14/03/2019	14/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	45	16	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.12	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.02	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.05	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.07	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.02	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Analytical Report Number: 19-33310

Project / Site name: Syon Lane Tesco

Your Order No: 96705

Lab Sample Number				1179092	1179093	1179094	1179095	1179096
Sample Reference				BH01	BH02	BH03	BH11	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				14/03/2019	14/03/2019	14/03/2019	14/03/2019	14/03/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	Eicosane	Heneicosane	None Detected	None Detected	None Detected
SVOC % Match	%	N/A	NONE	98	96	0	0	0
SVOCs TICs Compound Name		N/A	NONE	1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tri-2-propenyl-	Benzene, 1,3,5-trimethyl-	-	-	-
SVOC % Match	%	N/A	NONE	97	95	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Benzothiazole, 2-methyl-	Cyclohexane, isothiocyanato-	-	-	-
SVOC % Match	%	N/A	NONE	96	95	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Phenol, 2,5-bis(1,1-dimethylethyl)-	Tetradecane	-	-	-
SVOC % Match	%	N/A	NONE	96	95	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Benzothiazole, 2-(methylthio)-	Benzothiazole, 2-(methylthio)-	-	-	-
SVOC % Match	%	N/A	NONE	96	95	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Docosane	Nonadecane, 1-chloro-	-	-	-
SVOC % Match	%	N/A	NONE	95	95	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Octadecane	Eicosane	-	-	-
SVOC % Match	%	N/A	NONE	95	95	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Quinoline, 1,2-dihydro-2,2,4-trimethyl-	Heptadecane	-	-	-
SVOC % Match	%	N/A	NONE	94	95	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Phenol, 3,5-bis(1,1-dimethylethyl)-	Benzene, 1-ethyl-3-methyl-	-	-	-
SVOC % Match	%	N/A	NONE	94	94	-	-	-
SVOCs TICs Compound Name		N/A	NONE	Nonadecane, 1-chloro-	-	-	-	-
SVOC % Match	%	N/A	NONE	94	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 19-33310

Project / Site name: Syon Lane Tesco

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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The results included within the report are representative of the samples submitted for analysis.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH01		W	19-33310	1179092	c	pH at 20oC in water (automated)	L099-PL	c
BH02		W	19-33310	1179093	c	pH at 20oC in water (automated)	L099-PL	c
BH03		W	19-33310	1179094	c	pH at 20oC in water (automated)	L099-PL	c
BH11		W	19-33310	1179095	c	pH at 20oC in water (automated)	L099-PL	c
BH12		W	19-33310	1179096	c	pH at 20oC in water (automated)	L099-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

Appendix G Risk Rating Matrix

Table G.1: Risk rating for contaminated land qualitative risk assessment

Level of Severity	Likelihood		
	Most Likely	Reasonably Foreseeable	Unlikely
Acute harm or severe chronic harm. Direct pollution of sensitive water receptors or serious pollution of other water bodies.	High	High	Low
Harm from long-term exposure. Slight pollution of sensitive receptors or pollution of other water bodies.	Medium	Medium	Low
No significant harm in either short or long term. No pollution of water that is likely to affect sensitive receptors. No more than slight pollution of other water bodies.	Low	Low	Low

Appendix H Environmental Receptors

The Contaminated Land Statutory Guidance has a four category system that considers harm to human health, controlled waters, flora and fauna, property, livestock and crops. The Categories are broadly defined as follows:

1 Contaminated Land – similar to land where it is known that significant harm has been caused or significant harm is being caused

2 Contaminated Land – no significant harm being caused but there is a significant possibility for significant harm to be caused in the future

3 Not Contaminated Land – there may be harm being caused but no significant possibility for significant harm to be caused in the future

4 Not Contaminated Land – no contaminant linkage, normal levels of contaminants and no significant harm being caused and no significant possibility for significant harm to be caused in the future.

Table H.1: Significant pollution to controlled waters

Pollution of controlled waters

Under Section 78A(9) of Part 2A the term "pollution of controlled waters means the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter. The term "controlled waters" in relation to England has the same meaning as in Part 3 of the Water Resources Act 1991, except that "ground waters" does not include water contained in underground strata but above the saturation zones. (Paragraph 4.36)

Given that the Part 2A regime seeks to identify and deal with significant pollution (rather than lesser levels of pollution), the local authority should seek to focus on pollution which: (i) may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems; (ii) which may result in damage to material property; or (iii) which may impair or interfere with amenities and other legitimate uses of the environment. (Paragraph 4.37)

Significant pollution of controlled waters

Paragraph 4.38 states that "The following types of pollution should be considered to constitute significant pollution of controlled waters:

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

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

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

(d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC)5)".

Paragraph 4.39 states that “In some circumstances, the local authority may consider that the following types of pollution may constitute significant pollution: (a) significant concentrations6 of hazardous substances or non-hazardous pollutants in groundwater; or (b) significant concentrations of priority hazardous substances, priority substances or other specific polluting substances in surface water; at an appropriate, risk based compliance point. The local authority should only conclude that pollution is significant if it considers that treating the land as contaminated land would be in accordance with the broad objectives of the regime as described in Section 1 (of the Contaminated Land Statutory Guidance). This would normally mean that the authority should conclude that less serious forms of pollution are not significant. In such cases the authority should consult the Environment Agency”.

The following types of circumstance should not be considered to be contaminated land on water pollution grounds:

(a) The fact that substances are merely entering water and none of the conditions for considering that significant pollution is being caused set out in paragraphs 4.38 and 4.39 above are being met.

(b) The fact that land is causing a discharge that is not discernible at a location immediately downstream or down-gradient of the land (when compared to upstream or up-gradient concentrations).

(c) Substances entering water in compliance with a discharge authorised under the Environmental Permitting Regulations.

Significant pollution of controlled waters is being caused

In deciding whether significant pollution of controlled waters is being caused, the local authority should consider that this test is only met where it is satisfied that the substances in question are continuing to enter controlled waters; or that they have already entered the waters and are likely to do so again in such a manner that past and likely future entry in effect constitutes ongoing pollution. For these purposes, the local authority should:

(a) Regard substances as having entered controlled waters where they are dissolved or suspended in those waters, or (if they are immiscible with water) they have direct contact with those waters on or beneath the surface of the water.

(b) Take the term “continuing to enter” to mean any measurable entry of the substance(s) into controlled waters additional to any which has already occurred.

(c) Take the term “likely to do so again” to mean more likely than not to occur again.

Land should not be determined as contaminated land on grounds that significant pollution of controlled waters is being caused where: (a) the relevant substance(s) are already present in controlled waters; (b) entry into controlled waters of the substance(s) from land has ceased; and (c) it is not likely that further entry will take place.

Significant Possibility of Significant Pollution of Controlled Waters

In deciding whether or not a significant possibility of significant pollution of controlled waters exists, the local authority should first understand the possibility of significant pollution of controlled waters posed by the land, and the levels of certainty/uncertainty attached to that understanding, before it goes on to decide whether or not that possibility is significant. The term “possibility of significant pollution of controlled waters” means the estimated likelihood that significant pollution of controlled waters might occur. In assessing the possibility of significant pollution of controlled waters from land, the local authority should act in accordance with the advice on risk assessment in Section 3 and the guidance in this sub-section.

In deciding whether the possibility of significant pollution of controlled waters is significant the local authority should bear in mind that Part 2A makes the decision a positive legal test. In other words, for particular land to meet the test the authority needs reasonably to believe that there is a significant possibility of such pollution, rather than to demonstrate that there is not.

Before making its decision on whether a given possibility of significant pollution of controlled waters is significant, the local authority should consider:

(a) The estimated likelihood that the potential significant pollution of controlled waters would become manifest; the strength of evidence underlying the estimate; and the level of uncertainty underlying the estimate.

(b) The estimated impact of the potential significant pollution if it did occur. This should include consideration of whether the pollution would be likely to cause a breach of European water legislation, or make a major contribution to such a breach.

(c) The estimated timescale over which the significant pollution might become manifest.

(d) The authority's initial estimate of whether remediation is feasible, and if so what it would involve and the extent to which it might provide a solution to the problem; how long it would take; what benefit it would be likely to bring; and whether the benefits would outweigh the costs and any impacts on local society or the environment from taking action

Reproduced from DEFRA (2012) Contaminated Land Statutory Guidance pursuant to section 78YA of the Environmental Protection Act 1990 as amended by Section 57 of the Environment Act 1995.

Table H.2: Significant harm to human health, ecological systems and property

Relevant types of receptor	Significant harm	Significant possibility of significant harm
Human beings	The following health effects should always be considered to constitute significant harm to human health: death; life threatening diseases (eg cancers); other diseases likely to have serious impacts on health; serious injury; birth defects; and impairment of reproductive functions. Other health effects may be considered by the local authority to constitute significant harm. For example, a wide range of conditions may or may not constitute significant harm (alone or in combination) including: physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts. In deciding whether or not a particular form of harm is significant harm, the local authority should consider the seriousness of the	The risk posed by one or more relevant contaminant linkage(s) relating to the land comprises: (a) The estimated likelihood that significant harm might occur to an identified receptor, taking account of the current use of the land in question. (b) The estimated impact if the significant harm did occur – i.e. the nature of the harm, the seriousness of the harm to any person who might suffer it, and (where relevant) the extent of the harm in terms of how many people might suffer it. In estimating the likelihood that a specific form of significant harm might occur the local authority should, among other things, consider: (a) The estimated probability that

Relevant types of receptor	Significant harm	Significant possibility of significant harm
	harm in question: including the impact on the health, and quality of life, of any person suffering the harm; and the scale of the harm. The authority should only conclude that harm is significant if it considers that treating the land as contaminated land would be in accordance with the broad objectives of the regime as described in Section 1 of the Contaminated Land Statutory Guidance.	the significant harm might occur: (i) if the land continues to be used as it is currently being used; and (ii) where relevant, if the land were to be used in a different way (or ways) in the future having regard to the guidance on "current use" in Section 3 of the Contaminated Land Statutory Guidance. (b) The strength of evidence underlying the risk estimate. It should also consider the key assumptions on which the estimate of likelihood is based, and the level of uncertainty underlying the estimate.
Any ecological system, or living organism forming part of such a system, within a location which is: • a site of special scientific interest (under section 28 of the Wildlife and Countryside Act (WCA) 1981 (as amended) and Part 4 of the Natural Environment and Rural Communitites Act 2006 (as amended)); • a national nature reserve (under Section 35 of the WCA 1981 (as amended)); • a marine nature reserve (under Section 36 of the WCA 1981 (as amended)); • an area of special protection for birds (under Section 3 of the WCA 1981 (as amended)); • a "European site" within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2010 (as amended); • any habitat or site afforded policy protection under Section 15 of The National Planning Policy Framework (NPPF) on conserving and enhancing the natural environment (i.e. possible Special Areas of Conservation, potential Special	The following types of harm should be considered to be significant harm: • harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location; or • harm which significantly affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location. In the case of European sites, harm should also be considered to be significant harm if it endangers the favourable conservation status of natural habitats at such locations or species typically found there. In deciding what constitutes such harm, the local authority should have regard to the advice of Natural England and to the requirements of the Conservation of Habitats and Species Regulations 2010 (as amended).	Conditions would exist for considering that a significant possibility of significant harm exists to a relevant ecological receptor where the local authority considers that: • significant harm of that description is more likely than not to result from the contaminant linkage in question; or • there is a reasonable possibility of significant harm of that description being caused, and if that harm were to occur, it would result in such a degree of damage to features of special interest at the location in question that they would be beyond any practicable possibility of restoration. Any assessment made for these purposes should take into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.

Relevant types of receptor	Significant harm	Significant possibility of significant harm
Protection Areas and listed or proposed Ramsar sites); or • any nature reserve established under Section 21 of the National Parks and Access to the Countryside Act 1949.		
Property in the form of: • crops, including timber • produce grown domestically, or on allotments, for consumption • livestock • other owned or domesticated animals; • wild animals which are the subject of shooting or fishing rights.	For crops, a substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage. The local authority should regard a substantial loss in value as occurring only when a substantial proportion of the animals or crops are dead or otherwise no longer fit for their intended purpose. Food should be regarded as being no longer fit for purpose when it fails to comply with the provisions of the Food Safety Act 1990. Where a diminution in yield or loss in value is caused by a contaminant linkage, a 20% diminution or loss should be regarded as a benchmark for what constitutes a substantial diminution or loss. In the Guidance states that this description of significant harm is referred to as an "animal or crop effect".	Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question, taking into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.
Property in the form of buildings. For this purpose 'building' means any structure or erection and any part of a building, including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables.	Structural failure, substantial damage or substantial interference with any right of occupation. The local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended. In the case of a scheduled Ancient Monument, substantial damage should be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled.	Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question during the expected economic life of the building (or in the case of a scheduled Ancient Monument the foreseeable future), taking into account relevant information for that type of contaminant linkage.

Relevant types of receptor	Significant harm	Significant possibility of significant harm
	The Guidance states that this description of significant harm is referred to as a 'building effect'.	

Reproduced from DEFRA (2012) Contaminated Land Statutory Guidance pursuant to section 78YA of the Environmental Protection Act 1990 as amended by Section 57 of the Environment Act 1995.

Appendix I Generic Assessment Criteria

Human Health Generic Assessment Criteria

Background

In order to be able to make inference on whether the results obtained during the site investigation (e.g. chemical concentrations in soils, waters and gas) point to the presence of a potential hazard to human health, it is necessary to distinguish between the results, reflecting background and/or insignificantly elevated levels of contamination (i.e. with negligible potential to cause harm or pollution) and the results with significantly elevated concentrations (i.e. with significant potential to cause harm or pollution).

The approach to risk assessment with respect to risks to human health from contaminated land in the UK is set out in the publication Model Procedures for the Management of Land Contamination (CLR11) Environment Agency (2004).

This sets out a tiered approach:

- Preliminary Risk Assessment (e.g. establishing potential contaminant linkages);
- Generic Quantitative Risk Assessment (GQRA) (e.g. comparison of site contaminant concentrations against generic standards and compliance criteria e.g. Soil Guideline Values (SGV) or other Generic Assessment Criteria including an assessment of risk using the source pathway target model); and
- Detailed Quantitative Risk Assessment (DQRA) (e.g. the comparison of contaminant concentrations against site specific assessment criteria).

Preliminary Risk Assessment

This typically encompasses a desk based generation of a conceptual model to establish the potential contaminant linkages associated with the site and any proposed development. Works would typically involve:

- Evaluation of the potential sources of contamination on the site and in the locality and from both a current and historical perspective
- Statutory Consultation;
- Evaluation of a sites geology, hydrology and hydrogeology;
- Site inspection;
- Additional pertinent information as necessary on a site by site basis.

Where works indicate the presence of a potential contaminant linkage further evaluation and potentially site investigation works are necessary to determine the significance of the linkage.

Generic Quantitative Risk Assessment (GQRA)

In August 2008 the Environment Agency (EA) and Department of Environment Food and Rural Affairs (DEFRA) announced the withdrawal of the Contaminated Land Reports CLR7 – 10, CLEA UK (beta) and existing SGV reports as they no-longer fully reflected the revised approach to human health risk assessment.

New partial guidance (in particular Science Reports SR2, SR3 and SR7) and new risk assessment tools (CLEA model version v1.04, v1.05 and currently v1.06) were published in 2009 and these allow environmental practitioners to derive generic and site specific Soil Assessment Criteria (GAC and SAC).

Soil Guideline Values (SGVs)

The EA and DEFRA updated the TOX reports and Soil Guideline Values (SGVs) to reflect the guidance documents published in 2009. SGVs for arsenic, cadmium, nickel, selenium, BTEX compounds (benzene, toluene, ethylbenzene and xylenes), dioxins, furans and dioxin like PCBs and phenol have been made available.

Since publishing the revised SGVs the CLEA model was updated to version v1.06. The Environment Agency has however confirmed that v1.05 has only a "minor effect on assessment criteria calculated using the CLEA software 1.04" and consequently the GACs derived are considered to remain valid. Environment Agency SGVs generated using v1.04 have also not been updated. Software version v1.06 is identical to v1.05 with some password protection enhancements that in no way affect the GAC values generated.

Owing to the scientific advances since 2009 and in particular toxicological research outputs, less significance is now placed on the SGVs in the hierarchy outlined below.

Category 4 Screening Levels (C4SLs)

Category 4 Screening Levels were generated by Contaminated Land: Applications in Real Environments (CL:AIRE) on behalf of DEFRA and made available to the public in April 2014. Category 4 Screening Levels were derived in response to policy changes outlined in the recently revised Statutory Guidance (SG) for Part 2A of the Environmental Protection Act 1990 (Part 2A). Part 2A was originally introduced to ensure that the risks from land contamination to human health, property and the environment are managed appropriately, with the revised SG being designed to address concerns regarding its real-world application. The revised SG presents a new four category system for classifying land under Part 2A, ranging from Category 4, where the level of risk posed is acceptably low, to Category 1, where the level of risk is clearly unacceptable.

The document SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document (March 2014) states that:

The Impact Assessment that accompanied the revised Part 2A Statutory Guidance identified a potential role for new 'Category 4 Screening Levels' in providing a simple test for deciding when land is suitable for use and definitely not contaminated land. It was envisaged that these new screening levels would allow 'low-risk' land to be dismissed from the need for further risk assessment more quickly and easily and allow regulators to focus efforts on the highest-risk land. The C4SLs were proposed to be more pragmatic (whilst still strongly precautionary) compared to existing generic screening levels. It is anticipated that, where they exist, C4SLs will be used as generic screening criteria that can be used within a GQRA, albeit describing a higher level of risk than the currently or previously available SGVs.

Suitable For Use Screening Levels (S4USLs)

In January 2015, Land Quality Management (LQM) and the Chartered Institute of Environmental Health (CIEH) have published updated screening criteria that were derived in line with UK guidance on risk assessment (SR2 and SR3). The resultant screening criteria reflect the industries greater knowledge of the relevant toxicology and further consideration of exposure scenarios as set out in SP1010.

Waterman's Generic Assessment Criteria (GACs)

Waterman have used the following hierarchy for the generic assessment of soils to evaluate Human Health.

- Published Category 4 Screening Values (C4SLs) derived by CL:AIRE on behalf of DEFRA; or in their absence;
- Suitable 4 Use Screening Levels (S4USLs) derived by LQM/CIEH; or in their absence;
- Published Soil Guideline Values (SGVs);
- GAC prepared in accordance with the CLEA v1.04 / v1.06 model by authoritative bodies (e.g. Contaminated Land Applications in Real Environments (CL:AIRE) 2009; and
- Waterman in-house GAC prepared in accordance with the CLEA V1.06 model and associated documents.

Tabulated values of the GACs used are presented overleaf. The references of the sources quoted in the table are:-

- Environment Agency, 2009. CLEA Software, version 1.06;
- DEFRA, Environment Agency, 2004. Model Procedures for the Management of Land Contamination, Contaminated Land Report 11;
- DEFRA, 2014, SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document and appendices;
- LQM / CIEH, 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment;
- Environment Agency, 2009. Human health toxicological assessment of contaminants in soil. Report SC050021/SR2;
- Environment Agency, 2009. Updated technical background to the CLEA model. Report SC050021/SR3;
- Environment Agency, 2008. Compilation of chemical data for priority organic pollutants for derivation of Soil Guideline Values. Report SC050021/SR7; and
- EIC / CL:AIRE, 2010. Soil generic assessment criteria for human health risk assessment.

Detailed Quantitative Risk Assessment (DQRA)

Detailed Quantitative Risk Assessments are undertaken on a site specific basis and full details of the alterations to the CLEA model and generic land use scenarios will be described within the specific reports.

Benzo(a)pyrene Surrogate Marker (SM) Approach

The DEFRA Category 4 Screening Level for B(a)P is based on the surrogate marker approach. In order to utilise the GAC or others based on this approach, the sample assessed must exhibit certain properties that comply with underlying assumptions.

SP1010, Appendix E states:

"The SM approach estimates the toxicity of a mixture of PAHs in an environmental matrix by using toxicity data for a PAH mixture for which the composition is known. Exposure to the SM is assumed to represent

exposure to all PAHs in that matrix therefore the toxicity of the SM represents the toxicity of the mixture. In most cases, BaP is chosen as the SM due to its ubiquitous nature and the vast amount of data available and has been used by various authoritative bodies to assess the carcinogenic risk of PAHs in food (EFSA 2008). However, RIVM considered that 'it would not be suitable to use BaP as a SM for carcinogenic risk assessment of PAH mixtures in soil due to the wide variety in composition of PAH mixtures in Dutch land contamination sites', although little data was provided in the report to support this statement (RIVM 2001). Similarly, the Canadian Council of Ministers of the Environment (CCME) also stated that contaminated soil is likely to contain a diverse range of carcinogenic and non-carcinogenic PAH of varying potency (CCME, 2008).

The SM approach relies on a number of assumptions (HPA 2010).

- *The SM (BaP) must be present in all soil samples.*
- *The profile of the different PAH relative to BaP should be similar in all samples.*
- *The PAH profile in the soil samples should be similar to that used in the pivotal toxicity study on which HBGV was based i.e. the Culp study.*

[sic] To assess the PAH profile in the test soil sample [complies with the assumptions above], the ratio of the seven genotoxic PAHs (benz[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[g,h,i]perylene, chrysene, dibenz[a,h]anthracene and indeno[1,2,3-c,d]pyrene), relative to BaP, should be calculated to ensure it is similar to the test material used in the Culp study (HPA 2010). To be considered sufficiently similar, the ratio relative to BaP should fit within the upper and lower limits (representing an order of magnitude above and below the mean ratio to BaP of test material used in the Culp study). In such cases BaP is considered an adequate SM and the LLTC for BaP may be used in the risk assessment.

If the site falls outside the order of magnitude limits, it may be appropriate to considering a LLTC for groups of surrogate markers, such as groups of 2, 4 or 8 PAHs, as used by EFSA for the evaluation of PAHs in food (EFSA 2008). Expert judgement should be sought in such situations where there is uncertainty as to whether BaP is sufficiently representative (HPA 2010)."

The ratios of the seven genotoxic PAHs relative to B(a)P can be calculated 'by hand' or using LQM's PAH profiling tool.

Generic Quantitative Risk Assessment Criteria – Residential end-use without plant uptake

Proposed End Use	units	Residential without plant uptake			Source
Soil Organic Matter Content	**%**	**1**	**2.5**	**6**	
Arsenic	mg/kg	40	40	40	DEFRA C4SLs
Antimony	mg/kg	550	550	550	CL:AIRE 2009
Barium	mg/kg	1300	1300	1300	CL:AIRE 2009
Beryllium	mg/kg	1.7	1.7	1.7	LQM S4ULs 2015
Boron (Water Soluble)	mg/kg	11000	11000	11000	LQM S4ULs 2015
Cadmium	mg/kg	150	150	150	DEFRA C4SLs
Chromium (Total)	mg/kg	910	910	910	LQM S4ULs 2015
Chromium (VI)	mg/kg	21	21	21	DEFRA C4SLs
Copper	mg/kg	7100	7100	7100	LQM S4ULs 2015
Lead	mg/kg	310	310	310	DEFRA C4SLs
Mercury	mg/kg	1.2	1.2	1.2	LQM S4ULs 2015
Molybdenum	mg/kg	670	670	670	CL:AIRE 2009
Nickel	mg/kg	180	180	180	LQM S4ULs 2015
Selenium	mg/kg	430	430	430	LQM S4ULs 2015
Vanadium*	mg/kg	1200	1200	1200	LQM S4ULs 2015
Zinc	mg/kg	40000	40000	40000	LQM S4ULs 2015
Cyanide (Free)	mg/kg				Waterman GAC - CLEA v1.06
Complex Cyanide	mg/kg				Waterman GAC - CLEA v1.06

Proposed End Use	units	Residential without plant uptake			Source
Soil Organic Matter Content	%	1	2.5	6	
Thiocyanate	mg/kg				Waterman GAC - CLEA v1.06
Aliphatic EC5 - EC6	mg/kg	42	78	160	LQM S4ULs 2015
Aliphatic EC6 - EC8	mg/kg	100	230	530	LQM S4ULs 2015
Aliphatic EC8-EC10	mg/kg	27	65	150	LQM S4ULs 2015
Aliphatic EC10-EC12	mg/kg	130	330	770	LQM S4ULs 2015
Aliphatic EC12-EC16	mg/kg	1100	2400	4400	LQM S4ULs 2015
Aliphatic EC16-EC35	mg/kg	65000	92000	110000	LQM S4ULs 2015
Aliphatic EC35-EC44	mg/kg	65000	92000	110000	LQM S4ULs 2015
Aromatic C5-C7	mg/kg	370	690	1400	LQM S4ULs 2015
Aromatic C7-C8	mg/kg	860	1800	3900	LQM S4ULs 2015
Aromatic C8-C10	mg/kg	47	110	270	LQM S4ULs 2015
Aromatic C10-C12	mg/kg	250	590	1200	LQM S4ULs 2015
Aromatic C12-C16	mg/kg	1800	2300	2500	LQM S4ULs 2015
Aromatic C16-C21	mg/kg	1900	1900	1900	LQM S4ULs 2015
Aromatic C21-C35	mg/kg	1900	1900	1900	LQM S4ULs 2015
Aromatic C35-C44	mg/kg	1900	1900	1900	LQM S4ULs 2015
Benzene	mg/kg	0.38	0.7	1.4	LQM S4ULs 2015
Toluene	mg/kg	880	1900	3900	LQM S4ULs 2015
Ethyl Benzene	mg/kg	83	190	440	LQM S4ULs 2015

Proposed End Use	units	Residential without plant uptake			Source
Soil Organic Matter Content	%	1	2.5	6	
Xylene - o	mg/kg	82	190	450	LQM S4ULs 2015
Xylene - m	mg/kg	88	210	480	LQM S4ULs 2015
Xylene - p	mg/kg	79	180	430	LQM S4ULs 2015
MTBE (Methyl tert-butyl ether)	mg/kg				CL:AIRE 2009
Naphthalene	mg/kg	2.3	5.6	13	LQM S4ULs 2015
Acenaphthylene	mg/kg	2900	4600	6000	LQM S4ULs 2015
Acenaphthene	mg/kg	3000	4700	6000	LQM S4ULs 2015
Fluorene	mg/kg	2800	3800	4500	LQM S4ULs 2015
Phenanthrene	mg/kg	1300	1500	1500	LQM S4ULs 2015
Anthracene	mg/kg	31000	35000	37000	LQM S4ULs 2015
Fluoranthene	mg/kg	1500	1600	1600	LQM S4ULs 2015
Pyrene	mg/kg	3700	3800	3800	LQM S4ULs 2015
Benzo(a)anthracene	mg/kg	11	14	15	LQM S4ULs 2015
Chrysene	mg/kg	30	31	32	LQM S4ULs 2015
Benzo(b)fluoranthene	mg/kg	3.9	4	4	LQM S4ULs 2015
Benzo(k)fluoranthene	mg/kg	110	110	110	LQM S4ULs 2015
Benzo(a)pyrene	mg/kg	3.2	3.2	3.2	LQM S4ULs 2015
Indeno(1,2,3-cd)pyrene	mg/kg	45	46	46	LQM S4ULs 2015
Di-benzo(a.h.)anthracene	mg/kg	0.31	0.32	0.32	LQM S4ULs 2015

Proposed End Use	units	Residential without plant uptake			Source
Soil Organic Matter Content	%	1	2.5	6	
Benzo(g.h.i.) Perylene	mg/kg	360	360	360	LQM S4ULs 2015
Phenol	mg/kg	750	1300	2300	LQM S4ULs 2015
Pentachlorophenol (PCP)	mg/kg	27	29	31	LQM S4ULs 2015
1,1,2,2 Tetrachloroethane	mg/kg	3.9	8	17	LQM S4ULs 2015
1,1,1,2 Tetrachloroethane	mg/kg	1.5	3.5	8.2	LQM S4ULs 2015
1,1,1 Trichloroethane	mg/kg	9	18	40	LQM S4ULs 2015
Trichloroethene	mg/kg	0.017	0.036	0.08	LQM S4ULs 2015
Tetrachloromethane (Carbon Tetrachloride)	mg/kg	0.026	0.056	0.13	LQM S4ULs 2015
1,2- Dichloroethane	mg/kg	0.0092	0.013	0.023	LQM S4ULs 2015
Chloroethene (Vinyl chloride)	mg/kg	0.00077	0.001	0.0015	LQM S4ULs 2015
Trichloroethene	mg/kg	0.017	0.036	0.08	LQM S4ULs 2015
Tetrachloroethene	mg/kg	0.18	0.4	0.92	LQM S4ULs 2015
Trichloromethane (Chloroform)	mg/kg	1.2	2.1	4.2	LQM S4ULs 2015
Sum of PCDDs, PCDFs and dioxins like PCBs	mg/kg				CLEA SGVs 2009
Isopropylbenzene	mg/kg	12	28	67	CL:AIRE 2009
Propylbenzene	mg/kg	40	97	230	CL:AIRE 2009
Styrene	mg/kg	35	78	170	CL:AIRE 2009
Bromobenzene	mg/kg	0.91	2.1	4.9	CL:AIRE 2009

Proposed End Use	units	Residential without plant uptake			Source
Soil Organic Matter Content	%	1	2.5	6	
1,1,2 Trichloroethane	mg/kg	0.88	1.8	3.9	CL:AIRE 2009
1,1-Dichloroethane	mg/kg	2.5	4.1	7.7	CL:AIRE 2009
1,1-Dichloroethene	mg/kg	0.23	0.41	0.82	CL:AIRE 2009
1,2,4-Trimethylbenzene	mg/kg	0.41	0.99	2.3	CL:AIRE 2009
1,2-Dichloropropane	mg/kg	0.024	0.042	0.085	CL:AIRE 2009
2-Chloronaphthalene	mg/kg	3.8	9.3	22	CL:AIRE 2009
Bromodichloromethane	mg/kg	0.019	0.034	0.07	CL:AIRE 2009
Bromoform	mg/kg	5.2	11	23	CL:AIRE 2009
Chloroethane	mg/kg	8.4	11	18	CL:AIRE 2009
Chloromethane	mg/kg	0.0085	0.0099	0.013	CL:AIRE 2009
Cis 1,2 Dichloroethene	mg/kg	0.12	0.2	0.39	CL:AIRE 2009
Dichloromethane	mg/kg	2.1	2.8	4.5	CL:AIRE 2009
Hexachloroethane	mg/kg	0.22	0.54	1.3	CL:AIRE 2009
Trans 1,2 Dichloroethene	mg/kg	0.19	0.35	0.71	CL:AIRE 2009
Bis (2-ethylhexyl) phthalate	mg/kg	2700	2800	2800	CL:AIRE 2009
Butyl benzyl phthalate	mg/kg	42000	44000	44000	CL:AIRE 2009
Diethyl Phthalate	mg/kg	1800	3500	6300	CL:AIRE 2009
Di-n-butyl phthalate	mg/kg	450	450	450	CL:AIRE 2009
Di-n-octyl phthalate	mg/kg	3400	3400	3400	CL:AIRE 2009
Biphenyl	mg/kg	220	500	980	CL:AIRE 2009

Proposed End Use	units	Residential without plant uptake			Source
Soil Organic Matter Content	%	1	2.5	6	
2,4-Dinitrotoluene	mg/kg	170	170	170	CL:AIRE 2009
2,6-Dinitrotoluene	mg/kg	78	84	87	CL:AIRE 2009
Tributyl tin oxide	mg/kg	1.4	3.1	0.24	CL:AIRE 2009

Soil Contamination – Risk of Harm to Property

Structures and Underground Services

Buried Concrete

BRE Special Digest 1 (2005), 3rd Edition, entitled *Concrete in aggressive ground*, provides guidance on the specification for concrete for installation in natural ground and in brownfield locations. The procedures given for the ground assessment and concrete specification cover the fairly common occurrences of sulfates, sulfides and acids, and the more rarely occurring aggressive carbon dioxide found in some ground and surface waters, which affects concrete foundations and sub-structures. It gives procedures for specification of concrete and applies to both buildings and civil engineering construction.

Water Supply Pipes

Guidance is provided in the UK Water Industry Research (UKWIR) report entitled *"Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites"* Report Ref. No. 10/WM/03/21, 2010.

Guidance is provided in the November 2010 Q&A Update and the Questions and Answers Sheet dated 4 May 2011 included at the back of the UKWIR report. Item 3 has been reproduced here:

Table H2 UKWIR guidance

Item	Question	Answer
3	Following the flow chart in Figure 1.1, **would it be acceptable to not undertake a site investigation and specify the use of barrier pipes** (these seem to be suitable for all conditions)? Would it be acceptable to adopt the blanket approach of always using barrier pipes at Brownfield sites, negating the need for a desk study or intrusive investigation?	The UKWIR project steering group decided that barrier pipes would provide sufficient protection for the supply of drinking water in all Brownfield site conditions. It is therefore reasonable to expect that water companies will accept the use of barrier pipe in all situations as a blanket approach

Soil Contamination – Risk of Combustion

The combustibility of soils is a complex function of soil type, energy content, and availability of oxygen. The Building Research Establishment (BRE) has published guidance based on Calorific Value (i.e. energy content, alone), namely *IP 2/87, Fire and explosion hazards associated with the redevelopment of contaminated land*. This document provides a level below which combustibility is unlikely (2MJ/kg) and a level above which combustibility is likely (10MJ/kg). In the range between these two values combustibility is uncertain. Therefore, where the lower value is exceeded, the other key factors mentioned above need to be considered.

Soil Contamination – Risk of Harm to Vegetation

Where there is topsoil present on Site and it is being considered for reuse in landscaped areas then it needs to be assessed for its suitability for use by an appropriately qualified specialist. Topsoil can be both naturally-occurring and manufactured. The requirements for topsoil that is to be reused on site are specified in BS3882:2015 and cover a range of properties including texture, organic matter content, grading, pH, nutrients and phytotoxic contaminants. The specification for phytotoxic contaminants is reproduced in the table below:

Table H3 Phytotoxic Contaminants (by soil pH) for Topsoil

Contaminant*	pH		
	<6	6.0 to 7.0	>7
Zinc (Nitric acid extractable**)	<200mg/kg	<200mg/kg	<300mg/kg
Copper (Nitric acid extractable**)	<100mg/kg	<135mg/kg	<200mg/kg
Nickel (Nitric acid extractable**)	<60mg/kg	<75mg/kg	<110mg.kg

Footnotes: * The lower of the Generic Assessment Criteria for chemical contaminants (human health and the environment) and phytotoxicity shall be used for topsoil

** The method of testing is given in Annex D to BS3882:2015 Specification for topsoil and requirements for use.

The risk to human health and the environment needs to be considered as well as phytotoxicity and this will be carried out using the Generic Assessment Criteria selected for these risks as described elsewhere in this appendix and this report.

In order to assess the suitability of topsoil to be reused the full range of testing specified needs to be carried out and assessed by an appropriately qualified specialist.

Controlled Waters Generic Assessment Criteria

The Screening Values adopted by Waterman for ground and surface water quality have been selected on the basis of the water quality standards that apply at the controlled water receptor considered to be at potential risk of harm.

Surface Waters

The Water Framework Directive (WFD) (2000/60/EC) was originally introduced in 2000, however a raft of Daughter Directives were introduced to address the objectives the WFD originally set out. Over time the WFD and its Daughter Directives have gradually replaced number of the existing Directives including the Dangerous Substances Directive (DSD) and Surface Water Directive (SWD).

The WFD identifies 'Priority' and 'Priority Hazardous Substances', to which Environmental Quality Standards (EQS) have been determined. The WFD EQS do not provide a full complement of applicable values to adopt. In the absence of an EQS, values under the replaced Surface Water Directive have been used as a guide.

Groundwater

The EU Drinking Water Directive (DWD) (98/83/EC) lays out the standards for drinking water EU wide. The UK have followed the EU regulations and translated the Directive into the Water Supply (Water Quality) Regulations England 2000. The UK Drinking Water Standards are the most relevant criteria to use for the assessment of risks to water destined for potable sources.

The WFD, to date, have not set threshold values for groundwater on a river basin basis.

TPH and PAHs

A suitable risk based assessment criteria for risks from TPH in both surface waters and groundwater are not available in the UK. The WHO have produced a health based risk assessment for drinking waters

with regard to TPH “Petroleum Products in Drinking Waters, Background document for development of WHO Guidelines for Drinking-water Quality. Ref. WHO/SDE/WSH/05.08/123”.

A complete list of assessment criteria for PAHs is absent from the UK (benzo(a)pyrene is available). However, the risk from PAHs should be considered. The theory presented in the WHO document “Petroleum Products in Drinking Waters, Background document for development of WHO Guidelines for Drinking-water Quality. Ref. WHO/SDE/WSH/05.08/123” has been applied to provide indicative screening values for PAHS with regard to drinking water. Published TDI and ID effects have been amended for the UK standard body weight and behaviour to derive a UK guideline for DWS of PAHs (70kg body weight and 2l of water consumed per day).

The derived TPH and PAH screening values are used as an indication of the risks from TPH and PAHs to human health through drinking water only.

The standards for the substances tested for in this investigation are provided below.

Table H4 Water Quality Standards

	Concentration (µg/l)		
Determinand	**Surface Water - EQS Freshwater (DEFRA Directions 2015)**	**UK Drinking Water Standard (DWS)**	**WHO Drinking Water Standard**
Metals			
Arsenic	50	10	-
Barium	-	-	700
Beryllium	-	-	12
Boron	-	1000	-
Cadmium	0.25*	5	-
Copper	3.47 – 16.95	2000	-
Chromium (total)	4.7	50	-
Chromium (VI)	3.4	-	-
Chromium (III)	4.7	-	-
Iron	1000	200	-
Lead	4.66 – 24	10	-
Manganese	123 – 851.26	50	-
Mercury	0.07	1	-
Nickel	4.00 – 17.21	20	-
Selenium	-	10	-
Zinc	23.28 – 92.26**	-	-

Non-Metals			
Cyanide	1	50	-
Chloride	-	250,000	-
Nitrate	-	50,000	-
Sulphate	-	250,000	-
Ammonia (total)	-	500	-
Nitrite	-	500	-
BTEX			
Benzene	10	1	-
Ethyl Benzene	-	-	300
Toluene	74	-	-
Xylene (p+m)	30	-	500
MTBE	-	-	15***
Phenol	7.7	-	-
Petroleum Hydrocarbons			
Aliphatic EC5 - EC6	-	-	15,000
Aliphatic EC6 - EC8	-	-	15,000
Aliphatic EC8-EC10	-	-	300
Aliphatic EC10-EC12	-	-	300
Aliphatic EC12-EC16	-	-	300
Aromatic EC6-EC7 (Benzene)	10	1	
Aromatic EC7-EC8 (Toluene)	74	-	700
Aromatic EC8-EC10	-	-	300****
Aromatic EC10-EC12	-	-	90
Aromatic EC12-EC16	-	-	90
Aromatic EC16-EC21	-	-	90
Aromatic EC21-EC35	-	-	90
Polycyclic Aromatic Hydrocarbons			
Anthracene	0.1	-	1050
Acenaphthene	-	-	210*****
Acenaphthylene	-	-	210*****

Chrysene	-	-	1.085*****
Di-benzo(a.h.)anthracene	-	-	0.01085*****
Phenanthrene	-	-	43.75*****
Benzo(a)pyrene	0.00017	0.01	-
Benzo(b)fluoranthene	0.00017	0.1b	-
Benzo(g.h.i.) Perylene	0.00017	0.1	-
Benzo(k)fluoranthene	0.00017	0.1	-
Fluoranthene	0.0063	-	-
Indeno(1,2,3-cd)pyrene	0.00017	0.1	-
Naphthalene	2	-	70
Fluorene	-	-	140*****
Benzo(a)anthracene	-	-	0.543*****
Pyrene	-	-	105*****
Volatile Organic Compounds			
Vinyl Chloride	-	0.5	-
1,1-dichloroethene	-	-	30
Trans 1,2-Dichloroethene	-	-	0.3
Chloroform	-	100c	-
1,2-Dichloroethane	10	3	-
Trichloroethene (TCE)	-	10	-
Bromodichloromethane	-	100	-
Tetrachloroethene (PCE)	-	10	-
1,3-Dichloropropane	-	100	40
Bromoform	-	100	-
1,4-Dichlorobenzene	-	-	300
1,2-Dichlorobenzene	-	-	1000
1,2-Dibromo-3-chloropropane	-	-	1

* Value for Class 5 water, assumes >200mg$CaCO_3$/L

** Ambient background concentration of zinc for Thames catchment is 2ug/l

*** Odour and taste threshold

**** Value for ethylbenzene

***** Waterman-derived criteria based on guidance in WHO document and UK background data

b - Sum of 4 PAHs

c - sum of 4 trichlorohalides – Chloroform, bromoform, dibromoform and bromodichloromethane

Bioavailability based Environmental Quality Standards

Under the Water Framework Directive, originally introduced in 2000, and transposed into the UK regulatory framework via the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015, we are now required take account of the bioavailability when assessing the toxicity of heavy metal contamination in the freshwater environment.

What is Bioavailability and Why Account for it?

It is widely accepted that the total concentration of certain metals in freshwater often has limited relevance to potential environmental risk, but it is the 'bioavailable' fraction that is likely to result in toxic effects to aquatic organisms. Effectively, it's the bioavailability of a metal which reflects the actual metal concentration that the organism will be exposed to, and thus is the relevant concentration that we are interested in when assessing risk.

EQS developed under previous legislation (including the Dangerous Substances Directive (76/464/EEC)) were expressed as total concentration relative to hardness bandings to reflect the indications that toxicity to aquatic life was influenced by water hardness. Scientific knowledge and understanding on the impact of metals has since developed, and metal bioavailability in aquatic systems is now understood to be influenced by several site-specific physio-chemical factors including the pH, calcium content and the level of dissolved organic carbon (DOC) present within the water body under consideration.

Taking bioavailability into account as part of the risk assessment process is now considered best practice and will enable more accurate estimation of metal toxicity and the risks posed to the freshwater environment.

How to Account for Metal Bioavailability

The increased understanding of the impact of certain metals on the aquatic environment has enabled EQSs to be published by the UK Secretary of State for a number of metals based on their bioavailable concentration. These are referred to as EQSbioavailable and are listed in the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

It is very difficult to measure the bioavailable concentration of a metal directly. We therefore have to rely on models to predict the bioavailable concentration from dissolved concentrations. In the UK, a simple predictive tool has been developed that can take account of water quality parameters such as pH, and calcium to determine the amount of bioavailable metal present in the freshwater environment.

The tool is called the Metal Bioavailability Assessment Tool (M-BAT) and is acceptable for use under the UK regulatory framework.

Use of Background Concentrations for the Assessment of Zinc.

Metals occur naturally in the aquatic environment due to weathering of surface geology, and under the EQS Directive (2008/105/EEC) background concentrations for metals can be considered when assessing compliance against the respective EQS.

The situation for Zinc is now slightly different, and consideration of background concentration is now an explicit part of the zinc EQS released under the WFD and needs to be taken into account as part of the initial compliance assessment.

Using this approach, a local background concentration should be subtracted from the monitoring data before the bioavailability estimate is performed using M-BAT. Under the WFD, catchment specific background values have been defined for England and Wales to be used in conjunction with the EQSbioavailable. The background values are listed within the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 Schedule 3, Part 2, Table 2, and also reproduced in Appendix A of the M-BAT user guide.

Lead

Lead is not included in the M-BAT tool (referred to above) as it is not a full bioavailable EQS. The EQS for lead is an EU standard under WFD. It takes into account the influence of DOC on the toxicity of lead but, unlike the full bioavailable standards for zinc, copper, manganese and nickel which are included in M-BAT, it only considered the influence of DOC, and does not require the consideration of calcium or pH.

Ground Gas and Volatile Organic Compounds Generic Assessment Criteria

Ground Gas

Current UK guidance has been produced by CIRIA, the British Standards Institution (BSI) and CL:AIRE. The following relevant documents have been prepared to date:

- CIRIA C665 – Assessing the risks posed by hazardous ground gases to buildings, 2007;
    - Aims to consolidate good practice in investigation, facilitate the collection of relevant data, instigate appropriate monitoring programmes, all in a risk based approach to gas contaminated land.
- BS 8576 – Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs), 2013;
    - Provides guidance on the monitoring and sampling of ground gases, including methane, carbon dioxide, oxygen, and VOCs. Guidance is not provided on the risk evaluation and characterisation of site's, the selection and design of protective measures, verification of protective measures, sampling of atmospheric gases, and the monitoring and sampling of radon.
- CIRIA C735 – Good practice on the testing and verification of protection systems for buildings against hazardous ground gases, 2014; and
    - Sets out the good practice guidance for the designer, installer, verifier, and regulator on the verification and integrity testing of gas protection systems.
- BS 8485 – Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings, 2015.
    - Provides guidance on the appropriate ground gas parameters that can be used to identify a range of possible design solutions for protection against methane and carbon dioxide on a development.
- CL:AIRE - Technical Bulletin (TB 17), August 2018
    - The bulletin provides guidance on assessing ground gas monitoring data to ensure that sufficient data has been collected to cover critical variations in barometric pressure

Both the CIRIA and BSI publications have been prepared to be generally consistent with CLR11, *Model Procedures for the management of land contamination,* (Defra and the Environment Agency, 2004a) and follow a step by step approach summarised below:

1. Desk Study and Site Walkover.
2. Development of a Preliminary Conceptual Model and Risk Assessment.
3. Site Investigation (If deemed necessary from stage 2).
4. Risk Assessment and Site Characterisation.

5. Recommendation and Mitigation.

Where the preliminary conceptual model has deemed further investigation necessary to characterise the ground gas regime, an appropriate site investigation and monitoring regime should be designed and undertaken. In-depth guidance to assist in the design of the investigation is provided within C665 and BS 8576, which describes intrusive investigation techniques and provides guidance on selecting the number and location of monitoring wells based on the site specific conceptual model.

Waterman has generally followed the approach recommended in CIRIA C665, BS 8576, and BS 8485 with respect to characterising a site and determining the levels of gas protection methods required. Where deviations from the methodology detailed within above guidance occurs, the reasoning behind the deviation and implication of the analysis of the results has been included within the report.

Risk Assessment

In accordance with C665, to assess the ground gas regime at a site, the ground gas monitoring data should be assessed by determining the Gas Screening Value (GSV) (ℓ/hr). BS 8485 details further guidance on which GSV can be adopted based on a number of modifiers.

GSV = (Measured Maximum CO_2 or CH_4 Gas Concentration (%) / 100) x Maximum Measured Gas Flow Rate from boreholes (ℓ/hr).

Both C665 and BS 8485 dictate where the gas flow has been measured as less than the detection limit of the instrument used (typically <0.1ℓ/hr), the limit of detection of the instrumented should be used as the gas flow rate.

As per the guidance given in BS 8485 where a negative flow has been recorded, and there is an absence of a positive flow, a qualitative assessment has been undertaken into whether under different temporal conditions, a similar positive flow could occur. When the cause for negative flow is reasonably understood, it has been possible to rule out a corresponding credible positive flow and discount the negative flow.

The Gas Screening Value is used to classify the site, subject to the proposed end use of the site.

The Modified Wilson and Card classification system is used to attribute a Characteristic Situation (CS) value to the site/zone depending upon the calculated GSV. When attributing a CS, additional factors including the maximum recorded gas concentration and the maximum recorded gas flow rate should also be taken into account and may result in an increase in the CS value. Table H.5 below, outlines the CS values associated GSV's and additional factors which must be taken into account.

Table H5 Modified Wilson and Card Classification

Characteristic Situation (CIRIA 149)	Risk Classification	Gas screening value (CH_4 CO_2) l/hr	Additional Factors	Typical source of generation
1	**Very low risk**	**<0.07**	Typically methane ≤1% and / or carbon dioxide ≤5%. Otherwise consider increase to CS 2.	Natural soils with low organic content 'Typical' made ground
2	**Low risk**	**<0.7**	Borehole air flow rate not to exceed 70 l/hr.	Natural soil, high peat/organic content.

Characteristic Situation (CIRIA 149)	Risk Classification	Gas screening value (CH_4 CO_2) l/hr	Additional Factors	Typical source of generation
			Otherwise consider increase to CS 3.	'Typical' made ground
3	**Moderate risk**	**<3.5**		Old landfill, inert waste, mineworking flooded
4	**Moderate to high risk**	**<15**	Quantitative risk assessment required to evaluate scope of protective measures.	Mineworking – susceptible to flooding, completed landfill (WMP 26B criteria)
5	**High risk**	**<70**		Mineworking unflooded inactive with shallow workings near surface
6	**Very High risk**	**>70**		Recent landfill site

Notes:

1) Gas screening value: litres of gas / hour is calculated by multiplying the gas concentration (%) by the measured borehole flow rate (l/hr)
2) Source of gas and generation potential/performance must be identified.
3) If there is no detectable flow use the limit of detection of the instrument.

Following determination of the site's CS, the requirements and scope of gas protection measures can be prescribed based on the guidance given in BS 8485:2015.

BS 8485 details the required ground gas protection measures for a development using a points-based system, whereby a certain number of points must be accumulated through the installation of various protection measures to mitigate the risk to structures or buildings from the accumulation of methane or carbon dioxide. The number of points assigned will be dependent on the building type and the CS.

Table H6 Building types are separated into four distinct scenarios.

Kj,f Modifier	Building Type			
	Type A	Type B	Type C	Type D
Ownership	Private	Private or commercial / public, possible multiple	Commercial / public	Commercial / industrial
Control (change of use, structural alterations, ventilation)	None	Some but not all	Full	Full
Room sizes	Small	Small / medium	Small to large	Large industrial / retail park style

Further details on the description of the building types, along with examples are included in BS 8485.

Following identification of the appropriate Building Type and CS, the minimum gas protection score can be determined through the use of the following table.

Table H7 Gas Protection Score

Characteristic Situation	Minimum Gas Protection Score			
	Type A	Type B	Type C	Type D
1	0	0	0	0
2	3.5	3.5	2.5	1.5
3	4.5	4	3	2.5
4	6.5[A]	5.5[A]	4.5	3.5
5	N/A[B]	6.5[A]	5.5	4.5
6	N/A[B]	N/A[B]	7.5	6.5

[A]Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system e.g. in Institutional and / or fully serviced contractual situations.

[B]The gas hazard is too high for this empirical method to be used to define the gas protection measures.

Post determination of the minimum gas protection score, a combination of two or more of the following three types of protection measures should be used to achieve the score:

- The structural barrier of the floor slab, or of the basement slab and walls if a basement is present;
- Ventilation measures; and
- Gas resistant measures.

Through combining at least two ground gas protection measures, the lack of redundancy in the use of a single protection measure approach is negated. The ground gas protection measures should work independently and collaboratively.

The tables below detail the specific ground gas protection measures and their associated scores.

Table H8 Structural Barrier

Floor and substructure design	Score[A]
Precast suspended segmental subfloor (I.e. beam and block)	0
Cast in-situ ground bearing floor slab (with only nominal mesh reinforcement)	0.5
Cast in-situ monolithic ground bearing raft or reinforced cast in-situ suspended floor slab with minimal penetrations	1 or 1.5[B]
Basement floor and slab conforming to BS 8102:2009, Grade 2 waterproofing[C]	2
Basement floor and walls conforming to BS 1802:2009, Grade 3 waterproofing[C]	2.5

[A]The scores are conditional on breaches of floor slabs, etc., being effectively sealed.

[B]To achieve a score of 1.5 the raft or suspended slab should be well reinforced to control cracking and have minimal penetrations cast.

[C]The score is conditional on the waterproofing not being based on the use of a geosynthetic clay liner waterproofing product.

Table H9 Ventilation Measures

Protection element / system	Score	Comments
Pressure relief pathway (usually formed of low fines gravel or with a thin geocomposite blanket or strips terminating in a gravel trench external to the building.	0.5	Whenever possible a pressure relief pathway (as a minimum) should be installed in all gas protection measure systems. If the layer has a low permeability and / or is not terminated in a venting trench or similar, then the score is zero.
Passive sub floor dispersal layer: Very good performance: Good performance: Media used to provide the dispersal layer are; • Clear void; • Polystyrene void former blanket; • Geocomposite void former blanket • No-fines gravel layer with gas drains; • No-fines gravel layer.	 2.5 1.5	The ventilation effectiveness of different media depends on a number of different factors including the transmissivity of the medium, the width of the building, the side ventilation spacing, and type and thickness of the layer. The selected score should be assigned taking into account the recommendations in Annex B of BS 8485 2015. Passive ventilation should be designed to meet at least good performance, see in Annex B of BS 8485 2015.
Active dispersal layer, usually comprising fans with active abstraction (suction) from a subfloor dilution layer, with roof level vents. The dilution layer may compromise a clear void or be formed of geocomposite or polystyrene void formers.	1.5 to 2.5	This system relies on continues serviceability of the pumps, therefore alarm and response systems should be in place. There should be robust management systems in place to ensure the continued maintenance of the system including pumps and vents. Active ventilation should always be designed to meet at least good performance as described in in Annex B of BS 8485 2015.
Active positive pressurization by the creation of a blanket of external fresh air beneath the floor slabs by pumps supplying air to points across the central footprint of the building into a permeable layer, usually formed of a thin geocomposite blanket.	1.5 to 2.5	This system relies on continues serviceability of the pumps, therefore alarm and response systems should be in place. The score assigned should be based on the efficient coverage of the building footprint and the redundancy of the system. Active ventilation should always be designed to meet at least good performance.
Ventilated car park (floor slab of occupied part of the building under consideration is underlain by a basement or undercroft car park).	4	Assumes that the car fumes is vented to deal with exhaust fumes designed to *Buildings Regulations 2000, Approved Document F.*

It should be noted that for Type A Buildings active ventilation systems are inappropriate.

Table H10 Membrane

Protection element / system	Score	Comments
Gas resistant membrane meeting all of the following criteria; Sufficiently impervious to the gases with a methane gas transmission rate <40mℓ/day/m^2/atm (average) for sheet and joints (tested in accordance with BSO ISO 15105-1 manometric method);	2	The performance of membranes is heavily dependent on the quality and design of the installation, resistance to damage after installation and integrity of joints.

Protection element / system	Score	Comments
Sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions; Sufficiently strong to withstand in-service stresses (e.g. settlement if placed below the floor slab) Sufficiently strong to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc.); Capable, after installation, of providing a complete barrier to the entry of the relevant gas; and Verified in accordance with CIRIA C735.		For example, a minimum 1.4mm thickness (equivalent to 370g/m^2 for polyethylene), reinforced membrane (virgin polymer) meets the performance criteria. If a membrane is installed that does not meet the all the criteria in column 1 then the score is zero.

A gas protection score should only be assigned to a membrane which is formed of a material with suitably low gas permeability and which has been installed so it completely seals the foundation (including effective seals around all penetrations) and does not sustain damage from in-service stresses.

Volatile Organic Compounds (VOCs)

The Building Regulations 2000 Approved Document C (2004 Edition) also refers to volatile organic carbons (VOCs). These are primarily assessed by examination of the VOC content of site soils. Further guidance on VOCs is provided in *"The VOCs Handbook; Investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination"*, CIRIA Report C682, 2009.

For former landfill sites the risk from a wider range of trace gases are considered on a site specific basis when appropriate.

VOCs in groundwater

Under the Environmental Protect Act 1990, Building Regulations Approved Document C 2004 and the National Planning Policy Framework there is a requirement to ensure that Volatile Organic Compounds (VOC) are considered on a risk assessment basis.

VOCs are organic compounds that are volatile under normal atmospheric conditions. However, they may be found in the solid, liquid, and the dissolved phase as well as in the gaseous phase. VOCs are typically found in the following contaminants:

- Petroleum (non-halogenated) hydrocarbons (e.g. benzene, toluene, and butylbenzenes);
- Halogenated hydrocarbons (e.g. chlorinated ethenes and ethanes (dry cleaning fluids or degreasers) or chlorofluorocarbons (freons)); and
- Organic compounds containing nitrogen, sulphur, and oxygen (e.g. tetrahydrofuran).

The likely sources of the above contaminants include:

- Spills, leaks, and discharges from industries;
- Landfills;
- Buildings, furnishings, and common household products;
- Vehicle emissions;
- Marshland; and

- Uncontrolled waste disposal.

The risk to receptors from VOC occur from inhalation (acute and chronic), and a flammable / explosive risk when present at high concentrations in confined spaces.

Current UK guidance for VOCs are limited in comparison to ground gas, and is primarily given in the *"The VOCs Handbook; Investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination"*, CIRIA Report C682, 2009.

Additional guidance was published in 2017 by the Society of Brownfield Risk Assessments (SoBRA) *'Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile contaminants in Groundwater*', February 2017. The 2017 SoBRA document provided a set of Generic Assessment Criteria (GAC) to allow the risk to a residential/commercial premise to be assessed quantitatively using the contamination concentrations recorded in the groundwater. The GAC were generated using the CLEA model, with each GAC being the theoretical concentration in groundwater/perched water beneath a property that is modelled as resulting in estimated average daily exposure (ADE) to the critical receptor that is equal to the Health Criteria Value (HCV).

The GAC were designed to incorporate several precautionary assumptions, these conservatisms include;

- The assumption that the impacted groundwater/perched water is directly beneath the building, when it may instead be offset from the receptor;
- The assumption that there is an infinite source term, when in fact the source may be finite;
- The assumption that there is no biodegradation between the source term and the receptor;
- The assumption that the groundwater source is at a depth of 0.65m bgl;
- The use of sand soil type for both the saturated and unsaturated zone.
- The omission of a capillary zone between the saturated and unsaturated zone.

- These GAC are detailed in the Tables below.
- Table H11 Petroleum Hydrocarbons

Chemical	CAS	GACgwvap (µg/l) 1,2		Aqueous Solubility (µg/l)
		Residential	Commercial	
1,2,4-Trimethylbenzene	95-63-6	24	2,200	559,000
Benzene 3	71-43-2	210	20,000	1,780,000
Ethylbenzene 3	100-41-4	10,000	*960,000 (sol)*	180,000
Isopropylbenzene	98-82-8	850	*86,000 (sol)*	56,000
Propylbenzene	103-65-1	2,700	*240,000 (sol)*	54,100
Styrene	100-42-5	8,800	*810,000 (sol)*	290,000
Toluene 3	108-88-3	230,000	*21,000,000 (sol)*	590,000
TPH Aliphatic EC5-EC6 3		1,900	*190,000 (sol)*	35,900
TPH Aliphatic >EC6-EC8 3		1,500	*150,000 (sol)*	5,370
TPH Aliphatic >EC8-EC10 3		57	*5,700 (sol)*	427

Chemical	CAS	GACgwvap (µg/l) 1,2		Aqueous Solubility (µg/l)
		Residential	Commercial	
TPH Aliphatic >EC10-EC12 3		37	*3,600 (sol)*	34
TPH Aromatic >EC5-EC7 2,3		210,000	*20,000,000 (sol)*	1,780,000
TPH Aromatic >EC7-EC8 3		220,000	*21,000,000 (sol)*	590,000
TPH Aromatic >EC8-EC10 3		1,900	*190,000 (sol)*	64,600
TPH Aromatic >EC10-EC 12 3		6,800	*660,000 (sol)*	24,500
TPH Aromatic >EC12-EC16 3		39,000	*3,700,000 (sol)*	5,750
meta-Xylene 3,5	108-38-3	9,500	*940,000 (sol)*	200,000
ortho-Xylene 3,5	95-47-6	12,000	*1,100,000 (sol)*	173,000
para-Xylene 3,5	106-42-3	9,900	*980,000 (sol)*	200,000

Table H12 Polycyclic Aromatic Hydrocarbons

Chemical	CAS	GAC gw vap (µg/l) 1,2		Aqueous Solubility (µg/l)
		Residential	Commercial	
Acenaphthene	83-32-9	*170,000 (sol)*	*15,000,000 (sol)*	4,110
Acenaphthylene	208-96-8	*220,000 (sol)*	*20,000,000 (sol)*	7,950
Fluorene	86-73-7	*210,000 (sol)*	*18,000,000 (sol)*	1,860
Naphthalene	91-20-3	220	*23,000 (sol)*	19,000

Table H13 Pesticides

Chemical	CAS	GACgwvap (µg/l) 1,2		Aqueous Solubility (µg/l)
		Residential	Commercial	
Aldrin	309-00-2	*47 (sol)*	*3,700 (sol)*	20
alpha-Endosulfan	959-98-8	*7,400 (sol)*	*590,000 (sol)*	530
beta-Endosulfan	33213-65-9	*7,500 (sol)*	*600,000 (sol)*	280

Table H14 Halogenated Organics

Chemical	CAS	GACgwvap (µg/l) 1,2		Aqueous Solubility (µg/l)
		Residential	Commercial	
1,1,1,2-Tetrachloroethane	79-34-5	240	22,000	1,110,000
1,1,1-Trichloroethane	71-55-6	3,000	290,000	1,300,000
1,1,2,2-Tetrachloroethane	79-35-4	1,600	150,000	2,930,000
1,1,2-Trichloroethane	79-00-5	520	49,000	4,491,000
1,1-Dichloroethane	75-34-3	2,700	260,000	3,666,000

Chemical	CAS	GACgwvap (µg/l) 1,2		Aqueous Solubility (µg/l)
		Residential	Commercial	
1,1-Dichloroethene	75-35-4	160	16,000	3,100,000
1,2,3,4-Tetrachlorobenzene	634-66-2	240	*31,000 (sol)*	7,800
1,2,3,5-Tetrachlorobenzene	634-90-2	7.0	600	3,500
1,2,3-Trichlorobenzene	87-61-7	35	3,100	21,000
1,2,4,5-Tetrachlorobenzene	95-94-3	8.1	*700 (sol)*	600
1,2,4-Trichlorobenzene	120-82-1	68	7,200	41,400
1,2-Dichlorobenzene	95-50-1	2,000	*220,000 (sol)*	133,000
1,2-Dichloroethane	107-06-2	8.9	850	8,680,000
1,2-Dichloropropane	78-87-5	22	2,600	2,050,000
1,3,5-Trichlorobenzene	108-70-3	7.4	660	6,000
1,3-Dichlorobenzene	541-73-1	31	2,800	103,000
1,4-Dichlorobenzene	106-46-7	5,000	460,000 (sol)	51,200
Bromobenzene	108-86-1	220	20,000	388,040
Bromodichloromethane	75-27-4	17	1,600	3,000,000
Bromoform (Tribromomethane)	75-25-2	3,100	400,000	3,000,000
Chlorobenzene	108-90-7	98	15,000	387,000
Chloroethane	75-00-3	10,000	1,000,000	5,742,000
Chloroethene (Vinyl Chloride)	75-01-4	0.62	63	2,760,000
Chloromethane	74-87-3	14	1,400	5,350,000
cis-1,2-Dichloroethene	156-59-2	130	13,000	7,550,000
Dichloromethane	75-09-2	3,300	370,000	20,080,000
Hexachlorobenzene	118-74-1	16 (sol)	1,400 (sol)	10
Hexachlorobutadiene	87-68-3	1.7	230	4,800
Hexachloroethane	67-72-1	8.5	740	49,900
Pentachlorobenzene	608-93-5	140	12,000 (sol)	500
Tetrachloroethene	127-18-4	34	4,600	225,000
Tetrachloromethane (Carbon Tetrachloride)	56-23-5	5.3	770	846,000
trans-1,2-Dichloroethene	156-60-5	160	16,000	5,250,000
Trichloroethene	79-01-6	5.7	530	1,370,000
Trichloromethane (Chloroform)	67-66-3	790	85,000	8,950,000

Table H15 Others (Organic and Inorganic)

Chemical	CAS	GACgwvap (µg/l) 1,2		Aqueous Solubility (µg/l)
		Residential	Commercial	
2-Chloronaphthalene	91-58-7	160	*14,000 (sol)*	11,700
Biphenyl (Lemonene)	92-52-4	*15,000 (sol)*	*1,300,000 (sol)*	4,060
Carbon disulphide	75-15-0	56	5,600	2,100,000
Mercury, elemental	7439-97-6	1.1	*95 (sol)*	56
Methyl tertiary butyl ether (MTBE)	1634-04-4	83,000	7,800,000	48,000,000

The risks to receptors from vapours will be assessed through assessment of the volatile contaminant concentrations recorded in groundwater samples against the SoBRA derived GAC. Where an exceedance is recorded, a qualitative assessment will be made, given the conservative approach of the SoBRA derived GAC as to whether a significant vapour regime is present on-site and possible risk to receptors exists. The vapour concentration recorded during headspace analysis of soils, SVOC / VOC contaminant concentration within soil samples, and the vapour concentration within installed boreholes will also be considered qualitatively during this assessment.

Where a significant vapour regime is present and a risk to receptors exists, further assessment will be required, this may include, vapour sampling, further intrusive investigations, or a Detailed Quantitative Risk Assessment (DQRA). Dependent on the results of the further assessment, remedial measures will be required to mitigate the risk to receptors.

UK and Ireland Office Locations