AG Geo-Consultants Ltd

Phase 1 & 2 Desk Study & Contamination Investigation

14 - 16 Tudor Road, Hampton

Contract No./Report Type: 24-077/P1&P2

Produced for The White House Design Ltd

AG Geo-Consultants Ltd

Report Title
Phase 1 & 2 Desk Study & Contamination Investigation

Project	Project No./Report Type
14 - 16 Tudor Road, Hampton	24-077/P1&P2

Client Name
The White House Design Ltd

Issue Date/Version	Status	Comments, Description of Amendments
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<tr><td>History of Site & Surroundings</td><td><u>On Site</u>
Fields then detached building in the SW of the site by 1933. The building is replaced (by 1960) by the current larger building (in the NW of the site) which is a disused vehicle service garage on the ground floor ,with vehicle inspection pits. There are also garage buildings to the rear of the property, which have apparent asbestos cement roofs
<u>In the Surroundings</u>
Fields and then increasingly developed (includes a petrol station (just NW, <1934?, now remediated due to groundwater impact, and replaced by housing) and builder's yard (N) within 50m of the site).</td></tr>
<tr><td>Fuel Infrastructure</td><td>Records (from the Petroleum Officer) suggest the following on site.
<table>
<tr><th>Tank Ref & Capacity</th><th>Date of installation</th><th>Notes</th></tr>
<tr><td>- (250g)</td><td>1946 (?)</td><td>Paraffin in rear yard. Possibly above ground (?).</td></tr>
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<tr><td>T2 (2000g petrol)</td></tr>
<tr><td>T3 (1000g petrol)</td></tr>
<tr><td>T4 (500g)</td><td>Paraffin. Appears to be underground and so formerly petrol or diesel(?). Unknown status.</td></tr>
<tr><td>3-stage interceptor</td><td>Appears to still be present.</td></tr>
</table>

The petroleum license for the site expired in November 1994.
The status of T4 is unknown.
There are no recorded incidents of leaks or spills at this site. At some stage the pumps were removed.
Neither of the two neighbouring houses have a basement.
</td></tr>
<tr><td>Nearby ground investigation</td><td>The site investigation for <u>Yates Garage on the opposite side of the road</u> (9, Tudor Rd), found that:

Groundwater contained elevated concentrations of benzene & xylene (Petrol), and TPH (probably diesel).
A risk from methane gas was found (presumably from degradation of petroleum hydrocarbons).
Free-phase petroleum hydrocarbons were found upon the groundwater.

Remediation included groundwater pumping and treatment, plus removal of 5no. underground storage tanks and a single above-ground storage tank.</td></tr>
<tr><td>Ground Conditions</td><td><u>BGS Mapping Suggests</u>:

Drift Deposits: Taplow Gravel (TG).
Solid Geology: London Clay Formation (clay and silt).

<u>The investigation just W of our site found:</u>

0 to 0.4-1.5m: made ground (reworked, brown, sandy, gravelly clay)
0.4-1.5m to 4.0-4.25m: (dense) Taplow Gravel Member (f-c sands over f-c gravels… or sandy gravel, occasionally slightly clayey),
over London Clay.
</td></tr>
</table>

<table>
<tr><td></td><td>
Our investigation found:
<table>
<tr><th rowspan="2">Strata</th><th colspan="2">Depth Encountered (mBGL)</th><th rowspan="2">Typical Thickness (m)</th><th rowspan="2">Description & Comments</th></tr>
<tr><th>Top</th><th>Bottom</th></tr>
<tr><td>MG: concrete</td><td>0
0.3
0.2</td><td>0.15 to 0.2
0.35
0.6</td><td>0.15</td><td>All holes.
DS2, 2nd (buried) slab.
DS4, 2nd (buried) slab..</td></tr>
<tr><td>MG: clays, sands, gravels, cobbles</td><td>0.15 to 0.35</td><td>1.0 to 1.9
also >3.0, >3.0</td><td>-</td><td>Mixed grading.
Clays are soft.
Base of MG not proven in DS2 and DS6.</td></tr>
<tr><td>MG: Black Ash</td><td>1.10 to 1.15</td><td>1.25 to 1.35</td><td>0.2</td><td>DS1 and DS6 only</td></tr>
<tr><td>SAND/GRAVEL and CLAY. Alternating layers.</td><td>1.0 to 1.9</td><td>>4.0</td><td>-</td><td>Clays are soft and firm.
Sands and gravels are loose, dense & medium dense.</td></tr>
</table>
</td></tr>
<tr><td>Hydrogeology & Hydrology</td><td>

Watercourses: None within 250m.
Source Protection Zones (SPZ): None within 250m.
Abstractions: nearest are 843m E and 709m S (groundwater & surface water).
Aquifers: Superficial Deposits = Principal Aquifer. Bedrock= Unproductive strata
Groundwater (GW): The investigation just W of our site found (in 2014) groundwater lying at 2.5-3m dept and that. Groundwater flow direction was previously anticipated to be to the south towards the River Thames, however the piezometric surface plan produced from data collected on 14th April 2014 indicates a general flow direction towards the <u>north</u>. Our investigation found standing groundwater at 1.57 to 2.6m depth, indicating a possible flow direction of eastwards.

</td></tr>
<tr><td>Contamination Considerations</td><td>

The council have no extra significant records relating to the site.
Anthropogenic components of the made ground comprise: brick, metal, rare glass, and occasional concrete and ash layers.
Elevated soil concentrations in the shallow soils (vs residential with- and without- plant uptake), for

Arsenic and Lead in DS1 and DS3.
TPH C12-21 aromatic, plus PAHs, in DS2 and DS3.

PAH ratios to BaP for the soils, were within the Culp ranges and so BaP is a suitable surrogate marker for comparison against the BaP GAC. All PAH concentrations except BaP, can be ignored.
No BTEX, nor asbestos, were found in the shallow soils.
Despite the soils having some elevated chemical concentrations, we do not expect any significant risks to plants.
During monitoring, <u>groundwater</u> <u>in all wells</u> was found to exhibit hydrocarbon/organic odours. There was also a very faint sheen, or oily sheen, in 3no. of the 5no. wells. DS6 (forecourt) is the worse for impact, followed by DS3 and DS5, which lie (at the rear of the site) ENE of DS6.
Soils tests found hydrocarbon concentrations in DS6 at 2.6m depth that are likely to impact groundwater quality.
During groundwater monitoring, one visit found just elevated concentrations of TPH in DS6 (forecourt), but then a 2nd visit found elevated TPH in all 5no. wells, plus elevated MTBE in 3no. wells. Such suggests a plume originating at ~DS6 and flowing past DS3 and DS5 (both in the rear of the site).
PVC water supply pipes might be accepted, but we'd recommend installing barrier pipes. It would be prudent to replace existing water pipes with such.

Ground Gases, Radon and Chemical Vapours

No risks have been found that require protection against Radon.
No licensed landfills shown on or significantly near to the site. No other potential unlicensed landfilling is evident. The soils under the site have no significant organic content. Our monitoring (2 visits) proved there to be no significant ground gas risk.
There were slight and strong hydrocarbon odours in DS1 and DS6, next to the tanks, below 1.35m and 2.4m depth. Our 5no. 2.0 to 3.6m deep monitoring wells found PID readings <0.7ppm.

</td></tr>
<tr><td>Other Considerations</td><td>

The site appears not at risk of flooding from surface waters, but at moderate-high risk from groundwater flooding.
The site lies in an area (potentially conservatively) deemed moderate risk, for UXO presence.

</td></tr>
</table>

Strategy for Remediation & Risk Reduction	**<u>Our 5no. groundwater monitoring wells must be protected from damage until no longer required.</u>**
	Risks derive from the made ground, and soils impacted by petroleum hydrocarbons (and thus risks to groundworkers and site end-users, plus to groundwater). There is also a risk of UXO presence.
	• To remove the human health risks:
	  ○ The hardstanding at former tanks T0 and T00 shall be removed to prove that the tanks were not underground ones and then the soils under the subbase shall be checked for contamination.
	  ○ The remaining underground tanks (T1-T4) shall be removed from site, along with any concrete cradles and along with any soils impacted (visual and olfactory) by hydrocarbons.
	  ○ Site, landscape and maintenance workers should wear gloves, boots and overalls and wash their hands before eating, drinking and smoking. Excessive dust generation should be avoided.
	  ○ Barrier water supply pipes.
	  ○ Excavations or below ground voids should be checked for the presence of harmful gases and vapours prior to personnel entry.
	  ○ For the new garden areas, a "clean cover" layer should be placed over **any contaminated soils that remain in place.** If food crops/fruit trees could be planted in the above areas, then the **clean cover layer needs to be 0.57m thick (or 0.43m if gardens with no food crops)**. If there will just be landscaping areas with no food crops/fruit trees, **then clean cover can reduce to 0.3m thickness**. Clean cover should include 0.2m of clay, below topsoil. Rainwater from gardens shall be drained to surface water systems.
	• We recommend that a >=1200g membrane be retrofitted to the ground floor slabs, with all joints and service entry points, taped with gas proof tape. All rips and tears shall be equally taped. Internal annulus of services ducts entries (coming through the ground floor slabs) to be made gas tight (e.g. expanding foam). Wall cavities to be made gas proof.
	• A watching brief should be kept during siteworks for any unforeseen/unsuspected contamination (e.g. along drain runs). If such is found, then work should stop and a competent person should be contacted for advice and assessment. Also watch for potential UXO.
	• Any asbestos cement fragments spotted during groundworks, should be litter picked & removed off site.
	• Any recycled aggregates that are planned to be imported to site, should be assessed for contamination (especially asbestos) prior to import and relevant records retained for validation purposes.
	• Topsoil and subsoil should be assessed for contamination prior to import.

Reuse of Soils on or Off site	To avoid Landfill Tax reuse as much soil on site as possible (ensure legitimate reuse and only in the quantity required. Follow waste protocols). By following waste protocols, surplus **natural soils** can be **exported** to other development or construction sites. **Contaminated Made ground** can only be **exported** to soil treatment facilities, or other permitted/exempt sites. **Clean made ground** could go to other construction sites.
Further Data & Investigation	• The vehicle inspection pits should be uncovered and a geo-environmental engineer should inspect them for possible risk of contamination. • Following the removal of underground tanks, vent pipe, fuel lines and interceptors, retest groundwater quality in our wells.

This is only a summary and should not be read in isolation from the main text.

1 Introduction

1.1 Introduction and Brief

AG Geo-Consultants Ltd (AGGC) were commissioned by and on behalf of The White House Design Ltd (the Client) to produce a Phase I & II Desk Study and Contamination Investigation report for a site known as 14 – 16, Tudor Road, Hampton, TW12 2NQ (the "Site", see *proposed site plan* boundary in Appendix A).

The client's brief was to *address the contaminated land planning conditions for the site.* The planning conditions contain the usual requirement for a Phase 1 desk study, Phase 2 ground investigation, etc (see Table 2.1).

1.2 Proposed Development

The proposed development (see location plan in Appendix A) comprises *change of use from mixed use, comprising ground floor car motor garage (B2) and ancillary first floor flat(C3), to residential (C3) including alterations to the front and rear facades, the construction of front and rear extensions.* New front and rear garden areas are proposed.

1.3 Scope of Works

The client accepted AGGC's proposed detailed scope of work for a Phase 1 Desk Study, followed by a Phase 2 investigation (based on the findings of the desk study). The scope was designed to primarily identify if any significant contamination could exist across the site, with recommendations on remediation measures considered necessary, should any material contamination risks be identified. The client declined an assessment of any geotechnical risks.

The objectives of the work were to determine the sub-surface conditions in respect of:

Contamination/Environmental Aspects:

- Contamination assessment to consider potential significant pollutant linkages arising from historic and current land uses, on and off site. This includes:
    - Local Authority (LA) **Environmental Search** (for records that only the LA hold).
    - Local Authority **Petroleum Tank Search**.

This report should be submitted to the LPA to satisfy the relevant planning conditions, but also to seek their "**no objection**" to the potential employment of the **CL:AIRE *Definition of Waste Code of Practice*** (DoWCoP) at the site (i.e. in case there will be surplus natural soils and transfer of such soils to other development sites for reuse, is a consideration).

1.4 Limitations

Until all invoices associated with the production of this report have been paid in full, then it remains the property of AGGC and not the client, and AGGC do not grant legal reliance upon it to satisfy (or remove) planning permission conditions, or to be used for engineering design, etc.

This report is provided for the benefit only of the party to whom it is addressed and their advisors. No other developer or party may use it without our express written permission (i.e. reassignment). We do not accept responsibility to any other third party for the whole or any part of the contents and we exercise no duty of care in relation to this report to any third party.

Where intrusive investigations have been completed, information, comments and opinions given in this report are based on the ground conditions encountered during the site work and on the results of laboratory and field tests performed during the investigation. However, subsoils are inherently variable and hidden from view such that no investigation can be exhaustive to the extent that all soil conditions are revealed. Conditions may therefore be present beneath the site that were not apparent in the data reviewed as part of this assessment. In particular, it should be noted that groundwater levels vary due to seasonal and other effects, and may at times differ to those measured during the investigation.

This assessment has been based to some extent on data acquired from Third Parties. This data has been accepted as correct and has not been subjected to any additional validation.

Unless specifically noted to the contrary, it should be assumed that this report has not been submitted to any other regulatory authorities for approval.

2 Phase 1 Desk Study (Inc Preliminary Risk Assessment)

2.1 Introduction

There has been a **desk study** produced for the site, and the detailed findings are included in:

Table 2.1

Report type	Details	Comments
Phase 1 Preliminary Risk Assessment (Desk Study)	Desk Study report, 14-16 Tudor Road, Hampton, TW12 2NQ, January 23, Ref YEX4748	This has been submitted to planning, but there is no evidence (at 13/8/24) that it has been accepted and so signed off

The following sections contain information located/obtained by ourselves, with any new significant information from the above reports, added.

2.2 Desk Study

Table 2.2: Desk Study

Planning conditions	We have inspected the planning portal for the site's permission 23/1175/FUL and found further site plans etc. The planning conditions contain the usual generic contaminated land conditions. Additionally, **NPPF reminds developers (Cl 184) that they are responsible for providing developments that are free of significant risks** (both contamination and geotechnical). Furthermore, there are ground assessment requirements within **Building Regulations**. Potential risks to groundworkers should also be considered.
Current Use of Site and Surroundings N=North E=East S=South W=West	**On Site Conditions** *Disused **vehicle service garage** on the ground floor and an occupied apartment on the first floor. There are also **garage buildings** to the rear of the property*. Within the ground floor of the main building there is hard-surfaced flooring with **vehicle inspection pits.** The garages to the rear have apparent **asbestos cement roofs**. **In the Surroundings** Primarily residential area, but with a **former petrol station** (now housing) directly opposite (NW).
Historical Land Uses (from previous desk study maps)	**On Site** Fields then detached building in the SW of the site by 1933. The building is replaced (by 1960) by the current larger building, in the NW of the site. **In the Surroundings** Fields and then increasingly developed (includes a garage (NW, <1934?) and builder's yard (N) within 50m of the site).
Aerial Photographs	Show nothing extra or significant.
Other	Our research herein, and the desk study found: • *Planning consent 70/1733 was granted in November 1970 for the **removal of three existing pumps and tanks (fuel)** and **installation of a 5000 gallon underground petrol storage tank**. It is assumed that the earlier tanks were present at the site pre 1948, the earliest date which planning consents can be traced.* • *…..marketing report ….. refers to decommissioning of on site underground fuel tanks in 1998 by 'Tanksafe Ltd'. The tanks, **all petrol**, included a **1000 gallon (5000 litres) and 2no. 2000 gallon (10000 litres) tanks that were foam filled**. A formal certificate of these works (Ref. 98/002) is included for reference. The locations of these decommissioned underground fuel tanks are not recorded,*

<table>
<tr><td></td><td>
but it is likely that they are located within the rear yard of the premises.
• Three (3no.) surface inspection covers were noted, which are considered as representing the filling points for the former decommissioned underground fuel tanks.
• …..an application to redevelop a fuel garage at 9 Tudor Road, itself located directly opposite the site (NW). Remediation there included…removal of five (5no) underground storage tanks and a single above-ground storage tank. Also groundwater pumping and treatment to remove petroleum hydrocarbons.

Contrary to the drainage strategy suggesting that SUDS cannot be used, the ground appears suitable for SUDS and there appears to be space for SUDS, i.e. >5m clearance to buildings.

The RSK site investigation (2014) and risk assessment report for Yates Garage on the opposite side of the road (9, Tudor Rd), found that:
○ Groundwater flow direction was previously anticipated to be to the south towards the River Thames, however the piezometric surface plan produced from data collected on 14th April 2014 indicates a general flow direction towards the <u>north.</u>
○ Free-phase petroleum hydrocarbons were found upon the groundwater.
○ Groundwater contained elevated concentrations of benzene & xylene (Petrol), and TPH (probably diesel).
○ A risk from methane gas was found (presumably from degradation of petroleum hydrocarbons).
</td></tr>
<tr><td>Local Authority (LA) Environmental Records</td><td>
An Environmental search was ordered from the LA and is contained in Appendix F. They supplied the following records:
• Ground investigation report for the garage immediately NW.
• Part B list.
• Private water abstractions list.
The records appear to contain nothing that we do not already know from other enquiries (discussed herein).
</td></tr>
<tr><td>Local Authority Petroleum Tank Search</td><td>
A petroleum tank search was ordered from the LA and is contained in Appendix D. Key points are as follows:
○ The original plan was for construction(?), was dated 24th July 1970 and was for Esso.
○ That plan is annotated with changes to the fuel infrastructure, to provide a completion report (i.e. as-built?) dated 23rd Dec 1970.

<table>
<tr><th>Tank Ref & Capacity</th><th>Date of installation</th><th>Notes</th></tr>
<tr><td>- (250g)(call this T0)</td><td>1946 (?)</td><td>Paraffin in rear yard. Possibly above ground (?).</td></tr>
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<tr><td>3-stage interceptor</td><td>-</td></tr>
</table>
</td></tr>
</table>

	The petroleum records also show that: • The petroleum license for the site expired in November 1994. • Tanksafe Ltd decommissioned the **T1/T2/T3** tank by foam filling in 1998. • The status of T4 is unknown. The interceptors are believed to still exist. • There are *no recorded incidents of leaks or spills at this site.* • Neither of the two neighbouring houses have a basement. The records contain no further detail. At some stage the pumps were removed. No further information about the tanks has been located. **Full detailed information about the tanks is irrelevant**. What is more important is if any contamination from them has gotten into the ground and for that **we are checking every tank location for contamination anyway during Phase 2**.
Anticipated Ground Conditions	BGS Mapping Suggests: • **Fault Lines**: None lie significantly close enough to the site. • **Made ground (MG):** None >1m thickness shown. • **Drift Deposits**: Taplow Gravel (TG). • **Solid Geology**: London Clay Formation (clay and silt). • **The nearest relevant BGS boreholes (on the same geology) suggest:** - 0m to 1-1.5m: made ground, over - 1m-2m: soft brown sandy gravelly CLAY (possibly absent on site), over - 1.5-2m – 3.5-5m: very dense light brown (clayey) SAND & GRAVEL (TG). - >3.5-5m: London Clay (firm to start) The investigation just W of our site found: • **0 to 0.4-1.5m: made ground** (reworked, brown, sandy, gravelly clay) • 0.4-1.5m to 4.0-4.25m: (dense) **Taplow Gravel Member** (f-c sands over f-c gravels… or sandy gravel, occasionally slightly clayey) o over London Clay. Other From our significant experience, we'd expect ~0.5-2.5m of man-made ground.
Hydrology and Hydrogeology	• **Watercourses:** None within 250m. • **Source Protection Zones (SPZ):** None within 250m. • **Abstractions**: nearest are 843m E and 709m S (groundwater & surface water). • **Aquifers**: Superficial Deposits = Principal Aquifer. Bedrock= Unproductive strata • **Groundwater** (GW): expected to lie at 2.5-3m depth (ref the investigation just W of our site).
Environmental Datasheets (from previous desk study)	**Flood risk data is contained herein, but a drainage engineer should be consulted to assess and comment upon sources of flood risk.** The site appears not at risk of flooding from **surface waters**, but at moderate-high risk from **groundwater** flooding. Other potentially significant aspects are: **On Site** No Radon protection is required for new buildings (<1% homes exceed action level). The probability result is only valid **for properties above ground. All basement and cellar areas are considered to be at additional risk from high radon levels**. **In the Surroundings** • Other potential sources are not considered significant as they all lie >109m away.
Landfills?	No licensed ones shown on or significantly near to the site. No other potential unlicensed landfilling is evident.

Potential UXO Risk?	Yes • From a basic map search (via Zetica), the Site is assessed as **moderate** # risk of Unexploded Ordnance (UXO) **being present**. Furthermore: there are **no strategic targets** shown near to the site; there are **no post-WW2 airfields** shown (which could suggest WW2 airfields having been deleted from mapping of the time). • **Bomb Map**: n/a #: Moderate: Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
Potential Ground Risks	The following ***Environmental*/*Contaminated-Land Type*** risks could exist, which we recommend further assessment of: • **Petroleum vapours** from possible impacted soils around the tanks. • **Methane** as degradation product of the above. • Impacted soils around the tanks, and infilled vehicle inspection pits, and their risk to humans and groundwater. • **Made ground, inc asbestos cement** fragments close to buildings**.** • **Nearby garages and petrol station.** There is no significant recorded Radon risk (<1% properties exceed action level). There could also be ***Geotechnical Risks*** (e.g. to foundations, etc) which one should consider assessment of: • Shrink/swell risks especially from removal or retention of trees (a tree survey is recommended and especially before any are removed), • Possible shallow groundwater (unsuitable for soakaways). • Possible sulphate attack on buried concrete. **Other risks**: • A need to expose existing foundations to establish any constraints.

2.3 Preliminary Conceptual Model & Risk Assessment

2.3.1 General

The following is our opinion of risks (rather than those presented within the desk study by others).

The assessment of contamination risks and other environmental risks uses the **Source-Pathway-Receptor** principle.

The site characterisation attempts to identify potential previous and existing **sources** of contamination (or environmental risk) on-site, as well as off-site ones sufficiently close to the site to potentially affect it. The conceptual model links the identified sources likely to cause harm, via **pathways** to identified critical **receptors**.

In the event of a change of land use to a more sensitive use, the town planning regime will require assessment of the new site development layout within the context of the sources of risk and introducing new exposure pathways. The assessment is also used to determine if the site, once developed, would be classed as "contaminated land" under the definition provided by the Part 2A of the Environment Act 1990 as defined in the Environment Protection Act 1995.

The conceptual model is therefore based on a number of identified source-pathway-receptor scenarios. For land to pose a risk (or be classified as "contaminated" under Part 2a) a significant pollutant linkage between source and receptor needs to be identified, which will include each component of the conceptual model.

Risk assessment is always based upon the current state of the site, in case the client does nothing with surfacing, potential hotspots, etc, during the (re)development. The risk assessment does not discuss the post-development risks at the site, because there are required to be no significant ones (Ref. NPPF).

The absence or removal of a source, or interception of a pathway, will 'break' the pollutant linkage and remove the risk.

The conceptual model is characterised by identification of plausible pathways between the following:

- **On-site** sources, which may impact **on-site** receptors.
- **On-site** sources, which may impact **off-site** receptors.
- **Off-site** sources, which may impact **on-site** receptors.

The hazard, consequence and degree of risk all remain as 'potential' until assessed by intrusive investigation.

2.3.2 Preliminary Conceptual Model & Risks

Table 2.3: Potential Risks

Feature	Potential Risks and Contaminants of Concern[#] (CoC)
On-Site: Localised	
Asbestos containing materials (ACM): - As **asbestos cement debris/fragments** in the near-surface soils around buildings clad with asbestos.	Asbestos fragments and loose fibres in the soils.
Potential for automotive hydrocarbons - tipped down **drains** (and so along surface water drainage runs), - from spillages from the **fuel pumps** (impact on shallow soils) and during tank refilling via the direct-fill manholes (and so **around and under tanks**), - under **above-ground tanks** (e.g. probable paraffin & heating oil), - around **petrol interceptors, fuel lines** and **vent pipes.**	Oils, Petrol, Diesel (TPH, PAHs). Chemical vapours.
On-Site: Site-wide	
Made ground	Heavy Metals, hydrocarbons (TPH, PAHs), asbestos.
Unexploded Ordnance.	Explosion. There is always a risk of UXO being present on any site, but for this site the potential presence, and risk to construction workers forming excavations, is considered very low.
Off-Site	
None.	

#: From industry profiles, experience, etc.

There are not considered to be any significant risks from:

- The remaining tanks themselves (since they have been emptied and foam-filled).
- **Radon Gas.**
- **The former petrol station, lying ~10m W of our site.** Groundwater would be the migration pathway for any petroleum hydrocarbons. Groundwater flow direction was considered to be northwards and so not towards our site. That site was remediated some years ago (including removal of 5no. fuel tanks).

A **preliminary** conceptual model is indicated in the following tables (the model is finalised following intrusive site investigation, see Section 6).

Hotspots could comprise along fuel lines, vent pipes & drainage runs, and around and under tanks and the petrol interceptors.

Table 2.4: On-Site to the On-Site Source – Pathway – Receptor Model

Source		Pathway	Receptor	Potential Linkage?
General	Hazard			
General impact (made ground) from former site usage, i.e…… Total soils concentrations (e.g. heavy metals and hydrocarbons).	Contamination of groundwater by **leached contaminants (leachate)**.	Migration of **leachate** through unsaturated zone; Then Migration through saturated zone/groundwater.	Groundwater	Unlikely at present due to the site's hard cover. Removal of hard cover to form gardens could increase the risk
	Impact on Human health.	Ingestion of and dermal contact with soil & household dust; Inhalation of dust (indoor household and outdoor fugitive).	Construction workers.	Yes
			Site end-users.	Yes
		Growing then eating food crops.	Site end-users.	Yes
	Vegetation poisoning.	Plant root uptake.	Plants.	Yes, but unlikely
Hydrocarbon vapours at hotspots **Ground Gases** from degradation of petroleum hydrocarbons at hotspots.	Explosion (accumulation of methane and volatiles). Asphyxiation (resulting from elevated levels of carbon dioxide, methane etc).	Preferential flow paths into buildings through unsaturated zone. Inhalation of indoor vapours/gases and possible explosion.	Site end-users	Yes
		Preferential flow paths into buildings via piled foundations vibro columns, etc . Inhalation of indoor vapours/gases and possible explosion.		No new significant foundations are planned, and they would not require piling
		Inhalation of outdoor vapours/gases.		Negligible risk
			Groundworkers	Yes
Ground Gases from: - natural soils with organic content (e.g. peat, alluvium) - made ground with organic content. **Landfill Gases** from landfilled material within say 250m of the site.	Explosion (accumulation of methane). Asphyxiation (resulting from elevated levels of carbon dioxide, methane etc).	Preferential flow paths into buildings through unsaturated zone. Inhalation of indoor vapours/gases and possible explosion.	Site end-users.	Unlikely
		Preferential flow paths into buildings via piled foundations vibro columns, etc . Inhalation of indoor vapours/gases and possible explosion.		Unlikely
		Inhalation of outdoor gases.		Negligible risk
			Groundworkers	Unlikely
Liquid contaminants Hotspots and impact to soils: Petrol around and under the tanks. Paraffin under the former tank locations	Contamination of groundwater.	Migration through unsaturated zone to groundwater .	Groundwater and/or ecosystem.	Yes
		Via piled foundations.		n/a
	Impact on Human health.	Permeation into PE Water supply pipes.	Human drinking water.	Yes
		Ingestion of and dermal contact with soil.	Site end-users	Yes.
			Groundworkers	Yes
UXO.	Explosion.	Hit during excavations using **mechanical excavators**.	Construction workers	Yes, but unlikely

Linkages: likely to exist, might exist; unlikely to exist

Table 2.5: On-Site to Off-Site Source – Pathway – Receptor Model

Source		Pathway	Receptor	Potential Linkage?
General	Hazard			
Total soils concentrations (e.g. heavy metals and hydrocarbons): General impact (made ground) from former site usage.	Contamination of groundwater.	Migration of leachate through unsaturated zone; Then Migration through saturated zone/groundwater.	Off-site groundwater	Yes
	Impact on Human health.	Inhalation of dust (indoor household and outdoor fugitive).	Adjacent land users.	No
Contaminated groundwater due to impact from chemical hotspots in soil.	Contamination of groundwater.	Migration through saturated zone/groundwater.	Off-site groundwater	Yes
Gases from degradation of petroleum hydrocarbon hotspots Hydrocarbon vapours	Explosion (accumulation of methane and volatiles).. Asphyxiation (resulting from elevated levels of carbon dioxide, methane etc).	Preferential flow paths into buildings through unsaturated zone, Inhalation of indoor vapours/gases and possible explosion.	Adjacent land users.	Yes, but unlikely

There are not considered to be any significant **off-site to on-site** pathways or risks.

As usual, we plan to undertake a **walkover survey** (to confirm the suspected risks and to identify any new ones), at the start of the first day of Phase 2 siteworks. If required, then the Phase 2 scope will be immediately modified in order to pick up newly identified potential risks. Photographs of the site condition will also be taken.

3 Phase 2 Site Investigation

3.1 General

An intrusive site investigation was carried out on the 10th and 11th October 2024 and employed Dynamic (windowless) Sampling (DS) and a dynamic probe. The client dictated the use of a dynamic sample rig, rather than our preferred auger rig.

The holes are summarised as follows, with any targeted and non-targeted holes/sampling shown:

Table 3.1: Exploratory Hole Details

Exploratory Hole ID	Technique	Hole Depth (mBGL)		Well Depth (mBGL)	Targeted?	Comments & Reasons for Holes
		Target	Actual			
DS1	Dynamic (windowless) sampling	1m below GW level (thus 3.5-4m expected) or below base of tanks (say expected 3m)	3.0	2.0	Yes, ~4no. underground fuel tanks	Need to get wells all around the site and to target fuel tanks
DS2			3.0	3.0		
DS3			4.0	2.9	Yes, former fuel tank	
DS4			0.65	-	Yes, Fuel line runs	
DS5			3.6	3.6	Yes, Lube store	
DS6			3.0	2.5	Yes, fuel tanks	

DS4 was halted by a 2nd/buried slab. We managed to make a small hole through it and then continued to investigate the soils using a dynamic probe.

A plan showing the exploratory hole locations is presented as Appendix B. Such also shows the locations of the potential sources of contamination/risk.

Final hole locations are measured or estimated and were not surveyed.

3.2 Dynamic Sampling

6no. dynamic sample holes (DS)(windowless, WS) were advanced using a tracked drilling rig.

The dynamic sampling retrieved continuous soil samples from the holes, which were logged by an onsite engineer. In addition, SPT/SPT(c) tests were taken at regular intervals to give an indication of the strength/density profile of the underlying strata.

Representative samples were taken for chemical laboratory analysis.

Detailed log sheets for the dynamic sample holes are included in Appendix C.

3.3 Dynamic Probing

1no. dynamic probe test was advanced using a tracked drilling rig. This was used to inform the depth to the surface of the London Clay

Dynamic probe results are included in Appendix C.

3.4 Backfilling and Installations

On completion, most holes were fitted with (gas and) groundwater monitoring standpipes. For each well, the standpipe comprised a 50mm internal diameter (ID) UPVC riser pipe with screw connectors. The lower part (the "response zone") is slotted to allow the free ingress of water and gas. The annulus between the riser pipe and the borehole wall was filled with pea gravel. Above the gravel and slotted pipe, the annulus was filled with a cement bentonite grout and a lockable flush stopcock cover was installed at ground level. Details are shown on the logs. For all wells, the tops of the response zones lie at 1m depth.

No gas risk was expected, but gas taps were fitted and gas measurements were taken whilst on site measuring groundwater levels.

The wells should be protected and retained until the drainage engineer no longer requires groundwater information and until the LA has accepted the groundwater and ground gas risk assessment.

On completion DS4 was backfilled with arisings, as shown on the log.

Table 3.2: Well Details

Exploratory Hole ID	Well Depth (mbgl)	Response Zone (mbgl)(RZ)	Comments
DS1	2.0	1.0-2.0	RZ within inert MG, but having hydrocarbon odour.
DS2	3.0	1.0-3.0	RZ within inert MG.
DS3	2.9	1.0-2.9	RZ primarily within non-organic natural soils.
DS5	3.6	1.0-3.6	RZ within non-organic natural soils.
DS6	2.5	1.0-2.5	RZ within inert MG, but having hydrocarbon odour.

3.5 In-Situ Testing and Monitoring

Whilst on site we undertook SPT tests in one hole for future reference (e.g. any foundation design). Similarly, the probe results can be used for, say any foundation design.

Given the absence of any gas risk, then return visits to site were just undertaken to measure groundwater levels, but whilst there we measured gases and gas flow rates anyway, to confirm our opinion of there being no risk.

Groundwater samples were obtained for potential laboratory testing using low flow techniques, because petroleum hydrocarbons had been noted in the soils at a few well locations).

3.6 Sample Collection and Laboratory Analysis

Samples obtained during the investigation were subjected to a range of chemical testing at appropriate UKAS accredited laboratories.

Soil samples were sent for **chemical laboratory analysis** to be analysed for the *contaminants of concern* detailed in Table 3.3, as follows.

Table 3.3: Soil Sample Chemical Tests

Testing:	Number of Samples Tested	
	Made Ground	Natural Soils
AGGC Full suite comprising: arsenic, cadmium, copper, total chromium, chromium VI, lead, mercury, nickel, selenium, zinc, Speciated Polyaromatic Hydrocarbons (PAH), speciated Total Petroleum Hydrocarbons (TPH-CWG), soil organic matter content (SOM), pH and soluble sulphate.	4 (for soils coming to within 0.15-0.45mbegl)	0
Asbestos Screen & ID.	4	0
Speciated TPH (CWG) & BTEX & MTBE	5 (4no. of which are at 2-2.6m depth)	1

Deep soils were tested near to the tank bases, but most of such samples were (deep) made ground.

10no. groundwater samples were obtained from completed wells using low-flow sampling (due to the risk of free product, or mobile hydrocarbons in the surrounding soils). Water samples were analysed for the *contaminants of concern* detailed in Table 2.3, as follows.

Table 3.4: Groundwater Sample Tests

Testing:	Number of Samples Tested
Speciated TPH (CWG) & BTEX & MTBE	10
pH and sulphate (for buried concrete design).	2

All soil samples were collected using either clean stainless steel utensils or clean disposable gloves and placed directly into clean containers provided by the laboratory.

The chemical laboratory test results are presented in Appendix H.

4 Ground Conditions

4.1 General

The following table provides a summary of the strata encountered in the exploratory holes and the depth to the base of each stratum. MG = man-made ground.

Table 4.1: Typical Strata

Strata	Depth Encountered (mBGL)		Typical Thickness (m)	Description & Comments
	Top	Bottom		
MG: concrete	0 0.3 0.2	0.15 to 0.2 0.35 0.6	0.15	All holes. DS2, 2nd (buried) slab. DS4, 2nd (buried) slab..
MG: clays, sands, gravels, cobbles	0.15 to 0.35	1.0 to 1.9 also >3.0, >3.0	-	Mixed grading. Clays are soft. Base of MG not proven in DS2 and DS6.
MG: Black Ash	1.10 to 1.15	1.25 to 1.35	0.2	DS1 and DS6 only
SAND/GRAVEL and CLAY. Alternating layers.	1.0 to 1.9	>4.0	-	Clays are soft and firm. Sands and gravels are loose, dense & medium dense.

Anthropogenic components of the made ground comprised, brick, metal, rare glass, and occasional concrete and ash layers.

4.2 Groundwater

Groundwater observations were as follows:

Table 4.2: Groundwater Observations

Exploratory Hole	Depth to Groundwater (mBGL)	
	During site works	Standing Depths Post-site works
DS1	1.75	1.71, 1.96
DS2	1.50	1.57, 1.83
DS3	2.70	2.38, 2.57
DS4	Dry to hole base at 0.65m.	-
DS5	2.75	2.42, 2.60
DS6	2.75, rose to 2.40	1.84, 2.18

Using just the **depths (mbegl),** then these depths suggest groundwater flow to the east, during both monitoring visits.

That means that the petrol station directly to the west of the site could have impacted our site historically. That site was remediated when redeveloped, but there is still a chance of residual hydrocarbons in the soils under the road between the two sites.

4.3 Contamination Indications

Indications of contamination are noted on the logs and are summarised as follows (shaded cells show positive indications).

No free product was observed during site works and only sheens existed during monitoring.

Table 4.3: Summary of Visual and Olfactory Contamination Observations

Hole Ref	Stratum or Groundwater	Visual and Olfactory Indications (Shaded cells show positive indications (e.g. blue for GW))
DS1	MG	**Slight hydrocarbon odour** at 1.35-1.9m depth
	Natural soils	None
	GW	None noted during drilling. During monitoring visit number: 1. **Weak h/c odour** noted, no sheen 2. **Organic odour**, no sheen
DS2	All Stratum	None
	GW	None noted during drilling. During monitoring visit number: 1. **Weak h/c** odour noted, no sheen 2. **Organic odour**, no sheen
DS3	All Stratum	None
	GW	None noted during drilling. During monitoring visit number: 1. **Weak h/c odour** noted and v.faint sheen noted. 2. **h/c odour**, no sheen
DS4	All Stratum	None, but refused too shallow (0.65m) to comment
	GW	n/a
DS5	All Stratum	None
	GW	None noted during drilling. During monitoring visit number: 1. **Weak h/c odour** and **v.faint sheen** noted 2. **h/c odour**, no sheen
DS6	MG	**Strong hydrocarbon odour** at 2.4->=3.0m depth
	GW	None noted during drilling. During monitoring visit number: 1. **h/c odour** and **oily sheen** noted 2. **h/c odour** and **v.faint sheen**

DS6 is the worse for impact, followed by DS3 & DS5, which lie (at the rear of the site) ENE of DS6.

PID readings recorded during monitoring are summarised in the following table.

Table 4.4: Summary of PID Readings

Hole Ref	Steady State PID Reading (ppm): 25th Oct 2024
DS1	0.6
DS2	0.2
DS3	0.5
DS5	0.7
DS6	0.3

4.4 Underground Services Encountered

None were found in the inspection pits, nor subsequent exploratory holes.

5 Assessment of Contamination & Environmental Risks

5.1 Tier 1 Generic Quantitative Risk Assessment - Soil Risks to Humans

5.1.1 General

Results for soils that lie below about 1m depth have not been assessed for human health, but have been used for risks to groundwater.

The proposed redevelopment of the Site is residential with some private gardens, therefore, to identify chemicals of potential concern, the analytical data has initially been compared against the relevant available guidelines for ***residential with plant uptake*** end-use (i.e. with and food crops, including fruit trees). ***Residential without plant uptake*** guidelines are given for information.

The maximum results, have been used for subsequent comparison with the following 4no. sets of GAC:

1. Firstly against **Category 4 (Cat 4) Screening Levels**, SP1010, 24th September 2014, by CL:AIRE.
2. Then:
    a. Cl:AIRE/EIC/AGS **Soil Generic Assessment Criteria** (GAC) for Human Health Risk assessment, January 2010.
    b. The LQM/CIEH **S4ULs** for Human Health Risk Assessment. Ref: S4UL3269, released January 2015 (with update in August 2015), Land Quality Press, Nottingham.
    c. **EA Science Reports** SC050021, SR2 & SR3.

5.1.2 Metals

The CLEA model has separate Soil Guideline Values (SGVs) for different forms of mercury. However, the SGV report states that for general surface contamination, and to simplify the assessment, the chemical analysis results for total mercury content can just normally be compared with the SGVs for inorganic mercury (e.g. 40mg/kg for private gardens)(this is because the equilibrium concentrations of elemental and methyl mercury compounds are likely to be very low).

The following table summarises the results (**Bold** and/or highlight shows exceedances):

Table 5.1: Values for Metals in Soils

Compound	No. of samples	Maximum values (mg/kg)	SGV or GAC (1% SOM) mg//kg (Residential with plant uptake)	SGV or GAC (1% SOM) mg/kg (Residential without plant uptake)
Arsenic	4	42.6	37	40
Cadmium	4	4.8	11	85
Chromium	4	298	910 #	910 #
Chromium VI	4	0.19	6	6
Copper	4	689	2,400	7,100
Mercury (Inorganic)	4	8.7	40	56
Nickel	4	54.1	180	180
Lead	4	266,281,1100	200	310
Selenium	4	<3	250	430
Zinc	4	1,440	3,700	40,000

#Chromium III

Lead concentrations exceeded the **with- and without- plant uptake GAC** in DS1 and DS3.
Arsenic concentrations exceeded the **with- and without- plant uptake GAC** in DS3

5.1.3 Organics – General

Soil Organic Matter (SOM) tests were undertaken on 4no. samples. The results ranged from 2.66% to 23.2% and so a conservative figure of 1% SOM has been adopted when selecting the Generic Assessment Criteria (GAC) screening values for organics in the following sections.

5.1.4 Organics – TPH

The following table summarises the results (**Bold** and/or highlight shows exceedances):

Table 5.2: Values for Speciated Hydrocarbons in Soils

Compound	No. of samples	Maximum values (mg/kg)	SGV or GAC (1% SOM) mg/kg (Residential with plant uptake)	SGV or GAC (1% SOM) mg/kg (Residential without plant uptake)
Aliphatic				
EC 5-6	4	<0.1	42	42
EC> 6-8	4	<0.1	100	100
EC> 8-10	4	<0.1	27	27
EC> 10-12	4	4.0	130	130
EC> 12-16	4	10.2	1,100	1,100
EC> 16-35	4	173.1	65,000	65,000
EC> 35-44	4	19.7	65,000	65,000
Aromatic				
EC 5-7(benzene)	4	<0.01	70	370
EC> 7-8 (toluene)	4	<0.01	130	860
EC>8-10	4	<0.01	34	47
EC>10-12	4	12.2	74	250
EC>12-16	4	124	140	1,800
EC>16-21	4	615, 820	540#	1,900
EC>21-35	4	1680	1,500#	1,900
EC>35-44	4	281	1,100	1,900

#: 2.5% SOM GAC used (and shown) since the results exceeded the conservative 1% SOM GAC

C12-21 aromatic concentrations exceeded the **with-plant uptake GAC** in DS2 and DS3.

All BTEX (petrol)(Benzene, Toluene, Ethylbenzene, Xylene) results were below the limits of detection (LOD).

5.1.5 Organics – Polyaromatic Hydrocarbons (PAHs)

The following table summarises the results (**Bold** and/or highlight shows exceedances):

Table 5.3: Values for Speciated PAH in Soils

Compound	No. of samples	Maximum values (mg/kg)	SGV or GAC (1% SOM) mg/kg (Residential with plant uptake)	SGV or GAC (1% SOM) mg/kg (Residential without plant uptake)
Naphthalene	4	2.92	5.6#	5.6#
Acenaphthylene	4	4.97	170	2,900
Acenaphthene	4	7.06	210	3,000
Fluorene	4	12.4	170	2,800
Phenanthrene	4	136.0	220#	1,300
Anthracene	4	33.4	2,400	31,000
Fluoranthene	4	216.0	280	1,500
Pyrene	4	174.0	620	3,700
Benzo(a)anthracene	4	14.9, 75.2	11#	14#
Chrysene	4	72.7	22#	31#
Benzo(b)fluorathene	4	13.5, 76.6	3.3#	4.0#
Benzo(k)fluorathene	4	35.7	77	110
Benzo(a)pyrene	4	10.3, 47.7##	2.7#	3.2#
Indeno(123-ed)pyrene	4	37.4	36#	45
Dibenzo(ah)anthracene	4	1.55, 10.4	0.28#	0.32#
Benzo(ghi)perylene	4	28.9	320	360

#: 2.5% SOM GAC used (and shown) since the results exceeded the conservative 1% SOM GAC
##:SOM for this result was 23.3%

All of the PAH exceedances (generally exceeding both the with- and without- plant uptake GAC) were in DS2 and DS3.

5.1.6 Other

Asbestos was screened for in 4no. made ground samples and none was found.

5.2 Tier 2 Detailed Quantitative Risk Assessment - Soil Risks to Humans

The purpose of *detailed quantitative risk assessment* (DQRA) is to establish and use more detailed site-specific information and criteria to decide whether the elevated results do indeed pose unacceptable risks. Whether such further assessment is worthwhile can depend on a number of factors, especially whether the developer is happy with the currently required clean cover thickness.

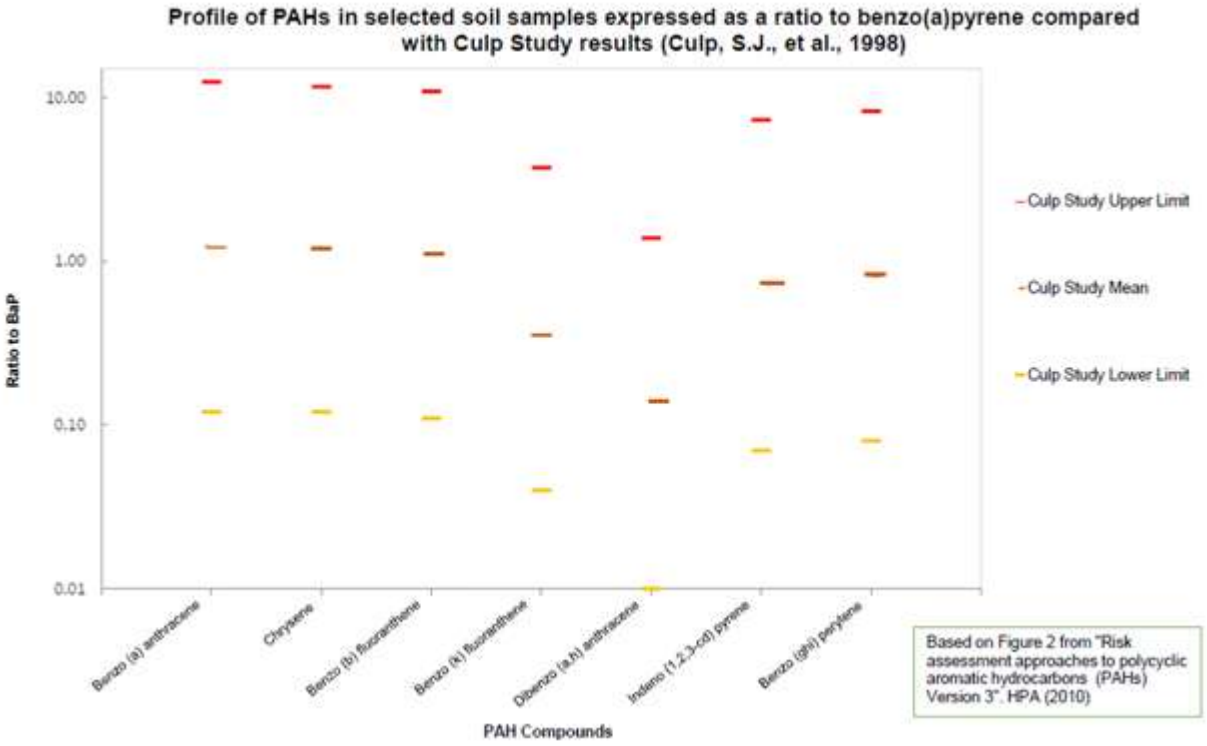
The driver for risks from the soils appears to be **PAH concentrations,** and then **Lead concentrations**.

The Lead in the soils is likely to be due to Leaded fuel and so bio-accessibility tests are considered unlikely to lower the bio-accessible fraction of the GAC and so unlikely to change the acceptable concentrations.

The assessment of PAHs as **single chemicals** is likely to be inappropriate for the majority of sites, due to the fact that they are usually present in soils as **mixtures**. An assessment of **mixtures** was therefore judged by SOBRA (Society Of Brownfield Risk Assessment)(2010) to be more suitable, since it takes into account the fact that **PAH mixtures** have been found to be comparatively more toxic than individual PAH compounds, and a mixture assessment will therefore provide a more

appropriate level of conservatism when assessing exposure to soil. Such considerations underpin the surrogate marker approach.

Therefore, in accordance with HPA guidance 13 and as detailed in SP101014, PAH profiling has been undertaken to determine the suitability of the Benzo(a)pyrene (BaP) surrogate marker approach in assessing the significance of the elevated PAHs. The Culp Study found the PAH profile across most sites to be as the plot below.



We had single PAH exceedances as follows:

Table 5.4 Exceedances by Single PAHs

Exploratory Hole Ref:	DS2, 0.4m		DS3, 0.2m					
	Result (mg/kg)	Ratio to BaP	Result (mg/kg)	Ratio to BaP				
BaA	14.9	1.45	75.2	1.58				
Chrysene	14.3	1.39	72.7	1.52				
BbF	13.5	1.31	76.6	1.61				
BkF	6.2	0.60	35.7	0.75				
BaP	10.3		47.7					
Dibenzo'	1.55	0.15	10.4	0.22				
Indeno	7.59	0.74	37.4	0.78				
BghiP	5.75	0.56	28.9	0.61				

Green= within Culp study ranged and thus BaP suitable as surrogate marker.

All of our **single PAH** ratios to BaP, were within the Culp ranges and so BaP is a suitable surrogate marker for comparison against the BaP GAC.

Our BaP concentrations in DS2 and DS3 still exceed the GAC, but the required clean cover thickness (based on BaP alone) is now reduced **(other single PAH concentrations can be ignored)**.

5.3 Soil Risks to Plants (Phytotoxicity)

It is not possible to produce a definitive list of phytotoxic substances on account of numerous variables. However, a number of metals are repeatedly cited as commonly occurring priority pollutants. As a result, the following list is adopted as indicators of the potential for phytotoxicity: As, B, Cr, Cu, Ni and Zn.

For the guideline values, the most authoritative source is the British Standard for topsoil (**BS3882**), but this only lists three elements. CLR 11 states that the **ICRCL Guidance Note 70/90** can be used for initial screening criteria. This approach has been adopted where BS3882 is lacking, but where an ICRCL 70/90 criterion is lacking, the next lowest criterion, has been adopted.

Table 5.5: GAC for Phytotoxic Risks

Compound	Generic Assessment Criteria (GAC)(mg/kg)				GAC Source
	pH 5.0 - <5.5	pH 5.5 - <6.0	pH 6.0 - <7.0	pH >7.0	
Boron	3				1987: ICRCL 59/83 (also New Zealand)
Chromium VI	25				1990: ICRCL 70/90
Chromium III	400				1998: MAFF Agricultural Practice for sewage sludge
Arsenic	250 (“applicable to plants”)				
Copper (Cu)	80	100	135	200	2015: BS3882 & 1996: DoE #
Nickel (Ni)	50	60	75	110	
Zinc (Zn)	200	200	200	300	

#: Department of the Environment Publication, Code of Practice for Agricultural Use of Sewage Sludge, 1996

The pH results varied from 8.1 to 10.2 and so concentrations determined of Cu and Zn exceeded the stated guidelines. Additionally, there were a few significant results for other heavy metals (which can also be potentially phytotoxic).

From our experience however, we do not anticipate these concentrations to pose any significant risk to plants.

5.4 Soil Risks to Water Supply Pipes

The future routes of water supply pipes had not been provided at the time of this report, hence the investigation and sampling strategy may not be fully compliant with UK Water Industry Research (UKWIR) recommendations.

To assess possible risks to proposed water supply pipes, the laboratory test results have been subject to initial assessment against the GAC presented in UKWIR. Full testing has not been undertaken to determine the suitability of metallic pipe materials.

It is assumed that water pipes will be placed no deeper than 1m below existing ground level and results that relate to strata below 1m are not considered in the following table. Assessment of the results (**for <1.2m depth**) versus the GAC is summarised as follows:

Table 5.6: GAC for Water Supply Pipes

Parameter	GAC (mg/kg)		Results exceeding the GAC (mg/kg)	
	PE pipes	PVC pipes	PE pipes	PVC pipes
BTEX (<C11)	0.1	0.03	<0.06	<0.06
Mineral Oil C11-C20	10	Suitable	14.1, 227, 260.7, 37.3	None
Mineral Oil C21-C40	500	Suitable	926, 2141	None

Other parameters within UKWIR have not been assessed since they are not potential contaminants of concern for this site.

Visual or olfactory indications of chemicals, or petroleum hydrocarbons (e.g. oil, petrol, diesel) were noted on site. Such indications comprised:

- Slight hydrocarbon odour at 1.35-1.9m depth in DS1,
- Strong hydrocarbon odour at >2.4m depth in DS6.

Both locations are on the forecourt around the tanks. Although at DS6 the contam is too deep to affect pipes, there is expected to be shallow contam from forecourt spillages.

Given that impacted soils may lie at proposed pipe levels, then we would recommend that barrier pipe materials be used on site for any new pipework. It would be prudent to replace existing water pipes with such.

Given the above, then we consider that the local water supply company might accept the use of PVC water supply pipe materials on site, but are more likely to require barrier pipes

It is recommended that this assessment be given to the relevant water supply company at an early stage (ideally prior to an application for planning permission being made) to confirm its requirements, which may not necessarily be the same as those recommended by UKWIR.

5.5 Tier 1 Generic Quantitative Risk Assessment – Risks to Water Resources

5.5.1 Soil Risks to Water Resources

Groundwater has been found to stand at ~1.6-2.6m depth.

From Table 4.3 there were:

- Slight hydrocarbon odour at 1.35-1.9m depth, in DS1 and
- Strong hydrocarbon odour at 2.4->=3.0m depth in DS6.

Soils testing found the following notable findings:

- Aliphatic C8-10: 383mg/kg in DS6 at 2.6m depth
- EPH C10-12: 362mg/kg in DS6 at 2.6m
- EPH C12-16 466mg/kg in DS6 at 2.6m
- No BTEX found.

5.5.2 Groundwater Risks to Water Resources

Groundwater samples have been collected from the 5no. wells and tested for hydrocarbons. See table below.

Because the nearest critical receptor is the underlying aquifer and hence current or future nearby water abstractions, then the results of groundwater tests are compared against the UK Drinking Water Standards (DWS), the World Health Organisation (WHO) guidelines and EA publications. The Environmental Quality Standards (EQS) for freshwater systems are also given for reference.

Table 5.7: Maximum Values for Contaminants in Groundwater (Bold and/or highlight shows exceedances)

Analyte	No. Samples Tested	Maximum values, or all values exceeding GAC	Maximum values, or all values exceeding GAC	Freshwater EQSl	UK Drinking Water
		Visit 1	Visit 2		
Benzene (ug/l)	10	<1	<1	10	1
Toulene (ug/l)	10	<1	<1	50	700
EthylBenzene (ug/l)	10	<1	3.7	20	300
Xylene (ug/l)	10	<2	10.1	30	500
MTBE (ug/l)	10	<1	26.1, 185, 282	-	15
Total Petroleum Hydrocarbons (TPH)(mg/l)	10	3.18	0.0238, 0.357, 1.31, 6.95,36.9	0.01	0.01

Groundwater during visit 2 (and therefore samples) were ~0.2-0.35m deeper than during visit 1. In summary….

Table 5.8 Discussion of Results

Visit No.	Exceedances in water	Comments
1	TPH in DS6 (forecourt)	-
2	TPH in ALL wells	Concentrations suggest the source to be nearest DS6 with a plume possibly heading ENE past DS3 (and clipping DS5)
	MTBE in DS1 & DS2 (forecourt) and DS5 (rear of site)	MTBE suggests leakage or spillages of modern unleaded petrol. DS5 could be picking up the edge of a plume as it was the lower of the three exceedances.

5.6 Tier 2 Detailed Quantitative Risk Assessment – Risks to Water Resources

Given the remediation that we are recommending (full removal of all tanks in order to reveal impacted soils around and below them), then we have not currently undertaken a Tier 2 detailed quantitative risk assessment (DQRA).

5.7 ``Ground/Landfill Gas Risks to Humans

No potential sources of ground gas have been found under the site (i.e. soils with significant organic content that could degrade) and none (including from historic or recent landfills) have been found close enough to the site to pose potential significant risk.

Methane had the potential to be present as a petroleum degradation product. Gases were checked during the 2no. site visits to obtain groundwater samples.

In order to assess the significance of potential ground gases at the site measured concentrations (by volume in air) and flow rates have been used to generate Gas Screening Values (GSVs). These have then been compared to CIRIA Report 665. BS8485 has also been referenced.

It is recommended that the gas risk should be assessed by the consideration of pathways to human receptors as follows:

- Gas entering the dwelling through the substructure and building up to hazardous levels.
- Subsequent householder exposure in garden areas, which can include outbuildings and extensions and where there may also be excavations for garden features.

The following ground gas parameters have been recorded over 2no. gas monitoring rounds (results are contained in Appendix G):

○ A maximum 'initial' methane concentration of	Below limit of detection (<0.1%)
○ A maximum 'initial' flow rate of	0.1 l/hr
○ A maximum 'steady state' carbon dioxide concentration of	2.6%
○ A maximum 'steady state' flow rate of	0.1 l/hr
○ Atmospheric pressures were	1003mb (steady), 1014mb (steady),

Negative flow rates are taken as being zero since they do not indicate gas generation, but usually indicate dropping water levels within monitoring wells, or well/atmospheric pressures equalising.

The worst-case Gas Screening Values (GSV) for both methane and carbon dioxide have been calculated, in order to see if any gas protective measures are required in the new development.

The GSV for methane is calculated to be 0l/hr and for carbon dioxide it is 0l/hr.

The strategy (later) is to remove petroleum hydrocarbon hotspots and so remove any potential to generate methane.

In accordance with CIRIA C665 and NHBC guidance, the type of buildings proposed are residential (not "low-rise")(and no vented void) and fall under the CIRIA C665 guidance.

The site falls into 'Characteristic Situation' **1 (CS1)(very low hazard)** in Table 8.5 of CIRIA 665. This indicates that no special protection measures are required in the new buildings.

Note that gas protection should be designed in accordance with BS8485 and by someone familiar with the standard.

5.8 Radon Risk to Humans

The chance of a property having a radon level that is at least as high as the **Action Level**, is called the **Radon Potential.**

For this area the environmental data sheets show the Radon Potential to be **0-1% (low risk)**(i.e. up to 1% of properties in this area could exceed the action level), for which **no radon protection** is required for new buildings or extensions on site.

Even though the Radon potential shows "no" Radon protection to be required, many developers are nonetheless adopting "Basic" protection and we would recommend such be considered here. The reason is that protection is obligatory only where >3% of properties exceed the Radon Action Level, but that still leaves 3% potentially at risk from Radon.

5.9 Chemical Vapour Risks to Humans

Chemical vapours were noted in the unsaturated zone in DS1, and such have the potential to exist in other parts of the forecourt area (as a result of refilling of the tanks with fuel, and refuelling cars).

5.10 Final Conceptual Model and Risk Assessment

The preliminary conceptual model and risk assessment has been updated in light of the findings of the Phase 2 work as shown in the following tables.

The method used for risk evaluation is qualitative based on interpretation of the available geoenvironmental and geotechnical data in order to provide an overall impression of the potential risks present at the site. This is described in terms of two variables as follows:

- **"Probability"** – being the likelihood that a hazard is present on site or in the surroundings.
- **"Consequence"** – being the potential outcome of the hazard.

The combination of these is used to define the risk. Clearly if a hazard is not present there can be no consequence. Similarly hazards that are potentially present will have different degrees of potential consequence. The combination of the presence of a hazard, and the potential severity of outcome of such a hazard within any event, can be used to manage the approach to management of the risk.

The **probability** (likelihood) of an event can be classified on a four point system using the following terms and definitions based on CIRIA C552:

- **Highly likely**: The event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;
- **Likely**: It is probable that an event will occur, or circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;
- **Low likelihood**: Circumstances are possible under which an event could occur, but it is not certain even in the long term that an event would occur and it is less likely in the short term;
- **Unlikely**: Circumstances are such that it is improbably the event would occur even in the long term.

An extra class is added to those of C552, that of "**negligible likelihood**", which is an amount or effect that is negligible, i.e. is so small that it is not worth considering or worrying about.

The **consequence** (severity) can be classified using a similar system also based on CIRIA C552. The terms and definitions relating to consequence are:

- **Severe**: Short term (acute) risk to human health likely to result in 'significant harm'[1]. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. Short term risk to an ecosystem or organism forming part of that ecosystem[1];
- **Medium**: Chronic damage to human health ('significant harm'[1]), pollution of sensitive water resources, significant change in an ecosystem or organism forming part of that ecosystem[1];
- **Mild**: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm'[1]). Damage to sensitive buildings, structures or the environment; and
- **Minor**: Harm, not necessarily significant, but that could result in financial loss or expenditure to resolve. Non-permanent human health effects easily prevented by use of personal protective clothing. Easily repairable damage to buildings, structures and services.

([1] Defined in Defra Circular on "Contaminated Land', EPA 1990 Part 2a", 01/2006, September 2006.)

Once the probability of an event occurring and its consequence have been classified, a risk category can be assigned as in the following table.

Table 5.9: Risk Classification System (CIRA 552)

		Consequence			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low likelihood	Moderate	Moderate/Low	Low	Very Low
	Unlikely	Moderate/Low	Low	Very Low	Very Low

Risk Level	Action
Low to Very Low	None
Moderate to Moderate/Low	Undertake appropriate mitigation measures to reduce the risk level by appropriate on-site practice at little additional cost.
High to Very High	Designers should take such risks into account and avoid or reduce risk level to acceptable levels. Additional resources required.

The following duplicates the **preliminary potential risks** from Table 2.3 and discusses whether they have now been proven to be risks.

Table 5.10: Proven Risks

Feature	Now proven to be a risk?
On-Site	
Asbestos containing materials (ACM) in the near-surface soils across the entire site.	None have been found but such still could exist
Potential for automotive hydrocarbons in the soils	Yes
Made ground	Yes
Unexploded Ordnance.	A risk could always exist
Off-Site	
Remediated and redeveloped Petrol station immediately west of the site.	Not originally thought to be a risk due to lying, what was thought to be, across hydraulic gradient from our site. Groundwater depths, plus the finding of petroleum impact to groundwater at the back (east of the site), suggests groundwater flow direction is now eastwards. That means that the petrol station directly to the west of the site could have impacted our site historically. That site was remediated when redeveloped, but there is still a chance of residual hydrocarbons in the soils under the road between the two sites.

Exists or likely to exist, might exist; unlikely to exist

The tables that follow provide a summary of the data reference points, together with an indication of the hazards, probabilities, consequences and degrees of risk.

This assessment indicates the site and environs are considered as **Very Low to High** risk with respect to contamination. **Indicators above low risk** comprise:

- Composition of made ground and risks to ground workers and site end-users.
- Hydrocarbon impacted soils and risks to ground workers and site end-users.
- Hydrocarbon impact to groundwater and the risks to off-site groundwater abstractions
- The always possible risk of UXO presence.

Table 5.11: On-Site to On-Site Source – Pathway Receptor Model

Source		Pathway	Receptor	Probability	Consequence	Potential Risk?
General	**Hazard**					
General impact (made ground) from former site usage Total soils concentrations (e.g. heavy metals and hydrocarbons):	Contamination of groundwater	Migration of **leachate** through unsaturated zone; Then Migration through saturated zone/groundwater.	Groundwater	Low likelihood	Mild	Low
	Human health	Ingestion of and dermal contact with soil & household dust; Inhalation of dust (indoor household & outdoor fugitive).	Construction workers	Highly Likely	Medium	High
			Site end-users	Likely	Medium	Moderate
		Growing then eating food crops.	Site end-users	Low Likelihood	Medium	Low / moderate
	Vegetation poisoning.	Plant root uptake	Plants	Low likelihood	Mild	Low
Hydrocarbon vapours at hotspots **Ground Gases** from degradation of petroleum hydrocarbons at hotspots.	Explosion (accumulation of methane and volatiles) Asphyxiation (resulting from elevated levels of carbon dioxide, methane etc).	Preferential flow paths into buildings **through unsaturated zone** Inhalation of indoor vapours/gases and possible explosion.	Site end-users	Low Likelihood	Medium (Inhalation of indoor vapours/ gases)	Low/ moderate
					Severe (possible explosion)	Moderate
		Preferential flow paths into buildings **via piled foundations vibro columns**, etc Inhalation of indoor vapours/gases and possible explosion.		Unlikely (limited new foundations planned and not piled)	Medium	Low
		Inhalation of outdoor vapours/gases.		Unlikely	Medium	Low
			Groundworkers	Likely	Medium	Moderate
Ground Gases from: - natural soils with organic content (e.g. peat, alluvium) - made ground with organic content. **Landfill Gases** from landfilled material within say 250m of the site.	Explosion (accumulation of methane). Asphyxiation (resulting from elevated levels of carbon dioxide, methane etc).	Preferential flow paths into buildings through unsaturated zone. Inhalation of indoor vapours/gases and possible explosion.	Site end-users.	Unlikely	Medium	Low
		Preferential flow paths into buildings via piled foundations vibro columns, etc . Inhalation of indoor vapours/gases and possible explosion.		Unlikely	Medium	Low
		Inhalation of outdoor gases.		Unlikely	Medium	Low
			Groundworkers	Unlikely	Medium	Low
Liquid contaminants Hotspots and impact to soils: Petrol around and under the tanks. Paraffin under the former tank locations	Contamination of groundwater	Migration through unsaturated zone to groundwater	Groundwater	Highly likely	Mild	Moderate
		Via piled foundations		n/a	Mild	n/a
	Impact on Human health	Permeation into PE Water supply pipes	Human drinking water	Likely	Mild	Low/ moderate
		Ingestion of and dermal contact with soil	Site end-users	Low likelihood	Medium	Low/ moderate
			Groundworkers	Likely	Medium	Moderate
UXO	Explosion	Hit during excavations, piling or borehole drilling	Construction workers & drillers	Low likelihood	Severe	Moderate

Table 5.12: On-site to Off-Site Source – Pathway – Receptor Model

Source		Pathway	Receptor	Probability	Consequence	Potential Risk?
General	**Hazard**					
Total soils concentrations (e.g. heavy metals and hydrocarbons): General impact (made ground) from former site usage	Contamination of groundwater	Migration of leachate through unsaturated zone; Then Migration through saturated zone/groundwater	Off-site groundwater	Unlikely	Mild	Very Low
	Human health	Inhalation of dust (indoor household and outdoor fugitive).	Adjacent land users	n/a	Medium	n/a
Contaminated groundwater due to impact from chemical hotspots in soil.	Contamination of groundwater	Migration through saturated zone/ groundwater	Off site groundwater	Highly likely	Mild	Moderate
Gases from degradation of petroleum hydrocarbon hotspots Hydrocarbon vapours	Explosion (accumulation of methane and volatiles) Asphyxiation (resulting from elevated levels of carbon dioxide, methane etc).	Preferential flow paths into buildings **through unsaturated zone** Inhalation of indoor vapours/gases and possible explosion.	Adjacent land users	Low Likelihood	Medium (Inhalation of indoor vapours/ gases)	Low/ moderate
					Severe (possible explosion)	Moderate

The petrol station to the west (apparently up hydraulic gradient) has been remediated, but our well DS2 is picking up TPH and MTBE. This could just be due to localised flow directions around the tanks, but could also indicate that hydrocarbons from that petrol station still lie under the road. With groundwater lying quite shallow then there is the potential for vapour risk.

Table 5.13: Off-Site to On-Site Source – Pathway – Receptor Model

Source		Pathway	Receptor	Probability	Consequence	Potential Risk?
General	**Hazard**					
Gases from degradation of petroleum hydrocarbon hotspots Hydrocarbon vapours	Explosion (accumulation of methane and volatiles) Asphyxiation (resulting from elevated levels of carbon dioxide, methane etc).	Preferential flow paths into buildings **through unsaturated zone** Inhalation of indoor vapours/gases and possible explosion.	Human beings	Low likelihood	Medium (Inhalation of indoor vapours/ gases)	Low/ moderate
					Severe (possible explosion)	Moderate

5.11 Strategy for Risk Reduction & Remediation

5.11.1 Introduction

There are two ways to reduce contamination/environmental type risks:

- "**remediation**" of soil and/or groundwater.
- Other **risk reduction measures** (that can only be completed post-commencement, such as clean cover in final garden areas, gas protection, or special water supply pipe materials).

Timescales for the construction and implementation of risk-reduction measures, are unknown.

5.11.2 General

If free-product is encountered upon the water in any excavation, then it's removal shall be attempted using a skimming pump. Pumped product shall be carefully collected into an IBC or similar and disposed of off site (or water could be treated on site and returned, clean, to the ground).

Given the existence of made ground on the site and the site's past usage, vigilance should be maintained during any groundworks, in case any further areas of suspected contamination are encountered. If areas are found, then work will stop in that area, a suitably qualified and experienced geo-environmental engineer will be contacted to assess the situation and potentially undertake appropriate sampling, testing and further risk assessment. The Engineer may also contact the Local Authority (LA) Environmental Health Officer (EHO) to discuss the situation and agree a way forward.

If any amendments to this Remediation Method Statement are required as a result of unforeseen contamination, then these will be agreed in writing with the Contaminated Land Officer before being carried out on site.

5.11.3 Pre-Commencement "Remediation" Requiring Validation

The following measures require implementation before the "development" can proceed.

The **vehicle inspection pits** should be uncovered and a geo-environmental engineer should inspect them for possible risk of contamination (e.g. waste oils having been tipped into them). If a risk is considered to exist, then they should be removed and the surrounding soils checked for contamination. If there is no suspicion of risks, then then can be infilled to permit development.

After the work below, then groundwater shall then be retested and TPH concentrations need to be below the EQS/DWS limits before development can proceed.

Hotspots

Some of the historic sources have been proven to have **hydrocarbon hotspots** and such could still exist at other potential current and historic sources.

The 2no. small tanks (T0 and T00) appears to have been above-ground. The hardstanding there shall be removed to prove such and then the soils under the subbase checked for contamination. Any such, shall be removed as a hotspot.

There is a high risk that surface water drain runs could have contained hydrocarbon impacted waters, which have leaked out at joints and so caused contamination along such pipe runs.

Impacted soils shall be removed until soils show no visual or olfactory indications of petroleum hydrocarbons. The hotspots will require removal as deep below groundwater as possible. This work shall be validated by a **contaminated land consultant**.

Fuel Tanks plus Fuel Lines to the Pumps and Vent Pipe Runs, and Interceptors

Standard industry practice (and usually required by the **Environment Agency** (or **Local Authority)**) is to fully remove from the ground, fuel tanks (even if decommissioned). The reason is that usually soils around and under fuel tanks are impacted by petroleum hydrocarbons and the tanks require removal in order to be able to access and remove those impacted soils (and so remove such as being a long-term source (and liability) for contamination of groundwater).

The tanks lie at such a distance from the building that excavations to remove the tanks should not affect foundations.

The underground fuel tanks (T1 to T4), fuel lines, pumps, vent pipes and interceptors, should be removed from the ground **as soon as possible**. The tank inverts could lie at 2-3m depth. Fuel lines and vent pipes should be carefully removed as they often still contain fuel.

Any concrete surrounds/cradles to the tanks should also be removed, to leave only soils in the voids, because unless they are removed it is impossible to see if there is any gross contamination under them which could lead to long-term ongoing contamination of groundwater.

Historic Drainage Runs

Some such hold a high risk of having carried chemicals or hydrocarbons, and such having leaked from the drains and then impacted the drainage trench fill and migrated along such fill.

Impacted Soils

Impacted soils around and below the above features, shall be removed until soils show no visual or olfactory indications of petroleum hydrocarbons. Such will require removal as deep below groundwater as possible.

A contaminated land consultant should attend site immediately that the above features are removed. They will direct the **removal of any significantly contaminated soils** around and below them (i.e. grey/black stained, or exhibiting (strong) hydrocarbon odours) and will take samples to prove (validation) that remaining soils are not significantly contaminated and no longer pose significant risks.

Note that given the fuel tanks and interceptors on site, and likely soils around them that have been contaminated by leakages and spills (plus drainage runs which could be holding petroleum hydrocarbons), then as hard cover and fuel tanks, etc, get removed during enabling works, petroleum hydrocarbons could be released into or onto the groundwater (in higher concentrations than at present), which could then carry hydrocarbons off-site. The developer should assess this and the risk that it could pose to surrounding land users, groundwater abstractions, and surface waters, and take necessary precautions (e.g. creating a sump on the down-hydraulic-gradient edge of the site and pumping out water to carbon filtration tank and/or oil separators).

5.11.4 Post-Commencement Risk Reduction Measures Requiring Validation

General

The following measures are undertaken as part of the development/construction and are "post-commencement".

Measures to overcome unacceptable risks identified in the previous sections are as follows.

All validation shall be undertaken by a suitably qualified and experienced geo-environmental engineer.

If free-product is encountered upon the water in any excavation, then it's removal shall be attempted using a skimming pump. Pumped product shall be carefully collected into an IBC or similar and disposed of off site (or water could be treated on site and returned, clean, to the ground).

Soil Risks to Humans

A practical solution to the presence of soil contaminants that pose a risk to humans is often to provide a clean cover layer in any garden or landscaped areas to any contaminated soils **that will be left in place** (or if contaminated soil is relocated to beneath such areas)(If the full depth of contaminated soil ends up being removed, then clean cover is no longer required). This could be achieved either by placing uncontaminated soil (i.e. **topsoil and subsoil**) directly onto the contaminated soils, hence raising ground levels, or by removal of part of the contaminated soil and backfilling with uncontaminated topsoil and subsoil, or by a combination of these means. The cover system is designed to reduce the exposure to contaminants of residents and other site users to an acceptable level. The cover layer should also reduce any risks to plant growth.

The required depth of clean cover can be calculated using BRE report BR465 (**An AGS review in July 2019 found this document to *still be considered technically fit for purpose* and that the *basic science is still considered very sound. Also that the practice of requiring a blanket 0.6m cover thickness is unsustainable***.

The following assumptions have been made:

- using **maximum** values for the existing ground contamination and
- clean cover concentrations that are a **quarter#** of the guideline values

(#: if actual clean cover concentrations are higher or lower, then the cover thickness will increase or decrease respectively. Any soils used as clean cover should be tested to ensure that they are uncontaminated, and it is generally advisable to test a minimum of three samples so that a representative mean value can be calculated and so the validity of this clean cover model can be checked).

Area-specific assumptions and the results are shown in the table below.

Table 5.14: Summary of Clean Cover Requirements

Area	Target Concentration Criteria for clean cover soils #	Mixing depth assumed (mm)	Clean Cover thickness required (mm)	If required then the addition of a Geo-fabric separation layer can reduce some of these thicknesses as follows:
Any areas where owners could grow crops and fruit trees (e.g. Rear gardens)	1/4X Residential with plant uptake GAC	600	570mm	**Say 450mm** (clean cover over separation fabric, but requires clause in contracts[3,4])
Areas where crops and fruit trees cannot and will not be grown (often, but not always, front gardens)	1/4X Residential without plant uptake GAC (conservative)	450[2]	430mm	**Say 300mm** (clean cover over separation fabric, but requires clause in contracts[3,4])
Landscaping areas (with no crop or fruit tree growing)	1/4X Residential without plant uptake GAC.	300[2]	300mm[1]	N/A
Hardstanding areas and below buildings	Areas having such construction cut the pathways from the soil and no further "clean cover" is required.		None	N/A

#: GAC are given in Tables 5.1, 5.2 & 5.3.
(1): the minimum clean cover system thickness that BRE recommends is 300mm.
(2): BRE465 permits alternative mixing depths for front gardens and other areas where crop growth is unlikely, therefore 450mm mixing depth has been chosen.
(3): Subject to LA agreement.
(4): This would require a clause in homeowners' contracts to require that if food crops are grown in front gardens then their roots do not penetrate through the membranes at this shallow depth. If not feasible then revert to non-membrane clean cover thickness stated above.

Given the nature of the contaminated soils and that the designed clean cover thickness assumes full mixing (i.e. **mixing not prevented** by a geo-fabric layer), then **no geo-fabric is required to separate the clean cover from the underlying contaminated soils**. That is unless the client wants to try and reduce thicknesses, in which case see note (3) and (4) above.

The clean cover system will also reduce any potential risks that have been identified for plants. Trees will be planted deeper, through any clean cover and into contaminated soil, and so should be placed in decent sized tree pits with associated clean topsoil backfill including all around the root bowl.

The BRE report recommends a minimum clean cover thickness of 300mm and that any clean cover layer should ideally incorporate a topsoil layer at least 150mm thick (or 30% of the total cover depth, whichever is the greater). The report also states that clean cover should not be used on slopes greater than 1 in 12.

The total thickness of clean cover is subject to council approval and the type of soil should be adequate for plant cultivation.

The proposed imported soils should be tested to confirm that they are uncontaminated (see **Risks from Imported Materials and Recycled Aggregates** section) and the final thickness of the cover will require validating by a suitably qualified and experienced geo-environmental engineer. In accordance with clean cover testing recommendations within NHBC Technical Extra Note 8 (Nov 2012), for this site **1no. validation pit will be formed in every plot** (with a minimum of 3nr pits) and will be accompanied by photographic evidence to prove the soil depth (i.e. tape measure against a horizontal bar/staff).

If not already tested herein, site-derived topsoil shall be tested for suitability for reuse (i.e. contamination).

Water Supply Pipe Risks

The local water supply company might accept the use of PVC water supply pipe materials on site but are more likely to insist on barrier pipe. This would be prudent given the potential for shallow hotspots to remain following redevelopment.

Radon, Gas and Chemical Vapour Risks to End Users

No Radon protection measures are required for new buildings or extensions on site.

Despite no ground-gas risk being found, **hydrocarbon vapours** have been found in the shallow soils. As this is not a new-build, then we have to work with the existing building. We recommend installing **some basic chemical vapour protection measures**, as follows:

- **Floor slabs, ventilation**: These are likely to be ground bearing and so it is not feasible to add any underfloor ventilation.
- **Floor slabs, make**-up: The existing ground floor slabs might however be reinforced due to the vehicle loads that it historically had to carry.
- **Retrofit a chemical-vapour membrane:** >=1200g **DPM**, having joints and services entries taped with proprietary gas tape. All rips and tears should be properly repaired with gas tape prior to the membrane being covered by screed.
- Internal annulus of **services ducts entries** (coming through the ground floor slabs) to be made gas tight (e.g. expanding foam)
- Gas proof wall cavities (e.g. use of gas-tight cavity trays. or fill below ground level with concrete).

Excavations or below ground voids should be checked for the presence of harmful gases and vapours prior to personnel entry.

Leaching Risk

The site is currently primarily covered in hardstanding so the potential for leaching is limited. It is planned that new small front and rear gardens be added (removal of hardcover) and so leaching risk could increase. We recommend that the clean cover (see earlier) should include a 0.2m layer of clay subsoil below the topsoil and that water percolating through the topsoil should be collected by filter drains or similar and the clean water diverted to surface water drainage systems (to prevent it percolating through the clay subsoil).

Hotspot Risks

Given the site history, then (as well as the known hotspots) numerous unforeseen hotspots should be expected and allowed for. Impacted soils shall be dealt with as detailed in the earlier “Impacted Soils” section

Following the removal of any hotspots, validation will be required to prove the remaining soils to be clean and would normally comprises soil sampling of the base and each side of the excavation (at least 1no. sample per surface, increasing with excavation size).

Risks from Imported Materials and Recycled Aggregates

For **sustainability**, recycled aggregates should be considered. Any recycled aggregates that are planned to be imported to site, and **any derived from on-site**, shall be assessed for asbestos content (and any other contaminants that might be present at the source site), prior to import.

All imported fill, topsoil and sub-soil shall be tested for a general suite of contaminants (e.g. "AGGC's Full Suite" herein, plus asbestos if derived from brownfield or recycling. Target concentrations shall be as per the targets given in Tables 5.1-5.3 ***residential with plant uptake*** end-use. For topsoil and subsoil, chemical test results shall be obtained from the supplier prior to import. **Once imported the topsoil/subsoil shall be sampled and tested in order to prove that the import is not significantly different (worse) than as promised**.

Topsoil and subsoil can contain naturally occurring contamination such as arsenic and lead. The results shall be assessed for any exceedances of guidelines.

Prior to import, test results should be obtained and checked. Once imported, and prior to placement, the material shall be tested at a rate of 1no. sample per 100m^3 (with a minimum of 2 samples per soil source). This is to ensure that the soils are as promised by the supplier.

It may make commercial sense to import soils that are surplus on other development (donor) sites. Surplus soils become waste as soon as they leave donor sites, unless they are being transferred to another "development" or "construction" (receiver) site for reuse. Such transfer means that such soils do not class as waste, provided that an assessment (Definition of Waste: Industry Code of Practice (DoWCoP), or waste exemption) is completed. There must be a pre-determined use at the receiving site and the soils must be proven, via the assessment, not to pose any unacceptable risks at the receiving site (and not to class as "waste").

Unforeseen Contamination

A site investigation samples a very small portion of the overall site soils. Given the existence of made ground on the site, vigilance should be maintained during site clearance and construction, in case any areas of suspected **unforeseen contamination** are encountered. If areas are found then a suitably qualified person (e.g. AGGC) should undertake appropriate sampling, testing and further risk assessment.

5.11.5 Post-Commencement Risk Reduction Measures Not Requiring Validation

Asbestos cement fragments have not yet been found on site, but are to be expected. **Risks from asbestos can be reduced by removing such fragments from site.** Although we have past experience of offering advice to reduce asbestos-in-soils risks, we are now not insured to do so and so **you should seek advice from a suitably qualified and insured consultant**. We expect however that they might advise the following:

- Before any heavy plant tracks the site (i.e. before site clearance), fragments lying at ground level should be litter picked and disposed of off-site.
- Litter picking should be repeated once the site is cleared and again for any fragments spotted during all excavations and groundworks.

Site, landscape and maintenance workers should wear gloves, boots and overalls and wash their hands before eating, drinking and smoking. Excessive dust generation should be avoided.

Excavations or below ground voids should be checked for the presence of harmful gases and vapours prior to personnel entry.

With regard to possible UXO risk, the client should consider the recommendations of CIRIA C681 and either:

1. Undertake a preliminary UXO assessment, or
2. Require their site contractors (once appointed) to consider such.

Either way, an UXO watching brief should be implemented (e.g. because the development is unlikely to involve piled foundations).

5.11.6 Summary of Risk Reduction and Remediation Measures and Validation

The measures required, the data that will be gathered to prove correct implementation and parties to validate them are as follows:

Of the aforementioned measures, there is no "remediation" that can feasibly be undertaken pre-commencement, all is post-commencement, as follows:

Table 5.15: Pre-Commencement Validation

Measure:	Data to be gathered:	Party to validate:
Remove Fuel Tanks (T1-T4, plus concrete cradles), plus Fuel Lines to the Pumps, Vent Pipe Runs, and Interceptors.	Supply sheets showing removal of tanks and any contents and fuel/vent lines.	Tank contractor to supply to Contaminated Land Engineer (e.g. AGGC).
Following the above**…..Retest groundwater quality in our wells**	Take and test water samples	Contaminated Land Engineer (e.g. AGGC).
Remove any grossly h/c impacted soils from around and below tanks (T0, T00, T1-T4), fuel lines, vent pipes and interceptors.	Direct the removal of any grossly contaminated soils. Take and test soil samples to prove none such remains. Take at least one sample from each side of the resulting void and at least one from the base (more if the excavation size warrants).	Contaminated Land Engineer (e.g. AGGC).
Remove known hotspots and any current unknown ones	Direct the removal of any grossly contaminated soils. Take and test soil samples to prove none such remains. Take at least one sample from each side of the resulting void and at least one from the base (more if the excavation size warrants).	Contaminated Land Engineer (e.g. AGGC).

Table 5.16: Post-Commencement Validation

Measure:	Data to be gathered:	Party to validate:
Check thicknesses of **clean cover**	• Provide a clear statement of the thickness of capping installed in each of the plots. • A site plan with inspection pit locations shown. • Plot-specific photographic evidence of the appropriate soils being used. • Plot-specific evidence of the appropriate thickness being in place using a rigid measuring staff and evidence of the presence of a geotextile in those areas requiring it.	Contaminated Land Engineer (e.g. AGGC).
Special water pipe materials (if required by water company)	Paperwork from Water Company confirming acceptable installation.	Water Company via Client/client's contractors
Residual h/c vapour protection: Install fully taped DPM, fully sealed at services entries. Repair any rips and punctures to floor membranes prior to covering	Photographs and sign off sheets to prove installation (due to low risks)	Contractor/installer to provide photographs and paperwork to Contaminated Land Engineer (e.g. AGGC)..
Remove any significant contamination hotspots	Not possible to determine scope at present.	Contaminated Land Engineer (e.g. AGGC)..
Test any imported topsoil and subsoil **and any recycled aggregates**.	• Information on the **history of the donor site(s)**. • Estimate on the **volume of soil/aggregate imported**. • **Contamination concentrations** required for imported soils/aggregates prior to import (not just BS3882). Confirmatory **sampling and testing** of: • 3no. samples per soil type after placement. • recycled aggregates, 1no. sample per 100m^3 after delivery to site. •	Client/Supplier to provide history, volume and test results to Contaminated Land Engineer (e.g. AGGC) for assessment **prior** to import. Contaminated Land Engineer (e.g. AGGC).
Assess any **unforeseen/new contamination** found	Not possible to determine scope at present.	Contaminated Land Engineer (e.g. AGGC).

Once all of the above risk reduction measures have been completed, and then a Validation Report will be prepared to confirm that such measures have been undertaken in accordance with the requirements herein.

5.11.7 Validation Report

If planning conditions require such, then in order to achieve sign-off by the Regulators, a final Validation Report will be established for their review and agreement, following substantial completion of the development (but prior to first occupation). Validation might still be prudent in order to satisfy lenders or site purchasers. The report's aim is to validate the measures in Section 5.11.3 and 5.11.4 as having been completed, and completed correctly.

Validation shall be undertaken by a suitably qualified and experienced geo-environmental engineer. Any Validation Report shall include the following information as a minimum:

- Validation of the aforementioned measures (where required).
- Copies of all chemical testing results of soils and for all materials tested.
- Figures and drawings (or discussion) detailing the locations of all samples retrieved for chemical testing.
- Copies of any correspondence with the Regulators.

The client shall separately maintain copies of all Duty of Care Consignment Notes for off-site treatment, re-use and/or disposal of materials. Information regarding such materials and their volumes will be required to validate any DoWCoP *Materials Management Plan* (MMP). This information is usually provided within a final Verification report and such can be one in-the-same as the Validation report for contamination risks.

A copy of the final Validation Report (following sign-off by the Regulators if applicable) shall be incorporated within the Site File in accordance with the CDM Regulations (2015).

6 Other Aspects

6.1 "Site H&S File"

The remediation and risk-reduction measures discussed earlier are designed to protect **end-users** of the site. Others at risk compromise **post-construction groundworkers** and **utilities workers,** etc, for which it is not usually economically viable to remove all risks.

Accordingly, and as with most sites, some sources of risk will, or could, remain as follows. **Such should be added to, and discussed in, the "Site H&S File" (or similar document):**

- Ground gas and Petroleum hydrocarbon vapour risks in excavations (esp confined spaces).
- Made ground remaining in place that contains elevated contaminants.

6.2 Soil/Materials Reuse & Disposal

6.2.1 General

Carbon & Sustainability
Final site levels should be designed to accommodate as much surplus soils/materials[#] from construction, as is legitimately possible (without been seen to be trying to lose such on site, in which case they would class as "waste").
Conduct a cut/fill assessment to establish any surpluses or deficits of soil/materials[#].
Any deficit can be resolved by obtaining surplus soils from other development sites by using a **U1 Waste Exemption** or the **Definition of Waste Code of Practice** (DoWCoP).
It may be possible for any surplus soils/materials[#] posing hazards, to be reused in areas where they will not pose hazard.

#: e.g. brick, tiles, concrete and tarmac, crushed for reuse as fill, provided that tarmac/asphalt does not contain hazardous concentrations of **coal-tar**.

In order to prevent excessive costs and reduce the environmental impact of the development (**sustainability**), it is recommended that removal of wastes from the site, including waste soils, is kept to a minimum by:

- firstly trying to balance cut/fill earthworks operations to retain soils on site,
- or removing from site for reuse at other construction/development sites, that require soil:
  - by employing *U1 Waste Exemptions (use of waste in construction*),
  - and/or *Definition of Waste: Industry Code of Practice* (DoWCoP) assessment,
  - and/or exporting to a soil treatment hub,
- with the last resort being disposal to a licensed waste disposal site (subject to Landfill Tax).

To avoid the risk that any surplus soils remain classed as waste, then a *Materials Management Plan* (MMP) is required before employing the DoWCoP and is strongly recommended for all other situations (e.g. in case it is later decided to employ the DoWCoP).

A MMP must be drafted to show the intent for surplus soils, before they are excavated otherwise the client may have to landfill natural soils that had been planned for reuse off-site, or made ground soils that had been planned for reuse on site.

AGGC's DoWCoP *Qualified Person* can assist with these assessments.

If removing to a licensed disposal site, then ***Waste Acceptance Criteria*** (WAC) test results and other chemical test results should be given to the waste disposal site for classification, along with the exploratory hole logs (which show sample locations and depths) to show which soils are natural and which are man-made. **Note that WAC alone cannot classify waste soils**.

The lab results to enable *Initial Waste Characterisation* are contained in Appendix H.

6.2.2 Transfer for Reuse on Another Site

Surplus soils become waste as soon as they leave site, unless they are being transferred to another "development" or "construction" site for reuse. Such transfer means that such soils do not class as waste, provided that a waste assessment is completed (e.g. by a DoWCoP Qualified Person) to prove compliance with the 4no. (DoWCoP type) factors.

Soil types can be transferred as follows:

- **Utilising DoWCoP**: Currently only **natural soils** can be transferred via a DoWCoP.
- **Utilising U1 Waste Exemption:** Limited quantities of both **natural soils** and **made ground** can be transferred via a U1, provided that they pose no risks to humans, nor the environment.
- **Transfer to a licensed, fixed or temporary, soil treatment facility/hub:** usually reserved for made ground.
- **Transfer to an exempt or permitted site:** Usually a last resort before landfilling.

Certain other materials may also be reused on other "Construction" sites by employing a *U1 Waste Exemption*.

6.2.3 Soil Treatment Facilities

Made ground and a wide range of hazardous wastes (including Waste Acceptance Criteria (WAC) failing materials), can avoid landfill disposal by being treated at a number of *Soil Treatment Facilities* around the UK. Such disposal is exempt from Landfill Tax.

6.2.4 Disposal to Licensed Waste Sites

To evaluate the various on-site soils for potential off-site disposal, soils are classified in accordance with the Hazardous Waste Directive (HWD) that enables the provision of a European Waste Catalogue (EWC) Code for use during offsite disposal and a Hazardous or Non-Hazardous Classification.

- **Non-Hazardous** material is suitable for disposal in a Non-Hazardous landfill;
- however, disposal to an **Inert** Landfill requires further Waste Acceptance Criteria (WAC) testing in accordance with BS EN 12457–3.
- Material classed as **Hazardous** also requires WAC testing to assign a suitable hazardous classification.

The Landfill Regulations require that all Hazardous and Non-Hazardous solid waste must be treated prior to offsite disposal to landfill. You can define 'treatment' by using the following 'three-point test'. All three criteria must be satisfied for all of the waste to qualify as being treated:

1. It must be a physical, thermal, chemical or biological process including sorting.

2. It must change the characteristics of the waste.
3. It must do so in order to:
    a. Reduce its volume; or
    b. Reduce its hazardous nature; or
    c. Facilitate its handling; or
    d. Enhance recovery.

It should be noted that a site investigation is unable to identify all below ground conditions at a site and therefore, if during construction works soils that require offsite disposal are identified as being different to what has been preliminarily tested in this report, additional testing will be required by a suitably qualified environmental consultant prior to disposal or recovery at a licensed offsite facility.

It is also recommended that prior to offsite disposal or recovery of any waste soils; the receiving licensed treatment/landfill facility should be sent copies of all relevant chemical analysis, **plus exploratory hole logs** showing the engineering descriptions of the soils to which the sample depths relate.

All producers of waste have a **duty of care** to ensure that any waste they produce is handled safely and within the law. They must **check** that anyone they pass waste on to is **authorised** to take it. This includes the authorised site earmarked to handle the waste and any haulier (licensed waste carrier) used to transport the waste between the sites.

All waste holders must act to keep waste safe against:
1. Corrosion or wear of waste containers;
2. Accidental spilling or leaking or inadvertent leaching from waste unprotected from rainfall;
3. Accident or weather breaking open contained waste and allowing it to escape;
4. Waste blowing away or falling while stored or transported;
5. Scavenging of waste by vandals, thieves, children, trespassers or animals.

Holders should protect waste against the above risks while it is in their possession and they should also protect it for its future handling requirements. Waste should reach not only its next holder but a licensed facility or other appropriate destination without escape. It is recommended that the container used to transport the waste is suitable not only to prevent solid and liquid residues escaping, but also any potentially dangerous vapours or odours associated with the waste.

Segregation of different categories of waste where they are produced may be necessary to prevent the mixing of incompatible wastes. Segregation may assist the disposal of waste to specialist outlets. Where segregation is practiced on sites, the waste holder should ensure that his employees and anyone else handling waste there are aware of the locations and uses of each segregated waste container.

Waste handed over to another person should be in some sort of container, which might include a skip. The only reasonable exception would be loose material loaded into a vehicle and then covered sufficiently to prevent escape before being moved. Waste containers should suit the material put in them.

A waste transfer note (WTN) is a document that must accompany any transfer of waste between different holders. The purpose of a WTN is to allow other people who handle your waste to know what they are dealing with so that they can manage it safely and properly. A WTN must be created

for each load of waste that leaves the site and must contain enough information about the waste to enable anyone coming into contact with it to handle it safely, and either dispose of it or allow it to be recovered within the law. If insufficient information is given on the WTN the responsible party may liable to be prosecuted.

Records of all waste transferred or received must keep for at least two years.

6.2.5 Asbestos Content to Soils

Since **asbestos cement fragments** contain greater than 0.1 % asbestos by weight, then any waste consignment of soil that contains any obvious asbestos cement fragments will automatically class as hazardous waste (hence the recommendation to litter pick any fragments observed).

Any litter picked asbestos cement fragments disposed of separately from the man-made ground would be classed individually as Hazardous Waste.

The man-made ground that contains asbestos/ACM would be classed as a mixed waste (hazardous or non-hazardous, as discussed above) and the waste code would be 17-06-05.

6.3 Further Data and Investigation

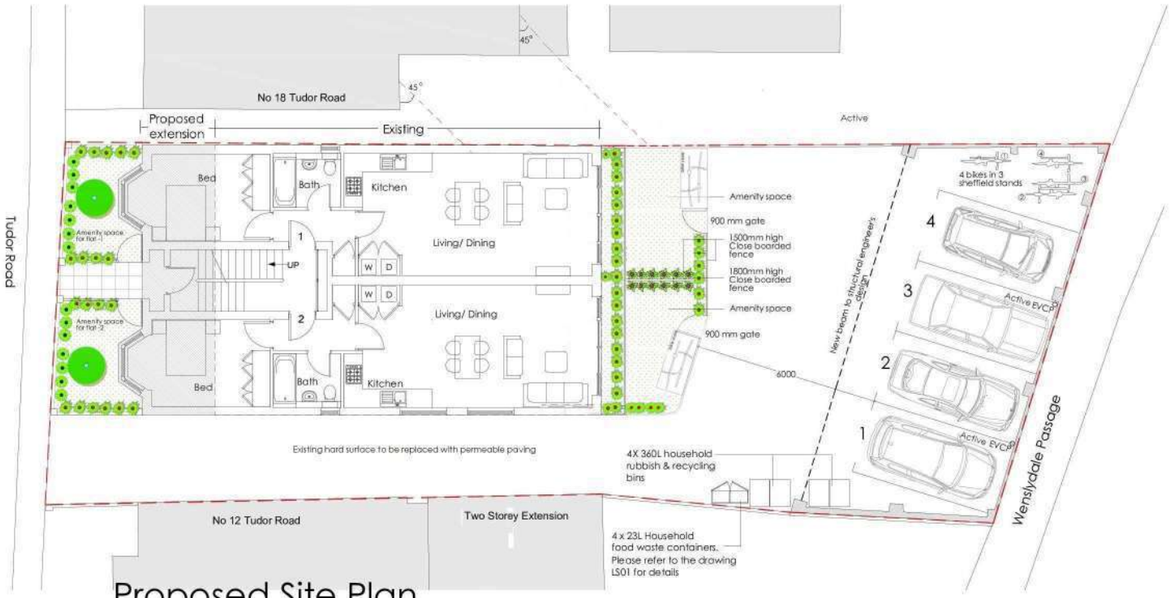
The vehicle inspection pits should be uncovered and a geo-environmental engineer should inspect them for possible risk of contamination.

Following the removal of underground tanks, vent pipe, fuel lines and interceptors, retest groundwater quality in our wells.

Appendices

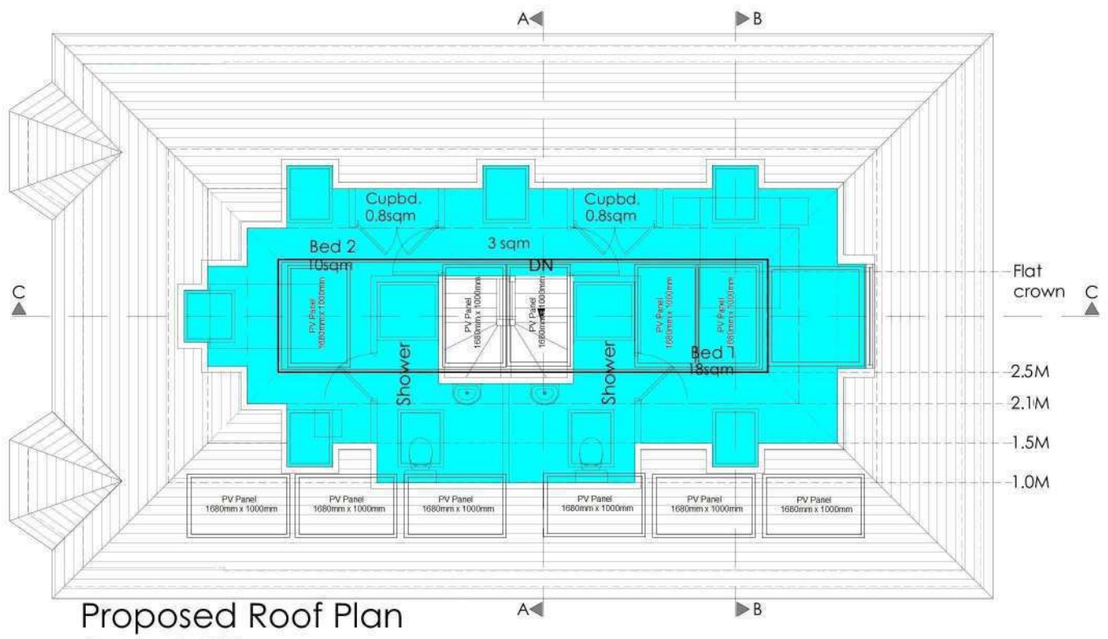
A. Proposed Development Plan
B. Exploratory Hole Locations (existing site plan)
C. Exploratory Hole Logs, Probe Plots, SPT Hammer Calibration
D. Petroleum Search
E. Further Tank Details from the DAS
F. LA Search
G. Monitoring Results
H. Chemical Laboratory Results

Appendix A



Proposed Site Plan
Scale 1:200

NB. Indicative landscaping proposals only. Details to be secured by condition.



Proposed Roof Plan
Scale 1:100

Proposed Ground Floor Plan
Scale 1:100

Proposed First Floor Plan
Scale 1:100

1:100 0 1 2 3 4 5 6 7 8 9 10

N

REV.	DATE	DESCRIPTION

PROJECT: Conversion & Extension of 14-16 Tudor Road, Hampton, TW12 2NQ

DRAWING TITLE: Proposed Site & Floor Plans

20 Marltake High Street
London SW14 8JN
Tel/Anc 020 8570 2646
Email: rdp@rdparchitects.com

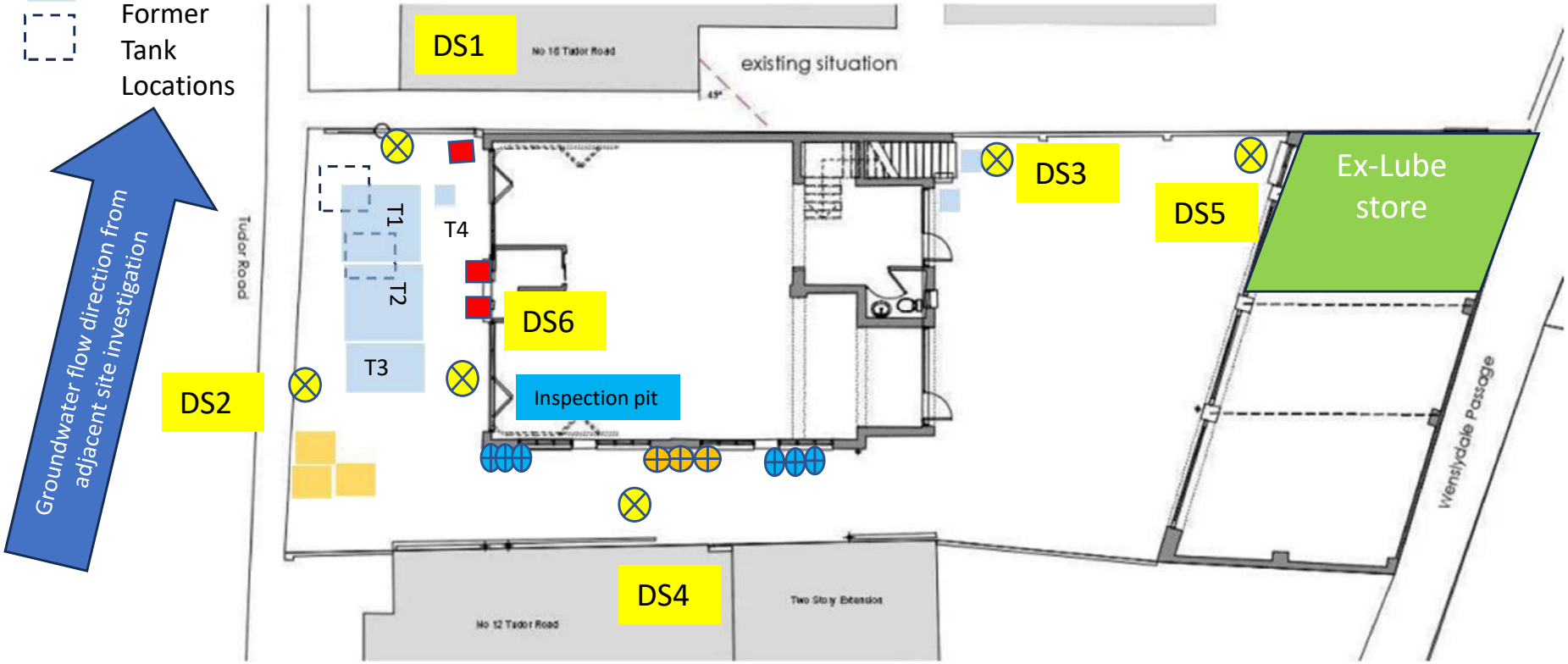
RDP ARCHITECTS
DESIGNING FOR DIVERSITY

SCALE:		DATE:	DRAWING No.	
1:100, 1:200	A3	23.03.2023	974/RDP/P04	E

Appendix B

Exploratory Hole Location Plan

- Vent pipes
- Offset fill points
- Petrol Interceptors
- Pumps
- Tanks
- Former Tank Locations



Version	Date
0	13/08/24
1	07/10/24
2	09/10/24

Appendix C

Key to Exploratory Hole Symbols and Abbreviations

SAMPLE TYPES

B	Bulk disturbed sample	ES	Environmental soil sample	U	Undisturbed sample
C	Core sample	EW	Environmental water sample	UT	Undisturbed thin wall sample
CBR-D	Disturbed sample from CBR test area	G	Gas sample	W	Water sample
CBR-U	Undisturbed sample from CBR test area	L	Liner sample		
D	Small disturbed sample	SPT	SPT split spoon sample		

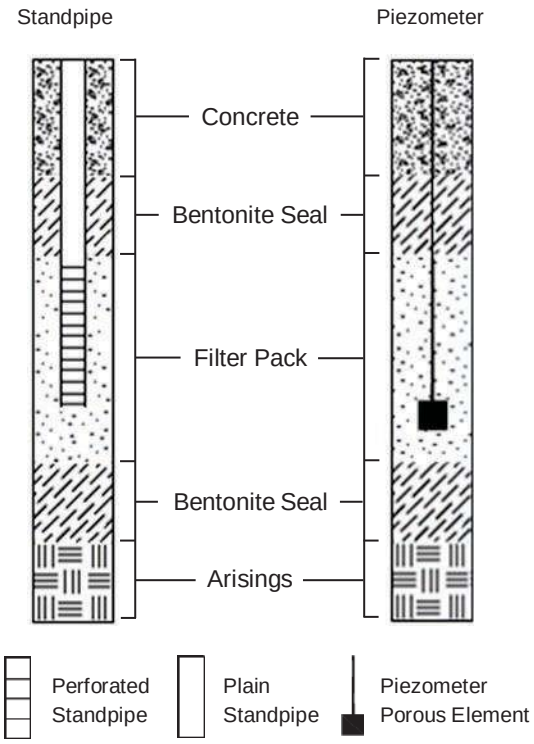
IN-SITU TESTING

SPTs	Standard Penetration Test (using a split spoon sampler)
SPTc	Standard Penetration Test (using a solid 60 degree cone)
N	Recorded SPT 'N' Value *
-/-	Blows/Penetration (mm) after seating blows totalling 150 mm
MX	Mexi Probe Test (records CBR as %)
HV	Hand Shear Vane Test (undrained shear strength quoted in kPa)
HP	Hand Penetrometer Test (kg/m^3)
( )	Denotes residual test value
PID	Photo Ionisation Detector (ppm) *
Kf/Kr	Permeability Test (f = falling head, r = rising head quoted in ms^{-1})
HPD	High Pressure Dilatometer Test (pressure meter)
PKR	Packer / Lugeon Permeability Test
CBR	California Bearing Ratio Test

ROTARY CORE DETAILS

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation (% of intact core >100 mm)
FI	Fracture Spacing (average fracture spacing; in mm, over indicated length of core) * *
NI	Non-Intact Core
AZCL	Assumed Zone of Core Loss

INSTALLATION & BACKFILL DETAILS



GROUNDWATER

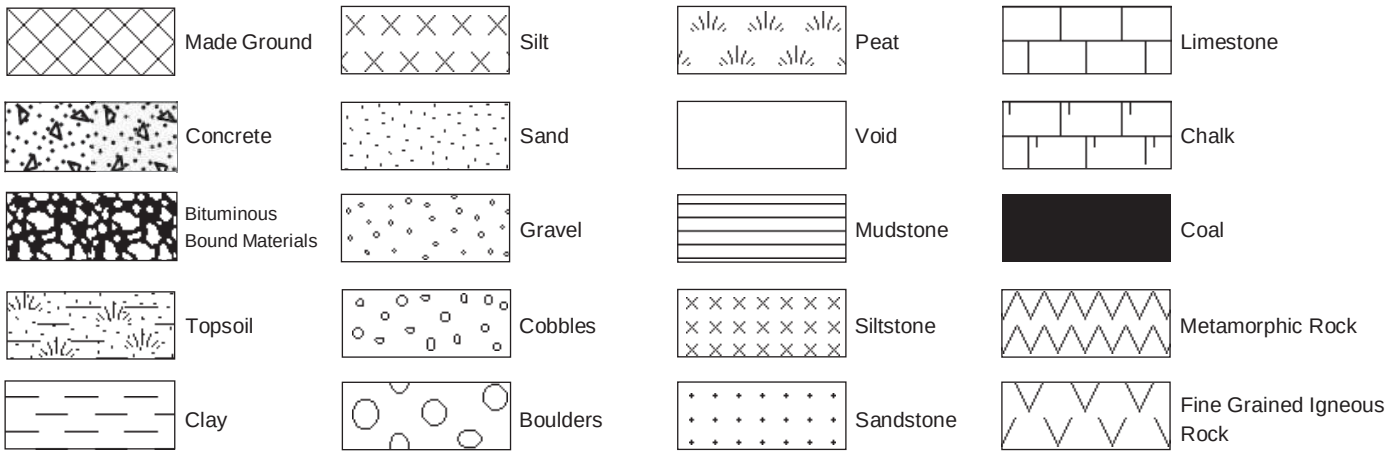
Groundwater strike

Standing water level after 20 minutes; 1st, 2nd etc (number denotes level order)

STRATUM BOUNDARIES

Unit boundary

STRATA LEGENDS - Note: Composite strata types are shown by combining symbols



* Where a single value is quoted this is the uncorrected 'N' value for a full 300 mm test drive following a seating drive of 150mm. Where the full test drive penetration is not achieved the number of blows is quoted for the penetration below the test total of 300mm, e.g.: 50/75.

* * The minimum, average and maximum are shown e.g. 5/45/125.

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BOREHOLE LOG

Project				BOREHOLE No
Tudor Road				DS1
Job No: F0903	Start Date: 11-10-24 End Date: 11-10-24	Ground Level (m)	Co-Ordinates ()	
Contractor: Geosampling				Sheet: 1 of 1

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thick-ness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
Depth	Type No	Test Result							
						0,15	CONCRETE		
0,40-0,50	ES					(0,65) 0,80	MADE GROUND: Dark orangish brown slightly clayey very sandy angular to subrounded fine to coarse flint, metal and brick GRAVEL.		
1,00	J					1,15	MADE GROUND: Soft orangish brown gravelly CLAY. Gravel is angular to subrounded fine to coarse concrete and flint.		
1,20	ES					1,35	MADE GROUND: Black ASH		
1,60	J		1.1			(0,55) 1,90	MADE GROUND: Soft dark grey gravelly CLAY. Gravel is angular to subrounded fine to coarse brick and flint. Slight hydrocarbon odour.		
2,50	J					(1,10) 3,00	Dark orangish brown sandy subroudned fine and medium flint GRAVEL.		

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
0,00	11-10-24	09,00	0,00	113	
3,00	11-10-24	11,00	1,00	113	1.75

Chiselling			Water Added	
From	To	Hours	From	To

GENERAL REMARKS

Terminated due to ground collapse 3.00 - 2.20m. Groundwater encountered at 1.75m. 50mm ID Pipe installed with base at 2.00m.

All dimensions in metres Scale 1:50	Client: AG Geo	Plant: Dart	Logged By: IP

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BOREHOLE LOG

Project				BOREHOLE No
Tudor Road				DS2
Job No: F0903	Start Date: 10-10-24 End Date: 10-10-24	Ground Level (m)	Co-Ordinates ()	
Contractor: Geosampling				Sheet: 1 of 1

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thick-ness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
Depth	Type No	Test Result							
						0,20	CONCRETE		
						0,30	MADE GROUND: Grey angular fine and medium igenous GRAVEL (Type 1)		
0,40-0,50	ES					0,35	CONCRETE		
							MADE GROUND: Multicoloured clayey very sandy angular fine to coarse GRAVEL and COBBLES of brick, flint and metal. 1,00 - 2,00 Limited Recovery (10%)		
			1.1			(2,65)			
2,00	ES						2,00 - 3,00 Limited Recovery (10%)		
						3,00			

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
0,00	10-10-24	13,45	0,00	113	
3,00	10-10-24	15,10	1,00	113	1.5

Chiselling			Water Added	
From	To	Hours	From	To

GENERAL REMARKS

Terminated due to ground collapse. Groundwater encountered at 1.50m. Limited recovery 1.00 - 3.00m. 50mm ID Pipe installed with base at 3.00m.

All dimensions in metres Scale 1:50	Client: AG Geo	Plant: Dart	Logged By: IP

Report ID: AGS4 UK BH || Project: F0903 - TUDOR ROAD.GPJ || Library: GINT STD AGS 4_0.GLB || Date: 11 October 2024

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Telephone: 01380 900102
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BOREHOLE LOG

Project				BOREHOLE No
Tudor Road				DS3
Job No: F0903	Start Date: 11-10-24 End Date: 11-10-24	Ground Level (m)	Co-Ordinates ()	
Contractor: Geosampling				Sheet: 1 of 1

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
Depth	Type No	Test Result							
						0,20	CONCRETE		
0,20-0,30	ES					0,45	MADE GROUND: Dark grey and brown very clayey very gravelly medium and coarse SAND. Gravel is angular fine to coarse brick, metal, flint and glass with occassional cobbles.		
						(0,65) 1,10	MADE GROUND: Soft very gravelly brown CLAY. Gravel is angular to subrounded fine and medium brick, flint and metal.		
1,00	J					(0,75) 1,85	Dark oragnish brown very sandy subrounded fine to coarse flint GRAVEL.		
2,00	J					2,15	Soft orangish grey very sandy slightly gravelly CLAY. Gravel is subrounded fine flint.		
			1.1			(0,65) 2,80	Dark oragnish brown very sandy subrounded fine to coarse flint GRAVEL.		
						3,10	Soft orangish grey very sandy slightly gravelly CLAY. Gravel is subrounded fine flint.		
						(0,90) 4,00	Dark orangish brown gravelly fine and medium SAND. Gravel is subrounded fine and medium flint.		

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
0,00	11-10-24	11,00	0,00	113	
4,00	11-10-24	12,45	1,00	113	2.7

Chiselling			Water Added	
From	To	Hours	From	To

GENERAL REMARKS

Terminated due to ground collapse from 4.00-2.90m. Groundwater encountered at 2.70m. 50mm ID Pipe installed with base at 2.90m.

All dimensions in metres Scale 1:50	Client: AG Geo	Plant: Dart	Logged By: IP

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BOREHOLE LOG

Project				BOREHOLE No
Tudor Road				DS4
Job No: F0903	Start Date: 10-10-24 End Date: 10-10-24	Ground Level (m)	Co-Ordinates ()	
Contractor: Geosampling				Sheet: 1 of 1

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thick-ness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
Depth	Type No	Test Result							
						0,15	CONCRETE		
						0,20	MADE GROUND: Grey angular and subangular fine and medium igenous GRAVEL (Type 1)		
						(0,40)			
						0,60	CONCRETE		
0,65	J					0,65	MADE GROUND: Dark brown sandy CLAY.		

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
0,00	10-10-24	12,00	0,00		
0,65	10-10-24	12,30	0,00		

Chiselling			Water Added	
From	To	Hours	From	To

GENERAL REMARKS

Terminated upon concrete obstruction. DPSH follow on through drill core hole in base to 5m depth.

All dimensions in metres Scale 1:50	Client: AG Geo	Plant: Hand tool and breaker	Logged By: IP

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BOREHOLE LOG

Project				BOREHOLE No
Tudor Road				DS5
Job No: F0903	Start Date: 10-10-24 End Date: 10-10-24	Ground Level (m)	Co-Ordinates ()	
Contractor: Geosampling				Sheet: 1 of 1

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thick-ness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
Depth	Type No	Test Result							
						0,15	CONCRETE		
						0,20	MADE GROUND: Grey angular and subangular fine and medium igenous GRAVEL (Type 1)		
0,40-0,50	ES					(0,80)	MADE GROUND: Dark grey and brown very clayey very gravelly medium and coarse SAND. Gravel is angular fine to coarse brick, metal, flint and glass with occassional cobbles.		
						1,00			
1,00-1,10	J						Very loose orangish brown very gravelly medium and coarse SAND. Gravel is subrounded fine and medium flint.		
1,20		N3				(0,85)			
						1,85			
2,00	J					(0,40)	Firm orangish grey very sandy slightly gravelly CLAY. Gravel is subrounded fine flint.		
2,00		N26				2,25			
						2,60	Medium dense dark oragnish brown very sandy subrounded fine to coarse flint GRAVEL.		
			1.1			2,75	Firm orangish grey very sandy slightly gravelly CLAY. Gravel is subrounded fine flint.		
3,00		N36				(0,85)	Dense dark oragnish brown very sandy subrounded fine to coarse flint GRAVEL.		
						3,60			
3,60		N13							

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
0,00	10-10-24	08,30	0,00	113	0
3,60	10-10-24	10,45	1,00	113	2.75

Chiselling			Water Added	
From	To	Hours	From	To

GENERAL REMARKS

Terminated due to ground collapse. Groundwater encountered at 2.75m. 50mm ID Pipe installed with base at 3.60m.

All dimensions in metres Scale 1:50	Client: AG Geo	Plant: Dart	Logged By: IP

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BOREHOLE LOG

Project				BOREHOLE No
Tudor Road				DS6
Job No: F0903	Start Date: 10-10-24 End Date: 10-10-24	Ground Level (m)	Co-Ordinates ()	
Contractor: Geosampling				Sheet: 1 of 1

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thick-ness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
Depth	Type No	Test Result							
						0,15	CONCRETE		
0,20-0,30	ES					(0,95)	MADE GROUND: Dark orangish brown slightly clayey very sandy angular to subrounded fine to coarse flint, metal and brick GRAVEL.		
1,00	J					1,10			
						1,25	MADE GROUND: Black ASH		
						(0,85)	MADE GROUND: Soft very sandy CLAY.		
2,00	J		1			2,10			
						2,40	MADE GROUND: Dark orangish brown slightly gravelly medium SAND. Gravel is subrounded fine and medium flint.		
2,60	ES		1			(0,60)	MADE GROUND: Black very sandy subangular and subrounded fine and medium concrete and flint GRAVEL with a strong hydrocarbon odour.		
						3,00			

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
0,00	10-10-24	12,15	0,00	113	
3,00	10-10-24	13,30	1,00	113	2.75

Chiselling			Water Added	
From	To	Hours	From	To

GENERAL REMARKS

Terminated due to ground collapse 3.00-2.50m. Groundwater encountered at 2.75m. 50mm ID Pipe installed with base at 2.50m.

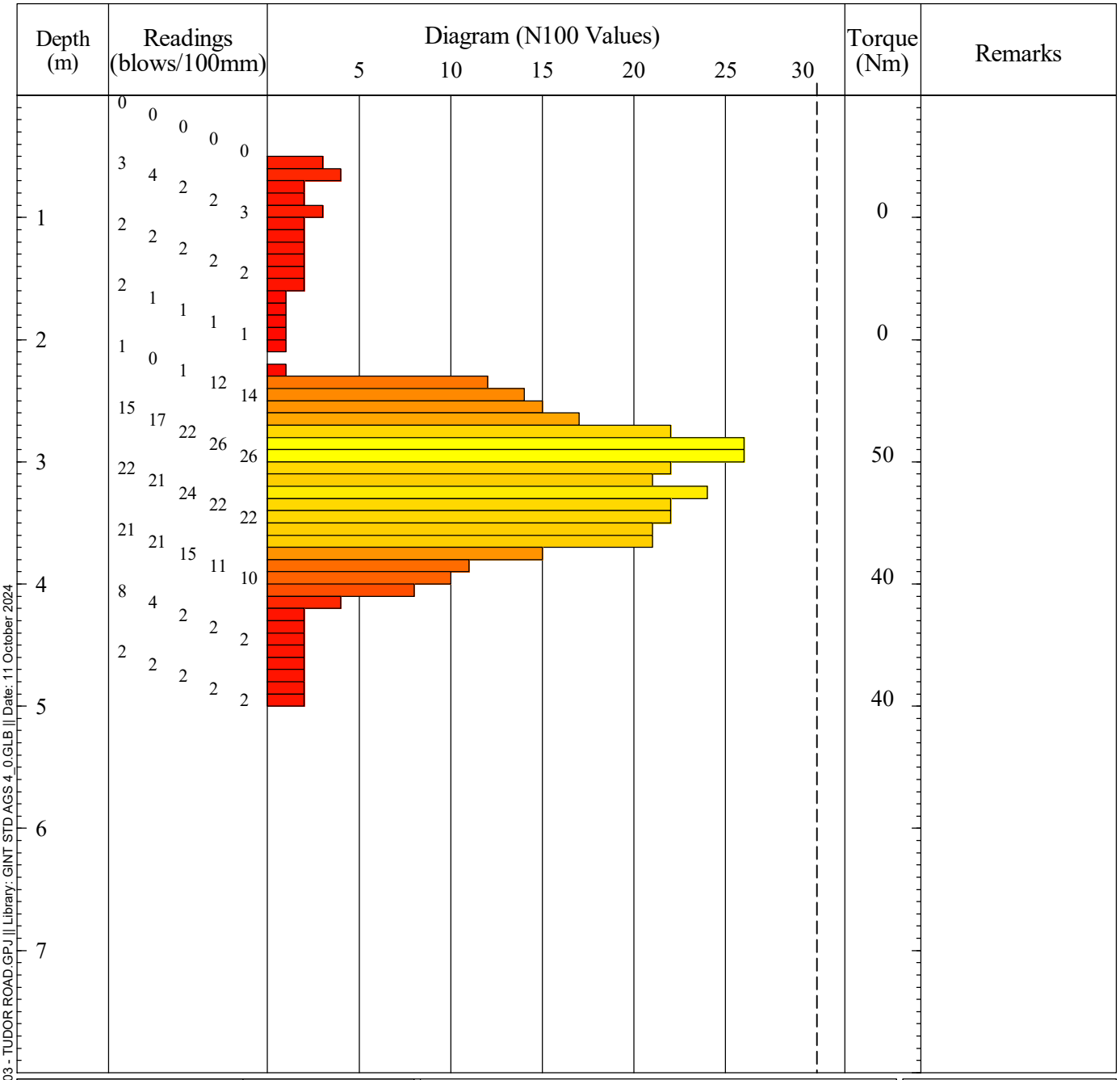
All dimensions in metres Scale 1:50	Client: AG Geo	Plant: Dart	Logged By: IP

Report ID: AGS4 UK BH || Project: F0903 - TUDOR ROAD.GPJ || Library: GINT STD AGS 4_0.GLB || Date: 11 October 2024

Wessex and West Ground Investigation Ltd
Telephone: 01380 900102
info@wwgi.co.uk

DYNAMIC PROBE LOG

Project				PROBE No
Tudor Road				DPSH4
Job No: F0903	Start Date: 10-10-24 End Date: 10-10-24	Ground Level (m)	Co-Ordinates ()	
Contractor: Geosampling				Sheet: 1 of 1



Hammer Wt (kg)	63
Hammer Drop (mm)	750
Cone Dia (mm)	35
Cone Type	DPSH-B
Damper	

GENERAL REMARKS

DPSH follow on through DS4. Terminated at maximum available depth.

All dimensions in metres Scale 1:50	Client: AG Geo	Plant: Dart	Logged By: IP

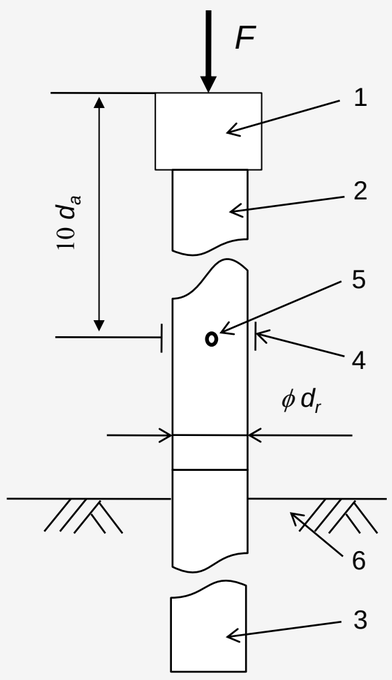
Report ID: AGS4 DYNAMIC PROBE || Project: F0903 - TUDOR ROAD.GPJ || Library: GINT STD AGS 4_0.GLB || Date: 11 October 2024

SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer	Premier
Test No	EQU2024_53
Client	Geotechnical Services
Test Depth (m)	9.70
Mass of hammer	m = 63.5kg
Falling height	h = 0.76m
E_{theor} =	$m \times g \times h$ = 473J

Characteristics of the instrumented rod



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

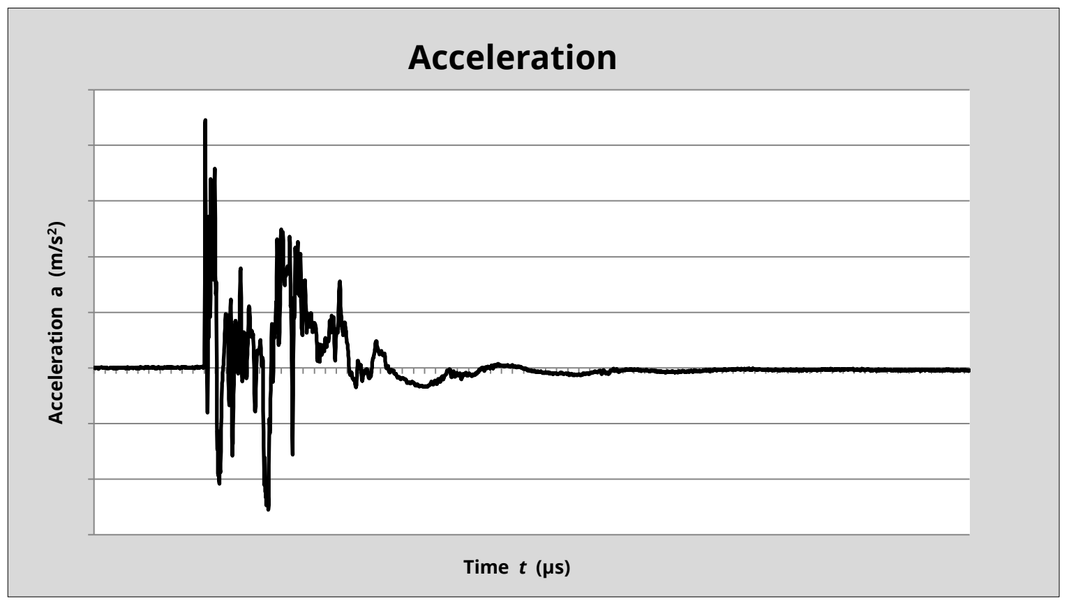
Diameter	d_r = 0.052 m
Length of instrumented rod	0.558 m
Area	A = 11.61 cm²
Modulus	E_a = 206843 MPa

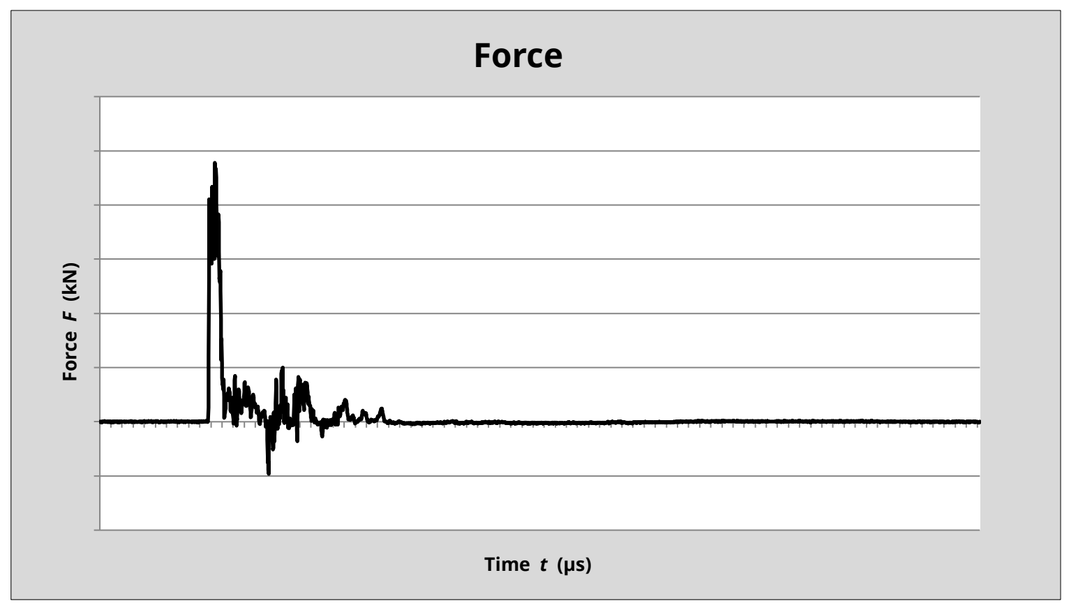
E_{meas} = **0.445** kN-m

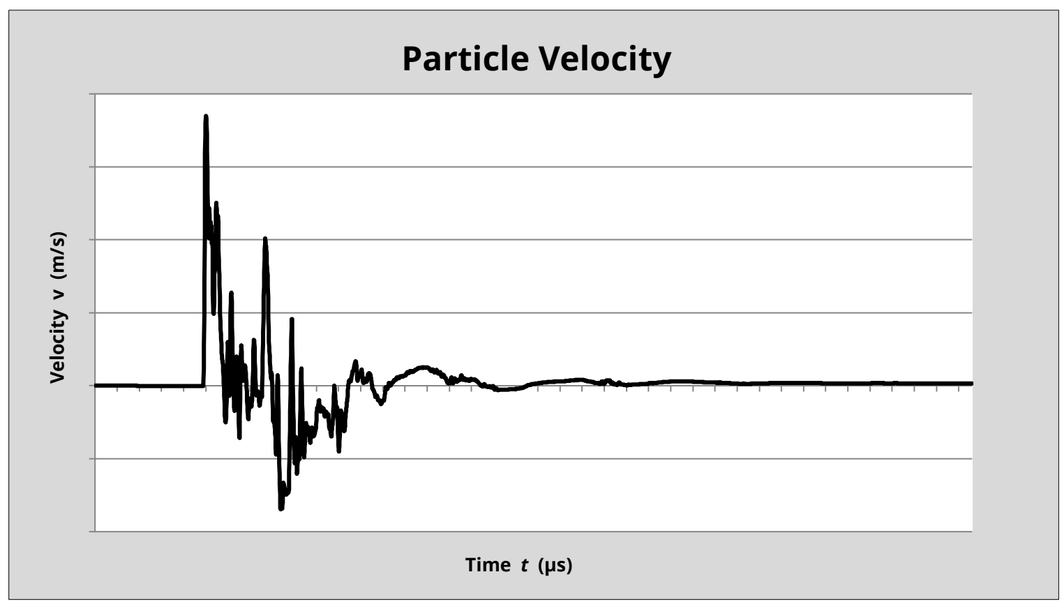
E_{theor} = **0.473** kN-m

Comments

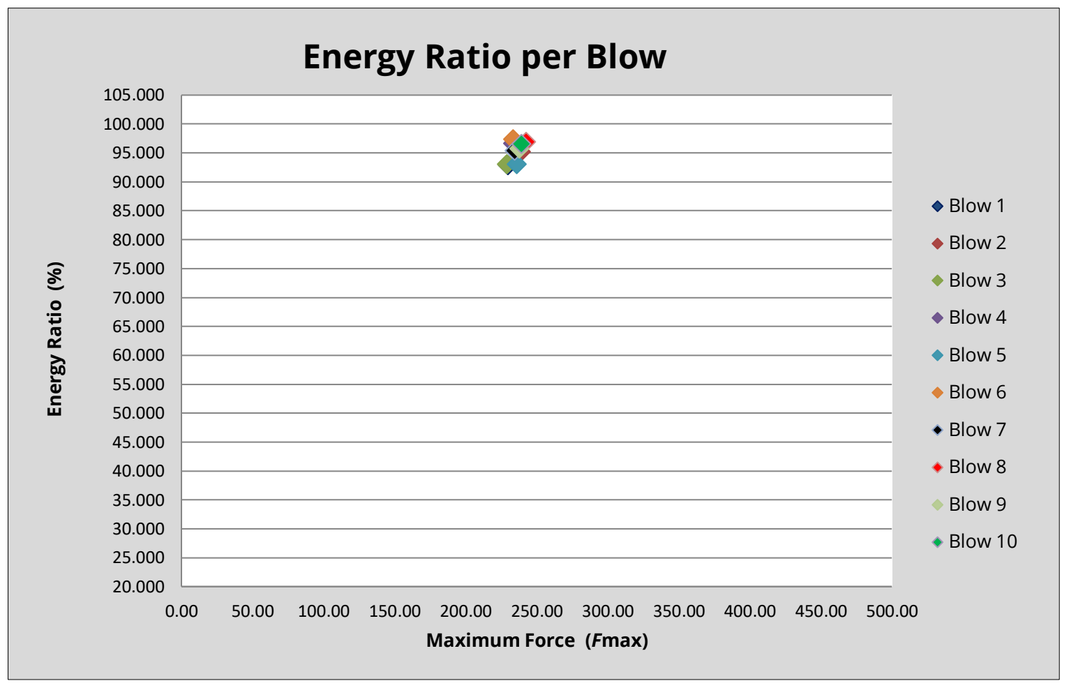
DATE OF TEST	VALID UNTIL	HAMMER ID
04/06/2024	04/06/2025	110 Red Rig







Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$ **94.09%**



Equipe SPT Analyzer Operator	Certificate prepared by	Certificate checked by	Certificate date
KS	10/06/2024	10/06/2024	10/06/2024

 Equipe Group, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

Appendix D

Petroleum Group LFB Headquarters - 2nd Floor
169 Union Street London SE1 0LL
T 020 8555 1200 x30859
F 020 7960 3624
Minicom 020 7960 3629
london-fire.gov.uk

The London Fire Commissioner is the fire and rescue authority for London

Date 7 October 2024
Our Ref 24/011240/PC
Your Reference: 24-077

Mr Andre Gilleard
AG Geo-Consultants Ltd
58 Church Road
Bishopston
Bristol
BS7 8SE

Dear Mr Gilleard

THE ENVIRONMENTAL INFORMATION REGULATIONS 2004 - ENVIRONMENTAL ENQUIRY

Premises: 14-16 Tudor Road, Hampton, TW12 2NQ

The London Fire Commissioner (the Commissioner) is the fire and rescue authority for London. The Commissioner is responsible for enforcing the Petroleum (Consolidation) Regulations 2014 in London.

As requested, a petroleum environmental search has been made in respect of the above premises.

A thorough search of current and historical files and databases has revealed information for the site as detailed in the attached form and plans.

Please note that this report is restricted to matters currently known by the Commissioner. Although we hold extremely comprehensive records, it is possible that we do not hold any records whatsoever for some solid-filled and very old tanks. This will be for one of the following reasons:

1. The records held by the Commissioner were passed to it from the Greater London Council in 1986. In 1965 the Greater London Council inherited petroleum related records from the London County Council and the outer London Boroughs / Councils. Some of the outer London records were incomplete.

2. For premises where petroleum tanks have been either removed or permanently made safe, the Commissioner's records have (in a minority of cases) been destroyed; and for these cases the Commissioner does not hold any records that indicate that there was ever a 'petroleum' interest at the premises.

As you are aware, a fee is levied for the provision of this information and payment should be made in accordance with the invoice, which will be sent under separate cover.

Any queries regarding this letter should be addressed to the person named below. If you are dissatisfied in any way with the response given, please ask to speak to the Head of Petroleum quoting our reference.

Yours sincerely

Pp Philip Cater

for Assistant Commissioner (Fire Safety)
Directorate of Operations
petroleum@london-fire.gov.uk

Reply to Petroleum Section
Direct **T** 0208 555 1200 Ext 30859

ENVIRONMENTAL ENQUIRY DETAIL FORM

Premises:
14-16 Tudor Road, Hampton, TW12 2NQ
Our Reference:
24/011240

Tank No.	Compartment No.	Year	Tank Type	Tank Capacity	Fuel Type	Current Status
1	1	1970	Single Skin Steel	9092 Litres	Petrol	RG22 Foam Filled
1	2	1970	Single Skin Steel	9092 Litres	Petrol	RG 22 Foam Filled
1	3	1970	Single Skin Steel	4546 Litres	Petrol	RG22 Foam Filled
2	4	?	Single Skin Steel	2273 Litres	Paraffin	Not Known

Current licence/Petroleum Storage Certificate in force?
YES ☐ NO ☒
Date last licence(s)/storage certificate(s) issued:
Last Licence date 30/06/65 - 30/11/94

Known leaks or spills at this site:
No recorded incidents of leaks or spills at this site

Comments:
Records for this site are limited. A note held on file indicates that a company called Tanksafe Limited were used to fill tank 1 compartments 1 ,2 ,3 with RG22 foam on 6 January 1998. Records show that a 5000 Gallon petroleum spirit tank was removed from the site in 1970 . There is also a note on file which indicates that there is a tank on the site which is used to store paraffin, the authority holds no further information on this tank. As you have requested drawings I enclose historical drawings which show the petroleum storage tanks and an earlier tank farm .

Signed:	*Philip Cater*
Name:	Philip Cater
Position:	Administrative Assistant
Date:	7 October 2024

1946 TANK FARM

24/0 11 24/3

Dwg No 1.

24/46

14/16 TUDOR ROAD,
HAMPTON,
TWICKENHAM,
RICHMOND.

SCALE: 1/8" - 1'

R.W. Everett.
4.5.66

6'0" brick F.R. screen at North end of forecourt
16.5.69

Lab Store and Office

Open-front parking garage

Garden

N

Garden

250 gal Paraffin

250 g bunded Heating Oil tank

up to 1st floor flat

Boiler House

Removed 14/5/69
Position of Kitchen Heater

Doors

Store

W.C.

Breeze + corrugated iron

Brick

Garden

Workshop

First floor living accommodation above.

Clear glazed windows

Open entrance to rear yard.

7'0" 7'7"

PIT

Blank wall

Passageway to garden

Folding Sliding doors

Office

Metal gates

V.P.

Private House

P3 T3 P1 P2

Shop

6'0" brick wall

D1 D2 W.I.

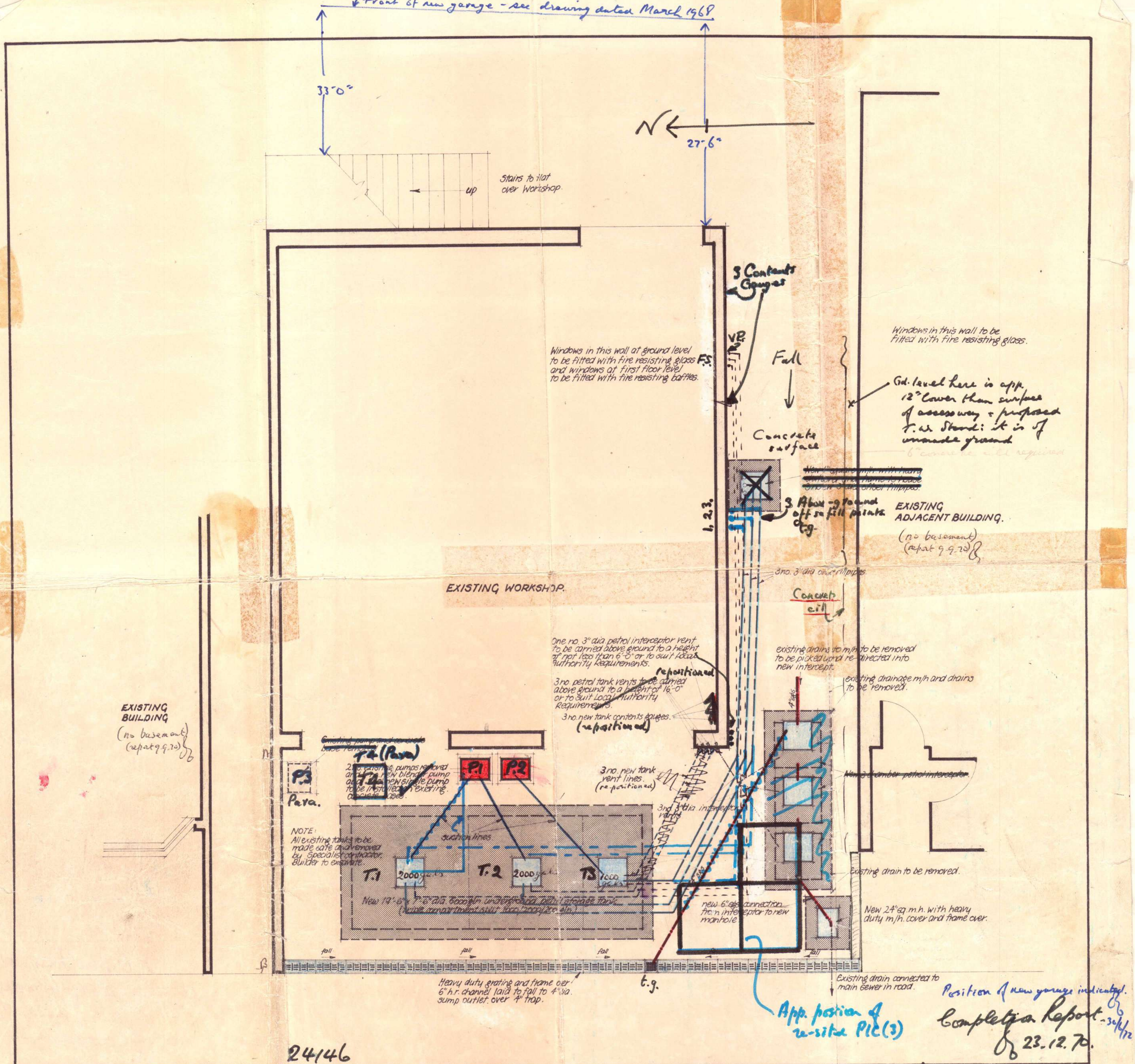
2'6" wall

fall Asphalt fall

T1 T2

Road Gulley

TUDOR ROAD


Front of new garage - see drawing dated March 1968
33'-0"
27'-6"
N
Stairs to flat over Workshop.
up
3 Contents Gauges
V.P.
F.S.
Windows in this wall at ground level to be fitted with fire resisting glass and windows at first floor level to be fitted with fire resisting baffles.
Fall
Windows in this wall to be fitted with fire resisting glass.
Gd. level here is app. 12" lower than surface of accessway + proposed F.W. Stand: it is of unmade ground
Concrete surface
1, 2, 3.
3 Above-ground offset fill points t.g.
EXISTING ADJACENT BUILDING.
(no basement) (report 9.9.70)
3no. 3" dia offset fillpipes.
EXISTING WORKSHOP.
Concrete cil
One no. 3" dia petrol interceptor vent to be carried above ground to a height of not less than 6'-0" or to suit Local Authority Requirements.
repositioned
3 no. petrol tank vents to be carried above ground to a height of 16'-0" or to suit Local Authority Requirements.
3 no. new tank contents gauges.
(repositioned)
existing drains to m/h to be removed to be picked up and re-directed into new intercept.
existing drainage m/h and drains to be removed.
4" S.G.S.
EXISTING BUILDING
(no basement)
(report 9.9.70)
T4 (Para)
2 no. existing pumps removed and new blender pump and new single pump to be installed on existing concrete bases.
P.1
P.2
P.3
Para.
3 no. new tank vent lines. (re-positioned)
3 no. 3" dia. interceptor vents
NOTE: All existing tanks to be made safe and removed by Specialist contractor. Builder to excavate.
suction lines
T.1
2000 gals
T.2
2000 gals
T3
1000 gals
New 3 chamber petrol interceptor.
Existing drain to be removed.
new 6" S.G.S. connection from interceptor to new manhole
New 24" sq. m.h. with heavy duty m/h. cover and frame over.
fall
fall
fall
fall
t.g.
Heavy duty grating and frame over 6" h.r. channel laid to fall to 4" dia. sump outlet over 4" trap.
Existing drain connected to main sewer in road.
App. position of re-sited PIC (3)
Position of new garage indicated.
Completion Report - 30/6/72
23.12.70.
24146

ESSO PETROLEUM COMPANY LIMITED
SOUTHERN REGION,
ESSO HOUSE, 153/157, THE BROADWAY,
WIMBLEDON, LONDON S.W.19.

PROPOSED NEW 5000 GALLON UNDERGROUND PETROL STORAGE TANK WITH OFFSET FILLS,
2 NO. NEW PUMPS AND NEW FORECOURT DRAINAGE AT;
TUDOR ROAD GARAGE, TUDOR ROAD, HAMPTON, MIDDLESEX.

SCALE: 1/4" TO 1'-0"
DATE: 24.7.70.

24146

Appendix E

TANKSAFE LIMITED
4/5 Gough Square
London EC4A 3DE
Tel: 0171-583 2007
Fax: 0171-583 2008
Mobile: 0850 842828

VAT No. 626 7731 22

6[th] January 1998

Tudor Road Garage Ltd
14-16 Tudor Road
Hampton
Middx
TW12 2NQ

INVOICE NO.980002

		£
Re:	Tudor Road Garage, 14-16 Tudor Road, Hampton, Middx.	
To:	Fill 1 x 1,000 and 2 x 2,000 gallon tanks with RG22 hardfoam	
	Quantity used 25 cubic metres	1,375.00
	Pipework preparation prior to foam filling	275.00
	To bottoms tanks by tanker	325.00
	Subtotal	1,975.00
	VAT @ 17.5%	345.62
TOTAL NOW DUE		2,320.62

Please make payment to Kellock Ltd.,

E&O.E

Pd 29-1-98
Ch No. [illegible]

Credit terms - 28 days from date of invoice.

KELLOCK

The debt arising under this invoice has been assigned to Kellock Ltd.

Payment should be made to Kellock Ltd. [illegible]

If this invoice is not found to be correct in all respects Kellock Ltd. should be notified immediately.

Registered No. 2794139. Registered Office as above.
A member of the Gallo Shipping Group.

TANKSAFE LIMITED
4/5 Clough Square
London EC4A 3DE
Tel. 0171-583 3007
Fax. 0171-583 3008
Mobile: 0850 642939

CERTIFICATE OF TANK FILLING

Certificate No. 98/002

Customer: Tudor Road Garage Ltd
14-16 Tudor Road
Hampton
Middx
TW12 2NQ

Site Name: as above

Address: as above

Date Filled: 6/1/98

Tank No.	Product	Tank Capacity(litres)
1	Petrol	10,000
2	Petrol	10,000
3	Petrol	5,000

We declare that the above tanks have been filled to capacity with RG22 hard foam in accordance with the procedures agreed with the local petroleum licensing authority.

Signed..... Dated.....5 FEB 1998
Managing Director
For and on behalf of TankSafe Limited

Copies: Tudor Road Garage Ltd

Senior Petroleum Officer
LFCDA Section P
90 Old Town
Croydon
Surrey
CR0 1AR

CUSTOMER COPY

TankSafe

TankSafe Ltd
[illegible]
London [illegible]
Tel: [illegible]
or: [illegible]
Fax: [illegible]

DELIVERY NOTE Serial No. 757

Date: 6-1-98

App. Name: [illegible]

Add. Labour: 13:00

Time Arrival:

Mileage: 192135 → 192206 KM

Time Departure: 16:30

	Customer	Site
Name / Address	[illegible]	[illegible]

TANK	SIZE	GRADE	DIPSTICK	MANIFOLD	NOMINAL	APPLICATION
3	[illegible]	[illegible]	✓	—	ROAD	[illegible]
2	[illegible]	[illegible]	✓	—	"	"
1	[illegible]	[illegible]	✓	—	"	"

CUBIC METRES: 25 cm

P. O. Present: Yes / No

Pipework Contractor: DM

Fittings Used:

Comments:

Customer/Contractor

Signature: [illegible]

Print Name: [illegible]

Position: [illegible]

WHITE

Appendix F

André Gilleard (Ground & Waste Soils Specialist)

From: Gavin Day <Gavin.Day@merton.gov.uk>
Sent: 09 September 2024 18:46
To: 'andre@ag-geoconsultants.co.uk'
Subject: hampton, tudor rd, no 14-16, TW12 2NQ - FS-Case-645545496
Attachments: MapEagle.pdf; 26550R02_FINAL_RSK_Report.pdf; PWS in LBRUT 2010 plotted plus LBW equals RSP list.xls; Part B list 20240902 version2.xls

Flag Status: Flagged

Categories: urgent

Hello Andre,

Thank you for your mail. Please find attached results of an historic-use enquiry run in the year 2017. Yates garage at No 9 Tudor Road has our nearest investigation, and is now remediated appropriate to its new use-class. Please find that investigation attached. Please find attached our Part B list and Private Water Drinking supplies list also attached. These are about the best data we have. Trusting this information is of use.

Gavin Day
Contaminated Land Officer
Regulatory Services Partnership
Serving Merton, Richmond and Wandsworth Councils

Friday will be a day of leave for me

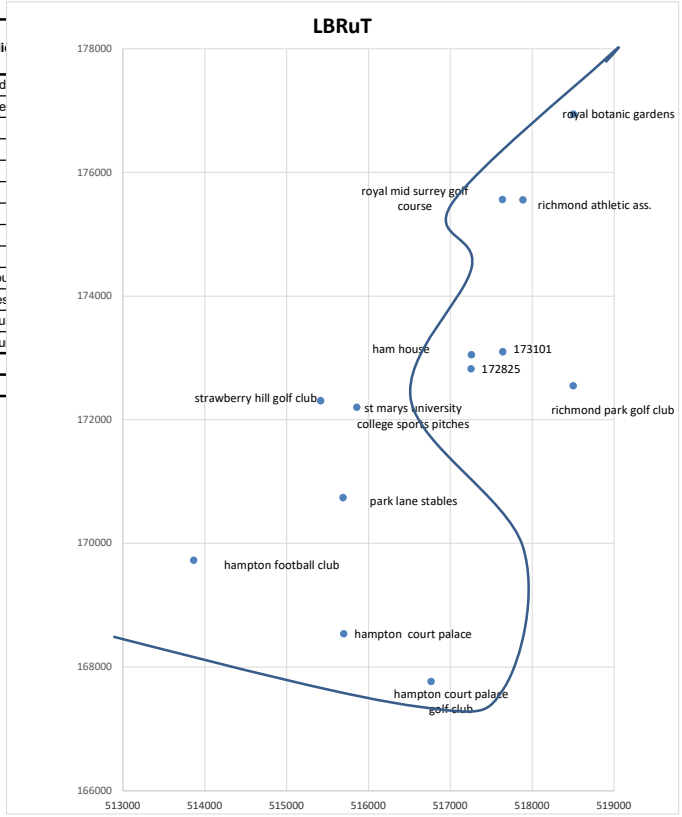
From: Pollution and Air Quality <Pollution@merton.gov.uk>
Sent: Monday, September 9, 2024 10:11 AM

LBRuT

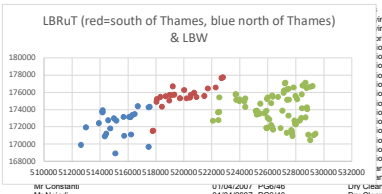
Name of Supplier	Type of Source	Geographical Location Easting	Northing	Grid Reference	Estimate of No. of People Supplied	Estimate of Average Daily Volume of Water Supplied in m3	Type of Premises Suppli
Ham House	Boreholes	517258	173050		0	0	Heritage Building Ground
Hampton Court Palace	Boreholes and River	515698	168540		0	0	Palace Ground and Garde
Palm Centre Limited	Boreholes	517252	172825		0	0	Garden Centre
Ham Polo Club	River	517640	173101		0	0	Riding Establishment
Park Lane Stables	Boreholes	515689	170740		0	0	Livery Stables
Hampton Court Palace Golf Club	Boreholes	516767	167769		0	0	Golf Club Grounds
Richmond Park Golf Club	Boreholes	518502	172549		0	0	Golf Club Grounds
Royal Mid Surrey Golf Club	Boreholes	517637	175561		0	0	Golf Club Grounds
Strawberry Hill Golf Club	Boreholes	515416	172308		0	0	Golf Club Grounds
Royal Botanic Gardens	Boreholes and River	518504	176941		0	0	Botanical Gardens and Grou
St Mary's University College	Boreholes	515856	172202		0	0	University Sports Pitches
Richmond Athletic Association	Borehole	517887	175557		0	0	Rugby Club Pitch and Grou
Hampton Football Club	Borehole	513865	169727		0	0	Rugby Club Pitch and Grou

LBW

St George's Hospital, Tooting	Borehole	527041		171545			hospital



LBRuT



Ref	Name	Address	Grid reference				State of Permit
EP/M/93/02/P1	Grimshaw & Wake Ltd	Unit 1b, Sandfield Industrial Estate, Oldfield Road, Hampton TW12 2HR	512643	169898		ring of Road Vehicles	Active
EP/M/00/01/P1	H&L Motors	70 Wellington Road, Twickenham TW2 5NX	514730	171818		ring of Road Vehicles	Active
EP/M/92/02/P1	Mortlake Crematorium	Kew Meadow Path, Richmond TW9 4EN	520015	176280		ria	Active
01/PVR	Shell Hospital Bridge	Staines Road, Twickenham TW2 5JA	513920	172424		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
17/PVR	Shell Oak Lane	5-11 Richmond Road, Twickenham TW1 3AB	516476	173486		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
02/PVR	Staines Road Service Station	110 Staines Road, Twickenham TW2 5AW	514589	172754		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
10/PVR	Palace Service Station	The green, Hampton Court Road, East Molesey KT8 9BW	515097	168913		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
04/PVR	BP Express Shopping	Lower Mortlake Road, Richmond TW9 2LL	518974	175707		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
05/PVR	Richmond Service Station	22-24 Popham Gardens, Lower Richmond Road, Richmond TW9 4LJ	519314	175742		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
13/PVR	Black Horse Service Station	174-176 Sheen Road. Richmond TW9 1XD	518954	175045		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
07/PVR	Tesco Express	159-167 Castelnau, Barnes SW13 9EW	522680	177665		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
08/PVR	Mortlake Service Station	16-26 Sheen Lane, East Sheen SW14 8LW	520486	175692		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
09/PVR	Sainsburys Service Station	303 Uxbridge Road, Hampton TW12 1AW	512995	171931		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
19/PVR	Sainsburys Service Station	Manor Road. Richmond TW9 1YB	519102	175667		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
12/PVR	East Sheen Service Station	567 Upper Richmond Road West, SW14 7ED	519719	175314		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
16/PVR	Ham Cross Service Station	297 Richmond Road, Kingston KT2 5QU	517764	171510		ion for the unloading of petrol into stationary storage tanks and filling of vehicle petrol tanks	Active
LBRUT/DC/11	Hamlyns	197 Upper Richmond Road West. East Sheen. SW14 8QT	520898	175453		ning	Active
LBRUT/DC/21	Pristine Laundries	90 Kew Road, Richmond TW9 2PQ	518315	175477		ning	Active
LBRUT/DC/19	MEL Dry Cleaners	24 Heath Road, Twickenham	516088	173144	Mr Constanti	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/16	Lime Dry Cleaners	107 North Road, Kew TW9 4HJ	519207	176685	Mr Nejadi	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/23	Reeves Dry Cleaners	180 Castelnau. Barnes SW13 9DH	522782	177744	Mr Amani	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/18	Noble Dove Dry Cleaners	374 Richmond Road, Twickenham TW1 2DX	517480	174269	Mrs Durani	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/25	Royal Dry Cleaners	84 Church Road, Barnes SW13 0DQ	522279	176564	Mr Lalli	02/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/07	Crystal Dry Cleaners	64 High Street, Whitton, TW2 7LS	514170	173763	Mr Boolaky & Mr Mungroo	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/31	Twickenham Green Dry Cleaners	4 Staines Road, Twickenham TW2 5AH	514994	172992	Mr Shali	11/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/27	Royal Dry Cleaners	106 High Street, Whitton TW2 7LN	514181	173682	Mr Singh Bains	27/05/2008 PG6/46 Dry Cleaning	Active
LBRUT/DC/10	Express Dry Cleaners	282 Upper Richmond Road West, East Sheen SW14 7JE	520441	175402	Mr Markande	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/30	Tio Too Dry Cleaners	159 St Margarets Road. Twickenham TW1 1RD	516704	174388	Mr Nurallah	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/26	Royal Dry Cleaners	455 Upper Richmond Road West, SW14 7PR	520189	175305	Mr Lalli	11/05/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/01	Beaucare Dry Cleaners	146 Heath Road, Twickenham TW1 4BN	515682	173151	Mr Seda	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/15	Kings Clothes Care Specialists	45 King Street, Twickenham TW1 3SG	516188	173126	Ms Patel	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/05	Coldel Dry Cleaners	39 Hampton Road, Twickenham TW2 5QE	515165	172724	Mr Byrne	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/32	White Hart Dry Cleaners	155 White Hart Lane, SW13 0JP	521456	175584	Mr Filho	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/02	Cache 2 Dry Cleaners	185 High Street, Hampton Hill TW12 1NL	514446	171211	Mrs Sehmi	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/08	Divine Dry Cleaners	424 Richmond Road. Ham KT2 5PU	517802	171552	Mr Aziz	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/28	Sky Dry Cleaners	13 York Street, Twickenham TW1 3JZ	516307	173371	Mr Seifamirmosseini	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/09	Ducane Dry Cleaners	2 Westminster House, Kew Road, Richmond TW9 2ND	518075	175223	Mr Dar	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/04	The Clean Machine	18 Eton Street, Richmond TW9 1EE	518038	174891	Mr Naom	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/33	Regal Dry Cleaners	56 High Street. Hampton Hill TW12 1PD	514343	170907	Mr Merchant	02/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/06	Crown Dry Cleaners (Whitton) Ltd	13 High Street, Whitton TW2 7LA	514202	173923	Mr Singh Thind	01/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/20	Oceana Dry Cleaners	84 High Street, Teddington TW11 8JD	516226	171116	Mr Dar	26/04/2007 PG6/46 Dry Cleaning	Active
LBRUT/DC/03	Classv Cleaners	59 Barnes High Street. SW13 9LF	521709	176448	Mr Haider	25/08/2009 PG6/46 Dry Cleaning	Active
LBRUT/DC/36	Wick Dy Cleaners	68 High Street, Hampton Wick KT1 4DQ	517473	169686	Mr Singh Khaneja	15/12/2010 PG6/46 Dry Cleaning	Active
LBRUT/DC/37	Silks Dry Cleaners	54 Broad Street, Teddington TW11 8QY	515722	170965	Mr Amin	18/11/2011 PG6/46 Dry Cleaning	Active
LBRUT/DC/38	Richmond Hill Dry Cleaners	21 Friars Stile Road, Richmond TW10 6NH	518421	174339	Mr Ehtemam	04/04/2012 PG6/46 Dry Cleaning	Active
LBRUT/DC/41	VIP Dry Cleaners	211 Lower Mortlake Road. Richmond. TW9 2LP	518683	175550	Mr Mickael Karim	17/05/2013 PG6/46 Dry Cleaning	Active
LBRUT/DC/39	Richmond Valet	398 Richmond Road, Twickenham TW1 2DY	517552	174330	Ms Ankit Patel	29/08/2013 PG6/46 Dry Cleaning	Active
LBRUT/DC/40	BM Lifestyle	64 Mortlake High Street, SW14 8HR	520728	175948	Mr Muhammed Amir Malik	02/12/2014 PG6/46 Dry Cleaning	Active

LBW

LAPPC 1		Stewarts Lane. SW8 3HE	529018	176633	London Concrete Limited	Blending etc Bulk cement
LAPPC 2		Pier Terrace, Jews Row, SW18 1TB	525989	175420	Hanson Premix	Blending etc Bulk cement
LAPPC 5	Lafarge Tarmac Ltd	Silverthorn Road, SW8 3HE	528764	176515	Tarmac Trading Ltd	Blending etc Bulk cement
LAPPC 6		The Willows, SW17 0BA	525921	171882	Cappagh Construction (London) Ltd	Concrete Crusher - Permanent
LAPPC 11		The Willows. riverside road. SW17 0BA	525921	171882	Cappagh Public Works Ltd	mobile concrete crushers
LAPPC 12		The Willows, riverside road, SW17 0BA	525921	171882	Cappagh Public Works Ltd	mobile concrete crushers
LAPPC 13		The Willows. riverside road. SW17 0BA	525921	171882	Cappagh Public Works Ltd	mobile concrete crushers
EP/LAPPC 16		110 Totterdown Street. SW17 8TA	527714	171482	Sorinobok Garage Ltd	Respraying of Road vehicles
LAPPC 20		40/42 Lydden Road, SW18 4LR	525753	173572	D&M Coachworks	Respraying of Road vehicles
EP/LAPPC 22		228 Roehampton Lane, SW15 4LE	522442	173683	Mayday Motors	Waste Oil burner < 0.4MW
EP/LAPPC 23		69-71 Bickersteth Road. SW17 9SH	527757	170951	Carpenters Garage	Waste Oil burner < 0.4MW
EP/LAPPC 25		Blackshaw Road. SW17 0BY	526376	171693	Lambeth Crematorium	Crematorium
EP/LAPPC 28		Stag Lane, SW18 3SB	522470	172790	Putney Vale Cemetery &	Crematorium
EP/LAPPC 27	Sainsburys Petrol Station	39 Nightingale Lane, SW12 8SY	528434	174164	Sainsburys Supermarkets Ltd	Vapour Recovery
EP/LAPPC 32	BP Wandsworth Service station	11 Swandon Way. SW18 1EW	525946	175226	BP Oil UK Ltd	Vapour Recovery
EP/LAPPC 33	BP Clapham Common Filling	105 Clapham Common Northside, SW4 9SH	528102	175218	Malthurst Limited	Vapour Recovery
EP/LAPPC 34	BP Tooting Service station	62 Trinity Road, SW17 7RH	527893	172713	BP Oil UK Ltd	Vapour Recovery
EP/LAPPC 35	Tesco Service station	219 Balham High Road. SW17 7BQ	528273	172713	Tesco Stores Ltd	Vapour Recovery
LAPPC 39	Malthurst Putney	134 West Hill. SW15 2UE	524392	174315	Malthurst Retail Limited	Vapour Recovery
EP/LAPPC 40	Co-operative Petrol roehampton vale	29 Roehampton vale, SW15 3DX	522073	172705	The Co-operative Group limited	Vapour Recovery
EP/LAPPC 41	Rontec Petrol Garratt Lane	666 Garratt Lane, SW18 0NP	526289	172034	Rontec Watford Ltd	Vapour Recovery
EP/LAPPC 42	Shell Savov	262 York Road. SW18 1TP	526359	175496	Shell UK Limited	Vapour Recovery
EP/LAPPC 43	Sainsburys Petrol Station	105 Lower Richmond Road. SW15 1EU	523687	175768	Sainsburys Supermarkets ltd	Vapour Recovery
EP/LAPPC 44	Shell Battersea	326 Queenstown Road, SW8 4LT	528684	177125	Shell UK Limited	Vapour Recovery
EP/LAPPC 45	Shell Roehampton	237 Roehampton Lane, SW15 4LB	522524	173734	Shell UK Limited	Vapour Recovery
EP/LAPPC 46	Shell Riversdale	289 Merton road, SW18 5JS	525295	173500	Shell UK Limited	Vapour Recovery
EP/LAPPC 47	Shell Balham	75 Balham Hill. SW12 9DP	528821	174042	Shell UK Limited	Vapour Recovery
EP/LAPPC 48	Battersea Park Service station	15-25 Parkgate Road, SW11 4NP	527265	177117	St Albans Operating company ltd	Vapour Recovery
EP/LAPPC 49	Battersea Dry Cleaners	62 Battersea Park road. SW11 4JP	528476	176786	Nosheen Malik	Dry Cleaning
EP/LAPPC 50	Spotless	723 Garratt Lane. SW17 0PD	526233	172210	Breezvwav Dry Cleaners Ltd	Dry Cleaning
EP/LAPPC 52	Pret a Porter Dry Cleaners	244 Battersea park road, SW11 3BP	527488	176407	Asmat Khimji	Dry Cleaning
EP/LAPPC 55	Quality Dry Cleaners	559 Garratt Lane, SW18 4SR	526121	172856	Masood I Sherwani	Dry Cleaning
EP/LAPPC 56	Valtina's Dry Cleaners	260 Upper Richmond Road. SW15 6TQ	523737	175140	Valtina's Limited	Dry Cleaning
EP/LAPPC 57	Posh Hands Laundry & Dry Cleaning	316 Trinity Road. SW18 3RS	527038	173870	Chandrakant Patel	Dry Cleaning
EP/LAPPC 58	Hazle Dry Cleaners	44 Battersea Park Road, SW11 4JP	528532	176814	Javed Iqbal Khan	Dry Cleaning
EP/LAPPC 59	Humberts Dry Cleaners	7 Putney Hill, SW15 6BA	523960	174988	Paullam Patel	Dry Cleaning
EP/LAPPC 60	Posh Wash	62 Battersea Rise, SW11 1EG	527511	175149	Shekofteh Zinoi	Dry Cleaning
EP/LAPPC 63	Friendsville Dry Cleaning &	1 Granville Road, SW18 5SB	525162	173842	Mohammed Nassir Poupal	Dry Cleaning
EP/LAPPC 65	Ducane Quality Cleaner	193A Balham High Road, SW12 9BE	528393	173,025	Rizwan Asghar	Dry Cleaning
EP/LAPPC 66	Dudley Dry Cleaners	195 Merton Road. SW18 5EF	525215	173878	Dudley Dry Cleaners Ltd	Dry Cleaning
EP/LAPPC 67	Bridge Dry Cleaners	61 Battersea Bridge Road. SW11 3AU	527210	177059	Mrs L Holdcroft	Dry Cleaning
EP/LAPPC 68	Radiant Dry Cleaners	342 Garratt Lane, SW18 4EL	525973	173063	Moham Dhamar	Dry Cleaning
EP/LAPPC 69	Belladetta Dry Cleaners	80 Battersea Rise, SW11 1EH	527376	175134	Woodlake Ltd	Dry Cleaning
EP/LAPPC 72	Zenith Dry Cleaners	203 Replingham Road. SW18 5LY	525205	173433	Mr M A Shamsi	Dry Cleaning
EP/LAPPC 73	Berose	60 Lower Richmond Road. SW15 1JT	523725	175797	Berose Ltd	Dry Cleaning
EP/LAPPC 74	Mr Steeds Dry Cleaners	71 Mitcham Lane, SW16 6LY	529409	171204	Wessex Dry Cleaners Ltd	Dry Cleaning
EP/LAPPC 75	D I Hamiltons Dry Cleaners	165-167 Lavender Hill. SW11 5QH	527983	175588	Mr Paresh Patel	Dry Cleaning
EP/LAPPC 77	Smartway Cleaners	100 Tooting High Street, SW17 0RR	527342	171317	Mr Abdul Salik	Dry Cleaning
EP/LAPPC 78	Park View Dry Cleaners	259 Putney Bridge Road, SW15 2PU	524387	175301	Mr S A	Dry Cleaning
EP/LAPPC 79	Smart Set Cleaners	215 Garratt Lane, SW18 4DS	525900	173860	Smart Set Cleaners Ltd	Dry Cleaning
EP/LAPPC 80	Soectrum	340 Battersea Park Road. SW11 3BY	527149	176211	Soectrum Clothes Care Ltd	Dry Cleaning
EP/LAPPC 81	Pearl Dry Cleaners	135 Wandsworth High Street. SW18 4JB	525466	174682	Kamlesh Rathod	Dry Cleaning
EP/LAPPC 82	Battersea Dry Cleaning & Laundrette	188 Battersea Park Road, SW11 4ND	527833	176562	Mr Abolghassem Etemadi	Dry Cleaning
EP/LAPPC 83	Evershine Dry Cleaners	123 Mitcham Road, SW17 9PE	527737	171197	Mr Syed Mohammed	Dry Cleaning
EP/LAPPC 84	Starlite Dry Cleaners	4 Bank Buildino. Mitcham Lane. SW16 6NQ	529280	171043	Mr Abdurahim Mohamed	Dry Cleaning
EP/LAPPC 85	Dukes Dry Cleaners	34 Lavender Hill. SW11 5RL	528426	175767	Jevcina Ltd	Dry Cleaning
EP/LAPPC 86	Universal Dry Cleaning	138 Putney High Street, SW15 1RR	523979	175195	Run Clean Ltd	Dry Cleaning
EP/LAPPC 88	The Dry Cleaning company	116 Upper Richmond Road, SW15 2SP	524319	174951	The Dry Cleaning Company.com	Dry Cleaning
EP/LAPPC 90	Shimmers Exclusive Dry Cleaners	3 Upper Tooting Road. SW17 7TS	528010	172319	Professional Dry Cleaners Limited	Dry Cleaning
EP/LAPPC 91	Viking Dry Cleaners	74 Bedford Hill, SW12 9HR	528703	173092	Mr Mosadiq Rehman	Dry Cleaning
EP/LAPPC 92	Baiza Quality Dry Cleaners	1A Totterdown Street, SW17 8TB	527679	171618	Fatima Baiza	Dry Cleaning
EP/LAPPC 93	Martinizing Exclusive Dry Cleaners	363 Upper Richmond Road, SW15 5QJ	522532	175408	Byblos Services Ltd	Dry Cleaning
EP/LAPPC 99	A Star Dry Cleaners	919 Garratt Lane. SW17	526912	171849	Ahmet Ummak	Dry Cleaning
EP/LAPPC 104	Scobies Valet service	5 Bellevue Parade, Wiseton Road, SW17 7EQ	527484	173297	DCS Limited	Dry Cleaning
EP/LAPPC 106	Sloane Demolition	84 Mendip Court, Chatfield Road, SW11 2LW	526302	175649	Sloane Demolition Ltd	mobile concrete crushers
EP/LAPPC 107	Kaptan Dry Cleaners	78 Movser Road. SW16 6SQ	528897	171093	Suzan Yosma	Dry Cleaning
EP/LAPPC 109	Fantasy Dry Cleaners	17-23 Linford street, SW8 4UP	529202	176735	Mr Abram Lyle & Mr Dominic Gold	Dry Cleaning
EP/LAPPC 113	Trinity Cleaners	26 Trinity Road, SW17 7RE	527961	172408	Muzz Sirivi	Dry Cleaning
EP/LAPPC 116	Falcon Laundrette & Dry Cleaners	86 Falcon Road, SW11 2LH	527135	175966	Tanwir Quayyum	Dry Cleaning
EP/LAPPC 118	Greenfield Dry Cleaners	4 Westbury Parade. Balham Hill. SW12 9DZ	528797	174258	Macrose Ltd	Dry Cleaning
EP/LAPPC 119	Jack Barclay Ltd	65 Burr Road, SW18 4SQ	525429	173549	Jack Barclay Ltd	Respraying of Road Vehicles
EP/LAPPC120	Heritage Dry Cleaners	78 Plough Road, SW11 2AR	526729	175474	S & W Laundry Service Limited	Dry Cleaning
EP/LAPPC121	Pure Stich Dry Cleaners	282 Battersea Park Road. SW11 3BS	527382	176355	Pure Drv Clean Ltd	Dry Cleaning
EP/LAPPC122	Fallsbrook Motors	163 Fallsbrook Road. SW16 6DY	529028	170468	Fallsbrook Motors Ltd	Waste Oil burner <0.4MW
EP/LAPPC123	E J Dry Cleaners Ltd	7 Granville Road, SW18 5SB	525146	173841	Mr Ehsan Javaheri	Dry Cleaning
EP/LAPPC124	Jubilee Dry Cleaners	51 East Hill, SW18 2QE	526238	174745	PARS.DC Limited	Dry Cleaning
EP/LAPPC125	Quality Express Dry Cleaners	12 Upper Tooting Road. SW17 7PG	527959	172317	Zalihle Abdi	Dry Cleaning

LBM

1	South London Crematorium	Rowan Road, Streatham, SW16 5JG	SW16 5JG	14/06/2010		Crematorium
2	North East Surrey, Crematorium	Lower Morden Lane, Morden	SM4	25/06/2010		Crematorium
7	Allen Concrete Ltd	38 Willow Lane. Mitcham. CR4 4NA	CR4 4NA	08/03/2006		Concrete Batching
8	Hanson Premix	Archway Close. Endeavour Wav		28/02/2006		Concrete Batching
23	Tesco	300 Beverley Way, New Malden, KT3 4PJ	KT3 4PJ	10/03/2006		Unloading petrol into storage at a service station
25	Savacentre Ltd	1 Merton High Street, SW19 1DD	SW19 1DD	27/01/2006		Unloading petrol into storage at a service station
27	Western Road Service station	231 Western Road. SW19 2QE	SW19 2QE	14/03/2006		Unloading petrol into storage at a service station
30	Colliers Wood service station	164/168 High Street, Colliers wood, SW19 2BNR	SW19 2BNR	22/01/2006		Unloading petrol into storage at a service station
33	Shell Pepys Corner	Worple Road, SW20 8RE	SW20 8RE	08/03/2010		Unloading petrol into storage at a service station
34	Kingston Autoway centre	Shannon Corner, New Malden. KT3 6HM	KT3 6HM	08/03/2010		Unloading petrol into storage at a service station
38	Shell Plough Lane	59 Plough Lane. SW17 8HA	SW17 8HA	10/03/2006		Unloading petrol into storage at a service station
42	Martin Way Service station	262 Martin Way, Morden, SM4 4AW	SM4 4AW	19/05/2006		Unloading petrol into storage at a service station
44	Wimbledon Chase service station	314 Kingston Road, SW20 8LR	SW20 8LR	04/02/2010		Unloading petrol into storage at a service station
48	Total Convenience store	7 Rowan Road. SW16 5JM	SW16 5JM	10/03/2006		Unloading petrol into storage at a service station
50	Wandle Service station	Bishopsford Road. Morden. SM4 6AP	SM4 6AP	10/03/2006		Unloading petrol into storage at a service station
54	Tesco	194/210 Merton Road, SW19 1EG	SW19 1EG	27/01/2006		Unloading petrol into storage at a service station
62	DWS Bodvworks Mitcham	11/11A Bunting Close. Mitcham. CR4 4ND	CR4 4ND	03/04/2014		Vehicle Refinishing
65	Maguire Skips Limited	Land adi 24. Wandle Wav. Mitcham. CR4 4NB	CR4 4NB	05/10/2011		Unloading/loading of cement
67	Rapid Ready Mix	Alpha Place, Garth Road, Morden, SM4 4LG	SM4 4LG	16/01/2012		Unloading/loading of cement
68	Fulham Timber Merchants	FTM, SW19 2JD	SW19 2JD	13/01/2015		Manufacture of wood based products
71	Willow Bodworks	Wandle Wav. Willow Lane Ind. CR4 4NB	CR4 4NB	22/06/2017		Respraying Road Vehicles
72	Advantage Concrete	42 Willow Lane. Mitcham	CR4 4NB	07/02/2018		Unloading/loading of cement
73	Surrey Steel	Rainbow Industrial Estate	SW20 0JK	07/03/2018		Coaring of Metal
73	Capgagh Public Works	Unit 8. Waterside Wav	SW17 0HB	06/03/2019		Unloading/Loading of Cement
DC/002	Bourjois Cleaners	330 West Barnes Lane	KT3 6NB	10/09/2007		Dry Cleaners
DC/004	Kingsmere Cleaners	36a Wimbledon Hill Road	SW19 7PA	10/09/2007		Dry Cleaners
DC/005	Prestige Dry Cleaning	343 London Road	CR4 4BE	10/09/2007		Dry Cleaners
DC/007	Dudley Dry Cleaners	316 Haydons Road	SW19 8JZ	10/09/2007		Dry Cleaners
DC/010	Galaxy Dry Cleaners	22 Lecadol Road	SW19 7BD	10/09/2007		Dry Cleaners
DC/011	Grand Dry Cleaners	310 Grand Drive	SW20 9NQ	10/09/2007		Dry Cleaners
DC/012/2018	M&B Dry Cleaners	185 Merton Road	SW19 1EE	07/02/2018		Dry Cleaners
DC/016	Master John (Dry cleaners)	5 Merton Park Parade	SW19 3NT	10/09/2007		Dry Cleaners
DC/017	Morden Dry Cleaners	14 Crown Lane	SM4 5BL	10/09/2007		Dry Cleaners
DC/018	Parisianne Cleaners	107 Central Road	SM4 5SQ	10/09/2007		Dry Cleaners
DC/019	Soft Touch Dry Cleaning	219 Streatham Road	CR4 4BE	10/09/2007		Dry Cleaners
DC/020	Rendezvous	310 Kingston Road	SW20 8LX	10/09/2007		Dry Cleaners
DC/022	Serena Dry Cleaners	276 London Road	CR4 3NB	10/09/2007		Dry Cleaners
DC/023	Smarty Dry Cleaning Services	1b Russell Road	SW19 1QN	10/09/2007		Dry Cleaners
DC/024	Swan Cleaners	64 Coombe Lane	SW20 9NQ	10/09/2007		Dry Cleaners
DC/026	London Quality Cleaners	163 London Road, Mitcham	CR4 2JB	10/09/2007		Dry Cleaners
DC/027	Unit 4 London Dry Cleaners Ltd	Unit 4, 271 Coombe Lane	SW20 0RH	10/09/2007		Dry Cleaners
DC/036	Nelson and Freelander	26 Durham Road	SW20 0TW	23/09/2008		Dry Cleaners
DC/030	Get Smart Drv Cleaners	47 Martin Wav. Morden	SM4 4AH	10/09/2007		Dry Cleaners
DC/001	Bond	102 kingston Road	Sw19 1LX	10/09/2007		Dry Cleaners
DC/037	Elite Ironing Ltd	Gap Bridge House, Gap Road	SW19 8JA	11/02/2010		Dry Cleaners
DC/038	Elecance	67 Ascroach Road, Ravnes Pa	SW20 8BA	06/05/2011		Dry Cleaners
DC69	Star Drv Cleaners	10 South Lodge Avenue	CR4 1LU	13/01/2015		Dry Cleaners
DC70	Bellview Cleaners	Unit 3, 7 Batsworth Road, Mitcham	CR4 3BX	31/10/2016		Dry Cleaners
DC71	Prestine DC	-	SW19 2NX	04/01/2019		Dry Cleaners

LONDON BOROUGH OF RICHMOND UPON THAMES

GIS SEARCH REPORT

Site Name: 14-16 Tudor Road, Hampton, TW12 2NQ

Date: 16 March 2017

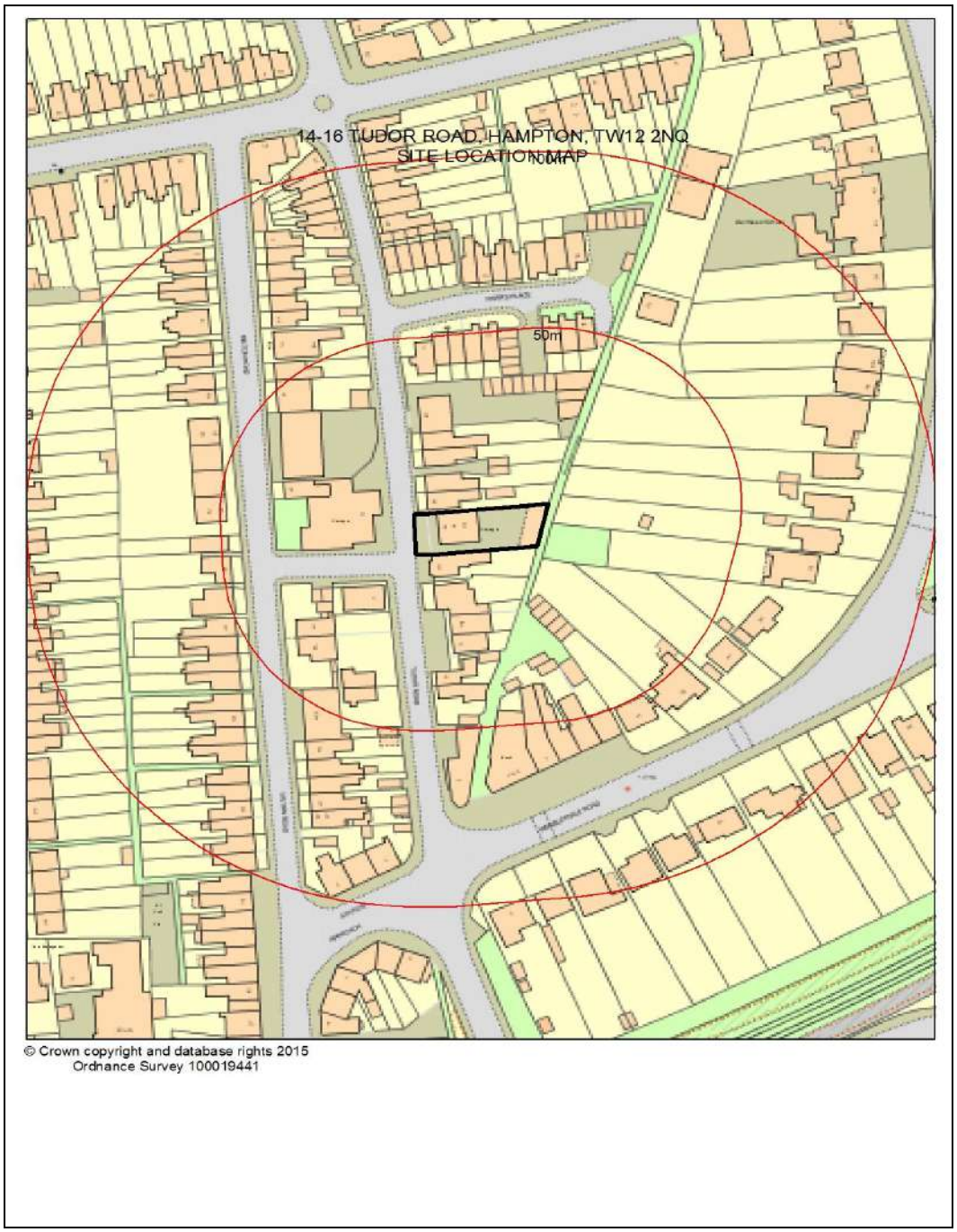
On Behalf of:

1. GIS SEARCH REPORT

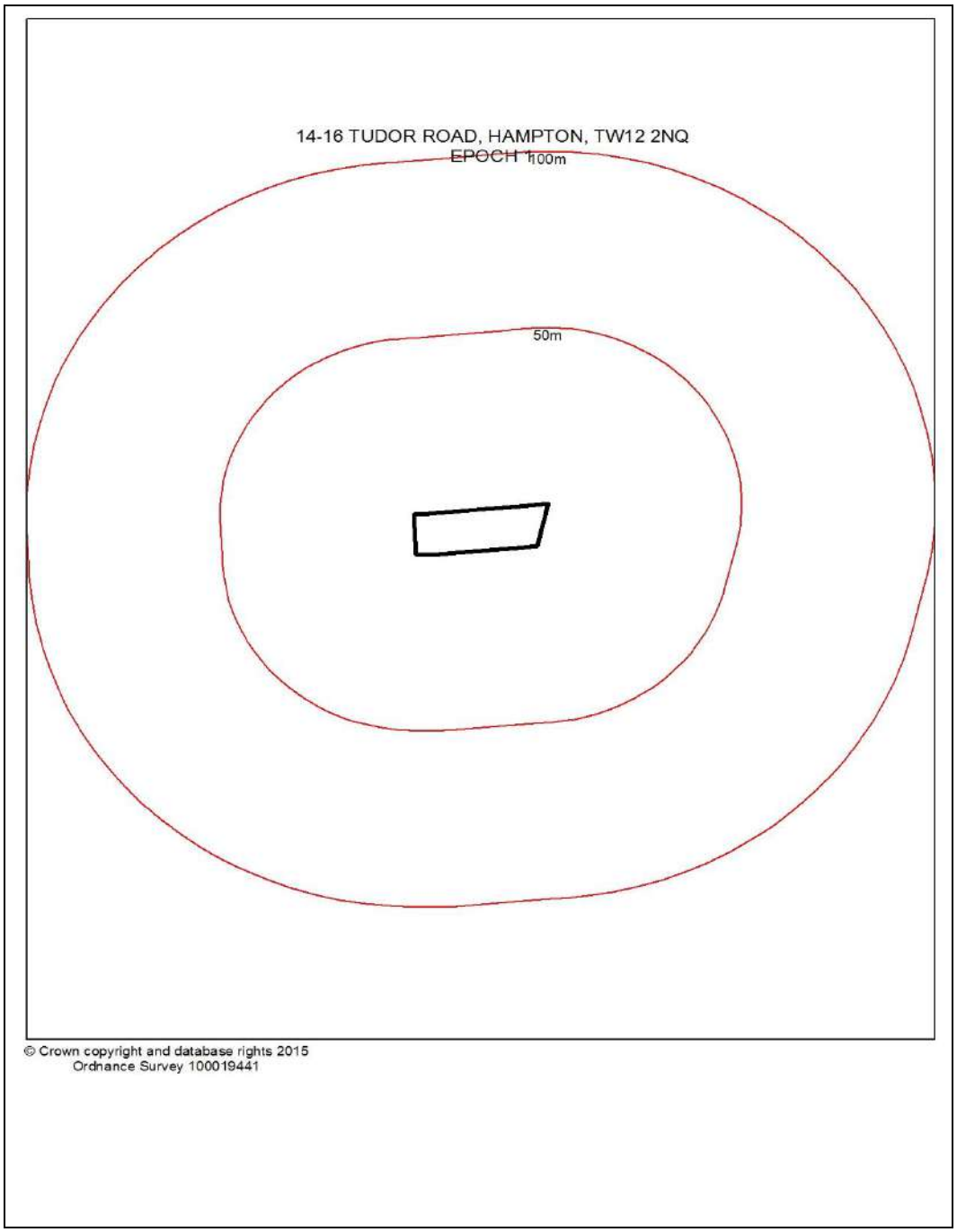
DATE: 16 March 2017 TIME: 10:39

Buffer Search Radius: 50, 100, 200, 250 metres
Search Feature ID: PCL000271
Search Feature Layer Name: Potential Contaminated Land Sites
Approx. area of search feature: 386m^2
Site Centre Coordinates (British National Grid): 513444, 170017
Feature Buffer Search
Selection Summary: A total of 22 features were selected on 6 out of 15 target layers (total includes the search feature).

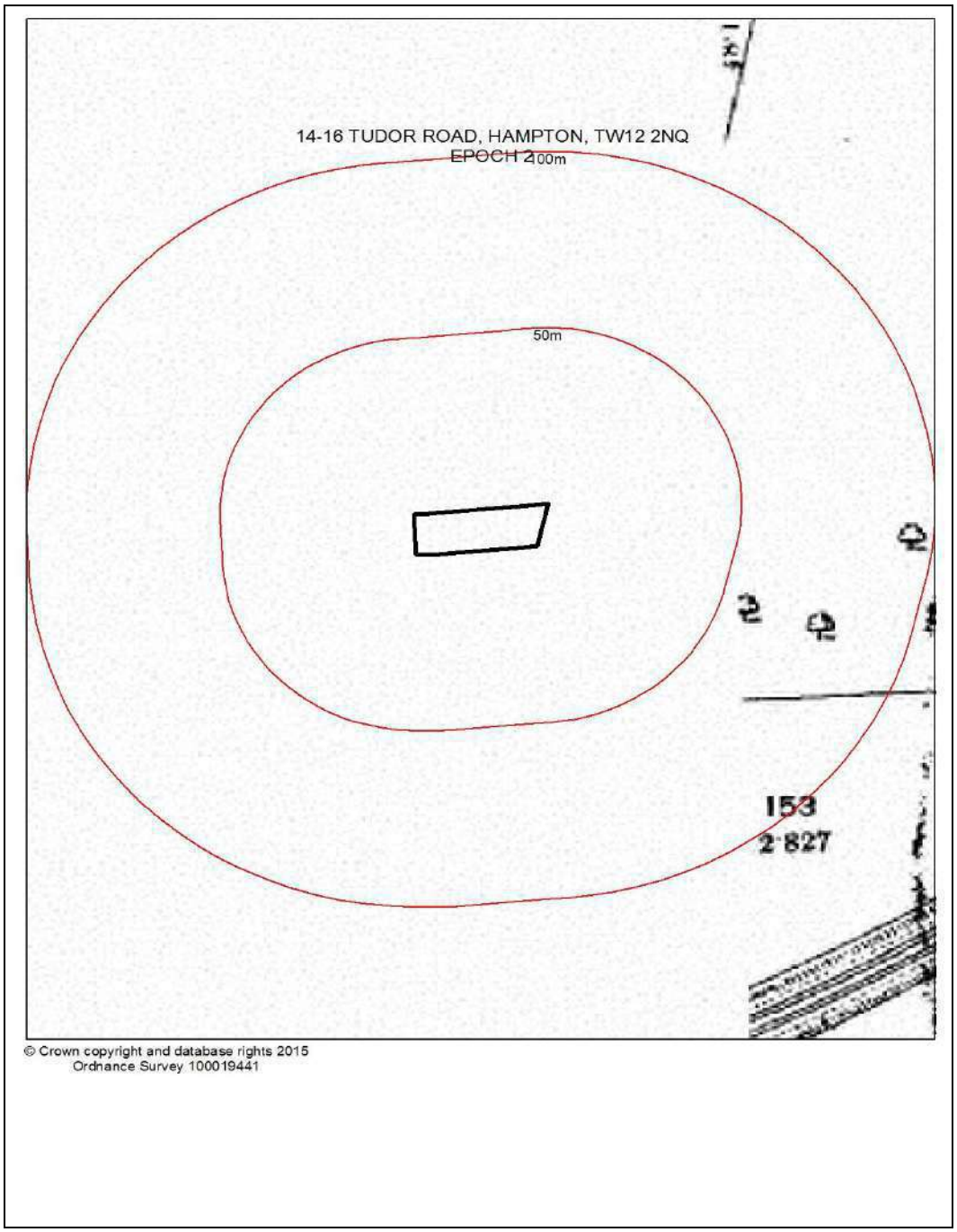
2. Site Location Map



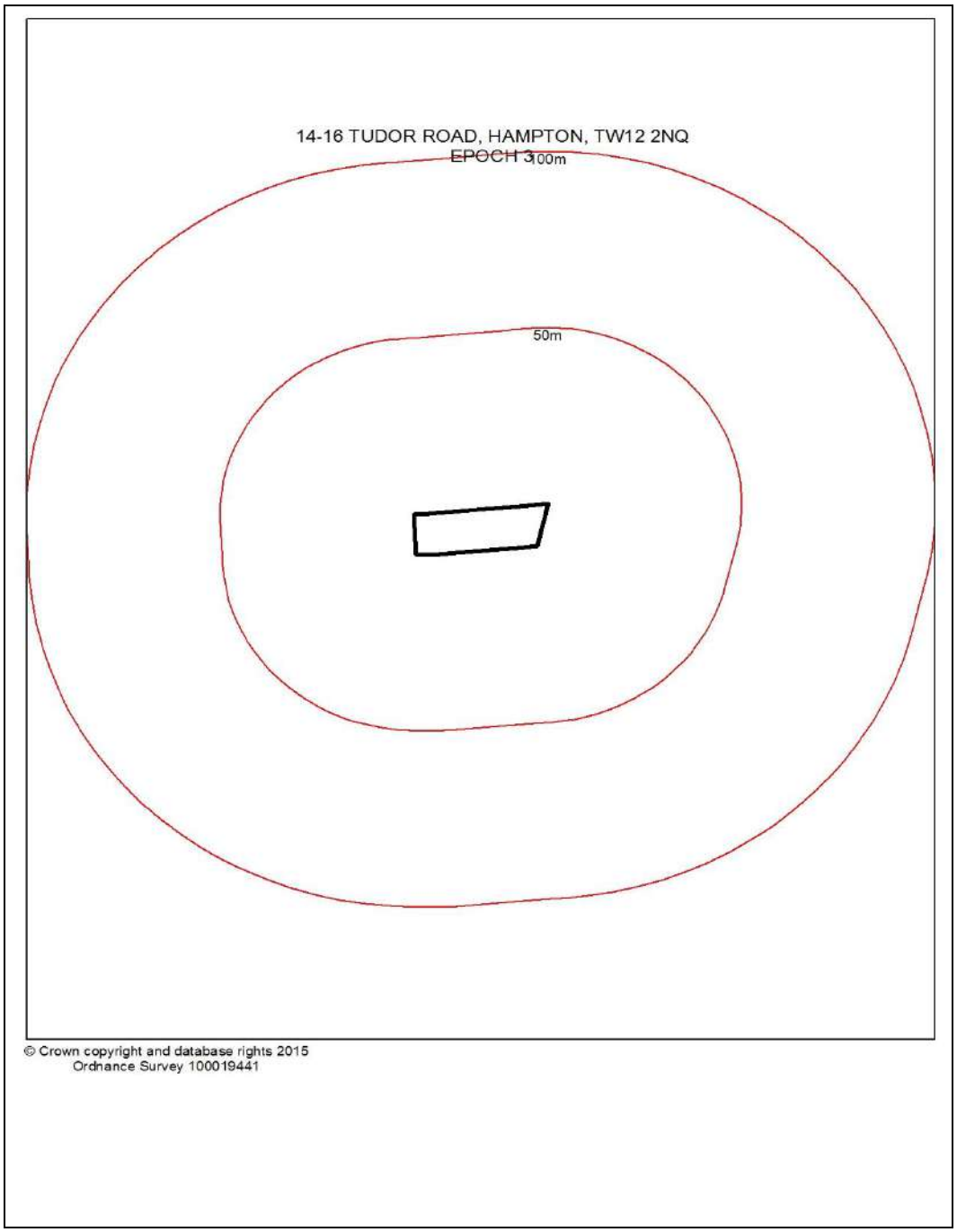
2.1 Layer Name: Epoch 1



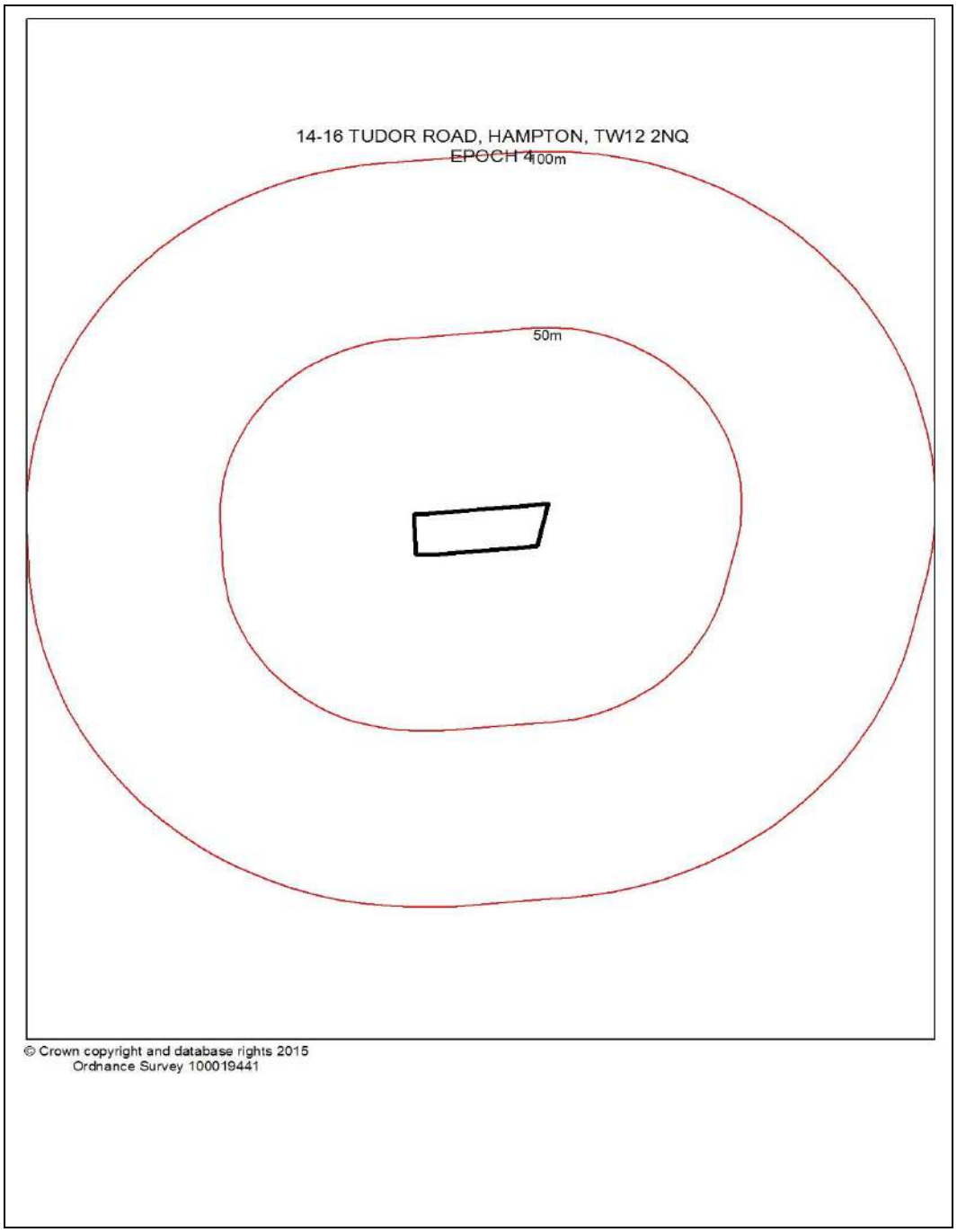
2.2 Layer Name: Epoch 2



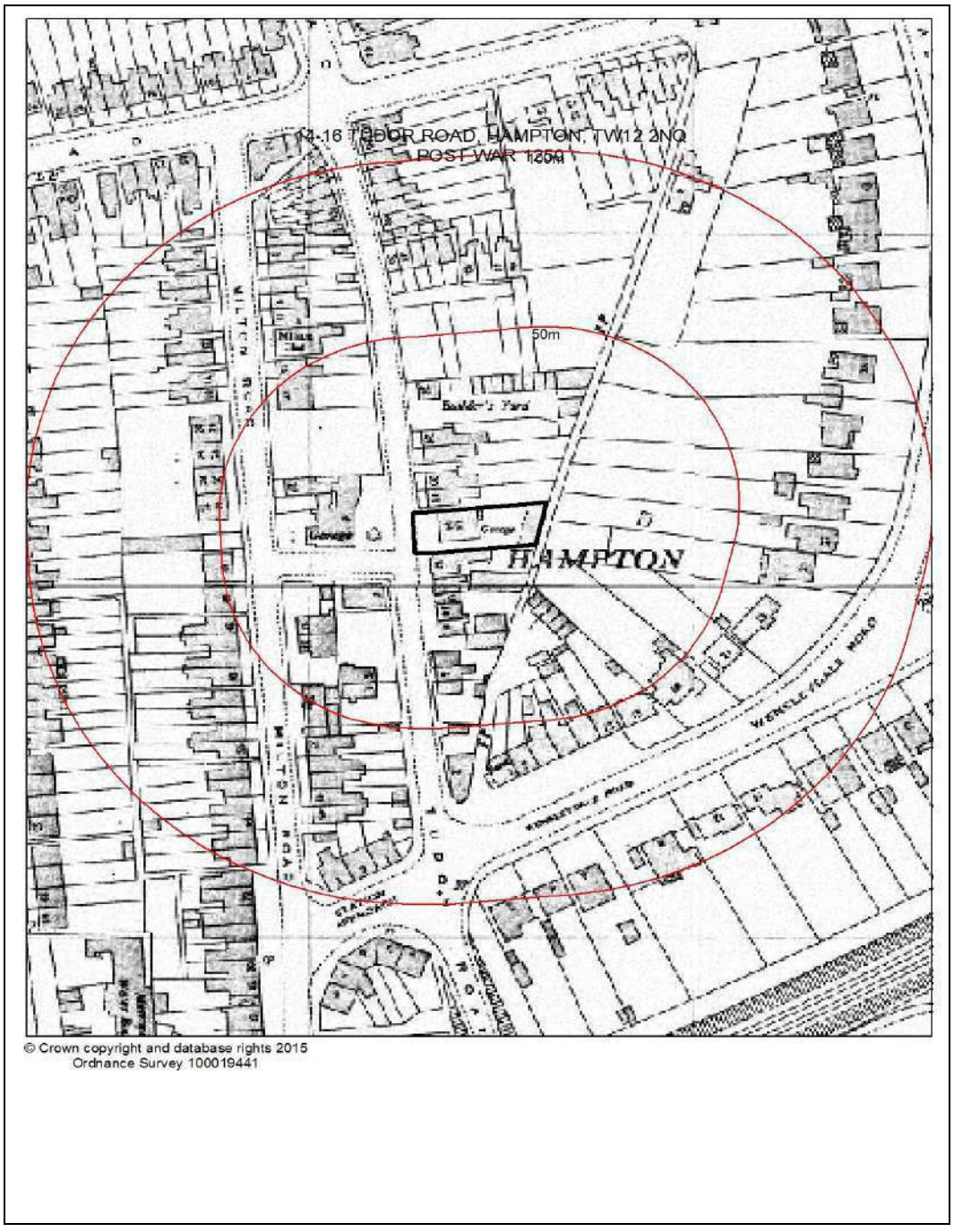
2.3 Layer Name: Epoch 3



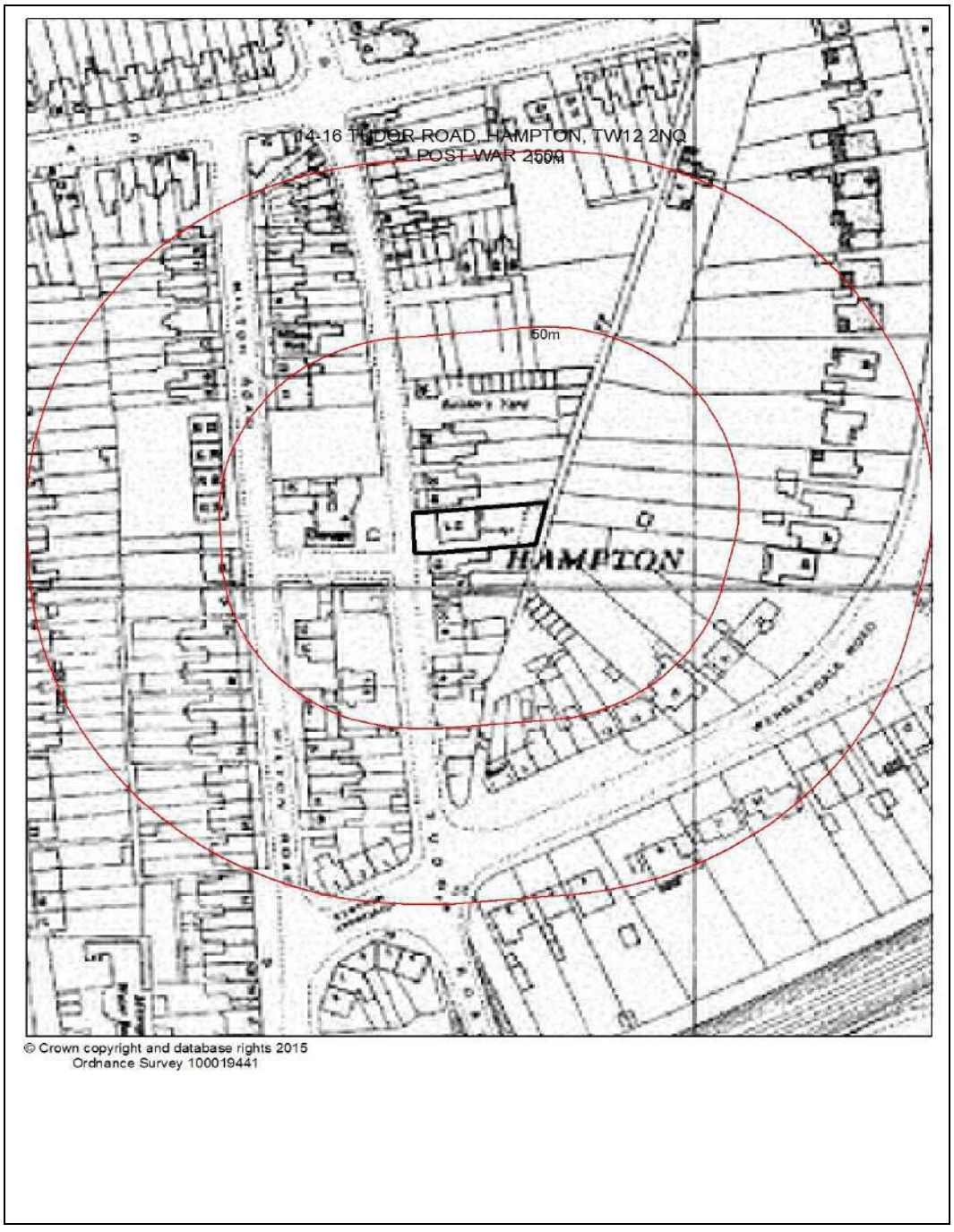
2.4 Layer Name: Epoch 4



2.5 Layer Name: Post War 1250



2.6 Layer Name: Post War 2500

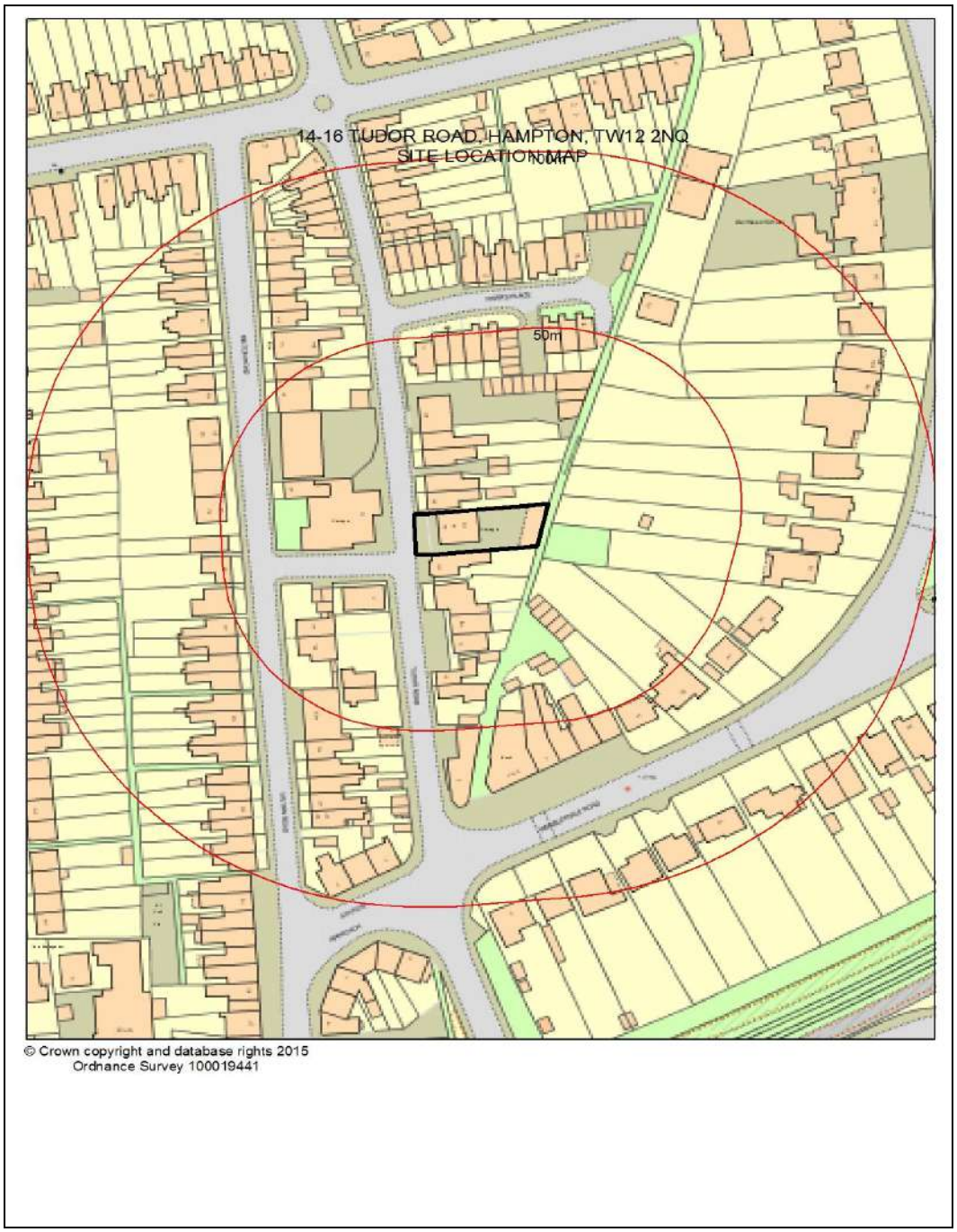


3. Summary Datasheet

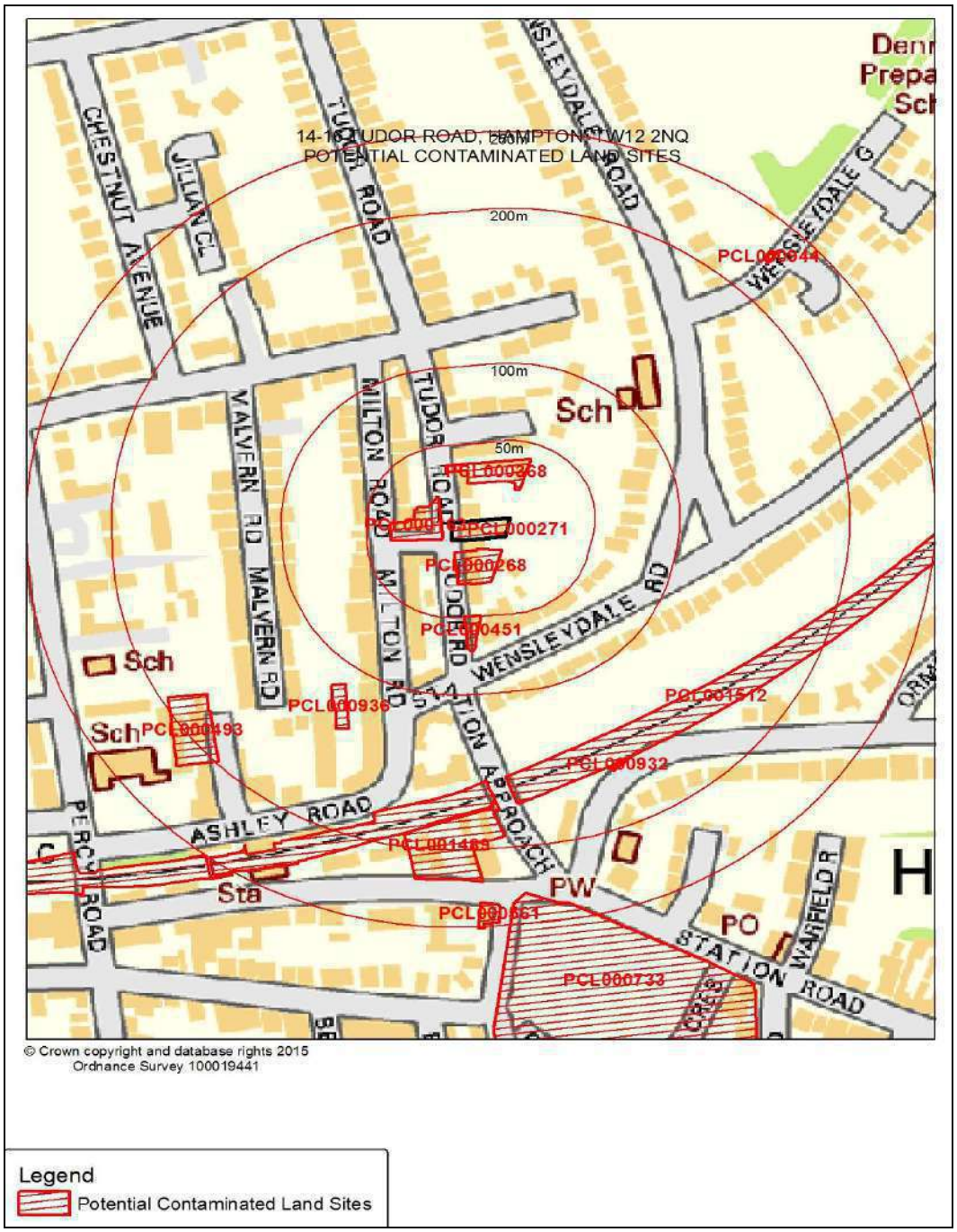
Search Layer Name	Search Distance	Data Available	No. of features identified
Potential Contaminated Land Sites	250 m	Yes	13
Recent Planning Consultations	50 m	Yes	3
Recent Site Investigations	50 m	Yes	1
Searches_Polygons	250 m	Yes	2
airpollcont	50 m	Yes	1
Fuel Stations	50 m	Yes	2
Integrated Pollution Control Sites	50 m	No	0
Waste Treatment Sites	50 m	No	0
waterprosecutions	250 m	No	0
Geotechnical surveys and planning documents	50 m	No	0
Radioactive Licences	50 m	No	0
Historic_Landfill_Sites_010k	250 m	No	0
Authorised_Landfill_Sites_010k	250 m	No	0
Private_Water_Supplies_2015	250 m	No	0
Waste Transfer Sites	50 m	No	0

NB: Total for layer Potential Contaminated Land Sites includes the search feature.

4. Site Location Map



5. Layer Name: Potential Contaminated Land Sites



5.1 GIS Attribute Data for Potential Contaminated Land Sites

Selection Summary for layer
1 feature(s) identified on site.
4 feature(s) identified off site within 50 metres
0 feature(s) identified off site within 50 - 100 metres
5 feature(s) identified off site within 100 - 200 metres
3 feature(s) identified off site within 200 - 250 metres

Id	Name	CURRENT_USE	Approx. distance (m)	Approx. Area (m2)	Grid Ref.
On Site					
PCL000271	TUDOR ROAD 4	Flats with no gardens	0.00	386	513444, 170017

Information from database query
Previous Industrial Uses
Industry Profile: Road vehicles: Garages and filling stations
Year Use Established: 1924
Year Use Ended: 1925
Comments: motor engineer
Note: No Data
Area: 380

Industry Profile: Road vehicles: Garages and filling stations
Year Use Established: 1970
Year Use Ended: 1976
Comments: LM/0775. Potential Tanks.
Note: LM historical tank and substation data
Area: 380

Industry Profile: Road vehicles: Garages and filling stations
Year Use Established: 2003
Year Use Ended: 2004
Comments: R/953/03.Petrol Sales. 14/16 Tudor Road,Hampton
Note: Source: environmental health
Area: 380

Industry Profile: Road vehicles: Garages and filling stations
Year Use Established: 1923
Year Use Ended: 1924
Comments: R/531/02. Motor Car Garage.Tudor Road Garage,14 Tudor Road,Hampton
Note: Kellys Kingston, Surbiton, Norbiton & District 1923 Middlesex 4 verifes the location of the address.
Area: 380

Information from database query
Previous Industrial Uses
No comment was found in the database

Identified Off-site - Within 50m					
PCL000163	TUDOR ROAD 5	Commercial	5.22	532	513409, 170019

Information from database query
Previous Industrial Uses
Industry Profile: Road vehicles: Garages and filling stations
Year Use Established: 1937
Year Use Ended: 2002
Comments: motor engineers
Note: No Data
Area: 530

Industry Profile: Road vehicles: Garages and filling stations
Year Use Established: 1961
Year Use Ended: 1971
Comments: LM/0774. Potential Tanks
Note: LM historical tank and substation data

Id	Name	CURRENT_USE	Approx. distance (m)	Approx. Area (m2)	Grid Ref.
Area: 530 Industry Profile: Road vehicles: Garages and filling stations Year Use Established: 2003 Year Use Ended: 2004 Comments: R/952/03. Petrol Sales. Tudor Road,Hampton, Note: Source: environmental health Area: 530 *Information from database query* ***Previous Industrial Uses*** No comment was found in the database					
PCL000268	TUDOR ROAD 3	Housing with gardens	6.34	504	513442, 169993
Information from database query ***Previous Industrial Uses*** Industry Profile: Metal manufacturing: Iron and steelworks Year Use Established: 1911 Year Use Ended: 1917 Comments: farriers Note: No Data Area: 503 Industry Profile: Metal manufacturing: Iron and steelworks Year Use Established: 1918 Year Use Ended: 1930 Comments: R/522/02. Farriers. 8 Tudor Road,Hampton Note: Kellys Kingston, Norbiton, Surbiton District Directory 1918 Middlesex 4 verifies the address. Area: 503 *Information from database query* ***Previous Industrial Uses*** No comment was found in the database					
PCL000368	TUDOR ROAD 1	Housing with gardens	18.63	529	513453, 170054
Information from database query ***Previous Industrial Uses*** Industry Profile: Road vehicles: Garages and filling stations Year Use Established: 1981 Year Use Ended: 1993 Comments: Car Repairs Note: No Data Area: 533 *Information from database query* ***Previous Industrial Uses*** No comment was found in the database					
PCL000451	TUDOR ROAD 2	Commercial	49.19	151	513439, 169951
Information from database query ***Previous Industrial Uses*** Industry Profile: Printing and bookbinding works Year Use Established: 1991 Year Use Ended: 1994 Comments: commercial printers.Panda Printer Products Ltd Note: No Data Area: 157 *Information from database query* ***Previous Industrial Uses*** No comment was found in the database					

Id	Name	CURRENT_USE	Approx. distance (m)	Approx. Area (m2)	Grid Ref.
Identified Off-site - Within 50-100m					
None					
Identified Off-site - Within 100-200m					
PCL000493	ASHLEY ROAD 1	Schools	175.53	1054	513275, 169887

Information from database query
Previous Industrial Uses
Industry Profile: Metal manufacturing: Iron and steelworks
Year Use Established: 1995
Year Use Ended: 2004
Comments: Architectural Metal Works.Ongoing land use in 22b. 22a has become a nursey
Note: also on Address Points
Area: 130

Industry Profile: Metal manufacturing: Iron and steelworks
Year Use Established: 1999
Year Use Ended: 2003
Comments: R/1110/03.metal products fabrication.22a Ashley Road,Hampton
Note: Thomson - Richmond Area 1999-2000. Currently a Nursery
Area: 920

Information from database query
Previous Industrial Uses
No comment was found in the database

PCL000932	ORMOND AVENUE 1	Electricity Sub Station	160.06	22	513525, 169865

Information from database query
Previous Industrial Uses
Industry Profile: Electricity distribution inc large transformer
Year Use Established: 1968
Year Use Ended: 1968
Comments: Electrical Sub Station Facilities
Note: No Data
Area: 21

Information from database query
Previous Industrial Uses
No comment was found in the database

PCL000936	MILTON ROAD 1	Housing with gardens	111.93	228	513362, 169903

Information from database query
Previous Industrial Uses
Industry Profile: Electricity distribution inc large transformer
Year Use Established: 1971
Year Use Ended: 2004
Comments: Electrical Sub Station Facilities
Note: No Data
Area: 227

Information from database query
Previous Industrial Uses
No comment was found in the database

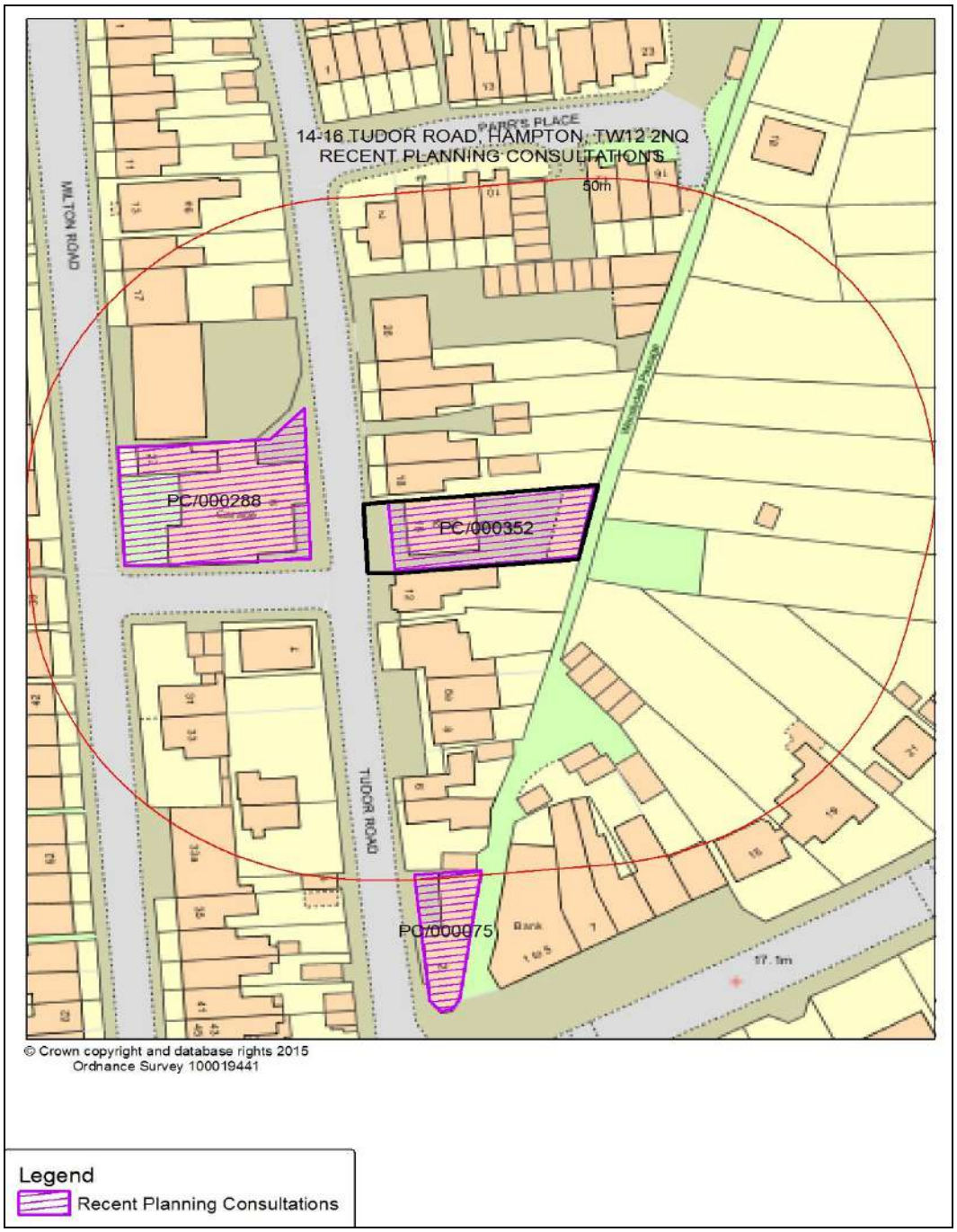
PCL001489	STATION ROAD TW12 11	Residential	169.69	1790	513428, 169812

Information from database query
Previous Industrial Uses
Industry Profile: Coal storage and depot
Year Use Established: 1912
Year Use Ended: 1950s
Comments: Coal yard

Id	Name	CURRENT_USE	Approx. distance (m)	Approx. Area (m2)	Grid Ref.
Note: No Data Area: No Data *Information from database query* ***Previous Industrial Uses*** No comment was found in the database					
PCL001512	Richmond Railway Line		140.25	675451	516471, 173219
Information from database query ***Previous Industrial Uses*** Industry Profile: Railway land Year Use Established: No Data Year Use Ended: No Data Comments: No Data Note: No Data Area: No Data *Information from database query* ***Previous Industrial Uses*** No comment was found in the database					
Identified Off-site - Within 200-250m					
PCL000561	STATION ROAD TW12 10	Flats with no gardens	234.36	154	513449, 169768
Information from database query ***Previous Industrial Uses*** Industry Profile: Chemical Works: Soap & detergent manufacturing works Year Use Established: 1981 Year Use Ended: 1982 Comments: soap manufacturers Note: No Data Area: 154 *Information from database query* ***Previous Industrial Uses*** No comment was found in the database					
PCL000733	HARVEY DRIVE 1	Housing with gardens	230.19	26635	513522, 169658
Information from database query ***Previous Industrial Uses*** Industry Profile: Sewage works and sewage farms Year Use Established: 1890 Year Use Ended: 1976 Comments: LM/0232,LM0293.LM/0340.Sewage Note: 1930?s Landmark historical polygon data 1940-1960?s Landmark historical polygon data 1980-1990?s Landmark historical polygon data Area: 26736 Industry Profile: Unknown Filled Ground (Pond, marsh, river, stream,dock etc) Year Use Established: 1872 Year Use Ended: 1890 Comments: LM/0423.Unknown Filled Ground (Pond, marsh, river) Note: LM infilled point data Area: 694 *Information from database query* ***Previous Industrial Uses*** No comment was found in the database					
PCL000944	WENSLEYDALE ROAD 2	Housing with gardens	223.23	26	513615, 170193

Id	Name	CURRENT_USE	Approx. distance (m)	Approx. Area (m2)	Grid Ref.
Information from database query ***Previous Industrial Uses*** Industry Profile: Electricity distribution inc large transformer Year Use Established: 1971 Year Use Ended: 2004 Comments: Electrical Sub Station Facilities Note: No Data Area: 15 *Information from database query* ***Previous Industrial Uses*** No comment was found in the database					

6. Layer Name: Recent Planning Consultations



6.1 GIS Attribute Data for Recent Planning Consultations

Selection Summary for layer
1 feature(s) identified on site.
2 feature(s) identified off site within 50 metres

Id	Name	Address	Approx. distance (m)	Approx. Area (m2)
On Site				
PC/000352	Tudor Road 14-16		0.00	328

Information from database query
Planning Comments
SITE_ID: PC/000352
SITE_NAME: Tudor Road 14-16
NOTE_TITLE: Description of the Proposal
NOTE: Unknown as no access to planning documents.
CASE_NO: PC-000443
COMMENTS: Planning Consultation
APPL_RECEIVED: 15/03/2017 00:00:00
ACT_TYPE_NAME: Planning Consultation
EXT_CASE_NO: 17/P0027/PREAPP

Identified Off-site - Within 50m				
PC/000075	2 Tudor Road	TUDOR ROAD	49.19	154

Information from database query
Planning Comments
SITE_ID: PC/000075
SITE_NAME: 2 Tudor Road
NOTE_TITLE: Description of the Proposal
NOTE: Change of use from B1 office use to C3 dwellings (2 x 1 bed flats)

Application contains parking areas.

Previously reviewed for a planning application by TH with no comments attached. Same agent and developer.
CASE_NO: PD-000014
COMMENTS: Permitted Development Notifcation
APPL_RECEIVED: 25/04/2014 00:00:00
ACT_TYPE_NAME: Permitted Development Planning Consultation
EXT_CASE_NO: 14/1569/P3JPA

SITE_ID: PC/000075
SITE_NAME: 2 Tudor Road
NOTE_TITLE: Historical Site Use Summary
NOTE: Site previously a commercial printers (1991-1994) with a petrol station approximately 50m away (with historical tank and substation data).
CASE_NO: PD-000014
COMMENTS: Permitted Development Notifcation
APPL_RECEIVED: 25/04/2014 00:00:00
ACT_TYPE_NAME: Permitted Development Planning Consultation
EXT_CASE_NO: 14/1569/P3JPA

PC/000288	Tudor Road 9/ Milton Road 27	Hampton	8.15	554

Information from database query
Planning Comments
SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: Description of the Proposal
NOTE: Demolition of canopy and removal of petrol storage tanks
CASE_NO: PC-000286
COMMENTS: Demolition - Prior Notice
APPL_RECEIVED: 09/02/2016 00:00:00

Id	Name	Address	Approx. distance (m)	Approx. Area (m2)

ACT_TYPE_NAME: Discharge of Conditions
EXT_CASE_NO: 16/0394/DEMPN

SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: Planning Application Comments
NOTE: I can confirm that I have reviewed that application and am satisfied with the proposed methodology for the demolition of the canopy and removal of the petrol storage tanks. As the site overlies a major aquifer, I would recommend that the Environment Agency is also consulted before any permission is given .
CASE_NO: PC-000286
COMMENTS: Demolition - Prior Notice
APPL_RECEIVED: 09/02/2016 00:00:00
ACT_TYPE_NAME: Discharge of Conditions
EXT_CASE_NO: 16/0394/DEMPN

SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: Description of the Proposal
NOTE: Seven dwellings
CASE_NO: PREPL-000029
COMMENTS: Pre-planning Enquiry
APPL_RECEIVED: 11/02/2016 00:00:00
ACT_TYPE_NAME: Pre-Planning Enquiry
EXT_CASE_NO: 16/P0027/PREAPP

SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: Planning Application Comments
NOTE: I can confirm I have reviewed the application. Our records indicate that the site was formerly a garage and petrol filling station. There are also records of a metal works and another garage in the vicinity of the site. Given the sensitivity of the proposed use (residential dwellings) it is likely that I would recommend that the standard contaminated land condition DV29F is applied to any future planning permission.
CASE_NO: PREPL-000029
COMMENTS: Pre-planning Enquiry
APPL_RECEIVED: 11/02/2016 00:00:00
ACT_TYPE_NAME: Pre-Planning Enquiry
EXT_CASE_NO: 16/P0027/PREAPP

SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: Description of the Proposal
NOTE: Redevelopment of the site to provide seven houses, associated landscaping and parking following the demolition of all existing buildings.
CASE_NO: PC-000350
COMMENTS: Planning Consultation
APPL_RECEIVED: 10/08/2016 00:00:00
ACT_TYPE_NAME: Planning Consultation
EXT_CASE_NO: 16/3019/FUL

SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: Planning Application Comments
NOTE: I can confirm I have reviewed the application. Our records indicate that the site was formerly a garage and petrol filling station. There are also records of a metal works and another garage in the vicinity of the site. Given the sensitivity of the proposed use (residential dwellings) it is likely that I would recommend that the standard contaminated land condition DV29F is applied to any planning permission granted.
CASE_NO: PC-000350
COMMENTS: Planning Consultation
APPL_RECEIVED: 10/08/2016 00:00:00
ACT_TYPE_NAME: Planning Consultation
EXT_CASE_NO: 16/3019/FUL

SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: Description of the Proposal
NOTE: Redevelopment of the site to provide seven houses, associated landscaping and parking following the demolition of all existing buildings.
CASE_NO: PLF-000049
COMMENTS: Planning Application Follow Up
APPL_RECEIVED: 06/12/2016 00:00:00
ACT_TYPE_NAME: Planning Application Follow Up
EXT_CASE_NO: 16/3019/FUL

Id	Name	Address	Approx. distance (m)	Approx. Area (m2)

SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: Planning Application Comments
NOTE: I can confirm that I have reviewed the application. Our records indicate that the site was formerly a garage and petrol filling station. A remediation validation report (ref: 100956/Validation Report/001 - Revision 2) written by Provectus Remediation Ltd was submitted to support the application. This report refers to previous site investigations and risk assessments undertaken in 2014 and 2016 by RSK and discusses the removal of petroleum storage tanks from the site and subsequent validation sampling of soils and groundwater. A letter from the Environment Agency dated 27 September 2016 (EA ref: SL/2016/116316/01-L01) confirming that they did not require any further information with regard to potential groundwater risks was also submitted. With regard to human health risks, the report states that the "results of the shallow soil samples have all been within the remediation criteria". Although the report considered VOC related risks to be "very low", following a discussion between myself and David Harman from Provectus on the 22nd December 2016, it was agreed that it would be prudent to install gas protection within buildings. Subsequently a revised remediation report was submitted on the 03/01/2017 (ref: 100956/Validation Report/001 - Revision 3) incorporating the gas protection measures within the development proposals.

I am satisfied with the remediation validation report submitted and can recommend that the an amended form of the standard contaminated land condition DV29F be applied to any planning permission granted. My suggested wording for the condition is as follows:

The building hereby permitted shall not be occupied until:

a) The remediation works approved as part of the remediation strategy (report reference 100956/Validation Report/001 - Revision 3 by Provectus) have been carried out in full and in compliance with the approved strategy. If during the remediation or development work new areas of contamination are encountered, which have not been previously identified, then the additional contamination should be fully assessed in accordance with part 1 (b, c) above of this condition and an adequate remediation scheme shall be submitted to and approved in writing by the Local Planning Authority and fully implemented thereafter;

b) a verification report, produced on completion of the remediation work, has been submitted to and approved in writing by the Local Planning Authority. Such report shall include

i) details of the remediation works carried out and
ii) results of verification sampling, testing and monitoring and iii) all waste management documentation showing the classification of waste, its treatment, movement and disposal in order to demonstrate compliance with the approved remediation strategy.

CASE_NO: PLF-000049
COMMENTS: Planning Application Follow Up
APPL_RECEIVED: 06/12/2016 00:00:00
ACT_TYPE_NAME: Planning Application Follow Up
EXT_CASE_NO: 16/3019/FUL

SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: Remed\Verification Report Observations
NOTE: The remedial works which have been undertaken to date by Provectus have included the following;
• Demolition of the former filling station canopy and associated hardstanding to facilitate the remediation works • Removal of five underground storage tanks (UST) and associated fuel lines • Removal of an above ground storage tank (AST) • Removal of an oil-water separator • Excavation and removal of soils that had been heavily impacted from hydrocarbons associated with the USTs and the oil-water separator • Excavation and removal of the Made Ground local to MW103 in the east of the site where loose chrysotile asbestos fibres have been identified • Installation of four sumps to reduce the LNAPL and associated dissolved phase hydrocarbon impact to the groundwater through a short duration period of total fluids pumping. • Extraction and treatment of groundwater from the four sumps using an Oil Water Separator prior to discharge of treated water to foul sewer. • Installation of an additional six injection wells and four monitoring wells. • Two rounds of in-situ chemical oxidation (ISCO) treatment in the four sumps and six injection wells.

Soils verification consisted of comparing shallow soil sample results to the remedial criteria in the RMS (Provectus 2016a) and collecting laboratory data of deeper soils at the sides and bases of the UST excavations. 15 shallow soil samples were tested for the suite below. There were no exceedances.

Deeper soil samples exceeded GACs for Arsenic, Lead, TPHs and Benzen and Xylene.

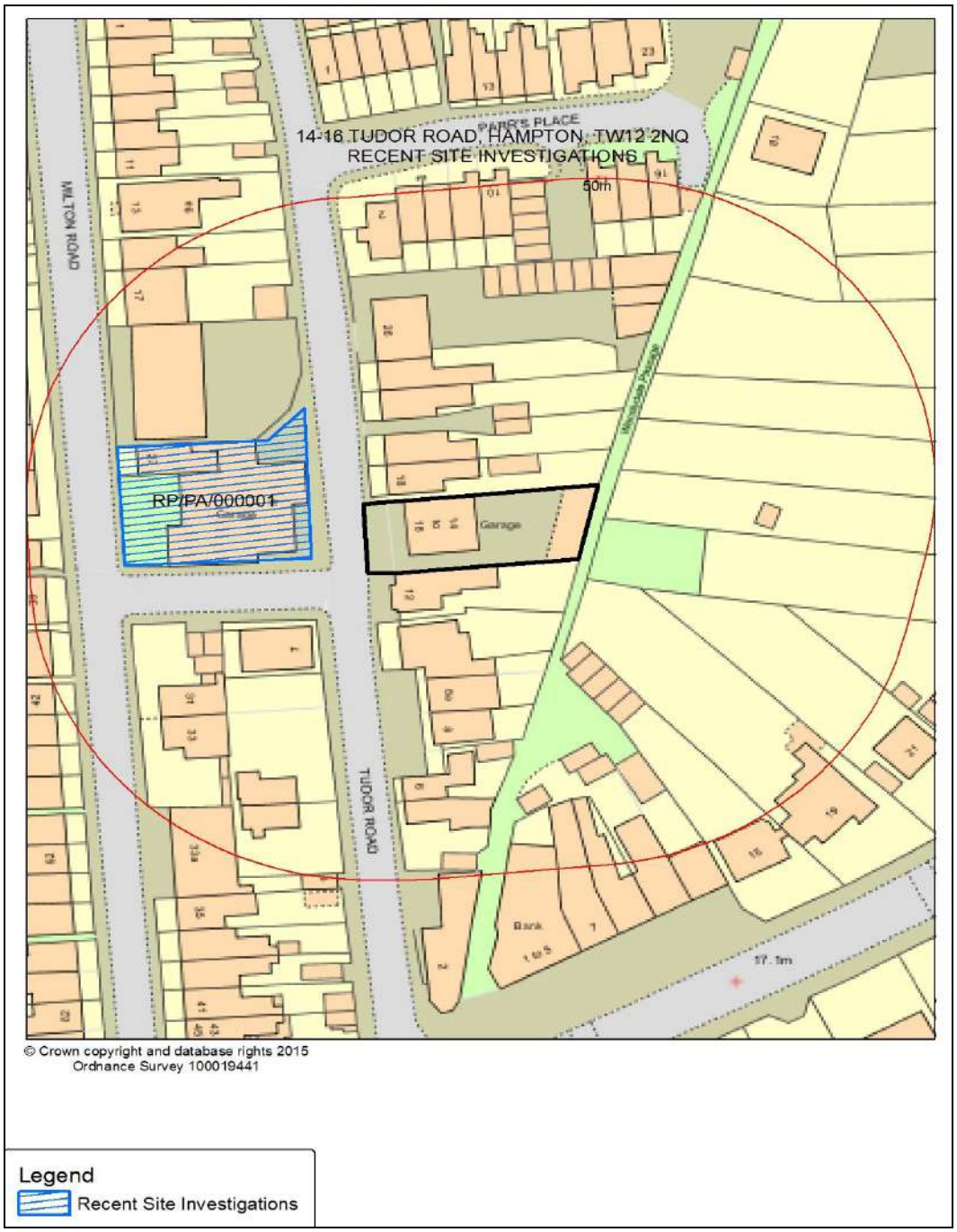
One of four scheduled gas monitoring events has occurred. This verification report will be revised as data on soil-vapour becomes available.

CASE_NO: PLF-000049
COMMENTS: Planning Application Follow Up
APPL_RECEIVED: 06/12/2016 00:00:00
ACT_TYPE_NAME: Planning Application Follow Up
EXT_CASE_NO: 16/3019/FUL

SITE_ID: PC/000288
SITE_NAME: Tudor Road 9/ Milton Road 27
NOTE_TITLE: General Case Management Note
NOTE: Proposed amendment to remidiation condition:

Id	Name	Address	Approx. distance (m)	Approx. Area (m2)
The building hereby permitted shall not be occupied until: a) The hydrocarbon vapour resistant membrane recommended within the remediation Validation Report (report reference 100956/Validation Report/001 - Revision 3 by Provectus) has been installed. If during the remediation or development work new areas of contamination are encountered, which have not been previously identified, then the additional contamination should be fully assessed in accordance with part 1 (b) of this condition and an adequate remediation scheme shall be submitted to and approved in writing by the Local Planning Authority and fully implemented thereafter; b) a verification report, produced on completion of the remediation work, has been submitted to and approved in writing by the Local Planning Authority. Such report shall include i) details of the remediation works carried out and ii) results of verification sampling, testing and monitoring and iii) all waste management documentation showing the classification of waste, its treatment, movement and disposal. REASON: In order to demonstrate compliance with the approved remediation strategy. CASE_NO: PLF-000063 COMMENTS: Planning Application Follow Up APPL_RECEIVED: 13/03/2017 00:00:00 ACT_TYPE_NAME: Planning Application Follow Up EXT_CASE_NO: 16/3019/FUL				

7. Layer Name: Recent Site Investigations

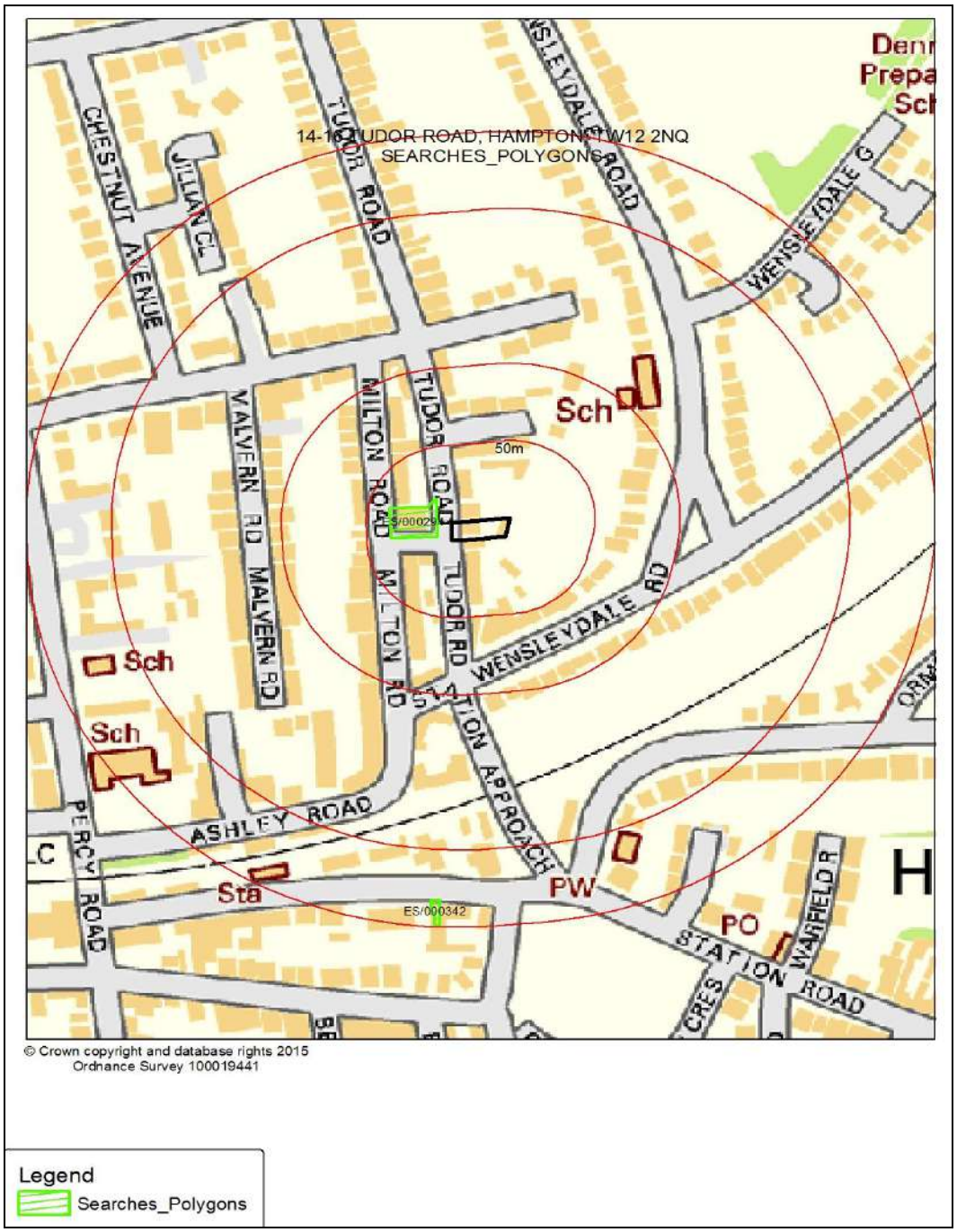


7.1 GIS Attribute Data for Recent Site Investigations

Selection Summary for layer
0 feature(s) identified on site.
1 feature(s) identified off site within 50 metres

id	name	address	type	Approx. distance (m)	Approx. Area (m2)	Grid Ref.
On Site						
None						
Identified Off-site - Within 50m						
RP/PA/000001	Tudor Road 9/ Milton Road 27		Planning/Redevelopment	8.11	552	513405, 170021

8. Layer Name: Searches_Polygons



8.1 GIS Attribute Data for Searches_Polygons

Selection Summary for layer
0 feature(s) identified on site.
1 feature(s) identified off site within 50 metres
0 feature(s) identified off site within 50 - 100 metres
0 feature(s) identified off site within 100 - 200 metres
1 feature(s) identified off site within 200 - 250 metres

Id	Name	Grid Ref.
On Site		
None		
Identified Off-site - Within 50m		
ES/000294	Tudor Road 9/ Milton Road 27_Former Yates Garage	513405, 170021
Identified Off-site - Within 50-100m		
None		
Identified Off-site - Within 100-200m		
None		
Identified Off-site - Within 200-250m		
ES/000342	Station Road 123	513418, 169770

9. Layer Name: airpollcont

9.1 GIS Attribute Data for airpollcont

Selection Summary for layer
0 feature(s) identified on site.
1 feature(s) identified off site within 50 metres

ID	Name	Location	Approx. distance (m)	Grid Ref.
On Site				
None				
Identified Off-site - Within 50m				
18	F A Yates Ltd	9 Tudor Road|||HAMPTON|Middlesex|TW12 2NH	No data	513410, 170020

10. Layer Name: Fuel Stations

10.1 GIS Attribute Data for Fuel Stations

Selection Summary for layer
1 feature(s) identified on site.
1 feature(s) identified off site within 50 metres

ID	Name	Location	Brand	Approx. distance (m)	Grid Ref.
On Site					
21	Tudor Road Garage	14-16 Tudor Road|||HAMPTON|Greater London|TW12 2NQ	OUT OF INDUSTRY	No data	513439, 170016
Identified Off-site - Within 50m					
15	Yates Garage	9 Tudor Road|||HAMPTON|Greater London|TW12 2NH	OUT OF INDUSTRY	No data	513408, 170019

NB: Total for layer Potential Contaminated Land Sites includes the search feature.

The Executors of Mrs M E Howard (Deceased) Estate

Yates Garage, Hampton, Middlesex

Environmental site investigation and quantitative risk assessment

26550 R02 (00)

MAY 2014

Appendix G

GAS MONITORING RESULTS

Date: 16/10/2024 **Contract No:** **Contract Name: Tudor Road** **Contract Engineer:** **Client name/contact** **Andre Gilleard 07395 100 727**

Weather Conditions: Sunny spells medium level cloud cover, dry and low wind Atmospheric Wind Conditions: Light ALM Pressure: 1003mb							Equipment used: GA500 (G501415), Dip Meter				Data Collected By: Toby McCusker of Enitial				Input Checked by (sign):
Ground Conditions (eg dry, flooded, frost, snow):					Depth to water (m bgl) (if noted to vary during monitoring then record such)	Well depth (mbgl)									
Location	Time		Atmospheric Pressure (mb)	BH Pressure or differential (mb)	Flow (l/hr)		% by volume in air			LEL (%)	(ppm)			Top of Response zone (m bgl)	Notes (eg, samples taken, dual installation, odours, sheens, broken headworks).
	hours mins	secs					Methane	Carbon Dioxide	Oxygen		H2S	CO	PID		
DS1		0	Steady 1003mb	0.14mb	0.0 (initial . . . as soon as tap opened)	1.71	2.2								BH in good condition
		45 Seconds			0.0 (steady state. Expected to be 0 l/hr)										
		0					ND	0.1	21.0	ND	ND	ND	NA		
		15					ND	0.1	20.9	ND	ND	ND	NA		
		30					ND	0.1	20.8	ND	ND	ND	NA		
		60					ND	0.1	20.8	ND	ND	ND	NA		
		90					ND	0.1	20.8	ND	ND	ND	NA		
		120					ND	0.1	20.8	ND	ND	ND	NA		
		_ _ ##													
		_ _##				Water level at end =									
						Water level 3mins after end =									
DS2		0	Steady 1003mb	0.07mb	0.0 (initial . . . as soon as tap opened)	1.57	2.95								BH in good condition
		45 Seconds			0.0 (steady state. Expected to be 0 l/hr)										
		0					ND	0.1	21.2	ND	ND	ND	NA		
		15					ND	0.1	21.2	ND	ND	ND	NA		
		30					ND	0.1	21.2	ND	ND	ND	NA		
		60					ND	0.1	21.1	ND	ND	ND	NA		
		90					ND	0.1	21.2	ND	ND	ND	NA		
		120					ND	0.1	21.1	ND	ND	ND	NA		
		_ _ ##													
		_ _##				Water level at end =									
						Water level 3mins after end =									
DS3		0	Steady 1003mb	0.02	0.0 (initial . . . as soon as tap opened)	2.38	2.87								BH in good condition
		45 _ Seconds			0.0 (steady state. Expected to be 0 l/hr)										
		0					ND	0.2	20.9	ND	ND	ND	NA		
		15					ND	0.2	20.9	ND	ND	ND	NA		
		30					ND	0.9	19.6	ND	ND	ND	NA		
		60					ND	0.9	19.5	ND	ND	ND	NA		
		90					ND	0.9	19.5	ND	ND	ND	NA		
		120					ND	0.9	19.5	ND	ND	ND	NA		
		_ _ ##													
		_ _##				Water level at end =									
						Water level 3mins after end =									
DS5		0	Steady 1003mb	0.05mb	0.1 (initial . . . as soon as tap opened)	2.42	3.2								BH in good condition
		60Seconds			0.1 (steady state. Expected to be 0 l/hr)										
		0					ND	0.1	21.0	ND	ND	ND	NA		
		15					ND	0.1	21.0	ND	ND	ND	NA		
		30					ND	2.2	17.8	ND	ND	ND	NA		
		60					ND	2.2	17.4	ND	ND	ND	NA		
		90					ND	2.3	17.4	ND	ND	ND	NA		
		120					ND	2.3	17.4	ND	ND	ND	NA		
		_ _ ##													
		_ _##				Water level at end =									
						Water level 3mins after end =									
DS6		0	Steady 1003mb	0.07mb	0.0 (initial . . . as soon as tap opened)	1.84	2.5								Odours? Sheens? Free Product?
		45 Seconds			0.0 (steady state. Expected to be 0 l/hr)										
		0					ND	0.2	21.1	ND	ND	ND	NA		
		15					ND	0.2	21.1	ND	ND	ND	NA		
		30					ND	0.2	20.9	ND	ND	ND	NA		
		60					ND	0.2	20.9	ND	ND	ND	NA		
		90					ND	0.2	20.9	ND	ND	ND	NA		
		120					ND	0.2	20.9	ND	ND	ND	NA		
		_ _ ##													
		_ _##				Water level at end =									
						Water level 3mins after end =									

Groundwater Monitoring

Low Flow - Sampling Record Sheet

CLIENT: AG Geo
DATE: 16/10/2024
WEATHER: Initially overcast changing to sunny spells. Drv and lwo wind speed.

SITE: Tudor Road
TIME: On: 09:45 Off: 15:00
MONITORING PERSONNEL: Toby McCusker

Monitoring Location	Time	DTL m	DTB m	End m	EC mS/cm	Temp C	pH	DO %	Dissolved Oxygen PPM	ORP mV	Purge Volume L	Odour description	Sediment description	Oil/grease visible	Colour description	Turbidity description	Comments
DS1	14:41	1.73	2.2	1.75	209.74	17.60	7.85	21.44	2.04	63.80	3	Weak Hydrocarbon	Fine in low volume	None	Cloudy	Moderate	BH initaly purged 2L prior to low flow test being conducted. Initial purge concluded that BH has good recharge and so a further low flow purge (3L) was conduted to determine stability. Samples taken are post-purge and post-low flow.
DS2	14:16	1.6	2.96	1.63	144.29	16.23	8.24	48.67	4.78	56.97	4	Weak Hydrocarbon	Fine in high volume	None	Cloudy grey	High	BH initaly purged 2L prior to low flow test being conducted. Initial purge concluded that BH has good recharge and so a further low flow purge (4L) was conduted to determine stability. Samples taken are post-purge and post-low flow.
DS3	13:15	2.4	2.77	2.77	662.38	18.25	7.49	75.12	6.98	84.19	1.5	Weak Hydrocarbon	Fine to moderate in high volume	Very faint sheen	Brown	High	BH initally spot sampled - but only obtained 1.5L of sample. After waiting some time the BH had recharged to its previous GW level. Most of the sample already taken was discarded. Purge was 1.5L prior to sampling - after recharge another spot sample was taken as the recharge of the BH is not sufficient to allow a low flow test to be carried out. Sample was 'post purge' but only 1.5L
DS5	13:00	2.45	3.2	2.4	672.73	17.98	7.72	42.04	3.93	63.59	2	Weak Hydrocarbon	Fine to moderate in high volume	Very faint sheen	Brown	High	BH initally spot samplee, BH was drying out as sample suite was complted. After waiting some time the BH had recharged to its previous GW level. Sample already taken was discarded. Purge was 2L prior to sampling - after recharge another spot sample was taken as the recharge of the BH is not sufficient to allow a low flow test to be carried out. Sample was 'post purge'
DS6	13:30	1.6	2.2	1.5	265.53	20.03	7.55	24.78	2.22	50.72	2	Hydrocarbon	Fine in high volume	Oil sheen	Grey/ brown	High	BH initally spot samplee, BH was drying out as sample suite was complted. After waiting some time the BH had recharged to its previous GW level. Sample already taken was discarded. Purge was 2L prior to sampling - after recharge another spot sample was taken as the recharge of the BH is not sufficient to allow a low flow test to be carried out. Sample was 'post purge'

GAS MONITORING RESULTS

Date: 25/10/2024 **Contract No:**
Contract Name: Tudor Road

Contract Engineer:
Client name/contact **Andre Gilleard 07395 100 727**

Weather Conditions: Cool, dry, 14 degrees
Atmospheric Wind Conditions: Light
ALM Pressure: 995mb

Equipment used: GA500 (G501415), Dip Meter

Data Collected By: Toby McCusker of Enitial

Input Checked by (sign):

Ground Conditions (eg dry, flooded, frost, snow): Dry

Location	Time		Atmospheric Pressure (mb)	BH Pressure or differential (mb)	Flow (l/hr)	Depth to water (m bgl) (if noted to vary during monitoring then record such)	Well depth (mbgl)	% by volume in air			LEL (%)	(ppm)			Top of Response zone (m bgl)	Notes (eg, samples taken, dual installation, odours, sheens, broken headworks).
	hours mins	secs						Methane	Carbon Dioxide	Oxygen		H2S	CO	PID		
DS1		0	Steady 1014	0.03	0.0 (initial . . . as soon as tap opened)	1.96	2.24									BH in good condition
		45 Seconds			0.0 (steady state. Expected to be 0 l/hr)											
		0						ND	0.1	21.3	ND	ND	ND	0		
		15						ND	0.1	21.3	ND	ND	ND	0.2		
		30						ND	0.6	20.7	ND	ND	ND	0.6		
		60						ND	0.6	20.7	ND	ND	ND	0.6		
		90						ND	0.6	20.7	ND	ND	ND	0.6		
		120						ND	0.7	20.6	ND	ND	ND	0.6		
		_ _ ##														
		_ _##				Water level at end =										
						Water level 3mins after end =										
DS2		0	Steady 1014	0.05	0.0 (initial . . . as soon as tap opened)	1.83	2.95									BH in good condition
		45 Seconds			0.0 (steady state. Expected to be 0 l/hr)											
		0						ND	0.1	21.2	ND	ND	ND	0		
		15						ND	0.1	21.2	ND	ND	ND	0.1		
		30						ND	0.1	21.2	ND	ND	ND	0.2		
		60						ND	0.1	21.1	ND	ND	ND	0.2		
		90						ND	0.1	21.1	ND	ND	ND	0.2		
		120						ND	0.1	21.1	ND	ND	ND	0.2		
		_ _ ##														
		_ _##				Water level at end =										
						Water level 3mins after end =										
DS3		0	Steady 1014	-0.03	0.0 (initial . . . as soon as tap opened)	2.57	2.9									BH in good condition
		45 _ Seconds			0.0 (steady state. Expected to be 0 l/hr)											
		0						ND	0.2	21.0	ND	ND	ND	0		
		15						ND	0.2	21.0	ND	ND	ND	0.3		
		30						ND	0.6	20.3	ND	ND	ND	0.5		
		60						ND	0.6	20.1	ND	ND	ND	0.5		
		90						ND	0.6	20.1	ND	ND	ND	0.5		
		120						ND	0.7	20.0	ND	ND	ND	0.5		
		_ _ ##														
		_ _##				Water level at end =										
						Water level 3mins after end =										
DS5		0	Steady 1014	0.03	0.0 (initial . . . as soon as tap opened)	2.6	3.22									BH in good condition
		60Seconds			0.0 (steady state. Expected to be 0 l/hr)											
		0						ND	0.1	20.9	ND	ND	ND	0		
		15						ND	0.1	20.8	ND	ND	ND	0.2		
		30						ND	2.5	17.8	ND	ND	ND	0.5		
		60						ND	2.5	17.4	ND	ND	ND	0.7		
		90						ND	2.5	17.3	ND	ND	ND	0.7		
		120						ND	2.6	17.3	ND	ND	ND	0.7		
		_ _ ##														
		_ _##				Water level at end =										
						Water level 3mins after end =										
DS6		0	Steady 1014	0.07	0.0 (initial . . . as soon as tap opened)	2.18	2.45									BH in good condition
		45 Seconds			0.1 (steady state. Expected to be 0 l/hr)											
		0						ND	0.1	21.1	ND	ND	ND	0		
		15						ND	0.1	21.1	ND	ND	ND	0.3		
		30						ND	0.2	20.9	ND	ND	ND	0.3		
		60						ND	0.2	20.9	ND	ND	ND	0.3		
		90						ND	0.2	20.9	ND	ND	ND	0.3		
		120						ND	0.3	20.9	ND	ND	ND	0.3		
		_ _ ##														
		_ _##				Water level at end =										
						Water level 3mins after end =										

Groundwater Monitoring

Low Flow - Sampling Record Sheet

CLIENT: AG Geo
DATE: 25/10/2024
WEATHER: Sunny spells for most with one spell of light rain. Low wind speed.

SITE: Tudor Road
TIME: On: 11:00 Off: 15:00
MONITORING PERSONNEL: Toby McCusker

Monitoring Location	Time	DTL m	DTB m	End m	EC mS/cm	Temp C	pH	DO %	Dissolved Oxygen PPM	ORP mV	Purge Volume L	Odour description	Sediment description	Oil/grease visible	Colour description	Turbidity description	Comments
DS1	13:48	1.96	2.24	2.05	780.15	16.30	7.16	14.04	1.37	70.33	4	Organic	Fine in low volume	None	Clear	Low	BH known to have good recharge - low flow test conducted straight away, took a while to stabilise purging 4L prior to sampling.
DS2	13:14	1.83	2.95	1.85	407.54	15.85	7.30	7.67	0.76	-12.22	8	Organic	Fine to medium size in low volume	None	Cloudy light grey	Moderate	BH known to have good recharge - low flow test conducted straight away, took a while to stabilise purging 8L prior to sampling.
DS3	14:05	2.57	2.9	2.57	690.75	16.35	7.36	55.84	5.46	126.06	1.5	Hydrocarbon	Fine to moderate in high volume	None	Cloudy brown	High	BH purged initially but only 1.5L before the well dried. Left to recharge prior to sampling - BH dried out again during sampling and was recharging slowly resulting in incomplete sample set (only 1L glass)
DS5	14:15	2.6	3.22	2.55	664.40	16.25	7.34	68.06	6.67	117.93	2	Hydrocarbon	Fine sediments in high volume	None	Light brown	High	BH initially purged 2L and then left to recharge. Sample taken post-purge of 2L as a spot sample
DS6	14:05	2.18	2.45	2.18	407.53	16.49	7.54	45.18	4.41	109.49	1	Hydrocarbon	Fine in high volume	Very faint sheen	Grey/ brown	High	BH purged initially but only 1L was purged before the well dried out. Left to recharge prior to sampling - BH dried out again during sampling and was recharging slowly resulting in incomplete sample set (only 1L glass)

Appendix H

ANALYTICAL TEST REPORT

Report Number	24-03111, issue number 0
Contract name:	14-16 Tudor Road
Client reference:	Not Supplied
Clients name:	AG Geo-Consultants Ltd
Clients address:	AGGEOCONLTD 58 Church Road Horfield BS7 8SE
Samples received:	18/10/2024
Analysis started:	21/10/2024
Analysis completed:	31/10/2024
Report issued:	31/10/2024
	Preliminary Report

Key	
U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
U/S	Sample not suitable for testing
NAD	No Asbestos Detected

Approved by: Sam Rogerson
Manager

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample ID	Depth (m)	Sample description	Material removed	% Removed	% Moisture
18479	DS1	0.40	Brown Sandy Clay with Gravel.	-	-	14.1
18480	DS1	1.00	-	-	-	-
18481	DS1	1.20	Black Sand with Gravel.	-	-	28.3
18482	DS1	1.60	Brown Sandy Clay.	-	-	18.3
18483	DS1	2.50	Brown Sand with Gravel.	-	-	38.9
18484	DS2	0.40	Brown Clayey Loam with Gravel.	-	-	49.3
18485	DS2	2.00	Brown Clay with Gravel.	-	-	32.5
18486	DS3	0.20	Brown Clay with Gravel.	-	-	17.9
18487	DS3	1.00	Brown Clay with Gravel.	-	-	24.1
18488	DS3	2.00	-	-	-	-
18489	DS5	0.40	-	-	-	-
18490	DS5	1.00	-	-	-	-
18491	DS5	2.00	-	-	-	-
18492	DS6	0.20	-	-	-	-
18493	DS6	1.00	-	-	-	-
18494	DS6	2.00	Brown Clay with Gravel.	-	-	7.7
18495	DS6	2.60	Brown Clay with Gravel.	-	-	6.0

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

a	Sampling date not provided
b	Sampling time not provided (waters only)
c	Sample not received in appropriate containers
d	Storage Temperature
e	Headspace present in sample container
f	Sample exceeded sampling to reciept
g	Sample exceeded holding time(s)

Lab ref	Sample ID	Depth (m)	Deviating	Tests (Reason for deviation)
18479	DS1	0.40	N	
18481	DS1	1.20	N	
18482	DS1	1.60	Y	VPH in Soil(g), BTEX in solids(g)
18483	DS1	2.50	N	
18484	DS2	0.40	N	
18485	DS2	2.00	N	
18486	DS3	0.20	N	
18487	DS3	1.00	Y	W. Sol Metals(c)
18494	DS6	2.00	N	
18495	DS6	2.60	N	

SOILS

Lab Number					18479	18481	18482	18483	18484
Client Reference					1	1	1	1	1
Sample ID					DS1	DS1	DS1	DS1	DS2
Depth (m)					0.40	1.20	1.60	2.50	0.40
Sampling Date					11/10/2024	11/10/2024	11/10/2024	11/10/2024	11/10/2024
Test	**Method**	**Accred**	**LoD**	**Units**					
Asbestos									
Asbestos Identification	SUBCON	SU	0	-	NAD	n/t	n/t	n/t	NAD
Metals									
Water Soluble Sulphate	CE061	M	10	mg/l	285	n/t	n/t	n/t	371
Arsenic	CE264	U	1.8	mg/kg	25.9	n/t	n/t	n/t	22.2
Cadmium	CE264	M	1.6	mg/kg	3.1	n/t	n/t	n/t	< 1.6
Chromium	CE264	U	2	mg/kg	115	n/t	n/t	n/t	298
Copper	CE264	M	1.6	mg/kg	32.2	n/t	n/t	n/t	37.4
Lead	CE264	U	2.3	mg/kg	266	n/t	n/t	n/t	180
Mercury	CE264	U	0.7	mg/kg	< 0.7	n/t	n/t	n/t	< 0.7
Nickel	CE264	M	2.1	mg/kg	37.6	n/t	n/t	n/t	36.1
Selenium	CE264	U	3	mg/kg	< 3.0	n/t	n/t	n/t	< 3.0
Zinc	CE264	M	4	mg/kg	538	n/t	n/t	n/t	210
Volatile Petroleum Hydrocarbons									
>C5-C6 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	g < 0.10	< 0.10	< 0.10
>C6-C8 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	g < 0.10	< 0.10	< 0.10
>C8-C10 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	g < 0.10	0.17	< 0.10
>C8-C10 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	g < 0.010	< 0.010	< 0.010
>C6-C7 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	g < 0.010	< 0.010	< 0.010
>C7-C8 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	g < 0.010	< 0.010	< 0.010
>C5-C10 Total (HS_1D_Total)	CE267	N	0.1	mg/kg	< 0.10	n/t	n/t	n/t	< 0.10
Colourimetric									
Chromium VI	CE263	N	0.04	mg/kg	0.190	n/t	n/t	n/t	0.110
Combustion									
Moisture Content	CE001	N	0.1	%	14.1	28.3	18.3	38.9	49.3
Soil Organic Matter	CE072	N	0.1	%	2.66	n/t	n/t	n/t	3.31
TPH Ali/Aro									
>C10-C40 Total (EH_2D_Total)	CE250	N	11.5	mg/kg	17.9	n/t	n/t	n/t	1910
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	< 0.5	n/t	n/t	n/t	4.3
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	mg/kg	1.8	n/t	n/t	n/t	81.7
>C16-C21 Aliphatic (EH_2D_AL)	CE250	N	0.7	mg/kg	< 0.7	n/t	n/t	n/t	17.7

SOILS

>C16-C21 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	2.7	n/t	n/t	n/t	615
>C21-C35 Aliphatic (EH_2D_AL)	CE250	N	4	mg/kg	< 4.0	n/t	n/t	n/t	33.2
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	4.5	mg/kg	11.1	n/t	n/t	n/t	975
>C35-C40 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	< 0.5	n/t	n/t	n/t	5.5
>C35-C40 Aromatic (EH_2D_AR)	CE250	N	1.5	mg/kg	1.7	n/t	n/t	n/t	159
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	mg/kg	< 1.0	n/t	n/t	n/t	3.2
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	0.6	mg/kg	0.7	n/t	n/t	n/t	10.2
Polyaromatic hydrocarbons									
Naphthalene	CE087	M	0.016	mg/kg	< 0.016	n/t	n/t	n/t	0.078
Acenaphthylene	CE087	M	0.015	mg/kg	< 0.015	n/t	n/t	n/t	0.255
Acenaphthene	CE087	M	0.013	mg/kg	< 0.013	n/t	n/t	n/t	2.41
Fluorene	CE087	U	0.013	mg/kg	< 0.013	n/t	n/t	n/t	1.68
Phenanthrene	CE087	M	0.014	mg/kg	0.070	n/t	n/t	n/t	28.2
Anthracene	CE087	U	0.017	mg/kg	0.021	n/t	n/t	n/t	8.33
Fluoranthene	CE087	M	0.017	mg/kg	0.233	n/t	n/t	n/t	38.2
Pyrene	CE087	M	0.016	mg/kg	0.207	n/t	n/t	n/t	32.3
Benzo(a)anthracene	CE087	U	0.012	mg/kg	0.132	n/t	n/t	n/t	14.9
Chrysene	CE087	M	0.028	mg/kg	0.143	n/t	n/t	n/t	14.3
Benzo(b)fluoranthene	CE087	M	0.02	mg/kg	0.190	n/t	n/t	n/t	13.5
Benzo(k)fluoranthene	CE087	M	0.025	mg/kg	0.074	n/t	n/t	n/t	6.20
Benzo(a)pyrene	CE087	U	0.019	mg/kg	0.143	n/t	n/t	n/t	10.3
Indeno(1,2,3-cd)pyrene	CE087	M	0.019	mg/kg	0.127	n/t	n/t	n/t	7.59
Dibenzo(a,h)anthracene	CE087	M	0.017	mg/kg	0.024	n/t	n/t	n/t	1.55
Benzo(g,h,i)perylene	CE087	M	0.019	mg/kg	0.107	n/t	n/t	n/t	5.75
Total PAH(16)	CE087	N	0.28	mg/kg	1.47	n/t	n/t	n/t	186
BTEX									
Benzene	CE192	U	0.01	mg/kg	< 0.010	< 0.010	g < 0.010	< 0.010	< 0.010
Toluene	CE192	U	0.01	mg/kg	< 0.010	< 0.010	g < 0.010	< 0.010	< 0.010
Ethylbenzene	CE192	U	0.01	mg/kg	< 0.010	< 0.010	g < 0.010	< 0.010	< 0.010
MTBE	CE192	N	0.02	mg/kg	< 0.020	< 0.020	g < 0.020	< 0.020	< 0.020
Total BTEX	CE192	N	0.06	mg/kg	< 0.060	< 0.060	g < 0.060	< 0.060	< 0.060
m,p-Xylene	CE192	U	0.02	mg/kg	< 0.020	< 0.020	g < 0.020	< 0.020	< 0.020
oXylenes	CE192	U	0.01	mg/kg	< 0.010	< 0.010	g < 0.010	< 0.010	< 0.010
Wet Chem									
pH	CE004	M	0.1	pH units	8.5	n/t	n/t	n/t	10.2
EPH									
>C10-C12 Soil (EH_1D_Total)	CE033	M	6	mg/kg	< 6.0	< 6.0	< 6.0	< 6.0	7.7

SOILS

>C12-C16 Soil (EH_1D_Total)	CE033	M	6	mg/kg	< 6.0	< 6.0	< 6.0	< 6.0	21.6
>C16-C21 Soil (EH_1D_Total)	CE033	M	6	mg/kg	14.1	< 6.0	< 6.0	< 6.0	198
>C21-C35 Soil (EH_1D_Total)	CE033	M	15	mg/kg	91.8	< 15.0	< 15.0	< 15.0	721
>C35-C40 Soil (EH_1D_Total)	CE033	U	10	mg/kg	33.5	< 10.0	< 10.0	< 10.0	205
>C35-C44 Soil (EH_1D_Total)	CE033	U	10	mg/kg	59.2	< 10.0	< 10.0	< 10.0	380
>C40-C44 Soil (EH_1D_Total)	CE033	N	10	mg/kg	25.7	< 10.0	< 10.0	< 10.0	176
>C10-C44 Soil (EH_1D_Total)	CE033	M	19	mg/kg	169	19.1	19.4	< 19.0	1330

SOILS

Lab Number					18485	18486	18487	18494	18495
Client Reference					1	1	1	1	1
Sample ID					DS2	DS3	DS3	DS6	DS6
Depth (m)					2.00	0.20	1.00	2.00	2.60
Sampling Date					11/10/2024	11/10/2024	11/10/2024	11/10/2024	11/10/2024
Test	**Method**	**Accred**	**LoD**	**Units**					
Asbestos									
Asbestos Identification	SUBCON	SU	0	-	n/t	NAD	NAD	n/t	n/t
Metals									
Water Soluble Sulphate	CE061	M	10	mg/l	n/t	258	c 89.0	n/t	n/t
Arsenic	CE264	U	1.8	mg/kg	n/t	42.6	25.0	n/t	n/t
Cadmium	CE264	M	1.6	mg/kg	n/t	4.8	< 1.6	n/t	n/t
Chromium	CE264	U	2	mg/kg	n/t	152	224	n/t	n/t
Copper	CE264	M	1.6	mg/kg	n/t	689	82.7	n/t	n/t
Lead	CE264	U	2.3	mg/kg	n/t	1100	281	n/t	n/t
Mercury	CE264	U	0.7	mg/kg	n/t	8.7	1.2	n/t	n/t
Nickel	CE264	M	2.1	mg/kg	n/t	54.1	42.3	n/t	n/t
Selenium	CE264	U	3	mg/kg	n/t	< 3.0	< 3.0	n/t	n/t
Zinc	CE264	M	4	mg/kg	n/t	1440	206	n/t	n/t
Volatile Petroleum Hydrocarbons									
>C5-C6 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C6-C8 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C8-C10 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	11.5	< 0.10	< 0.10	< 0.10	383
>C8-C10 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	0.108	< 0.010	< 0.010	< 0.010	4.19
>C6-C7 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C7-C8 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C5-C10 Total (HS_1D_Total)	CE267	N	0.1	mg/kg	n/t	< 0.10	< 0.10	n/t	n/t
Colourimetric									
Chromium VI	CE263	N	0.04	mg/kg	n/t	< 0.040	< 0.040	n/t	n/t
Combustion									
Moisture Content	CE001	N	0.1	%	32.5	17.9	24.1	7.7	6.0
Soil Organic Matter	CE072	N	0.1	%	n/t	23.2	5.14	n/t	n/t
TPH Ali/Aro									
>C10-C40 Total (EH_2D_Total)	CE250	N	11.5	mg/kg	n/t	3130	376	n/t	n/t
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	n/t	10.2	2.6	n/t	n/t
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	mg/kg	n/t	124	34.2	n/t	n/t
>C16-C21 Aliphatic (EH_2D_AL)	CE250	N	0.7	mg/kg	n/t	24.1	4.9	n/t	n/t

SOILS

>C16-C21 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	n/t	820	30.8	n/t	n/t
>C21-C35 Aliphatic (EH_2D_AL)	CE250	N	4	mg/kg	n/t	149	33.6	n/t	n/t
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	4.5	mg/kg	n/t	1680	203	n/t	n/t
>C35-C40 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	n/t	19.7	2.3	n/t	n/t
>C35-C40 Aromatic (EH_2D_AR)	CE250	N	1.5	mg/kg	n/t	281	51.2	n/t	n/t
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	mg/kg	n/t	4.0	2.9	n/t	n/t
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	0.6	mg/kg	n/t	12.1	10.3	n/t	n/t
Polyaromatic hydrocarbons									
Naphthalene	CE087	M	0.016	mg/kg	n/t	2.92	< 0.016	n/t	n/t
Acenaphthylene	CE087	M	0.015	mg/kg	n/t	4.97	< 0.015	n/t	n/t
Acenaphthene	CE087	M	0.013	mg/kg	n/t	7.06	< 0.013	n/t	n/t
Fluorene	CE087	U	0.013	mg/kg	n/t	12.4	0.073	n/t	n/t
Phenanthrene	CE087	M	0.014	mg/kg	n/t	136	0.649	n/t	n/t
Anthracene	CE087	U	0.017	mg/kg	n/t	33.4	0.280	n/t	n/t
Fluoranthene	CE087	M	0.017	mg/kg	n/t	216	1.10	n/t	n/t
Pyrene	CE087	M	0.016	mg/kg	n/t	174	0.939	n/t	n/t
Benzo(a)anthracene	CE087	U	0.012	mg/kg	n/t	75.2	0.679	n/t	n/t
Chrysene	CE087	M	0.028	mg/kg	n/t	72.7	0.552	n/t	n/t
Benzo(b)fluoranthene	CE087	M	0.02	mg/kg	n/t	76.6	1.03	n/t	n/t
Benzo(k)fluoranthene	CE087	M	0.025	mg/kg	n/t	35.7	0.369	n/t	n/t
Benzo(a)pyrene	CE087	U	0.019	mg/kg	n/t	47.7	0.674	n/t	n/t
Indeno(1,2,3-cd)pyrene	CE087	M	0.019	mg/kg	n/t	37.4	0.589	n/t	n/t
Dibenzo(a,h)anthracene	CE087	M	0.017	mg/kg	n/t	10.4	0.078	n/t	n/t
Benzo(g,h,i)perylene	CE087	M	0.019	mg/kg	n/t	28.9	0.488	n/t	n/t
Total PAH(16)	CE087	N	0.28	mg/kg	n/t	971	7.50	n/t	n/t
BTEX									
Benzene	CE192	U	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Toluene	CE192	U	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Ethylbenzene	CE192	U	0.01	mg/kg	0.047	< 0.010	< 0.010	< 0.010	0.208
MTBE	CE192	N	0.02	mg/kg	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Total BTEX	CE192	N	0.06	mg/kg	0.063	< 0.060	< 0.060	< 0.060	1.26
m,p-Xylene	CE192	U	0.02	mg/kg	< 0.020	< 0.020	< 0.020	< 0.020	0.613
oXylenes	CE192	U	0.01	mg/kg	0.016	< 0.010	< 0.010	< 0.010	0.441
Wet Chem									
pH	CE004	M	0.1	pH units	n/t	8.3	8.1	n/t	n/t
EPH									
>C10-C12 Soil (EH_1D_Total)	CE033	M	6	mg/kg	< 6.0	6.3	< 6.0	< 6.0	362

SOILS

>C12-C16 Soil (EH_1D_Total)	CE033	M	6	mg/kg	< 6.0	41.4	11.1	< 6.0	466
>C16-C21 Soil (EH_1D_Total)	CE033	M	6	mg/kg	17.0	213	26.2	< 6.0	15.9
>C21-C35 Soil (EH_1D_Total)	CE033	M	15	mg/kg	94.6	1690	215	< 15.0	23.5
>C35-C40 Soil (EH_1D_Total)	CE033	U	10	mg/kg	26.8	451	131	< 10.0	< 10.0
>C35-C44 Soil (EH_1D_Total)	CE033	U	10	mg/kg	44.8	730	270	< 10.0	< 10.0
>C40-C44 Soil (EH_1D_Total)	CE033	N	10	mg/kg	18.1	279	139	< 10.0	< 10.0
>C10-C44 Soil (EH_1D_Total)	CE033	M	19	mg/kg	162	2680	526	< 19.0	876

METHOD DETAILS

METHOD	TESTNAME	METHOD SUMMARY	ANALYSIS BASIS
CE267	VPH in Soil	HS-GCFID	As submitted sample
SUBCON	Asbestos Solid	HSG248	Air Dried Sample
CE061	W. Sol Metals	ICPOES	Air dried sample
CE033	EPH in Solids	Acetone:Hexane Extraction and GCFID	As submitted sample
CE264	Metals by ICP in Soil	ICPOES	Air dried sample
CE192	BTEX in solids	Analysis by HSGCFID	As submitted sample
CE250	GCXGC in Solids	DCM Extraction and GCxGC-FID	As submitted sample
CE263	ChromiumVI by Discrete Analyser in Solid	Gallery	Air dried sample
CE087	PAH in Soil	DCM Extraction and GCMS	As submitted sample

REPORT INFORMATION

Report No.:24-03111, issue number 0

Key	
U	ISO17025 Accredited Result
M	ISO17025 and MCERTS Accredited Result
N	Do not currently hold accreditation
^	MCERTS accreditation not applicable for sample matrix
*	ISO17025 accreditation not applicable for sample matrix
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I/S	Insufficient Sample
U/S	Unsuitable sample
N/T	Not tested
<	Means "less than"
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For soils and solids, analytical results are inclusive of stones, where applicable.

Sample Retention and Disposal

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TPH Classification - HWOL Acronym System

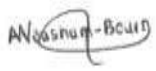
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

ANALYTICAL TEST REPORT

Report Number	24-03179, issue number 1
Contract name:	14-16, Tudor Road, T
Client reference:	Not Supplied
Clients name:	AG Geo-Consultants Ltd
Clients address:	AGGEOCONLTD 58 Church Road Horfield BS7 8SE
Samples received:	21/10/2024
Analysis started:	21/10/2024
Analysis completed:	24/10/2024
Report issued:	24/10/2024

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
U/S	Sample not suitable for testing
NAD	No Asbestos Detected



Approved by: Abbie Neasham-Bourn
Senior Reporting Administrator

Unit 6 Parkhead, Greencroft Industrial Park, Stanley, County Durham, DH9 7YB

Telephone: (01207) 528578, Email supportsquad@chemtech-env.co.uk

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

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Key

a	Sampling date not provided
b	Sampling time not provided (waters only)
c	Sample not received in appropriate containers
d	Storage Temperature
e	Headspace present in sample container
f	Sample exceeded sampling to reciept
g	Sample exceeded holding time(s)

Lab ref	Sample ID	Depth (m)	Deviating	Tests (Reason for deviation)
18753	DS1	2.15	N	
18754	DS2	2.90	N	
18755	DS3	2.85	N	
18756	DS5	3.15	N	
18757	DS6	2.45	N	

WATER

Lab Number					18753	18754	18755	18756	18757
Client Reference					1	2	3	4	5
Sample ID					DS1	DS2	DS3	DS5	DS6
Depth (m)					2.15	2.90	2.85	3.15	2.45
Sampling Date					16/10/2024	16/10/2024	16/10/2024	16/10/2024	16/10/2024
Sampling Time					14:40	14:15	13:15	13:00	13:30
Test	**Method**	**Accred**	**LoD**	**Units**					
Volatile Petroleum Hydrocarbons									
>C5-C6 Aliphatic (HS_1D_AL)	CE266	N	1	µg/l	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
>C6-C8 Aliphatic (HS_1D_AL)	CE266	N	1	µg/l	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
>C8-C10 Aliphatic (HS_1D_AL)	CE266	N	1	µg/l	< 1.00	< 1.00	64.5	< 1.00	272
>C8-C10 Aromatic (HS_1D_AR)	CE266	N	1	µg/l	< 1.00	< 1.00	8.58	< 1.00	15.4
>C6-C7 Aromatic (HS_1D_AR)	CE266	N	1	µg/l	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
>C7-C8 Aromatic (HS_1D_AR)	CE266	N	1	µg/l	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
TPH Ali/Aro									
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	1	µg/l	10.9	< 1.0	< 1.0	< 1.0	1530
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	313
>C16-C21 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C35 Aliphatic (EH_2D_AL)	CE250	N	1	µg/l	9.3	< 1.0	< 1.0	< 1.0	36.9
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C44 Aliphatic (EH_2D_AL)	CE250	N	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C44 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C5-C40 Total (HS_1D+EH_2D_Total)	CE250	N	15	µg/l	< 15.0	< 15.0	< 15.0	< 15.0	3180
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	1180
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	523
BTEX									
Benzene	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
oXylenes	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

METHOD DETAILS

METHOD	TESTNAME	METHOD SUMMARY	ANALYSIS BASIS
CE266	VPH in Water	HS-GCFID	-
CE250	GCXGC in Water	DCM Extraction and GCxGC-FID	-
CE057	BTEX in waters	Analysis by HSGCFID	-

REPORT INFORMATION

Report No.:24-03179, issue number 1

Key	
U	ISO17025 Accredited Result
M	ISO17025 and MCERTS Accredited Result
N	Do not currently hold accreditation
^	MCERTS accreditation not applicable for sample matrix
*	ISO17025 accreditation not applicable for sample matrix
S	Subcontracted
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U/S	Unsuitable sample
N/T	Not tested
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Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Moisture Content Calculated on a Wet Weight basis

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EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

ANALYTICAL TEST REPORT

Report Number	24-03639, issue number 1
Contract name:	14-16, Tudor Road, TW12
Client reference:	Not Supplied
Clients name:	AG Geo-Consultants Ltd
Clients address:	AGGEOCONLTD 58 Church Road Horfield BS7 8SE
Samples received:	31/10/2024
Analysis started:	31/10/2024
Analysis completed:	12/11/2024
Report issued:	12/11/2024

Key	U UKAS accredited test M MCERTS & UKAS accredited test $ Test carried out by an approved subcontractor I/S Insufficient sample to carry out test U/S Sample not suitable for testing NAD No Asbestos Detected
Approved by:	Sam Rogerson Manager

Unit 6 Parkhead, Greencroft Industrial Park, Stanley, County Durham, DH9 7YB

Telephone: (01207) 528578, Email supportsquad@chemtech-env.co.uk

DEVIATING SAMPLE INFORMATION

Comments
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Key

a	Sampling date not provided
b	Sampling time not provided (waters only)
c	Sample not received in appropriate containers
d	Storage Temperature
e	Headspace present in sample container
f	Sample exceeded sampling to reciept
g	Sample exceeded holding time(s)

Lab ref	Sample ID	Depth (m)	Deviating	Tests (Reason for deviation)
20736	DS1	2.15	Y	VPH in Water(g), BTEX in waters(g)
20737	DS2	2.90	Y	VPH in Water(g), BTEX in waters(g)
20738	DS3	2.85	Y	VPH in Water(g), BTEX in waters(g)
20739	DS5	3.15	Y	VPH in Water(g), BTEX in waters(g)
20740	DS6	2.45	Y	BTEX in waters(g), VPH in Water(g)

WATER

Lab Number					20736	20737	20738	20739	20740
Client Reference					1	1	1	1	1
Sample ID					DS1	DS2	DS3	DS5	DS6
Depth (m)					2.15	2.90	2.85	3.15	2.45
Sampling Date					25/10/2024	25/10/2024	25/10/2024	25/10/2024	25/10/2024
Sampling Time					13:50	13:15	14:25	14:15	14:05
Test	**Method**	**Accred**	**LoD**	**Units**					
Volatile Petroleum Hydrocarbons									
>C5-C6 Aliphatic (HS_1D_AL)	CE266	N	1	µg/l	185	282	6880	26.1	64.8
>C6-C8 Aliphatic (HS_1D_AL)	CE266	N	1	µg/l	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
>C8-C10 Aliphatic (HS_1D_AL)	CE266	N	1	µg/l	71.4	83.6	< 1.00	6.41	543
>C8-C10 Aromatic (HS_1D_AR)	CE266	N	1	µg/l	< 1.00	< 1.00	< 1.00	< 1.00	55.7
>C6-C7 Aromatic (HS_1D_AR)	CE266	N	1	µg/l	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
>C7-C8 Aromatic (HS_1D_AR)	CE266	N	1	µg/l	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Colourimetric									
Sulphate	CE257	U	0.3	mg/l	68.1	n/t	1460	n/t	n/t
TPH Ali/Aro									
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	1	µg/l	2.3	11.7	1.1	< 1.0	11200
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	9.1	70.2	14.4	< 1.0	4400
>C16-C21 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	15.5	78.2	3.7	< 1.0	773
>C16-C35 Aliphatic (EH_2D_AL)	CE250	N	1	µg/l	41.2	212	3.7	< 1.0	2120
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	48.7	512	10.5	< 1.0	4100
>C35-C44 Aliphatic (EH_2D_AL)	CE250	N	1	µg/l	1.8	15.0	< 1.0	< 1.0	123
>C35-C44 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	9.7	79.2	3.6	< 1.0	598
>C5-C40 Total (HS_1D+EH_2D_Total)	CE250	N	15	µg/l	357	1310	6950	23.8	36900
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	µg/l	2.9	11.9	< 1.0	< 1.0	9200
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	1	µg/l	8.0	31.6	8.0	< 1.0	4640
BTEX									
Benzene	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	3.7
MTBE	CE057	U	1	µg/l	185	282	< 1.0	26.1	< 1.0
m,p-Xylene	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	4.0
oXylenes	CE057	U	1	µg/l	< 1.0	< 1.0	< 1.0	< 1.0	6.1
Wet Chem									
pH	CE213	U	0.1	pH units	7.2	n/t	6.9	n/t	n/t

METHOD DETAILS

METHOD	TESTNAME	METHOD SUMMARY	ANALYSIS BASIS
CE266	VPH in Water	HS-GCFID	-
CE250	GCXGC in Water	DCM Extraction and GCxGC-FID	-
CE057	BTEX in waters	Analysis by HSGCFID	-
CE257	Anions by Discrete Analyser in Water	Gallery	-

REPORT INFORMATION

Report No.:24-03639, issue number 1

Key	
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^	MCERTS accreditation not applicable for sample matrix
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I/S	Insufficient Sample
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Sample Retention and Disposal

All soil samples will be retained for a period of 4 weeks from the point of receipt

All water samples will be retained for a period of 2 weeks from the point of Reporting

Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry