



Stage 1: Desktop Study & Walkover Survey

at

**Turnpike Motors,
The Street,
Walberton,
West Sussex,
BN18 0PG**

for

TURNPIKE MOTORS A.C.G

Job No. 14.7898
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DOCUMENT APPROVAL

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Contents

1.0 INTRODUCTION	5
2.0 PHYSICAL SETTING.....	5
3.0 SITE CONDITIONS	6
4.0 PRELIMINARY CONCEPTUAL SITE MODEL & RISK ASSESSMENT	10
5.0 CONCLUSIONS.....	15
6.0 PROPOSED SITE INVESTIGATION.....	15
7.0 RECOMMENDATIONS	ERROR! BOOKMARK NOT DEFINED.

Appendices

Appendix A – Site Photos
Appendix B – Historical Maps
Appendix C – Centremaps Report
Appendix D – Limitations

TRADING TERMS

Unless specifically stated within the tender/quotation or unless identified within the introduction to this report it is confirmed that this report has been compiled wholly in accord with Constructive Evaluation Limited's terms of engagement.

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The following notes should be read in conjunction with the report. Any variation to the general procedures outlined below are indicated in the text.

Foreword

The recommendations made and opinions expressed in the report are based on the conditions revealed by the site works as indicated on the site record sheets, together with an assessment of the data from the insitu and laboratory testing or in respect of the desktop reports. No responsibility can be accepted for conditions that have not been revealed by the research, for example, due to inaccuracies in the data. While the report may offer opinions, these comments are for guidance only and no liability can be accepted for their accuracy.

Routine Sampling

During the site investigation, soil, water and leachate samples have been taken in accordance with recommendations within BS.5930: 1990, & BS.10175: 2011. All samples have been marked accordingly, and stored under suitable conditions to prevent any deterioration of the specimen (e.g. volatilisation of hydrocarbons). All samples have been placed in suitably labelled sealed plastic containers and sampling equipment cleaned between sample locations to prevent possible cross contamination.

During the compilation of desktop studies a number of sources have been contacted in order to provide any relevant information regarding the site in question. The sources contacted provide their own Terms & Conditions with regard to the data provided. As such, each source, e.g. Sitescope, Council Websites, etc. must be considered only in relation to these individual Terms & Conditions. All research has been carried out in accordance with recommendations within BS.10175: 2011.

The method of construction employed to form trial pits is entered on their records. In general, it is not possible to extend machine excavated trial pits to depths significantly below the local water table, especially in predominantly granular soils. Except for manually excavated pits, and unless otherwise stated, the trial pits have not been provided with temporary side support during their construction, hence personnel have not entered them and examined the strata or any construction details so exposed.

Laboratory Testing

Unless stated otherwise within the text, all laboratory tests have been performed in accordance with the requirements detailed in British Standards 1881:1990 or other standards or specifications that may be appropriate.

Regulatory Bodies

After the compilation of desktop study and walkover survey or site investigation works all parties must communicate with regulatory bodies including the Local Authority (both Planning & Environmental Health) and the Environment Agency. It must be accepted that further requirements may develop. It is possible that aspects of desktop study may need to be altered to conform to the requirements of the regulatory bodies.

Definitions

Reference to the word "contamination" in this report does not relate to the statutory definition of contaminated land under 1990 Environmental Protection Act unless otherwise stated. The definition used in this report is: "Land that contains substances that, when present in sufficient quantities or concentrations, are likely to cause harm, directly or indirectly, to man, to the environment, or on occasion to other targets" (NATO CCMS, 1985).

Walkover Survey

It should be noted that a walkover survey is designed as a brief inspection of the site in question, however every reasonable effort has been made to access all areas of the site, areas where this has not proved possible will be referenced in the text. The site reconnaissance is undertaken with permission of the client after the document search is completed with the aim of recording any further aspects of the site not revealed by the desktop study however this does not in itself guarantee that every possible risk has been seen.

Conceptual Model/Risk Assessment/ Sampling Regime

The conceptual model, Risk assessment and sampling regime has been formulated in accordance with BS10175:2011 and CLR 8 based upon the relevant information gained from the desktop and walkover survey. While the model and assessment offer opinions and interpretations of these guidelines, the comments made are for guidance only and no liability can be accepted for their accuracy.

Restrictions

In some instances a site investigation must be separated into two stages, depending on the access to the sub soils at the time of the initial site attendance. It must also be noted that in many instances the access afforded is restricted due to continuing activity on the site. In such instances all reasonable effort were to achieve maximum sampling coverage. This does not imply a guarantee that inaccessible areas are similar.

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1.0 INTRODUCTION

Constructive Evaluation (CE) Limited were instructed by Turnpike Motors (Ref: EQ9092, Dated: 6/1/2014) to carry out a Stage 1: Desktop Study and Walkover Survey at a site known as Turnpike Motors, The Street, Walberton, BN18 0PG.

This report has been completed as it is understood that the site is to be redeveloped from its current use as a car garage into residential properties. Specific proposed plans have not been available to CE at the time of writing this report.

The client has instructed CE to undertake an environmental risk assessment to enable determination to the potential source – pathway – receptor linkages associated with the site and surrounding environs historical and current context.

The purpose of the Desktop Study was to provide information on:

- The expected geology & hydrogeology.
- The development history and most recent use.
- Potential sources of contamination.
- To enable the development of a Conceptual Site Model (CSM) and risk assessment.

This report presents results of the assessment, including historical Ordnance Survey maps and published geological & hydrogeological maps, as well as information from various sources such as Centremaps.

The report has been formulated in accordance with BS10175:2011 *Investigations into Potentially Contaminated Sites – Code of Practice* and CLR11 – *Model Procedures for the Management of Land Contamination*, and from Planning Policy Statement (PPS) 23 – *Planning & Pollution Control*.

2.0 PHYSICAL SETTING

The following observations are taken from published maps, which can be reviewed within Appendix B.

The site is located in the village of Walberton to the west of Arundel, and is centred on a National Grid Reference (NGR) 497050, 106042 with a site area of 0.15 hectares (Ha).

2.1 Geology

The relevant 1:50,000 British Geological Survey Map 317 (Chichester and Bognor Regis) indicates the site to be underlain by superficial deposits of River Terrace Deposits. This is underlain by solid geology comprising the London Clay Formation.

River Terrace Deposits – Sand and gravel, locally with lenses of silt, clay or peat.

London Clay Formation – The London Clay Formation typically consists of dark bluish to brownish grey, stiff heavily fissured Clay, containing variable amounts of fine grained sand and silt (particularly at the top and base of the deposit), weathering to orange brown clay near surface.

Geological Hazards – On site there is considered to be a Low risk from shrink swell, collapsible rocks and running sand, a Very Low risk from landslides, a Negligible risk from compressible ground and a Null-Negligible risk from soluble rocks.

2.2 Environmental

2.2.1 Hydrogeology

Aquifer within Superficial Deposits – Secondary (A) Aquifer; permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers;

Aquifer within Bedrock Deposits – Unproductive strata; These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

2.2.2 Hydrology

Groundwater Abstraction Licences – There are eight records within 2000m, the closest of these is located 904m south for direct spray irrigation.

Surface Water Abstraction Licences – Within 2000m there are two records, the closest of these is 1462m southeast for spray irrigation.

Detailed River Network – Of the seven records within 500m the closest is located 243m southwest and is listed as a drain (Tertiary River).

Surface Water Feature – The only record within 250m is located 243m southwest and is considered to be the previously mentioned drain (Tertiary River).

Flooding – Within 250m there are no records of Zone 2 or 3 floodplains, no flood defences, no areas benefiting from flood defences and no areas benefiting from flood storage. Within a 50m buffer the site is considered to have a very high susceptibility to groundwater flooding with a moderate confidence rating.

3.0 SITE CONDITIONS

3.1 Site Description

An Environmental Scientist from CE completed a walkover survey on 14th January 2014.

The study site is located within the village of Walberton and is accessible by pedestrian and vehicular means at the northern boundary via The Street.

The site comprises of an irregular shaped parcel of land that slopes down towards the north. The main use on site is for the MOT, repair and storage of cars and various car components. There is a single storey brick building, used as office and storage space, in the north of the site with an adjoining double height blockwork workshop building.

The workshop had a double layered roof comprising suspected asbestos containing corrugated cement sheeting overlain by corrugated metal sheeting. Vehicle maintenance is currently being undertaken within the workshop within which there is an inspection pit present, the concrete floor of which was heavily stained by oil. Various car parts, tools, oils and lubricants are stored within the main maintenance building and within the adjoining storage area to the east, staining was also noted on the floor within the storage area.

A single metal Aboveground Storage Tank (AST) is located to the south of the workshop on a brick base, it is understood that this is used for waste oil. Surrounding the tank were several plastic and metal containers used for various oils and solvents. The tank and containers are underlain by hard standing.

A second newer double height maintenance building with inspection pit is present in the west of the site used to undertake MOTs. Limited staining was noted on the concrete slab and there was limited storage of car parts and oil within. To the south of this is a small corrugated metal and wood garage, no access was available at the time of the site walkover.

In the south of the site was a gravelled area with weeds and brambles used to store tyres, two skips, gas cylinders, wood, breeze blocks, building sand, and various vehicles.

In the north of the site are historic Underground Storage Tanks (UST). It is understood the tanks have previously been decommissioned and are now foam filled.

Areas of oil staining were noted on the hard standing as well as puddles in the north.

3.2 Surroundings

The site is generally surrounded by residential dwellings with a small chapel to the west.

Photographs from the walkover can be reviewed within Appendix A.

3.3 Potential Sources of Contamination - Walkover Survey

On-Site

- Spills and leakages from stored car components, oils and lubricants.
- AST
- UST
- Asbestos Containing Material (ACM) from roof.

Off-Site

- No potential sources of contamination have been identified.

3.4 Site History

The following observations are made based on the available historic map extracts presented in Appendix B of which the most salient points have been discussed in relation to the site and surrounding environs. The sources identified which are considered to present a potential risk to the site are listed along side the observations.

<i>Date</i>	<i>Observations</i>	<i>Potential Contaminants</i>
1876	The earliest available maps show the site to be occupied by a single rectangular building in the north and a smaller outhouse in the centre. The remainder of the site to the south is shown to be an orchard. To the immediate east and west are buildings considered to be either residential or farm related with further orchards and agricultural land to the south. A road runs along the northern edge. The surrounding area is largely rural with orchards and fields.	On Site – Orchard (herbicides and pesticides)
1896-1897	An additional unspecified building has been constructed within the centre of the site. A chapel has been built to the immediate northwest.	-
1910-1912	The site appears unchanged. There has been limited residential development around the 100m periphery.	-
1938	The site appears unchanged. There has been additional residential expansion within the 100m periphery.	-
1950	The site remains unchanged. There are no significant changes to the surrounding area.	-
1961	The site remains unchanged. There are no significant changes to the surrounding area.	-
1974-1978	The building on site is now listed as a garage and several additional buildings are now present in the south, the orchards are no longer listed. Unspecified works are located 60m southeast and 80m north. An electrical substation has also been built 50m northeast.	On Site – Garage (hydrocarbons, heavy metals, VOC and SVOC). Off Site – Unspecified works and Electrical substation (PCBs)
1989-1994	There are no significant changes on or off site.	-
2002	A rectangular building is now on site in the west, this is considered to be associated with the garage. There are no discernable changes off site.	-
2012	There are no significant changes on or off site.	-

3.5 Potential Contamination Sources – Historical

On Site

- Orchard – Possible use of herbicides and pesticides.
- Garage – Hydrocarbons and heavy metals from fuels, lubricants and oils.

Off Site

- Unspecified works – Likely contaminants include hydrocarbons and heavy metals.
- Electrical substation - Polychlorinated biphenyls (PCB).

3.6 Information on Public Record

The following information has been obtained from public archive via the data supplier Centremaps or by direct application. The full Centremaps report is presented in Appendix C. Those identified that are considered to present a potential risk to the site are listed on the column below.

Public Record Information	Potential Contaminants																											
<u>Part A(2) and Part B Activities and Enforcements</u> – The only record within 500m is on site, this a historical Part B permit for the process of waste oil burning.	On Site - Hydrocarbons																											
<u>Licensed Discharge Consents</u> – Within 500m there is one record, this is located 310m south for sewage discharge from a church.	-																											
<u>Environment Agency Historic Landfill Sites</u> – There are five records within 1500m, the closest of these is 658m north for the disposal of inert, commercial and household waste.	-																											
<u>Potentially Contaminative Industrial Sites</u> – The eight records within 250m are listed in the table below: <table><tr><th>Distance (m)</th><th>Location</th><th>Activity</th></tr><tr><td>0</td><td>On Site</td><td>Vehicle repair (Sergents Garage)</td></tr><tr><td>0</td><td>On Site</td><td>Vehicle repair (Turnpike Motors)</td></tr><tr><td>33</td><td>East</td><td>Fabric retailer</td></tr><tr><td>66</td><td>Southeast</td><td>Unspecified Works</td></tr><tr><td>67</td><td>Northeast</td><td>Electrical Substation</td></tr><tr><td>96</td><td>Northeast</td><td>Unspecified Works</td></tr><tr><td>111</td><td>East</td><td>Pottery</td></tr><tr><td>245</td><td>Southeast</td><td>Electrical substation</td></tr></table>	Distance (m)	Location	Activity	0	On Site	Vehicle repair (Sergents Garage)	0	On Site	Vehicle repair (Turnpike Motors)	33	East	Fabric retailer	66	Southeast	Unspecified Works	67	Northeast	Electrical Substation	96	Northeast	Unspecified Works	111	East	Pottery	245	Southeast	Electrical substation	On Site – Hydrocarbons and heavy metals. Off Site – Unspecified works and electrical substation (PCBs).
Distance (m)	Location	Activity																										
0	On Site	Vehicle repair (Sergents Garage)																										
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67	Northeast	Electrical Substation																										
96	Northeast	Unspecified Works																										
111	East	Pottery																										
245	Southeast	Electrical substation																										

<i>Public Record Information</i>	<i>Potential Contaminants</i>
<u>Petrol and Fuel Sites</u> – The only record within 500m is located 130m south and is listed as obsolete. Given that the company address is Turnpike Motors it is considered that this is actually on site.	On Site – Hydrocarbons and heavy metals
<u>Designated Environmentally Sensitive Sites</u> – Within 2000m there are; forty six records of Ancient Woodlands with the closest located 520m north called Barns Copse, one record of an Environmentally Sensitive Area 896m northeast listed as the North Downs and one record of an Area of Outstanding Natural Beauty (AONB) located 890m northeast listed as the Sussex Downs.	-
<u>Nitrate Vulnerable Zone (NVZ)</u> – On site is recorded as a NVZ.	-
<u>Shallow Mining</u> – Within a 150m buffer there is a negligible risk associated with shallow mining.	-
<u>Estimated Background Soil Chemistry</u> – On site there is estimated concentrations of the following; arsenic at <15mg/kg, cadmium at <1.8mg/kg, chromium at 60-90mg/kg, nickel at 15-30mg/kg and lead at <150mg/kg.	-

4.0 PRELIMINARY CONCEPTUAL SITE MODEL & RISK ASSESSMENT

The Conceptual Site Model has been formulated in accordance with BS10175:2011, it assesses the significance of the environmental hazards identified at the site, the potential receptors and the pathway between them.

4.1 Sources

4.1.1 On Site

The on site potential sources have been identified as:

Vehicle workshop, above and below ground tanks, and car parts kept on site are likely to have caused leakages or spills of fuels, oils and lubricants over time. In many places this is likely to have been on soft ground given that staining was observed during the site walkover.

ACMs identified on the ground as well the roof of the workshop.

The historic orchard on site has not been considered further given the age and limited size of the orchard.

4.1.2 Off Site

The unspecified works and electrical substations are considered at too great a distance from the site to present an unacceptable risk.

4.2 *Receptors*

The receptors and possible pathways in relation to the site and surrounding areas are summarised below:

- Future end users – comprising residents of the proposed housing. Possible direct contact with contaminated soils, volatilisation, accidental ingestion and inhalation of contaminated dust generated from soils. Possible ingestion of soils as a result of consuming home grown vegetables.
- Site workers – during the redevelopment works. Likely direct contact with potentially contaminated soils and accidental ingestion, inhalation of contaminated dust generated from soils.
- Groundwater – pollution of a shallow superficial Secondary (A) Aquifer.
- Future building structure(s) and underground services – chemical attack on underground services including drinking water pipes and foundations.
- Future flora and fauna – within the garden and communal soft landscaped areas.

4.3 Conceptual Site Model

The Conceptual Site Model has been formulated to provide information regarding the possible sources of contamination on site, the pathway in which the contamination can migrate and vulnerable receptors to the contamination, all of which need to be present for there to be a risk.

<i>Source</i>	<i>Pathway</i>	<i>Receptor</i>	<i>Potential Risk</i>
Hydrocarbons including Total Petroleum Hydrocarbons (TPH), Polycyclic Aromatic Hydrocarbons (PAH), BTEX and MTBE from on site garage and associated tanks.	Inhalation, ingestion and dermal contact from exposure to contaminated soils.	End users.	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.
		Site workers.	Moderate risk given that site workers will be in direct contact with soils and based on the observations of the site walkover it is considered that soils are likely to have been impacted by the identified source.
	Leaching of contaminants through soils and/or via surface run off.	Secondary (A) Aquifer	Moderate risk given the sensitivity of the underlying aquifer and that portions of the site are not covered by hardstanding.
	Impacted soils.	Services.	Moderate risk as new services are likely to be installed in any new development.
		Future flora.	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.
	Volatilisation of hydrocarbons underlying soils and groundwater to indoor and/or outdoor air.	End users and buildings	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.
		Site workers	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.
	Impacted soils.	End users.	High risk given that potential ACM has been identified on site, if this is removed by a specialist contractor it is considered that this risk will be reduced.
ACM from workshop roof.		Site workers.	High risk given that potential ACM has been identified on site, if this is removed by a specialist contractor it is considered that this risk will be reduced.

14.7898 Turnpike Motors, Walberton

<i>Source</i>	<i>Pathway</i>	<i>Receptor</i>	<i>Potential Risk</i>
Heavy metals from on site garage and associated tanks.	Inhalation, ingestion and dermal contact from exposure to contaminated soils.	End users.	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.
		Site workers.	Moderate risk given that site workers will be in direct contact with soils and based on the observations of the site walkover it is considered that soils are likely to have been impacted by the identified source.
	Leaching of contaminants through soils and/or via surface run off.	Secondary (A) Aquifer	Moderate risk given the sensitivity of the underlying aquifer and that portions of the site are not covered by hardstanding.
	Impacted soils.	Services.	Moderate risk as new services are likely to be installed in the new development.
		Future flora.	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.
Volatile Organic Compounds (VOCs) and Semi Volatile Organic Compounds (SVOCs), from on site garage and associated tanks.	Inhalation, ingestion and dermal contact from exposure to contaminated soils.	End users.	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.
		Site workers.	Moderate risk given that site workers will be in direct contact with soils and based on the observations of the site walkover it is considered that soils are likely to have been impacted by the identified source.
	Leaching of contaminants through soils and/or via surface run off.	Secondary (A) Aquifer	Moderate risk given the sensitivity of the underlying aquifer and that portions of the site are not covered by hardstanding.
	Impacted soils.	Services.	Moderate risk as new services are likely to be installed in any new development.
		Future flora.	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.

14.7898 Turnpike Motors, Walberton

<i>Source</i>	<i>Pathway</i>	<i>Receptor</i>	<i>Potential Risk</i>
Continued..... Volatile Organic Compounds (VOCs) and Semi Volatile Organic Compounds (SVOCs), from on site garage and associated tanks.	Volatilisation of hydrocarbons underlying soils and groundwater to indoor and/or outdoor air.	End users and buildings	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.
		Site workers	Moderate risk given the extent of potential sources on site and that spills and leaks are likely to have occurred directly onto the underlying soil.

Negligible Risk	Defined as the site should be considered suitable for the present or future use and environmental setting. Contaminants unlikely to be present, which might have unacceptable impact on key targets.
Low Risk	Defined as the site should be considered suitable for the present or future use and environmental setting. Contaminants may be present but unlikely to have unacceptable impact on key targets.
Moderate Risk	Defined as the site may not be suitable for the present or future use and environmental setting. Contaminants are probably present and might have unacceptable impact on key targets.
High Risk	Defined as the site is probably or certainly not suitable for the present or future use and environmental setting. Contaminants are probably or certainly present and likely to have unacceptable impact on key targets.

5.0 CONCLUSIONS

This Stage 1 Desktop and Walkover Survey has identified various on site sources associated with the vehicle workshop.

The site was occupied by a single building and orchard until c.1974 when a garage was built on site. The site has remained a garage until the present day with an additional building constructed after 1994. The surrounding area has largely been rural consisting mainly of arable land and residential properties.

The risk to the future users and site workers is considered to be High as a result of the ACM observed on site, however, it is acknowledged that if this is removed from site prior to works this risk will be significantly reduced. Once the risk from ACM has been addressed it is considered that the sources identified with the onsite workshop present a Moderate risk. This risk category also applies to controlled waters, the proposed development and services.

The identified contaminants that present a potential risk to the above receptors include heavy metals, PAH, TPH, BTEX, MTBE, VOCs and SVOCs. These are considered to be as a result of spills or leaks caused by processes associated with the workshop and storage of car components.

It is also considered that the site presents a Moderate risk to end users and the proposed development from volatilisation which is attributed to the potentially impacted soils.

6.0 RECOMMENDATIONS

From the information contained within this report the following recommendations have been formulated.

6.1 *Proposed Site Investigation*

The main objectives of the proposed Site Investigation works are to establish whether or not unacceptable risks are present due to potential contamination which may restrict the development. The following investigation has not been designed to take into account any geotechnical parameters which may be required for the development at the site.

6.1.1 Testing Regime

The testing regime has been devised in accordance with BS10175:2011 *Guidelines for the Code of Practice for Contaminated Land* and CLR Report No.4 *Sampling Strategies*. The objective at this stage of the report is to attempt to delineate the extent of any contamination at the site by using intrusive soil sampling and testing techniques.

6.1.2 Scope of Works

Prior to intrusive investigation, the site area should be assessed using a Cable Avoidance Tool (CAT) to check for the presence of buried services. If service plans are available for the site, these should also be consulted prior to site work commencing.

We would recommend that investigation of the site comprises of window sampling at four positions to a nominal depth of 3-4 meters below ground level (mbgl).

In conjunction with the window sampling a series of shallow trial pits should be completed to a depth of 0.5mbgl to collect soil samples.

The locations of the proposed positions and holes should be for spatial coverage of the site given the extent of potential sources identified as well as targeting the UST and AST.

We would recommend the window sample holes are installed with gas and groundwater monitoring standpipes in order to quantify potential vapour and groundwater risks.

All positions should be logged and samples removed in accordance with current protocol. In addition, groundwater conditions, if encountered, shall be logged and visual/olfactory observations noted.

Samples should also be screened with a PID for the presence of VOCs.

6.1.3 Monitoring

The installed positions should be monitored for ground gases and groundwater, monitoring should commence approximately 7-10 days after completion of the holes to enable equilibration of the underlying soils and groundwater.

Gas monitoring shall be completed in accordance with CIRIA C665 *Assessing Risks Posed by Hazardous Ground Gases to Buildings*, when atmospheric pressure is either falling and/or below 1005 millibars (mb).

A portable Gas Analyser (GA2000+) will be used to monitor soil gases (Oxygen, Carbon Dioxide, Methane and Hydrogen Sulphide) within the positions. A Photo Ionisation Detector (PID- MiniRae 2000 lamp 10.6eV) meter will also be used during monitoring rounds to analyse the presence of Volatile Organic Compounds (VOCs) as a matter of course.

Once gas monitoring has been completed, a dip meter will be used to test for groundwater depth. If groundwater is encountered then the position will be adequately purged and samples subsequently removed in accordance with BS 6068-6.18: 2001 *Water Quality Sampling: Part 18 – Guidance on Sampling of Groundwater at Contaminated Sites*.

6.1.4 Analysis

An appropriate and consistent analytical suite of contaminative testing should be applied to any samples retrieved from site.

Based on the findings contained within this report, we would recommend that testing should comprise of a site specific screen to include: heavy metals, speciated TPH (aliphatic and aromatic C₅ – C₄₀), speciated PAH (including the more carcinogenic forms of naphthalene and benzo(a)pyrene), sulphates, pH and Soil Organic Matter.

Selected samples within Made Ground being screened for the presence of asbestos fibres.

If PID screening reveals the presence of the VOCs within the soils then laboratory analysis should be completed for VOCs and SVOCs.

If groundwater is encountered it is recommended that a standpipe is installed to allow monitoring and sampling. Groundwater samples should be submitted for a similar suite of analysis to the soils.

A UKAS and MCERTS accredited laboratory should be appointed to undertake all of the soil testing.

6.1.5 Guidance

The results from the Site Investigation will be compared against UK guidance including Soil Guideline Values (SGVs) and LQM CIEH Generic Assessment Criteria using the 'residential'. However, a Site Specific Assessment Criteria (SSAC) may also be utilised.

Groundwater analysis, if encountered, would follow a similar scenario and would be compared against the Drinking Water Standards (DWS) for the United Kingdom (UK). At present, there are no current UK DWS guidance for TPH, however to enable suitable characterisation of the site the old UK DWS guidance value will be utilised for correlative purposes.

6.2 *Statutory Consultees*

We would recommend that this report be forwarded to the relevant Statutory Consultees including the Environment Agency (EA) and Local Council's Environmental Health and Planning Department to seek their comments and subsequent approval.

6.3 *Underground Storage Tanks*

It is understood that the underground storage tanks on site have been decommissioned, however, it is not known whether these will require removing prior to development. If the tanks are to be excavated then the relevant Statutory Consultees should be contacted as the process may require validation by a suitably qualified person.

6.4 *Site works*

During construction works visual and olfactory appraisal of the underlying soils should be made. If during construction works any material is noted to show visual and/or olfactory sign of contamination a suitable geo-environmental consultant should be contacted to supervise/ guide further works. This material should be stockpiled separately and tested prior to its appropriate removal of site or re-use as necessary.

If any landscaping materials are to be imported on site they should be tested to check that they are suitable for the intended use. Clean, uncontaminated rock, subsoil, brick rubble, crushed concrete, ceramics and topsoil only shall be permitted as infill material.

6.5 Soakaways

Soakaways are for the disposal of clean uncontaminated surface water only and must not be constructed in contaminated land.

6.6 Flood Risk

This report is not intended to replace a full hydrogeological survey and it is recommended that additional specialist studies be conducted to confirm potential flood risks at the site.