TRENTSIDE GEOTECHNICAL TESTING

PHASE 1 LAND QUALITY ASSESSMENT REPORT

8A BELMONT STREET,

CAMDEN,

NW1 8HH

NOVEMBER 2018

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Graham Wing
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Date: 8th November 2018

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Table of Contents

APPENDIX A
(i) Site Photographs

APPENDIX B
(i) Groundsure Geo-Insight Report
(ii) Groundsure Enviro-Insight Report
(iii) Historical Mapping

APPENDIX C
Environmental Receptors

APPENDIX D
Risk Rating Matrix

EXECUTIVE SUMMARY

	SCOPE		
Purpose of the Report	This report presents an assessment of the likely risk associated with potential ground contamination at the site and provides information for the proposed development of the site.		
Future Site End-Use	The site is intended to be developed by way of partial demolition of the existing building and change of use of vacant storage unit and its re-development with a 3-storey building including basement excavation to provide 2 x 2-bed self-contained residential units on the lower ground floor, ground and first floor levels.		
	SITE INFORMATION		
Grid Reference	528328,184392	***Site Area (approx.)***	0.02 Hectares
Current Site Status	Vacant Storage Unit		
History	According to the information contained within the Groundsure Geo and Enviro Insight report at Appendix C, from the earliest available mapping, the site is empty until the 1950's when it appears to be a part of the Pianoforte Works grounds. From 1987 the mapping shows the site to be very close to the current lay out and is assumed to be storage or workshops. From the mapping, it appears the site has been surrounded by various works and a garage to the immediate south of the site. Around 100m south there are railway sidings although due to the nature of the underlaying bedrock there is little chance for migration of contamination from this source. The site itself has stayed generally consistent throughout the period mapped although surrounding there are a few limited uses that are listed as potentially contaminative. The full list is found within page 12 of the appended GroundSure report.		
Geology	The BGS Geological records indicated the site to have no Superficial Geology recorded. Bedrock deposits are recorded as **London Clay** formation.		
Hydrogeology	The hydrogeological records indicated that the site is located upon an **Unproductive Aquifer** within the Bedrock Geology.		
Hydrology	The site is located within a groundwater source protection zone (SPZ), however it does not lie within a ground vulnerability zone. The site does not lie within 250m of an Environment Agency/Natural Resources Wales Zone Flood Zone 2 or 3.		
Consultation	Apart from Groundsure Limited Reports and BGS online searches no other agencies and individuals have been directly contacted for records as part of this study.		
	CONCLUSIONS AND RECOMMENDATIONS		
Contaminated Land Assessment	Based on the information obtained during the desk study and the observations made during the walkover survey, it is concluded that the potential for significant pollutant linkages with respect to ground contamination at the site is **LOW to MODERATE**.		
Recommendations	A Phase 2 intrusive contaminated land investigation should be undertaken to determine the actual pollution linkages and to quantify the risk to the receptors as outlined with the Preliminary Conceptual Site Model. It would be prudent to undertake a geotechnical investigation of the site alongside the contaminated land investigation to enable a suitable foundation solution to be designed		

1 INTRODUCTION

1.1 The Brief

Trentside Geotechnical Testing Ltd was instructed to undertake a preliminary qualitative desk-based contamination assessment of ground conditions and site reconnaissance. This report was written on the instructions of Alejandro Fernandez of Martin Evans Arcitects for the site at 8a Belmont Street, Camden, NW1 8HH

The site is intended to be developed by way of partial demolition of the existing building and change of use of vacant storage unit and its re-development with a 3-storey building including basement excavation to provide 2 x 2-bed self-contained residential units on the lower ground floor, ground and first floor levels.

This report has been prepared for the exclusive use of Martin Evans Architects and persons they nominate, for assisting in the evaluation of potential risk associated with any ground contamination at the site.

1.2 Constraints and Limitations

The information presented within this report is based on observations made on-site, a review of available historical, geological and hydrogeological data obtained from Enviro Insight reports, Geo Insight reports and historical Maps produced by Groundsure Limited. Details of these reports can be found in Appendix B. Apart from Groundsure Limited Reports and BGS online searches, other agencies and individuals have not been directly contacted for records as part of this study.

Based on available information, a preliminary site specific conceptual model was developed to facilitate a qualitative assessment of ground contamination and potential environmental risks. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at, or adjacent to the site.

The scope of the study excludes any sort of geotechnical assessment and relates solely to potential contamination issues relating to the current and future use of the site. A quantitative contamination risk assessment was not undertaken as part of the study for this report.

Trentside Geotechnical Testing Ltd has endeavoured to assess all information used in the production of this report, but do not guarantee the accuracy or completeness of the information obtained from third-party sources.

1.3 Previous Investigations, Reports and Remediation Work

Trentside Geotechnical Testing were presented with a Basement Impact Assessment, Flood from Groundwater Risk Assessment and a small scale geotechnical site investigation. We have not been made aware of any previous remediation works pertaining to the site.

1.4 Objectives

The main aim of this report is as follows:

- To Obtain information from third party sources about the geological and environmental conditions within the area of the site
- Determine the possible ground related geotechnical and contamination hazards within the site boundary that may affect the proposed development

2 SITE DESCRIPTION

2.1 Location and Topography

The site is roughly 0.02ha in area and generally rectangular in shape. It is formed over two levels and located in Camden, North West London. Camden forms part of Inner London. The southern reaches of Camden form part of central London. The local authority is Camden London Borough Council.

A site visit was carried out on 28th July 2017. During the site visit full access was granted and available. An escort was provided due to the closed nature of the site and lack of general public access. The site is accessible on foot from the road and open to persons with access keys. The site would be easy to enter directly from vehicles although there is a limited head space of around 1.9m and this should be considered if any samples are to be taken using a drilling rig. There were no obvious visual or olfactory signs of contamination present across the site.

The site was largely even and uniform giving no indication of obvious signs of infilled land. No records of infilled land or potentially infilled land were noted on site within the GroundSure report.

No immediate concerns were noted nor the presence of any invasive plant species (such as Japanese Knot Weed).

3 SITE HISTORY

A review of historical Ordnance Survey (OS) maps obtained from Groundsure Limited was undertaken. A summary of the site history is given in chronological order in Table 1 below. Copies of the relevant map extracts are provided in Appendix B.

Table 1. Summary of History of the Site

OS Extract (Year)	Scale	Site Land Use	Surrounding Land Use
1874	2,500	Site unoccupied and appears frontage to adjacent building	Billiard Saloon Racket Court Surrounding Residential Developments Railways Warehouse
1916		No Significant Changes	Coal Depot
1952	2,500	Appears Part of “Pianoforte Works”	Goods Yard – 100m N Unspecified Works – 100m E
1987	2,500	Site appears close to current layout	Surrounding Industrial and Residential Developments
1991	2,500	No significant changes	Surrounding Industrial and Residential Developments
1991 - 2014	10,000	No further changes have been identified.	

4 GEOLOGY

4.1 General Geology

The geology beneath the site, as summarised in Table 4 below, has been established from British Geological Survey digital geology maps (www.bgs.ac.uk/data).

Table 2: Site Geology

Deposit	Distance	Typical Description	Comments
Superficial / Drift Geology	-	None Recorded	-
Bedrock / Solid Geology	On Site	London Clay	Unproductive Strata

5 HYDROGEOLOGY

Table 3 provides details of the groundwater classification of the hydrogeology units at the site.

Table 3: Groundwater Classification

Deposit	Location/Direction	Designation	Comments
Bedrock	On Site	Unproductive Aquifer	Unlikely to be considered as a potential pathway/receptor

6 HYDROLOGY

The site is located within a groundwater source protection zone (SPZ), however it does not lie within a ground vulnerability zone. The site does not lie within 250m of an Environment Agency/Natural Resources Wales Zone Flood Zone 2 or 3.

Table 4: Summarises the hydrological hazards of the site.

Data Type	Hazard	Comments
Groundwater Abstraction license	No abstraction licenses within 2km.	Low risk to receptor
Surface Water Abstraction license	No abstraction licenses within 2km.	Potentially low risk receptor due to nature of abstraction
Discharge consent	12no record of discharge consents within 500m of the site the nearest was 86m South. All discharge consents have either expired or have been surrendered.	Low risk due to nature of discharge.
Surface water feature	There are 2 surface water features located within 250m of the site.	Potentially moderate risk receptor due to nature and vicinity of receptor
Detailed River Network	Detailed River Network entries within 500m of the site; consisting of lakes/reservoirs, culverts, secondary and tertiary rives. The closest lake to the site is 141m South – River Adur	Considered as a receptor

Table 5 details the groundwater vulnerability and leaching potential within 500m of the site.

Table 5. Groundwater Vulnerability and Leaching Potential

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On site	-	-	No data recorded

7 Geological Hazards

The hazard rating with regards to natural subsidence within the study site is MODERATE according GeoSure report. The National Ground Subsidence (NGS) rating is obtained through the 6-natural ground stability hazard datasets, which are supplied by BGS. Table 8 provides details of the six individual NGS

Table 6. Details of Natural Ground Subsidence Ratings

Type	Rating	Details
Shrink-Swell Clays	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
Landslides	Very Low	Slope instability problems are unlikely to be present
Ground Dissolution of Soluble Rocks	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.
Compressible Deposits	Very Low	Very low potential for compressible deposits to be present. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
Collapsible Deposits	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.
Running Sands	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7.1 Archaeological Hazards

Archaeological information has not been sought as part of this desk study and it is assumed that the Client has not identified it as an issue. Some Local Authorities require at least an initial archaeological appraisal for development sites. Archaeological investigations occasionally reveal ground related problems from ancient times (prior to the 1st Edition OS maps) and can occasionally cause foundation and contamination hazards.

7.2 Quarrying, Mining and Radon

According to the Groundsure Enviro Insight Report the site has no historical mining or extraction activities within 1000m of its boundary. There are also no cavities within 1000m of the site boundary. The site is also not located within a Radon affected area, with less than 1% of homes above the Radon Action Level.

8 Environmental Hazards

Table 7 below summaries the potential hazards associated with pollution incidents, discharge consents and water abstraction license.

Table 7: Summary of Hazards Related Pollution Incidents, Discharge Consents and Water Abstraction

Data Type	Hazard	Comments
Pollution Incidents	6 records of pollution incidents to listed within 500m of the site	No action required
Potentially infilled land	11no records of potentially infilled land within 250m of the site. The closest is a timber pond 21m SE	Potential source of contamination to the site due to proximity and permeability of the underlying geology of the site
Land fill	No landfill activities pertain to the site. There are however multiple other licensed waste sites within 1500m of the site; the nearest of which is a metal depot 62m E	Considered as source of contamination. Medium risk due to proximity to site.
Local Authority Land Fill	No records of landfills mostly used as refused tips within 1500m.	Potentially low to medium risk of contamination to site users due to the permeability of the soil and high leaching potential of the underlying aquifer.
Part A (1) and IPPC Authorised Activities	No records	-
Dangerous Substances	No records	-
Records of Part A (2) and Part B Activities and Enforcements	8no record of environmental permit 47m south east of the site for mineral drying and cooling	Potentially low risk contamination source due to distance from site.
Licensed waste management sites	5no records of waste treatment or disposal sites. The closest is 487m east of the site.	Potentially low risk contamination source due to distance from site.

8.1 Visual Indications of Contamination and Invasive Plants

Trentside is not a specialist in this topic and has not conducted such a survey, however easily recognisable species such as Japanese knot weed, Giant Hogweed, badger sets were not noticed during the site walkover survey.

8.2 Designated Environmentally Sensitive Sites (DESS)

Table 8 summarises presence of the nearest DESS areas within 2000m of the site (Ground sure report - section 8)

Table 8. Summary of Designated Environmentally Sensitive Sites

Records of Local Nature Reserves (LNR)			
Distance (m)	Direction	LNR Name	Comment
1147	NW	Belsize Wood	No action required
1791	SE	Camley Street Nature Park	No action required
1809	SW	St Johns Wood Church Gardens	No action required

8.3 Source characterization

There are several potential sources of contamination identified off site including landfills/infilled land, unspecified/specified tanks, Industrial Repairs and Servicing historic garages, electrical features, and substation. Other sources of potential contaminative land use around the vicinity of the site include unspecified ground working unspecified commercial /industrial use, Distillery Pond, Metals Manufacturers, Fabricators and Stockholders and a refuse heap.

9 CONCEPTUAL SITE MODEL AND PRELIMININARY RISK ASSESSMENT

Contaminated Land, as defined in Part IIA of the Environmental Protection Act 1990 and the Contaminated Land (England) Regulations (2012) is assessed by the identification and assessment of potential pollutant linkages. The linkage between the potential sources and potential receptors identified needs to be established and evaluated

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

(a) significant harm is being caused or there is a significant possibility of such harm being caused; or
(b) pollution of controlled waters is being, or is likely to be, caused.

It should be noted that DEFRA has advised (DEFRA Circular 1/2006; Annex 3 Part 4) local authorities that land should not be designated as contaminated where:

(a) a substance is already present in controlled waters;
(b) entry into controlled waters of that substance from land has ceased; and
(c) it is not likely that that further entry will take place.

The local authority should regard something as being "likely" when they judge it "more likely than not to occur". These exclusions do not necessarily preclude regulatory action under the Water Resources Act 1991, which makes it a criminal offence to cause, or knowingly permit, any poisonous, noxious or polluting matter to enter controlled waters. In England and Wales, under the Anti-Pollution Works Regulations 1999, an anti-pollution notice may be served by the regulator requiring appropriate investigation and clean-up.

The local authority should regard something as being "likely" when they judge it "more likely than not to

occur". These exclusions do not necessarily preclude regulatory action under the Water Resources Act 1991, which makes it a criminal offence to cause, or knowingly permit, any poisonous, noxious or polluting matter to enter controlled waters. In England and Wales, under the Anti-Pollution Works Regulations 1999, an anti-pollution notice may be served by the regulator requiring appropriate

A Conceptual Model of the site has been developed, based historical and current potentially contaminative activities which have been identified from the review of available information to have taken place at, or adjacent to the site, are summarised in Table 9. Risk of harm from pollution are assessed in Table 10.

Table 9: Conceptual Site Model

Source	Potential Contaminants	Potential Pathways	Potential Receptors	Possible / Significant Pollutant Linkages
Railway Workings / Sidings	Heavy Metals, fuels and oils, solvents organic wastes, metals, semi metals, inorganics and hydrocarbons	Dust ingestion, dust inhalation and dermal contact Root uptake. Leachate generation and vertical migration of contaminants. Ground water	Human health buildings, animals, plants and water body	Potentially significant linkage due to high leaching potential of soil. particularly if nitrate concentrations are such that it impacts and exceeds the maximum allowed 50mg/l in any drinking water.
Buildings (On site)	Asbestos, gases	Inhalation and dermal contact	Human health	Significant if asbestos particles are released on site.
Electrical Features (On and Off site)	Heavy Metals, fuels and oils, solvents	Dust ingestion, dust inhalation and dermal contact Leachate generation and vertical migration of contaminants. Ground water	Human health, buildings in the vicinity	Significant if concentrations detected.
Infilled Ground - Concentration of Ground Gasses causing combustion	Methane, Carbon Dioxide, Hydrogen, Nitrogen, Carbon Monoxide	Migration, inhalation	Human health, buildings in the vicinity Major aquifer	Significant only if UXO is activated and detonates.
Historic Garages and engineering works (Off site) Garage associated activities including infrastructure used for the storage of associated chemicals	Potential for contamination from historical land uses and activities resulting in impacted surface water from Hydrocarbons (TPH, PAH, BTEX)	Dust ingestion, dust inhalation and dermal contact Leachate generation and vertical migration of contaminants. Ground water	Human health, buildings and water body Major aquifer	Potentially significant linkage due to high leaching potential of soil and high permeability of the sand and gravel layer underlying the site.
Infilled Land, possibly from old gravel pits cavities,	Metals, semi metals, inorganics, asbestos, PCBs,	Infilling of mining related extraction pits.	Human health, pets, buildings	Potentially significant. Release of gases which

unspecified ground workings/pits, made ground and unknown filled ground. (Off site)	fuels, oils, chlorinated hydrocarbons and PAHs. Also, dioxins and furans. Asbestos		and water body Major aquifer	may be explosive or asphyxiating. Downward migration of l
Unspecified Tanks & Tanks. (Off site)	Unknown Industrial feature	Unknown Industrial feature	Unknown	Unknown

10 PRELIMINARY CONTAMINATION RISK ASSESSMENT

The risk of significant harm from above has been assessed qualitatively as low, medium or high using the criteria shown in Appendix D. A risk estimation matrix for all pollutant linkages identified is shown in Table 10 below.

Table 10: Contamination risk assessment

Receptor	Potential Sources	Pathways	Risk	Comments
Human Health				
Existing site workers	Contaminated soils and groundwater.	Direct contact / ingestion, inhalation.	Moderate	There is historical likelihood of potential historical and current sources of contamination on/off-site. Site workers however are likely to be exposed directly to soils and groundwater
	Ground gas / vapours.	Inhalation.	Moderate	There is some likelihood of potential historical and current sources of contamination on site. Potential contamination primarily relates to off-site activities (refuse heap, infilled land etc). The existing storage building could have potentially collected gases in a confined space
Future site users including construction and ground workers	Contaminated soils and groundwater.	Direct contact / ingestion, inhalation.	Low	There is limited to no evidence of potential historical and current sources of contamination on/ off-site. Future site users however are likely to be exposed directly to soils and groundwater;
	Ground gas / vapours.	Inhalation.	Low	There is limited to no evidence of potential historical and current sources of contamination on site. Potential contamination relates to off-site activities (refuse heap, infilled land etc.) The existing storage building could have potentially collected gases in a confined space
Adjacent properties users	Contaminated groundwater and vapour.	Migration through Aquifer, direct contact, inhalation, ingestion.	Moderate	There is limited to no evidence of potential historical and current sources of contamination onsite or Off-site. The major aquifer could provide a significant pathway for leachates into nearby buildings

Property (Buildings)				
Adjacent structures	Contaminated soils and groundwater	Migration through groundwater.	Moderate	There is limited evidence of potential historical and current sources of contamination on site. However off-site sources in the surrounding area may provide aggressive conditions for adjacent structures rather than from this site. The major aquifer could provide a significant pathway for leachates into nearby buildings
	Ground gas / vapours.	Migration through near surface soils. .	Moderate	There is limited evidence of potential historical and current sources of contamination on site. However off-site sources in the surrounding area may provide aggressive conditions for adjacent structures rather than from this site.
Property (Crops and Pets)				
Crops and Pets	Contaminated soils and groundwater. Ground gas / vapours	Migration through Aquifer strata, direct contact, inhalation, ingestion.	Low	There is some evidence of potential historical and current sources of contamination on- and off-site. Future occupants and adjacent property occupants however are unlikely to grow crops or own pets. These are unlikely to be exposed directly to soils and groundwater; therefore, direct contact, ingestion and inhalation exposure pathways are unlikely to exist.
Water Bodies				
Lakes/ Reservoir, Culverted Sources and Drains	Contaminated soils and groundwater.	Surface water run-off, lateral migration of contamination.	Moderate	There is some evidence of potential historical and current sources of contamination on site. Potential contamination primarily relates to off-site activities. Receptor are unlikely to impacted by activities on site during construction works and by activities of future occupants.
Secondary A Aquifer / Principal Aquifer	Contaminated soils and groundwater	Downward migration through the soils.	Moderate	There is limited evidence of potential historical and current sources of contamination on/off-site. The sand and gravel layer underlying the site could provide a significant pathway for leachate into the ground water, nearby surface water bodies and adjacent sites. The site is classed as having a high leaching potential. Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they can attenuate diffuse pollutants.

11 OTHER OPERATIONAL ISSUES

The proposed development will require excavations for building foundations. Where material arising from these excavations cannot be used as fill material on site, an assessment would be required to determine if the surplus soil arisings have hazardous properties and to ascertain suitability for use in the formation of the bunds on site. Alternatively, if required, the assessment should determine the likely waste classification of the soil arisings to assist with an appropriate disposal route

12 CONCLUSIONS

In our opinion, the risk of potentially significant harm being caused to potentially sensitive receptors by the impact of the potential environmental hazards identified at or surrounding the site in its current state with regards to the proposed end-use is deemed to be **LOW to MODERATE.**

In our opinion the risk of the site being classified as contaminated land by the local authority under the provisions of the statutory guidance made under Part IIA of the Environmental Protection Act 1990 is LOW.

Although a low to moderate risk has been assigned to the potential for risks to arise as a result of the development, due to the presence of linkages between sources and receptors an intrusive investigation would be prudent to assess the nature of the made ground at the site and to determine the extent of any potential contamination. We would recommend a regieme of Ground Gas Monitoring with 6 visits over a minimum 2 month period.

Should redevelopment of this site take place it would be prudent to undertake a geotechnical investigation of the site to enable a suitable foundation solution to be designed. If possible, it would be advised to undertake this at the same time as the environmental investigations to minimize mobilization and supervisory costs.

The main potential source of contamination identified on site relates to the NVZ and possible asbestos containing materials from existing structure to be demolished. Potential sources of contamination identified off site including landfills/infilled land, unspecified/specified tanks, historic garages, electrical features, and substation. Other sources of potential contaminative land use around the vicinity of the site include unspecified ground working unspecified commercial /industrial use, Distillery Pond, Metals Manufacturers, Fabricators and Stockholders and a refuse heap.

The key receptors that could be affected by potential contamination are: current and future site users including residents, construction and maintenance workers, controlled waters and property (crops, livestock and structures).

Based on the information obtained during the desk-based study and the observations made during the walkover survey and given the known history of the site, it is considered possible that significant contamination is present within the sub- surface. The preliminary risk assessment for the site is therefore likely to be *MODERATE*

A watching brief should be maintained throughout the entire development phase of works and any possible evidence of contamination encountered during the redevelopment works should be alerted to the Local Authority. Appropriate actions would then be required to further inspect, sample and analyse any suspect materials, and formulate an appropriate remediation plan, as necessary

13 RECOMMENDATIONS

Based on the information obtained in the formation of this report, a Phase 2 intrusive contaminated land investigation should be undertaken to determine the actual pollution linkages and to quantify the risk to the receptors as outlined with the Preliminary Conceptual Site Model. It would be prudent to undertake a geotechnical investigation of the site alongside the contaminated land investigation to enable a suitable foundation solution to be designed

APPENDIX A

(i) Site Photographs

APPENDIX B

(i) Groundsure Geo-Insight Report
(ii) Groundsure Enviro-Insight Report
(iii) Historical Mapping

TRENTSIDE GEOTECHNICAL TESTING

INTERPRETIVE REPORT

on

SITE INVESTIGATION AND LABORATORY TESTING

at

8a Belmont Street, Camden, NW1 8HH

8th November 2018

REPORT NO: TGT2479

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Prepared by: **Checked by:**

Approved by:

Graham Wing
Trentside Geotechnical Testing Ltd

Date: 8th November 2018

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1 INTRODUCTION

This report was written on the instructions of Alejandro Fernandez of Martin Evans Arcitects for the site at 8a Belmont Street, Camden, NW1 8HH. The Site Investigation consists of a Phase 1 Desktop Study. An Intrusive Site Investigation with subsequent contamination testing, gas monitoring and a geo-environmental engineering summary report based upon the collated data. The Phase 1 Desktop Study, Site Works and final engineering report was carried out by Trentside Geotechnical Testing. Chemical testing carried out DETS (UKAS2139)

The aim of the tests was to investigate the ground conditions and carry out subsequent laboratory tests in order to provide information regarding risk and levels of any contamination on site. The investigation included 2no 15m Boreholes (BH1 & BH2) and sampling for subsequent laboratory testing. The material logs and laboratory test results are appended to this report.

The ground investigation has been carried out using intrusive ground investigation techniques in general accordance with the recommendations of BS5930: 1999 *Code of Practice for Site Investigations* (including Amendment A2, 2010). Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks. Testing has been undertaken to detect the presence of gas in the ground. The laboratory tests have been carried in general accordance to of BS1377: *1990 Methods of Test for Soils for Civil Engineering Purposes* and BRE Special Digest 1: Concrete in Aggressive Ground.

All 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, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations and water conditions between or below exploratory holes. It should be noted that groundwater levels, gas concentrations and gas flows, if present, usually vary due to seasonal, atmospheric and/or other effects and may at times differ to those measured during the investigation.

All information, comments and opinions given in the desk study appended to and referred to in this report are based on the information obtained from GroundSure Ltd. The information search cannot be exhaustive and there may be records that have not come to light. There may also be circumstances where events or features at the site that are not documented. This report was prepared for the sole and exclusive use of the client in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

2 SITEDESCRIPTION

2.1 Location, Topography and Current Site Conditions (Site Reconnaissance)

The site is roughly 0.02ha in area and generally rectangular in shape. It is formed over two levels and located in Camden, North West London. Camden forms part of Inner London. The southern reaches of Camden form part of central London. The local authority is Camden London Borough Council.

A site visit was carried out on 28th July 2017. During the site visit full access was granted and available. An escort was provided due to the closed nature of the site and lack of general public access. The site is accessible on foot from the road and open to persons with access keys. The site would be easy to enter directly from vehicles although there is a limited head space of around 1.9m and this should be considered if any samples are to be taken using a drilling rig. There were no obvious visual or olfactory signs of contamination present across the site.

The site was largely even and uniform giving no indication of obvious signs of infilled land. No records of infilled land or potentially infilled land were noted on site within the GroundSure report.

No immediate concerns were noted nor the presence of any invasive plant species (such as Japanese Knot Weed).

2.2 Geology

Information on the geology of the site was obtained from the following sources published by the British Geological Survey (BGS):

- The BGS digital geology map, which utilises the most up to date names for geological units (www.bgs.ac.uk/data).

- Information on geology obtained as part of the desk study, which is drawn from the BGS digital map.

The site is shown to be underlain by the following strata:

TABLE 1: SUMMARY OF SITE GEOLOGY	
Geological Unit Name	**Description (BGS)**
Superficial Deposits	**None Recorded**
Bedrock	**London Clay Formation - Clay, Silt And Sand. Sedimentary Bedrock formed approximately 34 to 56 million years ago in the Palaeogene Period. Local environment previously dominated by deep seas.** The London Clay mainly comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions ('cementstone nodules') and disseminated pyrite. It also includes a few thin beds of shells and fine sand partings or pockets of sand, which commonly increase towards the base and towards the top of the formation. At the base, and at some other levels, thin beds of black rounded flint gravel occurs in places. Glauconite is present in some of the sands and in some clay beds, and white mica occurs at some levels. The base of the London Clay formation was redefined by Ellison et al. (1994) to correspond to the base of the Walton Member (Division A2) of King (1981). It is usually marked by a thin bed of well-rounded flint gravel or a glauconitic horizon, or both, typically resting on a sharply defined planar surface, although locally uneven. The London Clay Formation overlies the Harwich Formation or, where the Harwich Formation is absent, the Lambeth Group. The top of the London Clay Formation is taken as the top of the Claygate Member, which is distinguished from the overlying Bagshot Formation by containing finer sand without cross-bedding and in the relative abundance of clay and silt in the Claygate Member.

2.3 Hydrogeology and Hydrology

The Environment Agency (EA) website (www.maps.environment-agency.gov.uk/wiyby/) has classified the geological units underlying the site as follows:

- Bedrock Geology as Unproductive Strata

'Unproductive Strata' are rock layers or superficial deposits with low permeability that have negligible significance for water supply or river base flow.'

The site is located within a groundwater source protection zone (SPZ), however it does not lie within a ground vulnerability zone.

The site does not lie within 250m of an Environment Agency/Natural Resources Wales Zone Flood Zone 2 or 3.

2.4 History of Site and Surrounding Area

According to the information contained within the Groundsure Geo and Enviro Insight report at Appendix C, from the earliest available mapping, the site is empty until the 1950's when it appears to be a part of the Pianoforte Works grounds. From 1987 the mapping shows the site to be very close to the current lay out and is assumed to be storage or workshops. From the mapping, it appears the site has been surrounded by various works and a garage to the immediate south of the site.
Around 100m south there are railway sidings although due to the nature of the underlaying bedrock there is little chance for migration of contamination from this source.
The site itself has stayed generally consistent throughout the period mapped although surrounding there are a few limited uses that are listed as potentially contaminative. The full list is found within page 12 of the appended GroundSure report.

2.5 Geo - Environmental Data

There are no records of Historic Surface Ground Workings or Underground Workings on this site. The nearest being a tunnel approximately 194m SW. There are no records of historical mining on or within 1000m of the site. The site is expected to be High Plasticity in areas of cohesive material and therefore a moderate risk of Shrink/Swell. The is a very low to negligible risk of Landslides, Ground Dissolution of Soluble Rocks, Compressible Deposits, Collapsible Deposits and Running Sands. Full details of environmental features such as landfills, groundwater abstraction points, etc, are in the Groundsure Geo and Enviro Insight report that can be found in Appendix C of this report.

2.6 Initial Conception Model

An initial conceptual model has been compiled based on the fact that the site has a history of commercial use (Section 2.5 above and Appendix C). An intrusive investigation for contamination chemical testing has been carried out (Appendix A).
Please note, if any soils are imported to the site or exported out from the site, for instance for use as landfill, validation of their suitability will be required.

The identified potential sources of contamination, associated contaminants and receptors have been considered with plausible pathways that may link them. The resulting potential pollutant linkages are considered in Section 2.6.5. The risk classification has been estimated in accordance with information in Appendix C.

2.6.1 Summary of Potential Contamination Sources

Potential source and their associated contaminants of concern are summarised in Table 2 below.

TABLE 2: SUMMARY OF POTENTIAL SOURCES AND CONTAMINANTS	
On Site (Historical & Current)	**Contaminants of Concern**
Made Ground	Heavy metals, asbestos, hydrocarbons (potentially present within the made ground).
Potential for inorganic and low volatility organic contaminants to be present within the sub- surface soils	SVOC's
Potential for volatile organic contaminants to be present within the sub- surface soils	VOC's
Off Site	**Contaminants of Concern**
Historical Activities	Hydrocarbons, VOCs, SVOCs

2.6.2 Summary of Potential Receptors

Considering the setting of the site and the proposed redevelopment, sensitive receptors are considered to include:

- future site occupants
- future maintenance workers
- adjacent site users
- vegetation
- buried services and structures
- groundwater

Please note that construction workers have not been identified in the conceptual model as receptors because risks are considered to be managed through health and safety procedures including CDM regulations. This also applies to occupational exposure arising from activities in the work place.

2.6.3 Pathways

Pathways that could plausibly result in a complete contaminant linkage include:

- direct contact (of future residents and maintenance workers by soil and dust ingestion, dust inhalation and dermal contact)
- direct contact (of future residents with contaminated soils by consumption of home grown vegetables)
- root uptake
- direct contact with buried services and structures
- leachate generation and vertical migration of contaminants.

2.6.4 Potentially Complete Contaminant Linkages

The plausible potentially complete contaminant linkages identified for the proposed end use are:

1. Direct contact by future site users or construction/maintenance workers with soil that may be impacted by heavy metals, hydrocarbons or asbestos.

2. Direct contact with sensitive buried services with soils that may be impacted by hydrocarbons.

3. Leachate generation and vertical migration of contaminants to groundwater.

2.6.5 Risk Estimation for Potentially Complete Contaminant Linkages

The potentially complete contaminant linkages are detailed above with the estimated risk associated with each being detailed in Table 3 below. The risk classification has been undertaken in accordance with CIRIA C552, with a summary of the relevant section being included in Appendix B.

TABLE 3: RISK ESTIMATION FOR POTENTIALLY COMPLETE CONTAMINANT LINKAGES

Contaminant Linkage	Likelihood	Severity	Risk and justification
1	Low likelihood	Medium	Moderate/Low: Soils impacted with heavy metals, or asbestos from the demolition of earlier structures at the site. Impact from hydrocarbons is not unlikely.
2	Low likelihood	Medium	Moderate/Low: Significant ground contamination is not likely, however given the age of the site and the nature of the activities that take place on it, there is potential for hotspots of hydrocarbon contamination within the near surface soils.
3	Low likelihood	Medium	Moderate: Groundwater is expected to be in the region of 2.7m depth beneath the site. Impact on groundwater would require significant contamination of the overburden soils.

The review of the available information and the production of the initial conceptual model and risk assessment has identified risks associated with potentially complete pollutant linkages that range from Low to Moderate.

Linkages with risk estimations of Moderate/Low or above would typically require further investigation. These linkages are: -

- Linkage 1
- Linkage 2
- Linkage 3

To further investigate the risks posed by these linkages an intrusive site investigation was completed, the methodology and findings of which are detailed in the following sections.

3 FIELDWORK

3.1 Scope of Works

The intrsusive investigation comprised of sinking 2No. exploratory boreholes by Continuous Flight Auger (CFA) method and sampling methods to investigation depths of up to 15m below ground level (BH1 – BH2) on 28th July 2017.

A further intrusive site investigation was carried out on 29th October 2018 where a further 4no Trial Pits and samples were taken across the footprint of the building. Contamination Testing including Metals, PAH, TPH and Asbestos was carried out on all samples.

The Site Plan within Appendix A illustrates the position of the investigation holes within the site boundary. The site plan, bore hole and bore hole logging was carried out by sub contractors of Trentside Geotechnical.

3.2 In-Situ Testing

The Pilcon hand held vane was used to carry out soil shear tests at various depths within the excavations and testing within any cohesive layers. When non-cohesive layers were encountered, Mackintosh Probe testing was undertaken, the results of which are noted on the material logs in Appendix A.

3.3 Sampling

Small disturbed samples were collected at various depths as the Boreholes were advanced. These were returned to Trentside Geotechnical Testing Ltd for processing, checking and then DETS for Chemical / Contamination Testing (UKAS 2139).

4 LABORATORY TESTING

8 representative samples of the upper MADE GROUND and superficial natural material encountered across the site were selected and tested for a range of commonly occurring contaminants and indicators of contamination including those given by the Contaminated Land Exposure Assessment (CLEA). A contamination suite was undertaken on the selected samples which included heavy metals, speciated PolyAromatic Hydrocarbon (PAH) and speciated Total Petroleum Hydrocarbon (TPH).

DEFRA/EA previously published a number of Soil Guideline Values (SGVs) for certain determinants, (common toxic metals), which were generic guideline criteria for assessing the risks to human health from chronic exposure to soil contamination for standard land- use functions. However, these were withdrawn in late 2008 and DEFRA/EA have now issued a new set of guidance documents. With regard to the ENV1 standard suite of tests, currently SGV figures have only been issued for Arsenic, Cadmium, Mercury, Nickel, Phenols and Selenium.

In the absence of currently published SGV values for the remaining contaminants, Messrs. WS Atkins have derived ATRISK Soil Screening Values (SSVs) based on the new 2009 guidance (SC050021/SR3 (the CLEA Report) and SC050021/SR2 (the TOX report)) for commercial/industrial, residential without homegrown produce, residential with homegrown produce and allotment land uses. These have been based on the default assumptions provided in the CLEA report which it is understand will be used in the development of future Soil Guideline Values by DEFRA and the Environment

Agency. Atkins SSVs have been derived in line with the new guidance using CLEA model v1.04. As the inhalation of vapour pathway contributes less than ten percent of total exposure, this is unlikely to significantly affect the combined assessment criterion and the SSV values used are the combined assessment criterion given by CLEA if free product is not observed.

Neither CLEA or ATRISK currently publish values for Hexavalent Chromium. Therefore, both Total Chromium and Hexavalent Chromium values have been compared against the Land Quality Management/Chartered Institute of Environmental Health (LQM/CIEH) Generic Assessment Criteria published in 2009 and based on CLEA v1.04 with Total Chromium values based on Chromium III.

No traces of Asbestos were found within any of the samples tested.

4.1 UPDATED CONTAMINATION RISK ASSESSMENT

Based on the results of the soils samples tested and when compared to General Assessment Criteria (GAC) derived from the assumption the site would be "residential – without plant uptake". We present the below updated site contamination risk assessment.

Receptor	Potential Sources	Pathways	Risk	Comments
Human Health				
Existing site workers	Contaminated soils and groundwater.	Direct contact / ingestion, inhalation.	Low	Negligible to low levels of soil contamination found. No thresholds exceeded.
	Ground gas / vapours.	Inhalation.	Low	After monitoring, site classified as "Green" or "CS1"
Future site users including construction and ground workers	Contaminated soils and groundwater.	Direct contact / ingestion, inhalation.	Low	Negligible to low levels of soil contamination found. No thresholds exceeded.
	Ground gas / vapours.	Inhalation.	Low	After monitoring, site classified as "Green" or "CS1"
Adjacent properties users	Contaminated groundwater and vapour.	Migration through Aquifer, direct contact, inhalation, ingestion.	Low	There is limited to no evidence of potential historical and current sources of contamination onsite or Off-site. The major aquifer could provide a significant pathway for leachates into nearby buildings
Property (Buildings)				
Adjacent structures	Contaminated soils and groundwater	Migration through groundwater.	Low	Negligible to low levels of soil contamination found. No thresholds exceeded.
	Ground gas / vapours.	Migration through near surface soils. .	Low	After monitoring, site classified as "Green" or "CS1"

Property (Crops and Pets)				
Crops and Pets	Contaminated soils and groundwater. Ground gas / vapours	Migration through Aquifer strata, direct contact, inhalation, ingestion.	Low	Negligible to low levels of soil contamination found. No thresholds exceeded.
Water Bodies				
Lakes/ Reservoir, Culverted Sources and Drains	Contaminated soils and groundwater.	Surface water run-off, lateral migration of contamination.	Low	Negligible to low levels of soil contamination found. No thresholds exceeded.
Secondary A Aquifer / Principal Aquifer	Contaminated soils and groundwater	Downward migration through the soils.	Low	Negligible to low levels of soil contamination found. No thresholds exceeded.

5 DISCUSSION & CONCLUSION

No individual samples tested any of the ATRISK Contaminated Land Screening values (SSvS) when compared to Residential with plant uptake.

Therefore it must be considered that, based on the samples tested, the Upper Ground on this site may pose a "**LOW RISK**" to the future users of this site and to the ground workers on this site if expected minimum industry precautions are taken eg wearing of gloves and no eating during works

Due to the chemical concentrations identified, any excavated material at this site would likely pose a '**Low**' hazard to ground workers as far as Health and Safety is concerned. We would still recommend that standard Health and Safety precautions be taken with regard to ground workers at this site. During the construction phase, it is best practice consider dust suppression measures as these will minimize potential inhalation of dust by neighbours or ground workers.

No traces of Asbestos were found within any of the samples tested.

TABLE 4: UPDATED RISK ESTIMATION FOR POTENTIALLY COMPLETE CONTAMINANT LINKAGES

Contaminant Linkage	Likelihood	Severity	Risk and justification
1	Low likelihood	Medium	Low: No results from the samples tested exceeded Screening Values or contained any asbestos.

2	Low likelihood	Medium	Low: No undue levels of contamination were found within the samples tested or contained any asbestos.
3	Low likelihood	Medium	Low: Groundwater is expected to be in the region of 2.7m depth beneath the site. Impact on groundwater would require significant contamination of the overburden soils of which there isn't.

5.1 Off-site Disposal of Surplus Soil

5.1.1 General

All excavated material and excess spoil, or imported fill, must be classified for waste disposal or fill acceptance purposes prior to disposal at landfill or used as construction material. Under the Landfill (England and Wales) Regulations 2002 (as amended), prior to disposal all wastes must be classified as:

- 'inert', or
- 'non-hazardous', or
- 'hazardous'.

The Environment Agency's Technical Guidance WM3 Waste Classification: Guidance on the classification and assessment of waste, document outlines the methodology for classifying wastes.

Currently all wastes may require pre-treatment prior to disposal at landfill.

5.1.2 Initial Waste Characterisation

A specific assessment tool that will characterise contaminated waste soil by following the guidance within WM3 has not been carried out. This assessment tool is aimed at aiding potential future off-site disposal of materials. This assessment produces an 'initial' characterisation of the waste which determines if it is hazardous or not (if it is 'not' hazardous, then it may be either inert (insoluble and inorganic) or non-hazardous. However, due to complications with the terminology of 'inert waste' it is best not to refer to it as such until after Waste Acceptance Criteria (WAC) testing.

In the absence of this assessment, an inspection of the raw test data has been carried out against published Landfill WAC Limits shown on the laboratory test sheets. Based on this rudimentary inspection, none of the samples tested would be classed as hazardous for off-site disposal.

The WAC inspections undertaken indicate no samples have triggered any of the stated Waste Acceptance Criteria Limits. Accordingly, the most appropriate waste classification for the soils would be **non-hazardous** for disposal at correspondingly licensed non-hazardous landfills (note: some inert landfills are licensed to accept non-hazardous waste).

It is important to note that landfill operators often have their own assessment tools and can often come to a different conclusion. Thus, some landfill operators could even refuse to take apparently suitable waste.

5.1.3 Ground Gas Monitoring

During the initial site works and 3 subsequent visits, the maximum methane concentration recorded was 1.1%v/v. The maximum carbon dioxide concentration was recorded at 1.6%v/v in BH2. The associated flow rates reached a maximum of 0.1l/hr. Oxygen levels ranged between 19.2 – 19.5%v/v.

CIRIA Publication C665 “Assessing Risks posed by Hazardous Ground gases to Buildings (Revised 2007) includes the NHBC “Traffic Light” system

Given the flow rates and associated Gas Screening Values (GSVs), presented within the appended Gas Results Sheet, and in accordance with the NHBC “Traffic Light” system, we would consider that the current site would be classified as Green or Characteristic Situation 1. Therefore this would indicate that Lowest ground gas protection measures are required and it is suggested that installing a membrane merely as a precautionary measure. Gas protection measures are to be installed as prescribed in BRE 414.

APPENDIX A – Factual Report

Material Logs
Chemical Testing Results

APPENDIX B
CIRIA C552

APPENDIX C
GroundSure Data

APPENDIX D
Misc. Photographs

APPENDIX E
Misc. Reports

Trentside Geotechnical Testing

Highlands Farm, Southend Road
Rettendon, Essex, CM3 8EB
Telephone/Fax: 020 34880311 **Mobile:** 07508 853739
Email: info@trentsidegeotechnical.co.uk **Website**: www.trentsidegeotechnical.co.uk

Factual Report

Client : Martin Evans Architects

Site Name : 10a Belmont Street, NW1 8HH

Client Reference : Q1459v2

Laboratory Reference : TGT2479

Date of Completion : 21-Aug

Content Summary

Lab Reference :	TGT2479	
Client Reference :	Q1459v2	
For the attention of :	Alejandro Fernandez	
This report comprises of the following :	1	Site Plan
	2	Material Logs
	2	Geotechnical Test Summary
	1	Moisture vs Strength Chart
	1	Plasticity Chart
	1	Chemical Results
	1	WAC Results
	1	Limitations of Report

Notes :

General

Please refer to report summary notes for details pertaining to methods undertaken and their subsequent accreditations

Samples were supplied by Customer

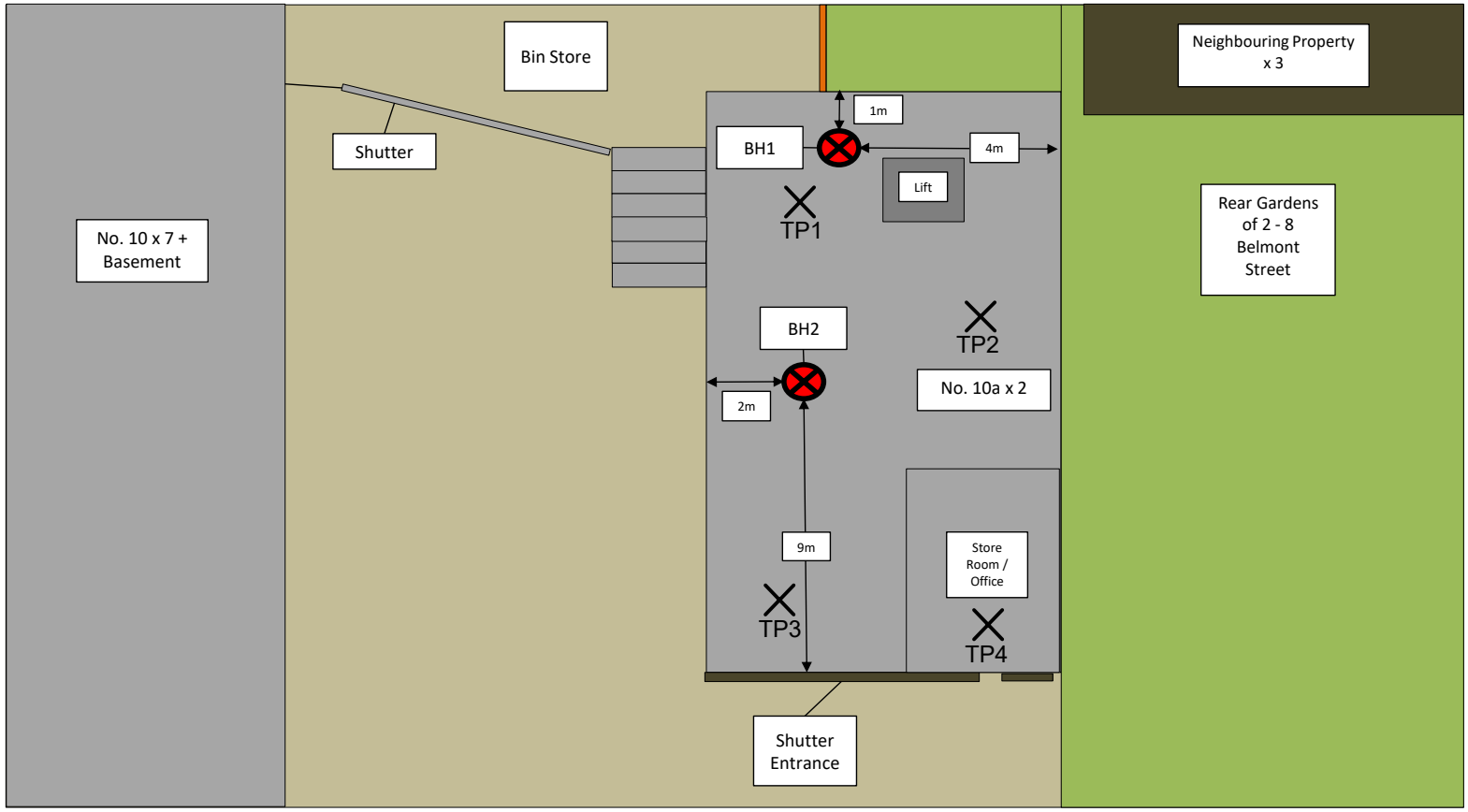
All tests performed in-house unless otherwise stated

Deviant Samples

Samples were received in suitable containers	Yes
A date and time of sampling was provided	Yes
Arrived damage/denaturing free	Yes

Fieldwork / Site Plan

Project Title:	10a Belmont Street, NW1 8HH	Project Ref:	TGT2479	Date:	11-Aug
Client:	Martin Evans Architects	Scale:	Not to Scale		



Comments :

Drawn By:	KW		Checked By: GW

Trentside Geotechnical Testing & Site Investigations Ltd

LABORATORY MATERIAL LOG

Project Name :	10a Belmont Street, NW1 8HH	Location Ref : BH1	Drilling Method : CFA	Job No : TGT2479	Performed By : MM
				Date : 28/07/17	Checked By : GW

Depth (m)	Description of Strata	Soil Sample Type Taken	InSitu Test (Type & Result)	N Value*	Allowable Bearing Capacity kN/m²**	Comments & Water Depths
GL - 0.45	Concrete	D - 0.5				No Roots observed
0.45 - 1.8	MADE GROUND - Medium compact mid to dark brown gravelly silty clay with numerous brick fragments	D - 1.0 D - 1.5	M 15, 18 15, 20	8 - 15	90 - 120	
1.8 - 3.0	MADE GROUND - Medium compact pungent dark brown silty clay with numerous brick and limestone fragments	D - 2.0 D - 3.0	M 14, 14 13, 14 V 140+ 140+	8 - 15 30+	80 - 120 280+	
3.0 - 6.8	Very stiff mid brown silty CLAY with partings of orange and brown silt and fine sand	D - 4.0 D - 5.0 D - 6.0	V 140+ 140+	30+	280+	
6.8 - 8.0	Very stiff mid brown silty CLAY with partings of orange and brown silt and fine sand. Occasional crystals throughout.	D - 7.0 D - 8.0	V 140+ 140+	30+	280+	
8.0 - 10.5	Very stiff dark brown silty CLAY with partings of brown silt and fine sand with occasional crystals throughout	D - 9.0 D - 10.0	V 140+ 140+	30+	280+	
10.5 - 15.0	Very stiff mid grey silty CLAY with partings of gret silt and fine sand. Occasional crystals throughout.	D - 12.0 D - 15.0	V 140+ 140+	30+	280+	

BOREHOLE COMPLETED TO 15.0m - Dry and Open on Completion

KEY					Notes : Standpipe Installed to 15.0m	Sheet Number : 1 of 1
	D	Disturbed Sample	M	Mackintosh Probe		Weather : Dry
	U	Undisturbed Sample				
	B	Bulk Sample	V	Shear Vane	*Mackintosh N75 x 0.38 = SPT N Value	Scale : NTS
	W	Water Sample			** Terzaghi & Peck 1996 assuming 2x2m footing	

Trentside Geotechnical Testing & Site Investigations Ltd

LABORATORY MATERIAL LOG

Project Name :	10a Belmont Street, NW1 8HH	Location Ref : BH2	Drilling Method : CFA	Job No : TGT2479	Performed By : MM
				Date : 28/07/17	Checked By : GW

Depth (m)	Description of Strata	Soil Sample Type Taken	InSitu Test (Type & Result)	N Value*	Allowable Bearing Capacity kN/m²**	Comments & Water Depths
GL - 0.25	Concrete					
0.45 - 1.8	MADE GROUND - Medium compact mid to dark brown gravelly silty clay with numerous brick fragments	D - 0.5				No Roots observed
		D - 1.0	M 16, 18 17, 21	8 - 15	90 - 120	
		D - 1.5				
1.8 - 2.4	MADE GROUND - Medium compact pungent dark brown silty clay with numerous brick and limestone fragments	D - 2.0	M 14, 14 16, 15	8 - 15	80 - 120	
3.0 - 6.9	Very stiff mid brown silty CLAY with partings of orange and brown silt and fine sand	D - 3.0	V 140+ 140+	30+	280+	
		D - 4.0	V 140+ 140+	30+	280+	
		D - 5.0	V 140+ 140+	30+	280+	
		D - 6.0	V 140+ 140+	30+	280+	
6.9 - 8.0	Very stiff mid brown silty CLAY with partings of orange and brown silt and fine sand. Occasional crystals throughout.	D - 7.0	V 140+ 140+	30+	280+	
		D - 8.0	V 140+ 140+	30+	280+	
8.0 - 10.3	Very stiff dark brown silty CLAY with partings of brown silt and fine sand with occasional crystals throughout	D - 9.0	V 140+ 140+	30+	280+	
		D - 10.0	V 140+ 140+	30+	280+	
10.3 - 15.0	Very stiff mid grey silty CLAY with partings of gret silt and fine sand. Occasional crystals throughout.	D - 12.0	V 140+ 140+	30+	280+	
		D - 15.0	V 140+ 140+	30+	280+	

BOREHOLE COMPLETED TO 15.0m - Dry and Open on Completion

KEY					Notes : Standpipe Installed to 15.0m	Sheet Number : 1 of 1
	D	Disturbed Sample	M	Mackintosh Probe		Weather : Dry
	U	Undisturbed Sample				
	B	Bulk Sample	V	Shear Vane	*Mackintosh N75 x 0.38 = SPT N Value	Scale : NTS
	W	Water Sample			** Terzaghi & Peck 1996 assuming 2x2m footing	

Laboratory Testing Results

BS 1377 : 1990

Job Number : TGT2479
Client : Martin Evans Architects
Client Reference : Q1459v2
Site Name : 10a Belmont Street, NW1 8HH

Date Received : 28/07/2017
Date Testing Started : 31/07/2017
Date Testing Completed : 21/08/2017
Laboratory Used : Trentside Geotechnical, CM3 8EB

Sample Ref			Sample Type	Moisture Content (%) [1]	Soil Faction > 0.425mm (%) [2]	Liquid Limit (%) [3]	Plastic Limit (%) [4]	Plasticity Index (%) [5]	Liquidity Index (%) [5]	Modified Plasticity Index (%) [6]	Soil Class [7]	Filter Paper Contact Time (h) [8]	Soil Sample Suction (kPa)	Insitu Shear Vane Strength (kPa) [9]	Organic Content (%) [10]	pH Value [11]	Sulphate Content		
BH/TP/WS	Depth (m)	UID															SO_3 [12]	SO_4 [13]	Class [14]
BH1	1.0	17-2215	D	24	9														
BH1	2.0	17-2216	D	28	13														
BH1	3.0	17-2217	D	30	<5	66	23	43	0.14	43	CH					7.4	0.22	0.26	DS-1
BH1	4.0	17-2218	D	32	<5	68	24	44	0.18	44	CH								
BH1	6.0	17-2219	D	32	<5	62	21	41	0.25	41	CH								
BH1	8.0	17-2220	D	30	<5	70	20	49	0.20	49	CH								
BH1	10.0	17-2221	D	28	<5	67	22	45	0.14	45	CH								
BH1	12.0	17-2222	D	26	<5														
BH1	15.0	17-2223	D	24	<5														

Notes :-

[1] BS 1377 : Part 2 : 1990, Test No 3.2
[2] Estimated if <5%, otherwise measured
[3] BS 1377 : Part 2 : 1990, Test No 4.4
[4] BS 1377 : Part 2 : 1990, Test No 5.3
[5] BS 1377 : Part 2 : 1990, Test No 5.4
[6] BRE Digest 240 : 1993
[7] BS 5930 : 1981 : Figure 31 - Plasticity Chart for the classification of fine soils
[8] In-house method S9a adapted from BRE IP 4/93
[9] Values of shear strength were determined in situ by using a Pilcon hand vane or Geonor vane (GV).
[10] BS 1377 : Part 3 : 1990, Test No 4
[11] BS 1377 : Part 2 : 1990, Test No 9
[12] BS 1377 : Part 3 : 1990, Test No 5.6
[13] $SO_4 = 1.2 \times SO_3$
[14] BRE Special Digest One (Concrete in Aggressive Ground) 2005

Note that if the SO_4 content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4m or DS-5m class respectively unless water soluble magnesium testing is undertaken to prove otherwise

Key

D	Disturbed sample
B	Bulk sample
U	U100 (undisturbed sample)
W	Water sample
ENP	Essentially Non-Plastic
U/S	Underside Foundation

Comments :-

Technician :- CW
Checked By :- GW
Date Checked :- 21-Aug-17

Laboratory Testing Results

BS 1377 : 1990

Job Number : TGT2479
Client : Martin Evans Architects
Client Reference : Q1459v2
Site Name : 10a Belmont Street, NW1 8HH

Date Received : 28/07/2017
Date Testing Started : 31/07/2017
Date Testing Completed : 21/08/2017
Laboratory Used : Trentside Geotechnical, CM3 8EB

Sample Ref			Sample Type	Moisture Content (%) [1]	Soil Faction > 0.425mm (%) [2]	Liquid Limit (%) [3]	Plastic Limit (%) [4]	Plasticity Index (%) [5]	Liquidity Index (%) [5]	Modified Plasticity Index (%) [6]	Soil Class [7]	Filter Paper Contact Time (h) [8]	Soil Sample Suction (kPa)	Insitu Shear Vane Strength (kPa) [9]	Organic Content (%) [10]	pH Value [11]	Sulphate Content		
BH/TP/WS	Depth (m)	UID															SO_3 [12]	SO_4 [13]	Class [14]
BH2	1.0	17-2224	D	29	15											7.8	0.45	0.54	DS-2
BH2	2.0	17-2225	D	27	19														
BH2	3.0	17-2226	D	32	<5	55	18	38	0.38	38	CH								
BH2	4.0	17-2227	D	31	<5	63	20	43	0.27	43	CH								
BH2	6.0	17-2228	D	29	<5	64	20	43	0.20	43	CH								
BH2	8.0	17-2229	D	26	<5	58	21	37	0.13	37	CH								
BH2	10.0	17-2230	D	27	<5	65	21	44	0.13	44	CH								
BH2	12.0	17-2231	D	24	<5														
BH2	15.0	17-2232	D	26	<5														

Notes :-

[1] BS 1377 : Part 2 : 1990, Test No 3.2
[2] Estimated if <5%, otherwise measured
[3] BS 1377 : Part 2 : 1990, Test No 4.4
[4] BS 1377 : Part 2 : 1990, Test No 5.3
[5] BS 1377 : Part 2 : 1990, Test No 5.4
[6] BRE Digest 240 : 1993
[7] BS 5930 : 1981 : Figure 31 - Plasticity Chart for the classification of fine soils
[8] In-house method S9a adapted from BRE IP 4/93
[9] Values of shear strength were determined in situ by using a Pilcon hand vane or Geonor vane (GV).
[10] BS 1377 : Part 3 : 1990, Test No 4
[11] BS 1377 : Part 2 : 1990, Test No 9
[12] BS 1377 : Part 3 : 1990, Test No 5.6
[13] $SO_4 = 1.2 \times SO_3$
[14] BRE Special Digest One (Concrete in Aggressive Ground) 2005

Note that if the SO_4 content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4m or DS-5m class respectively unless water soluble magnesium testing is undertaken to prove otherwise

Key

D	Disturbed sample
B	Bulk sample
U	U100 (undisturbed sample)
W	Water sample
ENP	Essentially Non-Plastic
U/S	Underside Foundation

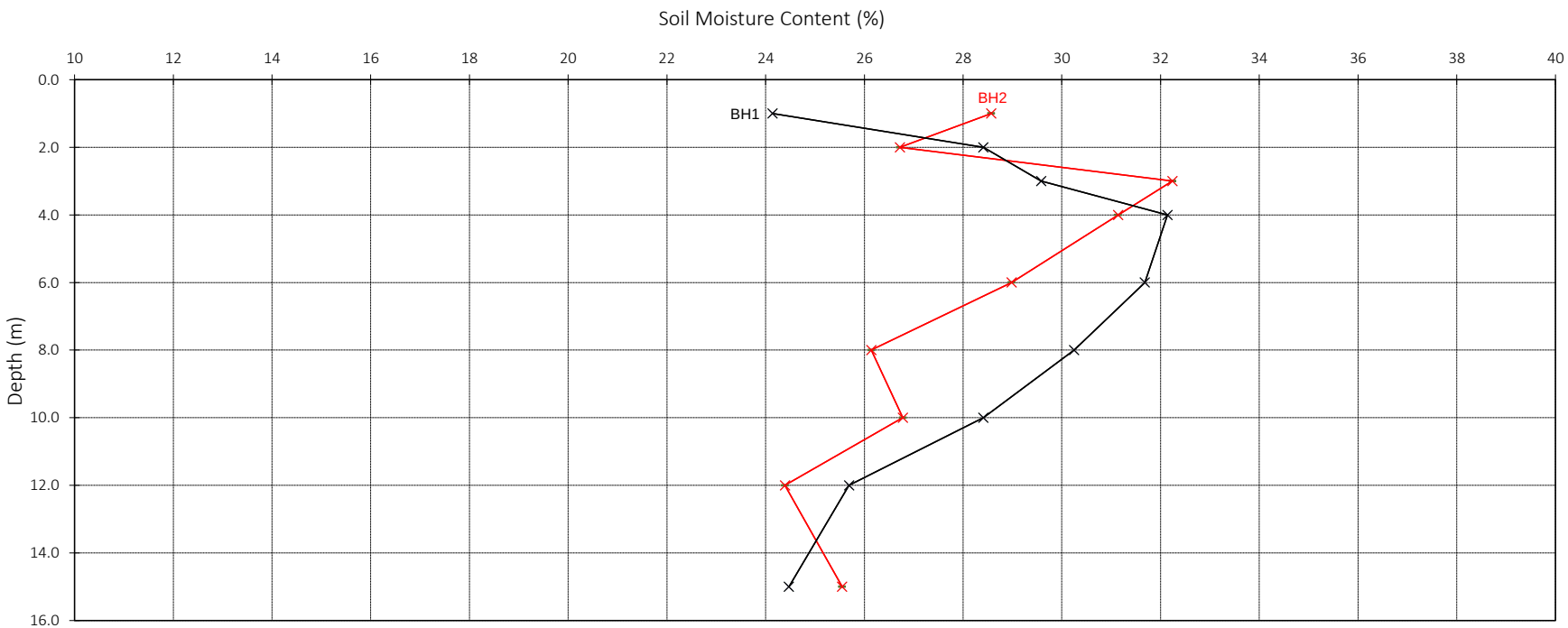
Comments :-

Technician :- CW
Checked By :- GW
Date Checked :- 21-Aug-17

Laboratory Testing Results

Moisture Content Profile

Job Number :	TGT2479	Date Received :	28/07/2017
Client :	Martin Evans Architects	Date Testing Started :	31/07/2017
Client Reference :	Q1459v2	Date Testing Completed :	21/08/2017
Site Name :	10a Belmont Street, NW1 8HH	Laboratory :	Trentside Geotechnical CM3 8EB



Notes :-

1. If the Soil Fraction > 0.425mm exceeds 5% the Equivalent Moisture Content of the remainder (calculated in accordance with BS 1377: Part 2 : 1990, cl.3.2.4 note 1) is also plotted and the alternative profile additionally shown as an appropriately coloured broken line.
2. If plotted, 0.4 LL and PL+2 (after Driscoll, 1983) should only be applied to London Clay (and similarly over consolidated clays) at shallow depths.

Unless otherwise stated, values of Shear Strength were determined in situ by using a Pilcon Hand Vane the calibration of which is limited to a maximum reading of 140 kPa.

Comments :-

Checked By :- GW

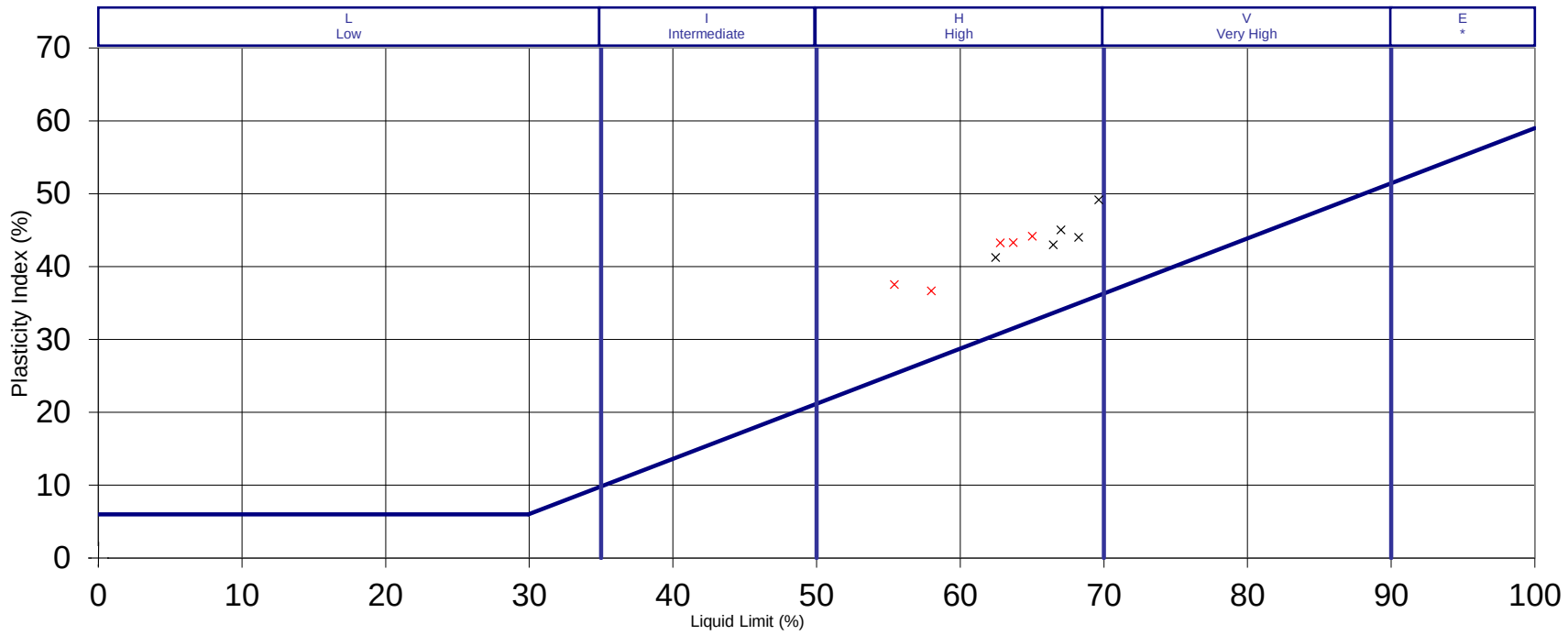
Date Checked :- 21-Aug-17

Laboratory Testing Results

Plasticity Chart for the classification of fine soils and the finer part of coarse soils

In Compliance with BS5930 : 1999

Job Number :	TGT2479	Date Received :	28/07/2017
Client :	Martin Evans Architects	Date Testing Started :	31/07/2017
Client Reference :	Q1459v2	Date Testing Completed :	21/08/2017
Site Name :	10a Belmont Street, NW1 8HH	Laboratory :	Trentside Geotechnical CM3 8EB



Notes :-

SILT (M-SOIL), M, plots below A-Line

CLAY, C, plots above A-Line }M and C may be combined as FINE SOIL, F.

Key :- BH1

BH2

Comments :-

Checked By :- GW

Date Checked :- 21-Aug-17

Summary of Chemical Analysis
Soil Samples

Our Ref TGT2479
Client Ref Belmont Street
Contract Title Belmont Street

	Lab No	1211479	1211480	1211481	1211482		ATRISK Contaminated Land Screening Values (SSV) derived using CLEA v1.04 for 6% SOM				
	Sample ID	BH1	BH1	BH2	BH2						
	Depth	1.5	3.0	1.0	2.5						
	Other ID										
	Sample Type	SOIL	SOIL	SOIL	SOIL						
	Sampling Date	28-Jul	28-Jul	28-Jul	28-Jul						
	Sampling Time	AM	AM	AM	AM						
Test / Preparation	**Method**	**LOD**	**Units**				Residential with plant uptake	Residential without plant uptake	Allotments	Commercial/ Industrial	
Stones >20mm	DETSC 1003*	1	% m/m	16.8	3.3	21.8	2.2					
Moisture Content	DETSC 1004	0.1	%	19.9	31.0	26.5	30.4					
Petroleum Hydrocarbons												
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	300	1400	57	86000	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	660	3900	120	180000	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	190	270	21	17000	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	380	1200	74	24000	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	660	2500	130	38000	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	13.2	< 1.5	22.3	< 1.5	930	1900	260	28000	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.5	< 3.6	< 3.6	1700	1900	1600	28000	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	-	-	-	-	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	160	160	3900	12000	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	530	530	13000	40000	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	150	150	1700	11000	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	760	770	7300	47000	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	4300	44000	13000	90000	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	45.8	< 0.6	< 0.6	< 0.6	110000	110000	270000	1800000	
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	140000	110000	270000	1800000	
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	-	-	-	-	
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	-	-	-	-	S4UL / LQM/CIEH / 2015
PAHs												
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	13	13	24	1100	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	920	6000	160	100000	
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	110	6000	200	100000	
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	860	4500	160	71000	
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.09	< 0.03	440	1500	90	23000	
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	0.05	< 0.03	11000	1600	2200	540000	
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.03	0.03	0.11	< 0.03	890	4500	290	23000	
Pyrene	DETSC 3303#	0.03	mg/kg	0.03	0.04	0.12	< 0.03	2000	3800	620	54000	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.09	< 0.03	13	15	13	180	
Chrysene	DETSC 3303	0.03	mg/kg	0.12	< 0.03	0.08	< 0.03	27	32	19	350	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.11	< 0.03	3.7	4	3.9	45	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.56	< 0.03	0.08	< 0.03	100	110	130	1200	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.09	< 0.03	3	3.2	5.7	76	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.50	< 0.03	41	46	39	510	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.3	0.32	0.43	3.6	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.05	< 0.03	250	360	640	4000	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10	1.37	< 0.10	-	-	-	-	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref TGT2479
Client Ref Belmont Street
Contract Title Belmont Street

								Landfill Waste Acceptance Criteria Limits		
Lab No				1211483	1211484					
Sample ID				BH1	BH2			**Inert Waste Landfill**	**Stable Non-reactive Hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Depth				1.5m	1.0m					
Other ID										
Sample Type				LEACHATE	LEACHATE					
Sampling Date				27-Jul	27-Jul					
Sampling Time				AM	AM					
Test / Preparation	**Method**	**LOD**	**Units**							
Leachate 10:1	DETS 036*			Y	Y			**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Metals										
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.1	1.3			0.5	2	25
Boron, Dissolved	DETSC 2306*	12	ug/l	37	64			20	100	300
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03			0.04	1	5
Chromium, Dissolved	DETSC 2306	0.25	ug/l	0.61	< 0.25			0.5	10	70
Chromium, Hexavalent	DETSC 2203	0.007	mg/l	< 0.007	< 0.007			0.1	0.2	0.5
Copper, Dissolved	DETSC 2306	0.4	ug/l	2.2	1.5			2	50	100
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.30	0.17			0.5	10	50
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01			0.01	0.2	0.5
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5			0.4	10	40
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.39	0.36			1.0	5	10
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	< 1.3			4	50	200
Inorganics										
Cyanide, Free	DETSC 2130	0.02	mg/l	< 0.02	< 0.02			5	10	50
Sulphate as SO4	DETSC 2055	0.1	mg/l	39	25			1000	20000	50000
Sulphur (free)	DETSC 3049	84	ug/l	< 84	< 84			100	1000	10000
Phenols										
Phenol - Monohydric	DETSC 2130	0.1	mg/l	< 0.1	< 0.1			1	-	-

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 18-26027
Client Ref BELMONT
Contract Title GSAT

				Lab No	1415113	1415114	1415115	1415116
				Sample ID	TP1	TP2	TP3	TP4
				Depth	0.50	0.40	0.60	0.50
				Other ID	BS1	BS2	BS3	BS4
				Sample Type	SOIL	SOIL	SOIL	SOIL
				Sampling Date	30/10/18	30/10/18	30/10/18	30/10/18
				Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Metals								
Arsenic mg/kg	DETSC 2301#	0.2	mg/kg	3.1	9.3	4.1	24
Boron, Water Soluble mg/kg	DETSC 2123#	0.2	mg/kg	0.6	0.5	0.5	0.6
Cadmium mg/kg	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Chromium mg/kg	DETSC 2301#	0.15	mg/kg	12	16	14	20
Copper mg/kg	DETSC 2301#	0.2	mg/kg	8.9	14	8.7	14
Lead mg/kg	DETSC 2301#	0.3	mg/kg	7.0	14	6.5	14
Mercury mg/kg	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel mg/kg	DETSC 2301#	1	mg/kg	7.5	12	8.8	19
Selenium mg/kg	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Zinc mg/kg	DETSC 2301#	1	mg/kg	19	36	21	49
Inorganics							
Organic matter %	DETSC 2002#	0.1	%	0.2	0.5	0.1	< 0.1
Petroleum Hydrocarbons							
EPH (C10-C40) mg/kg	DETSC 3311#	10	mg/kg	< 10	< 10	< 10	< 10
PAHs							
Naphthalene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene mg/kg	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.03
Anthracene mg/kg	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.03
Pyrene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)anthracene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Chrysene mg/kg	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(b)fluoranthene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(k)fluoranthene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)pyrene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Dibenzo(a,h)anthracene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene mg/kg	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total mg/kg	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis

Soil Samples

Our Ref 18-26027
Client Ref BELMONT
Contract Title GSAT

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1415113	TP1 BS1 0.50	SOIL	NAD	none	A Christodoulou
1415114	TP2 BS2 0.40	SOIL	NAD	none	A Christodoulou
1415115	TP3 BS3 0.60	SOIL	NAD	none	A Christodoulou
1415116	TP4 BS4 0.50	SOIL	NAD	none	A Christodoulou

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 18-26027
Client Ref BELMONT
Contract Title GSAT
Sample Id TP1 BS1 0.50

Sample Numbers 1415113 1415117 1415118
Date Analysed 08/11/2018

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	< 0.5	3	5	6
DETSC 2003# Loss On Ignition	%	1.2	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# TPH (C10 - C40)	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.1	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l		Amount Leached* mg/kg		WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
	2:1	8:1	LS2	LS10			
DETSC 2306 Arsenic as As	< 0.16	0.54	< 0.002	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	1	5.7	< 0.02	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.03	< 0.03	< 0.004	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.81	3	< 0.02	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.5	1.4	< 0.004	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.01	< 0.01	< 0.0004	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	1.9	< 0.02	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.5	1.7	< 0.02	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.56	3.1	< 0.01	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.17	< 0.01	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.25	< 0.006	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	4.6	< 0.002	0.039	4	50	200
DETSC 2055 Chloride as Cl	1100	1100	< 20	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	160	160	0.32	1.6	10	150	500
DETSC 2055 Sulphate as SO4	2900	2600	< 20	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	14000	9500	28	102	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 100	< 0.2	< 1	1	n/a	n/a
* Dissolved Organic Carbon	3300	2700	< 10	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	9.1	8.7
DETSC 2009 Conductivity uS/cm	20.6	13.6
* Temperature*	16	16

Mass of Sample Kg*	0.130
Mass of dry Sample Kg*	0.121

Stage 1

Volume of Leachant L2*	0.232
Volume of Eluate VE1*	0.188

Stage 2

Volume of Leachant L8*	0.966
Volume of Eluate VE2*	0.9

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

Information in Support of the Analytical Results

Our Ref 18-26027
Client Ref BELMONT
Contract GSAT

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1415113	TP1 0.50 SOIL	30/10/18	GJ 250ml, PT 1L		
1415114	TP2 0.40 SOIL	30/10/18	GJ 250ml, PT 1L		
1415115	TP3 0.60 SOIL	30/10/18	GJ 250ml, PT 1L		
1415116	TP4 0.50 SOIL	30/10/18	GJ 250ml, PT 1L		
1415117	TP1 0.50 LEACHATE	30/10/18	GJ 250ml, PT 1L		
1415118	TP1 0.50 LEACHATE	30/10/18	GJ 250ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

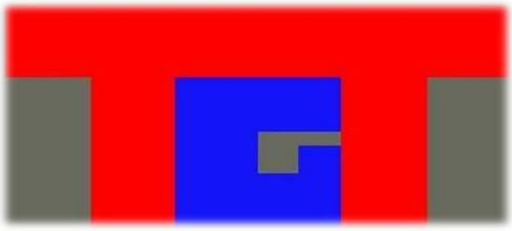
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months



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This report shall not be reproduced, except in full, without the written approval of the testing laboratory.

Where our involvement consists exclusively of testing samples, the results and comments (if provided) relate only to the samples tested.

Any samples that are deemed to be subject to deviation will be recorded as such within the test summary.