WML CONSULTING
Civil, Structural and Geotechnical Engineers

Phase 1 Desk Study and Preliminary Geo-Environmental Assessment

For a site at

Every Street, Manchester

Undertaken on behalf of

Mr Ervin Bejko

Report No. 7261/G/01

August 2016

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Civil, Structural and Geotechnical Engineers

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1.0 INTRODUCTION

Appointment

1.1 WML Consulting was commissioned by Jennings Design Associates Ltd, on behalf of Mr Ervin Bejko, to undertake a Phase 1 Desk Study and Preliminary Geo-environmental Assessment of a site located at Every Street, Manchester, M4 7DQ.

Proposed Development

1.2 It is understood that the currently proposed redevelopment relates to the demolition of the existing residential structure and the construction of a 3-4-storey building comprising 10no private residential units with associated hardstanding for access and car-parking together with very small areas of soft landscaping.

1.3 An unreferenced drawing indicating the proposed layout by JDA Architects is presented in the Pre Application Submission document (Rev D) in Appendix 01.

Objective

1.4 The purpose of the Desk Study is to collate available geological and environmental data for the site and its environs in order to undertake a preliminary geotechnical and geo-environmental appraisal and inform a site specific conceptual model.

1.5 This enables a preliminary assessment of geo-environmental risks to be undertaken and provides information for the design of an appropriate Phase 2 Ground Investigation in accordance with the Environment Agency (2004) Model Procedures for the Management of Land Contamination, CLR11.

Scope

1.6 The Phase I Desk Study comprised a site reconnaissance visit undertaken on 1st August 2016 together with a review of the following information sources:

- British Geological Survey (1:50,000) Sheet 85 'Manchester' (Solid Edition).
- British Geological Survey Digital Geological Map of Great Britain (DiGMapGB-50; available as a Web Map Service).
- Coal Authority interactive map viewer (available as a Web Map Service).
- Environment Agency 'What's in my back yard?' website.
- The site and surrounding area's hydrogeology, hydrology and environmental compliance history from data presented in the site specific GroundSure Environmental Insight Report (Appendix 03).
- Historical Ordnance Survey maps as provided by GroundSure (Appendix 03).
- BRE Publication 211 (2015) "Radon: Guidance on Protective Measures for New Buildings".
- HPA-RPD-033 Indicative Atlas of Radon in England and Wales, 2007.

2.0 SITE LOCATION AND DESCRIPTION

Site Location

2.1 The site comprises land off Every Street in Manchester. It is centred on approximate Ordnance Survey National Grid Reference 385760E, 398166N with an indicative postcode of M4 7DQ.

2.2 The proposed development site is bounded to the north-west by Every Street, to the south-west by Tutbury Street and to the north-east and south-east by Caterham Street with residential development beyond.

2.3 A location plan is presented in the Pre Application Submission document in Appendix 01.

Site Description

2.4 The site is roughly rectangular in shape and covers an area of approximately 0.06 Hectares. It occupies a generally level area and comprises a centrally located two storey-brick residential structure with a private garden.

2.5 The site is bounded by brick walls of differing heights and in varying states of repair.

2.6 A short driveway forms vehicular access from Tutbury Street to a residential parking garage which forms the southern end of the existing structure.

2.7 Several semi-mature trees of varying species are located within the private gardens along with areas of grass and shrubbery.

2.8 Surrounding land is predominantly occupied by residential developments.

2.9 Photographs of the site are provided in Appendix 02.

3.0 ENVIRONMENTAL SETTING

3.1 The following sections on the environmental setting of the site are summarised from the GroundSure Enviro Insight Report in Appendix 03 and supplemented by information from the Environment Agency web based 'What's in my backyard' service.

3.2 The geology of the site is covered by the British Geological Survey (BGS) Sheet 85 'Manchester' (1:50,000 scale Solid and Drift editions) and the site specific GroundSure GeoInsight report supplemented by the BGS Digital Geological Map of Great Britain (DiGMapGB-50; available as a Web Map Service).

Environmental Setting

Description	Comments
Geology	The BGS plans indicate that the site is underlain by Made Ground of unknown thickness and provenance. This is in turn underlain by Devensian Glacial Till, comprising mainly clay which may be more locally interbedded with sand and gravel horizons. The Drift deposits are underlain at greater depths by the Permian Collyhurst Sandstone Formation. These generally comprise soft red sandstone, locally interbedded with grey sandstones. Several coal seams, namely the Openshaw Coal, Charlotte Coal, Bradford Threequarters Coal and Bradford Four Foot Coal are conjectured to sub-outcrop at approximate distances of between 950m and 1700m to the north-east. The strata are indicated to dip to the west/south-west at an angle of between 15 and 20º and will therefore underlie the site but at a significant depth. There are no faults inferred within 500m of the site boundary.
Radon	The property is not in a Radon Affected Area as defined by the Health Protection Agency as less than 1% of properties are above the Action Level of exposure. Therefore, no radon protection measures are necessary for new structures as described in publication BR211 by the Building Research Establishment.
Mining and Subsidence	In consideration of the information provided within the GroundSure Report and the underlying geology comprising the Colleyhurst Sandstone Formation, risks to the development from subsidence relating to shallow, unrecorded abandoned mine workings is considered low and can be discounted. The risk from non-coal mining activity at the site is also considered low.
Hydrology	There is 1no recorded Detailed River Network Feature within 250m of the site. This relates to the River Medlock, 92m east of the site. There are no Surface Water Abstraction Licences within 1km of the site.
Hydrogeology	The Glacial Till beneath the site is classified by the Environment Agency as a 'Secondary (Undifferentiated) Aquifer'. This classification is now assigned where it is not possible to attribute either category A or B to a rock or soil type. In general these layers have previously been designated as both minor and non-aquifers. The underlying bedrock is classified as a 'Principal Aquifer' (former Major Aquifer). These include geology of a high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. However, there are no Environment Agency Source Protection Zones within 500m

Description	Comments
	of the site. There is 1no Groundwater Abstraction Licence within 1km of the site. This relates to general cooling at Moseley Rubber Co Ltd, 796m south-west.
Landfill and Waste Management Activity	There are no active or non-operational landfills recorded within 1km of the site. There is 1no historic landfill recorded within 750m of the site. This is located 201m south and relates to the deposition of Inert and Industrial waste recorded between 1986 and 1987. There is 1no licensed Waste Site within 500m of the site. This relates to a licence for a household, commercial and industrial waste transfer station at Murray Mills Conservation Ltd 483m north-east.
Industrial Land Use Information	There are 7no potentially contaminative industrial sites within 250m of the subject site. The nearest relate to an 'Unspecified Works' 31m north-east, a warehouse 97m west and electronic equipment 188m north-east. An inspection of the 'Unspecified Works' during the site visit confirms that this is a church and is therefore unlikely to have had a contaminative use. There are no active Petrol Fuel Sites recorded within 500m of the site boundary. There are no Underground High Pressure Pipelines or High Voltage Underground Cables recorded within 500m of the site boundary.
Environmental Permits, Incidents and Registers	There are no records of historic IPC Authorisations, Part A(1), or Part A(2) Authorised Activities within 500m of the site. There are 2no records of Part B IPPC Authorised Activities within 500m of the site. These relate to historical permits for the respraying of road vehicles 320m south-west and di-isocyanate processes 423m north, both sufficiently remote as to have no effect on the site. There are no List 1 or List 2 Dangerous Substances Inventory Sites recorded within 500m of the site. There are no registered sites holding Licences or Radioactive Substance Authorisations within 500m of the study site. There are 3no active Licenced Discharge Consents within 250m of the site, these all relate to sewer storm overflow, 146m east, 202m south-east and 217m east. There are 5no recorded Environment Agency Pollution Incidents within 250m of the site. The nearest is located 169m south-east and related to crude sewage with a Category 3 (Minor) impact to air and water. This is unlikely to have had an effect on the site. No sites have been determined as Contaminated Land under Section 78R of the Environmental Protection Act 1990 within 500m of the study site.
Potential Flood Risks	Detailed assessment of flood risk is outside the scope of this assessment. However, reference to the Environment Agency website and the Groundsure report indicates that the Risk of Flooding from Rivers and the Sea (RoFRaS) is currently designated as 'very low'. The site is indicated on British Geological Survey (BGS) records to be within an area which is considered to be susceptible to groundwater flooding. The BGS confidence rating for this assessment is considered 'Moderate'.

Description	Comments
Ecological Survey Information	There are no Designated Environmentally Sensitive Sites within 500m of the study site. However, an ecological assessment is outside of the scope of this report and an ecological specialist should be consulted in this respect.
Archaeological Information	No archaeological information has been obtained for the purpose of this report. Where considered appropriate, reference should be made to an archaeological consultant in this respect.
Unexploded Ordnance (UXO)	Reference has been made to the University of Manchester's online WWII map collection which indicates known bombing sites across the Manchester area. No information for the subject site was recorded, however a bomb strike was recorded in December 1940 at All Saints Church some 30m north-east of the site. Archive Ordnance Survey (OS) map extracts obtained from the GroundSure EnviroInsight Report indicate the clearance of residential structures both on the site and within in the immediate surrounding area sometime between 1938 and 1948. It cannot be wholly discounted that this was as a result of unrecorded bomb damage sustained during air-raids. In consideration of the post-war development of the site any such residual UXO's are likely to have been encountered and dealt with during the development of the existing Buildings in the 1950's. Nevertheless, although considered to be low, risks from UXOs within the area of the proposed new structure cannot be completely discounted at this stage. Therefore, Manchester City Council may require at least a Preliminary UXO survey to be undertaken as part of planning procedures.

4.0 SITE HISTORY

4.1 The historical development of the site has been determined by reference to archive Ordnance Survey (OS) map extracts obtained from the GroundSure EnviroInsight Report in Appendix 03.

4.2 It should be noted that historical plans with no mapping information at or around the immediate site area have been omitted from the Map Dates.

Historical Development

Map Dates	Scale	Comments	
		On Site	Surrounding Area
1848	1:10,560	The site was developed with terraced residential houses located around a central courtyard on Every Street.	The surrounding area was generally in residential use with localised industrial developments within 500m. These included Ancoats Vale Dye Works approximately 150m south-east and Ardwick Spindle Works some 250m south-east. Ardwick Lime Works was located around 250m east with associated Lime Kilns, a Limestone Pit and a Tram Road. Holt Town Cotton Mills were located some 500m north-east with 2no large reservoirs extending to within 400m north-east of the site. A number of brick fields were located around 600m south-east of the site. An unspecified shaft was located 600m south-east. All Souls Church was located approximately 20m to the north-east with a Burial Ground some 50m to 100m to the south-west of the site. The River Medlock was located some 90m to the east and the Manchester with Ashton Under Lyne Canal 300m to the north-east.
1851	1:1,056	No significant changes apparent.	No significant changes apparent.
1893	1:2,500	No significant changes apparent.	A Brewery was located some 150m north-west. A number of Cotton Mills and Iron Works were located between 100m and 250m to the south-east and north-east.
1894	1:10,560	No significant changes apparent.	A Brick Works was located some 400m south-east. A Goods Station with an area of railway sidings was located some 350m south.
1906	1:10,560	No significant changes apparent.	Lurry Works and Providence Iron Foundry had been developed some 100m east and 150m south-east of the site respectively.
1908	1:2,500	No significant changes apparent.	A Workhouse had been constructed some 100m south-west. Vulcan Works had undergone expansion some 150m west.
1916	1:10,560	No significant changes apparent.	No significant changes apparent.
1922	1:2,500	No significant changes apparent.	No significant changes apparent.
1923	1:10,560	No significant changes apparent.	No significant changes apparent.
1932	1:2,500	No significant changes apparent.	No significant changes apparent.

Map Dates	Scale	Comments	
		On Site	Surrounding Area
1934	1:10,560	No significant changes apparent.	No significant changes apparent.
1938	1:10,560	No significant changes apparent.	No significant changes apparent.
1948	1:1,250	The southern and central sections of the site had been cleared with residential structures remaining in the northern section.	Widespread clearance of residential structures had occurred in the areas immediately surrounding the site. Residential redevelopment had occurred of an area some 80m north-east.
1953	1:1,250	The remaining residential structures in the northern section of the site had been cleared.	Further residential redevelopment had occurred some 125m north and 200m south-west of the site.
1956	1:10,560	No significant changes apparent.	No significant changes apparent.
1960	1:1,250	The current building had been constricted as a Rectory in the central part of the site.	Further residential redevelopment had occurred some 250m east and 40m north-west of the site.
1965	1:2,500	No significant changes apparent.	No significant changes apparent.
1968	1:2,500 & 1:10,560	No significant changes apparent.	No significant changes apparent.
1979	1:1,250	No significant changes apparent.	Further clearance of residential structures had occurred in in areas some 80m north and 100m west of the site.
1981	1:1,250 & 1:10,000	No significant changes apparent.	Ancoats Goods Station some 250m south and a number of industrial structures some 250m east had been cleared.
1985	1:10,000	No significant changes apparent.	No significant changes apparent.
1989	1:1,250	No significant changes apparent.	Two Warehouses had been constructed some 100m south-west of the site.
1991	1:10,000	No significant changes apparent.	Residential redevelopment had occurred of an area some 80m north-east of the site.
1992	1:1,250	No significant changes apparent.	No significant changes apparent.
1994	1:1,250	No significant changes apparent.	No significant changes apparent.
1995	1:1,250	No significant changes apparent.	No significant changes apparent.
2002	1:10,000	No significant changes apparent.	The former Vulcan Works located 150m south-west had been cleared and redeveloped with residential structures.
2010	1:10,000	No significant changes apparent.	No significant changes apparent.
2014	1:10,000	No significant changes apparent.	No significant changes apparent.

4.3 In summary, the site was developed with residential structures prior to the first available map of 1848. Sometime between 1938 and 1953 the site was cleared and remained undeveloped until the late 1950's when the current residential structure was constructed.

4.4 The surrounding area has historically comprised, in the main, mixed residential and industrial developments. Nearby industrial development included a number of Cotton Mills, Iron Works, Dye Works, a Foundry and a Lime Works. The area immediately surrounding the site underwent extensive residential redevelopment during the 1950's and again during the 1990's.

4.5 On the basis of the above, no significant sources of ground contamination are envisaged within the site although the presence of Asbestos Containing Materials (ACM) and asbestos fibres within the existing building and any infilled former basements relating to the previous buildings cannot be wholly discounted.

5.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT

Introduction

5.1 The following paragraphs outline a Preliminary Risk Assessment (PRA) for the site as defined by DEFRA and the EA Model Procedures for the Management of Land Contamination, CLR11 (2004).

5.2 The table in Paragraph 5.5 provides a Preliminary Conceptual Model (PCM) which defines the site in terms of a potential pollution linkage, that is, whether a pathway exists between a contamination source and a sensitive environmental receptor (Source-Pathway-Receptor relationship).

5.3 The table considers whether a pollution linkage is potentially present or not and provides a preliminary qualitative assessment of risk, based on the information currently available and in accordance with guidance provided in the CIRIA document C552 (2001) Contaminated Land Risk Assessment – A guide to good practice. The risk evaluation process is described further in Appendix 04.

5.4 Where a possible linkage is identified, it does not necessarily mean that a significant risk exists, but indicates that further information is required through appropriate site investigation to substantiate the conceptual model.

5.5 The PCM/PRA is based on the proposed development comprising a multi-storey structure to include ten private residential units. External areas are to comprise hardstanding for access and car-parking together with localised areas of soft landscaping.

Source	Pathway	Receptor	Probability of Linkage	Comment
The likelihood of significant ground contamination sources being present at the site due to its past use is considered low. However, the presence of Asbestos Containing Materials (ACM) within the existing structures and Made Ground associated with historical demolition rubble cannot be wholly discounted at this stage.	Direct contact, ingestion of soil, dermal contact, dust exposure pathways.	Current Site Users	No linkage anticipated	Currently the site is disused and covered in the main by the existing building therefore the potential for a plausible direct contact exposure scenario is low. Although there is a perceived exposure scenario in existing garden areas, these are currently covered by long grass and localised trees. Therefore, the risk to current site users is considered **LOW.**
		Site End Users	Unlikely	The provision of buildings and new hard cover will break the direct pollution linkage significantly. In addition, only very small areas of managed soft landscaping are envisaged. Therefore, the potential pollution linkage will be further reduced with the risk to site end users considered **LOW.**
		Construction Workers	Low	Construction workers could potentially be exposed to contaminated soils during earthworks and foundation construction. However, any perceived contamination risks will be mitigated by adopting good site working practices including appropriate Health and Safety measures during the works, thus providing a **LOW** preliminary risk.

Source	Pathway	Receptor	Probability of Linkage	Comment
		Adjacent land users	Unlikely	Contact via wind-blown dust/debris, particularly during the development phase is possible. The current risk is considered **VERY LOW** although this would increase during construction works. Appropriate health and safety measures adopted during site development, will ensure that the risk remains low.
The likelihood of soluble and/or liquid, and therefore mobile contaminants occurring at the site due to its past use is considered very low.	Direct downward migration through leaching and/or mobile liquids.	Groundwater	Unlikely	Although the site is indicated to be underlain by a Principal (Bedrock) Aquifer, intervening relatively impermeable Glacial Till will significantly retard any significant vertical movement vertically towards the aquifer. Therefore the perceived risk to groundwater is considered **LOW**.
	Off-site migration in groundwater or surface water flow.	Surface water	Unlikely	The nearest surface watercourse is the River Medlock 92m east of the site boundary. Significant lateral movements of any groundwater contamination towards the river is unlikely due to the relatively impermeable nature of the intervening Glacial Till. Therefore the perceived risk to surface water is considered **LOW**.
		Groundwater/ surface water abstractions	Unlikely	The site is not within an Environment Agency Source Protection Zone and there are no surface water abstractions within 1km of the site. Therefore, risks to groundwater/surface water abstractions are considered **VERY LOW.**
		Adjacent Properties	Unlikely	The impermeable nature of the Glacial Till will inhibit any lateral migration towards adjacent properties. Therefore, the preliminary perceived risk to adjacent properties is assessed as **LOW.**
		Ecology	No linkage anticipated	There are no ecologically sensitive sites within influencing distance of the subject site. The risk to ecology is therefore considered **VERY LOW**.
The likelihood of volatile contaminants occurring at the site due to its past use is considered	Inhalation of harmful vapours (indoor and outdoor airspaces)	Current Site Users	No linkage anticipated	No significant sources of volatile contaminants are envisaged and the site is current disused. Therefore the current risk from inhalation of indoor/outdoor air is considered **LOW.**

Source	Pathway	Receptor	Probability of Linkage	Comment
low.		Site End Users	Unlikely	The proposed development is unlikely to provide a more sensitive exposure scenario than already exists. Therefore the preliminary risk from inhalation of indoor/outdoor air is considered **LOW**.
		Construction Workers	Unlikely	In the event of construction workers coming into contact with possible volatile compounds, the exposure time will be relatively short. The chronic exposure risk to construction workers, assuming that appropriate health and safety measures will be adopted, is therefore considered **LOW.**
		Adjacent Properties	Unlikely	Significant sources of volatile contaminants at the site are not anticipated and the impermeable nature of the Glacial Till will inhibit significant lateral migration of any volatile compounds. Therefore the preliminary risk to adjacent properties and users is assessed as **LOW**.
The presence of appreciable thicknesses of Made Ground with the potential to generate significant volumes of ground gas is unlikely. There are no recorded landfills within influencing distance. The presence of ground gas resulting from shallow unrecorded mine workings is unlikely.	Emissions from the ground beneath the site collecting in confined spaces and excavations	Construction/ services maintenance workers	Unlikely	The potential to generate significant volumes of toxic and/ or flammable/ explosive gas beneath the site is considered low. Assuming that appropriate health and safety measures will be adopted during construction, the preliminary risk is therefore considered **LOW.**
	Migration of gases on/off site and collecting in confined spaces on/off site.	Adjoining site users	Unlikely	In consideration of the age of any potential infilling, the likelihood of significantly volumes of ground gas arising from the site to migrate to adjoining properties is considered low. In addition, migration of any ground gas present will be retarded by relatively impermeable Glacial Till. Therefore, the preliminary risk to adjacent properties from the site is considered **LOW.**
		Current/future site users	Low	The potential to generate significant volumes of ground gas beneath the site is low. Relatively impermeable Glacial Till will significantly inhibit any lateral flow of gas from any unrecorded off-site sources. The potential risk to current and future site users is therefore considered **LOW.**
The site is not in an area which is affected by naturally occurring radon gas.	Natural emissions from the ground collecting in confined spaces within buildings	Site end users	No linkage anticipated	The site is not located in an area where radon protection measures are required. No further action is necessary regarding radon protection as the risk is **VERY LOW**.

Source	Pathway	Receptor	Probability of Linkage	Comment
Chemicals which could prove aggressive to construction materials May be present on site.	Direct contact	Construction concrete, plastic water pipes.	Unlikely	Any risks to construction materials identified after site investigation and assessment will be mitigated as part of the structural design. The perceived risk is therefore considered **LOW**.

Preliminary Risk Assessment

5.6 Under the proposed development scenario, potential pollution linkages are on the whole considered unlikely with associated preliminary risks being assessed as very low to low.

5.7 The approach at the Phase 1 Desk Study stage must however be precautionary until such time as uncertainties in the conceptual model can be verified by appropriate site investigation. Such uncertainties relate, in the main, to the potential for Asbestos Containing Materials (ACM) and asbestos fibres to be present within the existing structure together with the potential for 'low-level' ground contamination to be present in any Made Ground beneath the site as a result of the site's brownfield status.

6.0 PRELIMINARY GEOTECHNICAL APPRAISAL

Site Preparation and Earthworks

6.1 No demolition should proceed until an appropriate Asbestos survey of the existing building has been undertaken and any Asbestos Containing Materials (ACM) removed by a reputable licensed contractor.

6.2 Historical/existing foundations, ground floor slabs and other buried concrete obstructions associated with current and former structures will need to be broken out to suitable depths below formation levels where they are to impinge on the proposed redevelopment.

6.3 All existing asphalt/concrete hardstanding and below ground foundations removed as part of the clearance work, subject to appropriate screening and crushing, may be suitable for re-use as bulk fill beneath hard cover areas.

6.4 As part of the site clearance, the removal of trees and other vegetation should be undertaken under consultation with an ecological specialist.

Foundations and Floor Slabs

6.5 Made Ground should be considered unsuitable for the direct support of structural loads as it will be inherently weak and therefore incompetent as a bearing stratum, resulting in the potential for unacceptable total and differential settlements.

6.6 Traditional style spread foundations may be suitable for the support of the new structures although these may need to be taken down to competent strata by mass concrete trench fill foundations or even piles. This will need to be confirmed by appropriate site investigation.

6.7 As cohesive soils are anticipated, the possible effects of clay heave from tree removal on building foundations / floor slabs will need to be considered. Ground investigation will therefore need to include a classification of any clay soils and their potential to shrink and/or swell as a result of natural moisture content moisture change.

6.8 Foundation construction will need to take account of any remaining and/or new services and, where they are in close proximity, may need to be taken down to beneath the lowest level of the service trench so that their structural integrity is maintained.

Excavations and Groundwater

6.9 Significant inflows of groundwater are not anticipated with conventional 'sump and pump' dewatering measures considered adequate to keep excavations dry.

6.10 In view of the relatively impermeable nature of the anticipated cohesive Glacial Till, soakaways are not considered suitable as a drainage solution for the new development. However, this should be confirmed through ground investigation and appropriate testing at drainage design stage.

7.0 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

General

7.1 The site has historically been used for residential purposes, initially with a number of structures located around a central courtyard and later redeveloped into the existing residential structure.

7.2 As such, the likelihood of significant and or widespread ground contamination sources being present beneath the site is considered low with the overall risk from such contamination also considered low. This will be subject to confirmation by site investigation.

7.3 No demolition should proceed until an appropriate Asbestos survey of the existing building has been undertaken and any Asbestos Containing Materials (ACM) removed by an appropriately licensed contractor.

7.4 In consideration of the information within the Coal Authority Report, the risks of shallow, unrecorded mine workings occurring beneath the site are considered low and can be discounted.

7.5 The potential presence of Made Ground beneath the site may dictate that traditional style spread foundations are taken down to competent founding media by mass concrete trench fill foundations or even piles. This will need to be confirmed by appropriate site investigation.

7.6 Ground investigation will also need to include a classification of any clay soils and their potential to shrink and/or swell as a result of any moisture content changes.

7.7 In view of the relatively impermeable nature of the anticipated cohesive Glacial Till, soakaways are not considered suitable as a drainage solution for the new development. This may preclude the use of soakaway drainage although this will be confirmed by ground investigation.

Site Investigation

7.8 Site investigation is required to provide information on the physical and chemical ground conditions. This will enable the assumptions made in the preliminary site conceptual model to be confirmed or modified so as to assess the actual environmental risks posed by the site. Chemical analysis will also allow a classification of soil for re-use/disposal purposes, should this be required.

7.9 The investigation will also comprise sampling and chemical analysis of the near surface soil and possibly groundwater and the installation of ground gas monitoring standpipe with subsequent monitoring for hazardous ground gas concentrations and flow.

7.10 In addition, appropriate investigation will be undertaken to establish geotechnical parameters for the design of foundations, floor slabs and pavement construction.

7.11 Site investigations will be undertaken in accordance with British Standard Institution (BSI), Code of Practice for Ground Investigations – BS5930:2015 and Investigation of Potentially Contaminated Sites – Code of Practice. BS 10175:2011.