



**PHASE 2 GEO-ENVIRONMENTAL SITE
ASSESSMENT REPORT**

**60 – 62 CLARENCE ROAD,
LOGSIGHT,
MANCHESTER,
M13 0YE**

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EnviroSolution Ltd Document Verification

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Prepared by	Tom Craig	Signature	
Checked by	Gemma Lucas	Signature	

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Executive Summary

EnviroSolution Ltd was commissioned to undertake a Phase 2 Geo-Environmental Site Assessment at Clarence Road in Manchester.

The recent intrusive ground investigation has shown Made Ground underlies the site with a proven thickness of between 1.0m and 1.50m.

Soil contaminants (e.g. lead, aromatic TPH, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene and Dibenzo(ah)anthracene) have been detected in the shallow soils beneath the site at concentrations in excess of the human health assessment criteria. The identified contaminants of concern could potentially present a long-term exposure risk to human health of future site users if they remain present in the shallow soils following redevelopment. The presence of buildings and hardstanding would effectively sever exposure pathways in those areas. However, a risk of exposure would occur if they remained present in the areas of soft landscaping. Therefore, remedial measures will be required in areas of soft landscaping to eliminate potential exposure risks (e.g. a clean topsoil cover system).

The site can be classified as Characteristic Situation 1 (CS1; very low risk) in terms of ground gases. No ground gas protection measures are required for the new development.

A remediation strategy should be prepared prior to redevelopment to detail the remediation and validation requirements. This document should be submitted to planning for approval prior to commencing any groundworks on the site.

It is recommended that discussions are undertaken with the water supply company to confirm their requirements for water supply pipes.

The Made Ground would not be suitable for the construction of traditional shallow spread foundations due to the risk of unacceptable total and differential settlement occurring.

The underlying diamicton is considered to be adequate bearing strata and would be suitable for the construction of conventional shallow strip/ trench fill footings with an allowable bearing pressure of 125 kN/m². This is based on a characteristic undrained shear strength of 75 kN/m² for the cohesive material and a maximum foundation width of 1m for strip footings. Further assessment would be required for larger foundations. Foundations should be set at a minimum depth of 1.50m bgl to allow for limited tree planting.

Foundation excavations should be checked by an experienced ground worker prior to placing concrete. Any soft spots or unsuitable founding materials (loose sands or soft clay) should be removed if encountered and replaced with compacted granular fill or lean mix concrete.

Where the depth of fill exceeds 600mm, it is recommended that suspended floors are utilised.

The results from the chemical laboratory sulphate and pH analysis for the site indicate a Design Sulphate Class of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) class of AC-1.

Contents

1	Introduction	7
1.1	Background.....	7
1.2	Objectives.....	7
1.3	Scope of Work	7
1.4	Site Location	8
1.5	Site Description	8
1.6	Development Proposals	8
2	Ground Investigation Methodology	9
2.1	Intrusive Field Works.....	9
2.2	Soil Sampling Methodology	9
2.3	Laboratory Analysis	9
2.3.1	Chemical Analysis.....	9
2.3.2	QA/QC	9
2.3.3	Geotechnical Analysis	10
3	Ground Conditions.....	11
3.1	Made Ground	11
3.2	Diamicton	11
3.3	Bedrock.....	11
3.4	Groundwater	11
3.5	Chemical Analysis	11
3.6	Geotechnical Model	12
3.7	Geotechnical Laboratory Results	13
3.7.1	Sulphate Testing.....	13
3.7.2	Plasticity Testing	13
4	Infiltration Testing.....	14
5	Geotechnical Appraisal	16
5.1	Foundations.....	16
5.1.1	General.....	16
5.2	Excavations and Groundwater	16
5.3	Concrete Design	16
6	Generic Quantitative Risk Assessment	17
6.1	Introduction.....	17
6.2	Human Health	17
6.2.1	Long Term Risks to Human Health.....	17

6.2.2	Short Term Risks	18
6.3	Buildings and Buried Services	18
6.4	Controlled Waters	18
6.5	Ground Gas.....	18
7	Conclusions and Recommendations.....	19
7.1	Contaminated Land	19
7.2	Geotechnical.....	19

References

Appendices

Appendix A – Site Plans

Appendix B – Site Photographs

Appendix C – Borehole Logs

Appendix D – Infiltration Test Data

Appendix E – Tier 1 Human Health Risk Assessment

Appendix F – Laboratory Test Certificates

1 Introduction

1.1 Background

EnviroSolution Ltd was commissioned to undertake a Phase 2 Geo-Environmental Site Assessment at Clarence Road. This work was required to inform development plans for the construction of a new residential dwelling.

A Phase 1 Environmental Site Assessment has previously been completed for this site:

- Geosmart Information Limited, Clarence Road, Phase 1 Geo-environmental Assessment, Ref: 74241R1, January 2021.

The Phase 1 report should be read in conjunction with this report as this will form the basis for the conceptual understanding of the site.

1.2 Objectives

The objectives of the ground investigation were:

1. To develop a ground model of the site, summarising the ground conditions.
2. To obtain information to inform foundation design.
3. To develop a conceptual site model and complete a generic quantitative risk assessment in order to identify any environmental risks and liabilities associated with ground conditions at the site.
4. To identify the requirements for any additional works prior to site development (e.g. further ground investigation or remedial works).

1.3 Scope of Work

The intrusive investigation was designed to inform the foundation solution at the site. As part of this investigation a limited number of samples were recovered for contamination testing from across the site.

- An intrusive ground investigation in order to obtain information on the ground conditions beneath the site.
- Generic quantitative risk assessments utilising the ground investigation data in line with industry approved guidelines.
- Geotechnical appraisal of the ground conditions to inform foundation design.

The scope of work was developed in accordance with the Environment Agency of England and Wales Environment Agency (2020) Land Contamination Risk Management Report LCRM “How to assess and manage the risks from land contamination” and BS10175:2011+A2:2017 ‘Investigation of Potentially Contaminated Sites – Code of Practice’.

1.4 Site Location

The site is located at 60 – 62 Clarence Road, Longsight, Manchester, M13 0YE. The British National Grid Reference for the approximate site centre is GR: 386365 395660.

The site location is shown on **Figure 1** in **Appendix A**.

1.5 Site Description

The site is located on the western side of Clarence Road in Longsight.

The site is rectangular in shape and covers a total approximate area of about 520m².

The site is currently a vacant plot of land. Relic foundation trenches are visible in the central area of the site.

The site is generally flat with little change in elevation.

Land use in the surrounding area is predominantly residential.

The existing site plan is shown on **Figure 2** which is included in **Appendix A**.

1.6 Development Proposals

It is understood that the development proposal includes the construction of a new three-storey residential apartment building comprising 3 no. self-containing flats. Development plans include vehicle parking to the front and soft landscaping to the rear.

The development plans are included in **Figure 3** in **Appendix A**.

2 Ground Investigation Methodology

2.1 Intrusive Field Works

The intrusive investigation works were undertaken by EnviroSolution Ltd on the 28th of June 2021. The work comprised the following:

- The drilling of 3 no. window sample boreholes (designated as WS1 – WS3) to depths of up to 3.0m below ground level (bgl).
- Infiltration testing in 2 no. locations designated as (IF1 – IF2).
- Geotechnical logging of ground conditions at each location.
- In-situ geotechnical testing within boreholes.
- Collection of representative soil samples from boreholes for subsequent chemical and geotechnical laboratory analysis.

The exploratory hole locations are shown on **Figure 4** in **Appendix A**.

2.2 Soil Sampling Methodology

The exploratory holes were logged in accordance with the requirements of BS 5930: 2015 and BS EN 14688 Pts 1&2. Visual and olfactory evidence of contamination was noted if encountered. These observations were used to aid scheduling of samples for chemical laboratory analysis. Soil samples were collected at distinct changes in lithology, or on the basis of field observations.

Samples were collected with a clean trowel or by hand (using dedicated nitrile gloves for each sampling location). Samples were placed immediately into laboratory supplied sampling containers, specific to the type of analyses required. All sample containers were sealed and labelled with a unique location identity, depth and date of sampling.

2.3 Laboratory Analysis

2.3.1 Chemical Analysis

All soil samples were transported in cool boxes at the end of the day under a chain of custody regime to Chemtest, who are a UKAS accredited laboratory. Analysis was conducted to MCerts standards where applicable.

Chemical analysis was scheduled on a total of 5 no. soil samples for a range of chemical parameters including: Toxic 9 metals, pH, asbestos ID, asbestos quantification, volatile and semi-volatile organic compounds (VOCs and SVOCs) and TPH criteria working group.

2.3.2 QA/QC

Field methods and procedures complied with accepted industry standards (BS10175:2011). These standards include the use of specified sample container types and agreed sampling decontamination procedures.

All samples were transported from the site to the analytical laboratory under a chain of custody regime within cool boxes containing ice packs. All analytical results were subjected to a QA/QC validation check to ensure they met the Laboratory's target criteria.

2.3.3 Geotechnical Analysis

A programme of laboratory testing was undertaken in accordance with BS:1377 (1990) 'Methods of Test for Soils for Civil Engineering Purposes'. The following tests being carried out:

Table 1: BS:1377 Testing

BS Test No.	Description
Part 2: 3.2.3.3	Moisture Content
Part 3: 5.2	Sulphate Content, pH Value
Part 2: 5.4	Plasticity Index

The following in-situ and laboratory testing outside the scope of BS:1377 was also undertaken:

Table 2: Non-BS:1377 Testing

Standard or Methodology	Test Description
BRE Special Digest 1	Total Sulphate, Aqueous Extract Sulphate, Total Sulphur, pH

3 Ground Conditions

3.1 Made Ground

Made Ground was encountered in all exploratory hole locations during the investigation with a thickness of between 1.0m and 1.50m bgl.

The Made Ground generally consists of brown reworked clayey soil with brick fragments and whole brick.

3.2 Diamicton

Deposits of diamicton were encountered in all exploratory holes beneath the Made Ground. The base of the diamicton was not proven during the investigation.

The diamicton generally consists of a firm to stiff brown slightly gravelly clay.

Uncorrected SPT N-values for the diamicton range between 8 and 41 and is indicative of a low to medium to very high strength clay with an undrained shear strength range of between 40kN/m² and 205kN/m² using the general approximation of:

Undrained Shear Strength (C_u) = $N \times 5$ (after Stroud, 1974).

Based on these results, then it is considered that a Characteristic Undrained Shear Strength of 75kN/m² can be adopted for foundation design.

3.3 Bedrock

Bedrock deposits were not encountered during the investigation.

The recorded borehole logs are shown in **Appendix C**.

3.4 Groundwater

Groundwater was not encountered during the investigation.

3.5 Chemical Analysis

A copy of the laboratory test certificates is included in **Appendix F**. An assessment of the data is presented in Section 6.

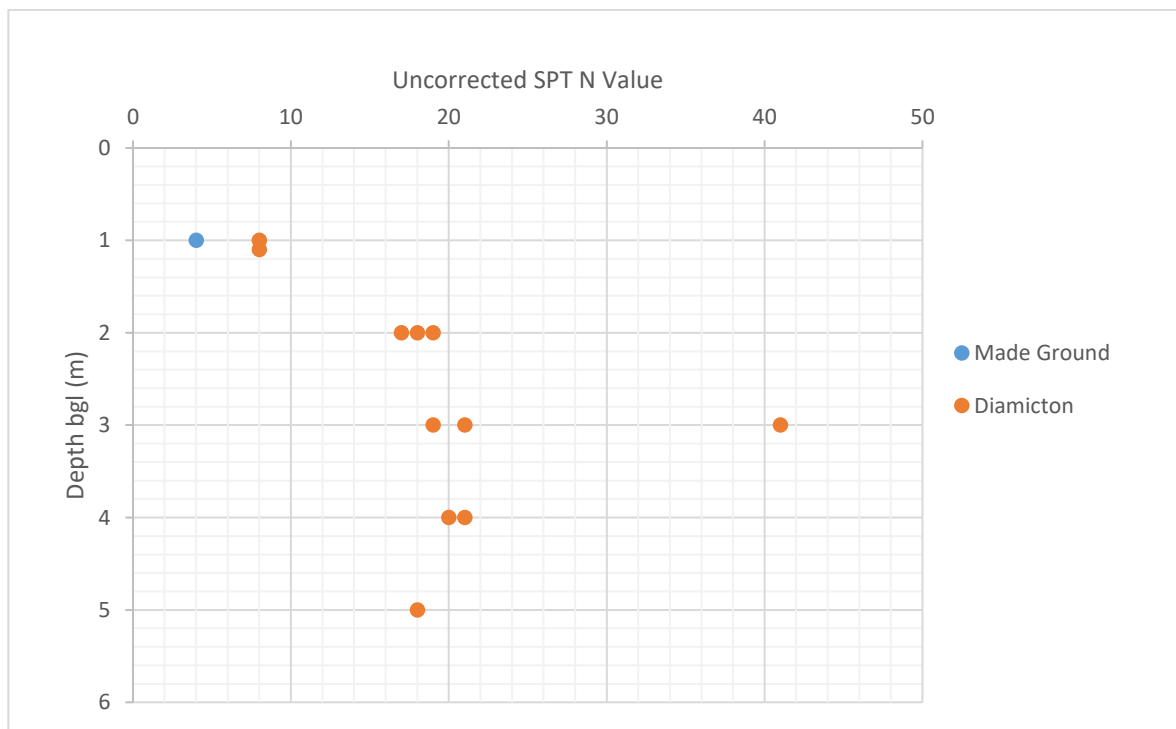
3.6 Geotechnical Model

Table 3: Geotechnical Model

Stratum	Depth to Base (m bgl)	Parameters/ Comments	
		Strength Parameters	Other Parameters/ Notes
Made Ground	1.0 – 1.50m	SPT N values 4	Sandy gravel fill and reworked gravelly sand with occasional brick fragments.
York Moraine Member (Cohesive)	Not Proven	SPT N values 8 – 41	Encountered in WS1, HP1 and HP2. Firm brown slightly sandy gravelly clay with fine to coarse angular gravels.
York Moraine Member (Granular)	Not Proven	SPT N values 14 – 46	Encountered in WS2 only. Loose to medium dense sand extending to 2.40m overlying dense fine to coarse gravel.

A total of 12 no. Standard Penetration Tests (SPTs) were performed during the drilling works. The results are recorded on the borehole logs at the appropriate depths and are displayed on the graph below.

SPT – Depth Plot



3.7 Geotechnical Laboratory Results

3.7.1 Sulphate Testing

The results of chemical testing carried out in accordance with BRE Special Digest 1:2005 Concrete in Aggressive Ground are summarised as follows (See **Appendix F**):

Table 4: BRE Special Digest 1:2005 Test Results

Material	Property	No. of Tests	Range of Results	Characteristic Values (BRE Special Digest 1)	Design Sulphate Class and ACEC Class
Diamicton	Sulphate (SO ₄) by 2:1 water soil extract (mg/l)	1	69	69	DS-1 AC-1
	pH	1	7.8	7.8	
	Total Sulphur %	1	<0.02	<0.02	
	Chloride by 2:1 water soil extract (mg/l)	1	8.9	N/a	N/a
	Nitrate by 2:1 water soil extract (mg/l)	1	<1.5	N/a	N/a

3.7.2 Plasticity Testing

The results of the plasticity testing are summarised below, and the data are included in **Appendix F**.

Table 5: Plasticity Testing Results

Sample ID	Plasticity Index	Modified Plasticity Index	Volume Change Potential
WS1 at 1.50m	27	26.5	Medium
WS2 at 3.0m	32	31	High
WS3 at 1.50m	35	34.5	High

The results of the plasticity testing indicate an intermediate plasticity clay soil with a high volume change potential.

4 Infiltration Testing

A total of 2 no. infiltration tests were completed on site in 2 no. boreholes (designated as IF1 - IF2). The falling head test methodology was used.

The infiltration test pit dimensions were as follows:

Infiltration Test ID	Dimensions (m)		
	Length	Width	Depth
IF1	0.1	0.1	2.0
IF2	0.1	0.1	2.0

Backfilling with gravel at each test location was deemed unnecessary to maintain the borehole dimensions throughout the tests. The borehole sides were deemed stable.

Each test location was filled rapidly with water. Subsequent water level observations were made with a dip-meter lowered down into the water from the top of the pit.

Results

The infiltration test data obtained (tabulated and graphed) are enclosed (see **Appendix D**).

In accordance with the methodology set out within BRE Digest 365 entitled 'Soakaway design', values of a_{p50} and $V_{p75}-V_{p25}$ were calculated. In all tests the values of t_{p75-25} were unobtainable from the recorded data and were initially marked as failed.

The results are presented in the tables below:

Parameter	IF1	IF2
Depth of Water	0.40	1.0
Total Effective Storage Depth (m)	1.60	1.0
75% Effective Storage Depth (m bgl)	0.80 (Not Reached)	1.25 (Not Reached)
25% Effective Storage Depth (m bgl)	1.60 (Not Reached)	1.75 (Not Reached)
Volume (m ³) $V_{p75}-V_{p25}$	N/a	N/a
Area (m ²) a_{p50}	N/a	N/a
Time (seconds), t_{p75-25}	Failed	Failed
Soil infiltration rate (m/s), f	Failed	Failed

The results show that all infiltration tests failed as it was not possible to determine the infiltration rate using the standard methodology set out in BRE 365. The water failed to drain and remained at a stable level throughout the testing.

Given that the infiltration tests conducted at the site failed, it is therefore not recommended that soakaway drainage systems are installed at this site.

5 Geotechnical Appraisal

5.1 Foundations

5.1.1 General

The Made Ground would not be suitable for the construction of traditional shallow spread foundations due to the risk of unacceptable total and differential settlement occurring. This is due to the variable nature of the material and the lack of controlled compaction when the material was placed.

The underlying diamicton is considered to be adequate bearing strata and would be suitable for the construction of conventional shallow strip/ trench fill footings with an allowable bearing pressure of 125 kN/m². This is based on a characteristic undrained shear strength of 75 kN/m² for the cohesive material and a maximum foundation width of 1m for strip footings. Further assessment would be required for larger foundations. Foundations should be set at a minimum depth of 1.50m bgl to allow for limited tree planting.

Foundation excavations should be checked by an experienced ground worker prior to placing concrete. Any soft spots or unsuitable founding materials (loose sands or soft clay) should be removed if encountered and replaced with compacted granular fill or lean mix concrete.

Should both granular and cohesive material be present at the proposed formation level, it is recommended that excavations are locally deepened, and foundations appropriately reinforced to span material with different settlement properties.

Where the depth of fill exceeds 600mm, it is recommended that suspended floors are utilised.

5.2 Excavations and Groundwater

Groundwater inflows were not recorded during the drilling works.

Sump pumps should be adequate for dewatering shallow excavations if required. Advice on groundwater control in construction is given in CIRIA Report C515: Groundwater Control Design and Practice.

Excavations within the diamicton could be relied upon to stand supported in the short term only. If left open, they would need to be either be fully supported or battered back to a safe angle of repose. Further advice on excavation support is given in CIRIA Document 97: Trenching Practice.

5.3 Concrete Design

The results from the chemical laboratory sulphate and pH analysis for the site indicate a Design Sulphate Class of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) class of AC-1.

6 Generic Quantitative Risk Assessment

6.1 Introduction

The quantitative risk assessment has been undertaken in general accordance with guidance issued by the Environment Agency and comprises a Generic Quantitative Risk Assessment (GQRA) which screens site concentrations against Generic Assessment Criteria (GAC) based on the Preliminary Risk Assessment (PRA) and associated Preliminary Conceptual Site Model. Where a concentration exceeds the GAC, the substance is confirmed as a Contaminant of Concern (CoC).

6.2 Human Health

6.2.1 Long Term Risks to Human Health

Taking into account the proposed land use at the site (residential) GAC for residential land use with plant uptake has been adopted as the GAC for this assessment as it is considered feasible that external areas could be used to grow home grown produce.

The source of the GAC utilised for this assessment comprise the LQM 'Suitable 4 Use Levels' and Category 4 Screening Levels'.

Some substances have been detected in the Made Ground beneath the site at concentrations in excess of the GAC (see **Appendix E**). Such substances include:

- Lead (WS1 at 0.30m and WS2 at 0.30m)
- Aromatic TPH >C16-C21 (WS2 at 0.30m)
- Aromatic TPH >C21-C35 (WS2 at 0.30m)
- Benzo(a)anthracene (WS2 at 0.30m)
- Benzo(b)fluoranthene (WS2 at 0.30m)
- Benzo(a)pyrene (WS2 at 0.30m)
- Dibenzo(a,h)anthracene (WS2 at 0.30m and 0.80m)

The location of the majority of exceedances (WS2) is positioned beneath proposed building footprint. This would effectively sever any exposure pathways to future site users. However, chemical testing has shown exceedances of lead contamination in areas of proposed soft landscaping. The lead could potentially present a long-term exposure risk to human health of future site users if they remain present in the proposed areas of soft landscaping following redevelopment. Therefore, remedial measures will be required in areas of soft landscaping in order to eliminate exposure risks (e.g. a clean topsoil cover system).

Asbestos was not detected in any of the exploratory borehole locations, thus indicating a low risk to future site users from asbestos in the shallow soils beneath the site.

6.2.2 Short Term Risks

During the redevelopment of the site, it will be necessary to implement measures to protect construction workers, and adjacent site users from the soil contaminants identified at the site. In addition, to ensure that they do not encounter contaminated soils and/or groundwater, construction workers and site visitors should wear appropriate personal protective equipment (PPE). Health and safety procedures would ensure that ingestion of contaminated soils and / or groundwater is avoided (e.g. by washing hands prior to eating, drinking and smoking).

6.3 Buildings and Buried Services

It is considered that the foundations for the proposed development could be at risk of attack from any aggressive chemicals contained within the ground. In line with the recommendations with BRE Special Digest 1 (2005) "Concrete in Aggressive Ground", the Design Sulphate Class for the site is DS-1 and AC-1 as previously detailed in Section 3.7.1.

Plastic pipe materials are potentially vulnerable to attack from elevated levels of hydrocarbons, which can potentially lead to contamination of potable water supplies, and water supply companies require the risk to their workers from other contaminants in the ground to be assessed. Therefore, if new water supply pipes are to be installed on site, it is recommended that discussions are undertaken with the water supply company to confirm their requirements.

6.4 Controlled Waters

The recent site investigation has shown the site to be underlain by low permeability cohesive diamicton which will act as an impermeable barrier, restricting the migration of any contaminants within the Made Ground to the underlying groundwater aquifers.

No sensitive surface water courses have been identified within a 1km radius of the site.

The risk to controlled waters is deemed to be low.

6.5 Ground Gas

The recent site investigation has shown the Made Ground material at the site to be comprised of predominantly cohesive material. No significant amount of putrescible material was identified.

No further ground gas sources have been identified on site or in the surrounding area

The site can be classified as Characteristic Situation 1 (CS1; very low risk) in terms of ground gases. No ground gas protection measures are required for the new development.

7 Conclusions and Recommendations

7.1 Contaminated Land

The recent intrusive ground investigation has shown Made Ground underlies the site with a proven thickness of between 1.0m and 1.50m.

Soil contaminants (e.g. lead, aromatic TPH, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene and Dibenzo(ah)anthracene) have been detected in the shallow soils beneath the site at concentrations in excess of the human health assessment criteria. The identified contaminants of concern could potentially present a long-term exposure risk to human health of future site users if they remain present in the shallow soils following redevelopment. The presence of buildings and hardstanding would effectively sever exposure pathways in those areas. However, a risk of exposure would occur if they remained present in the areas of soft landscaping. Therefore, remedial measures will be required in areas of soft landscaping to eliminate potential exposure risks (e.g. a clean topsoil cover system).

The site can be classified as Characteristic Situation 1 (CS1; very low risk) in terms of ground gases. No ground gas protection measures are required for the new development.

A remediation strategy should be prepared prior to redevelopment to detail the remediation and validation requirements. This document should be submitted to planning for approval prior to commencing any groundworks on the site.

It is recommended that discussions are undertaken with the water supply company to confirm their requirements for water supply pipes.

7.2 Geotechnical

The Made Ground would not be suitable for the construction of traditional shallow spread foundations due to the risk of unacceptable total and differential settlement occurring.

The underlying diamicton is considered to be adequate bearing strata and would be suitable for the construction of conventional shallow strip/ trench fill footings with an allowable bearing pressure of 125 kN/m². This is based on a characteristic undrained shear strength of 75 kN/m² for the cohesive material and a maximum foundation width of 1m for strip footings. Further assessment would be required for larger foundations. Foundations should be set at a minimum depth of 1.50m bgl to allow for limited tree planting.

Foundation excavations should be checked by an experienced ground worker prior to placing concrete. Any soft spots or unsuitable founding materials (loose sands or soft clay) should be removed if encountered and replaced with compacted granular fill or lean mix concrete.

Where the depth of fill exceeds 600mm, it is recommended that suspended floors are utilised.

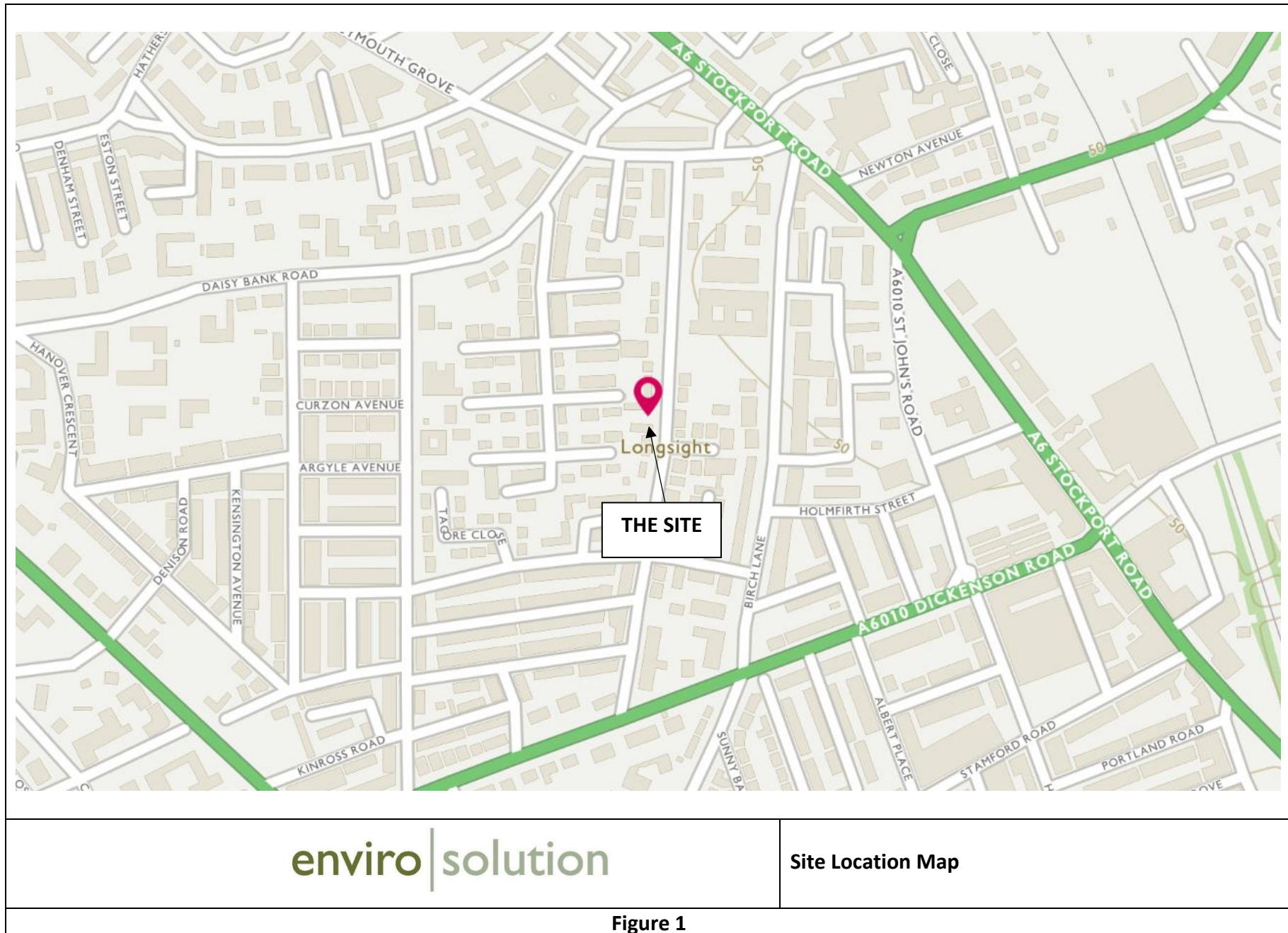
The results from the chemical laboratory sulphate and pH analysis for the site indicate a Design Sulphate Class of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) class of AC-1.

REFERENCES

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APPENDICES

Appendix A – Site Location and Site Plan

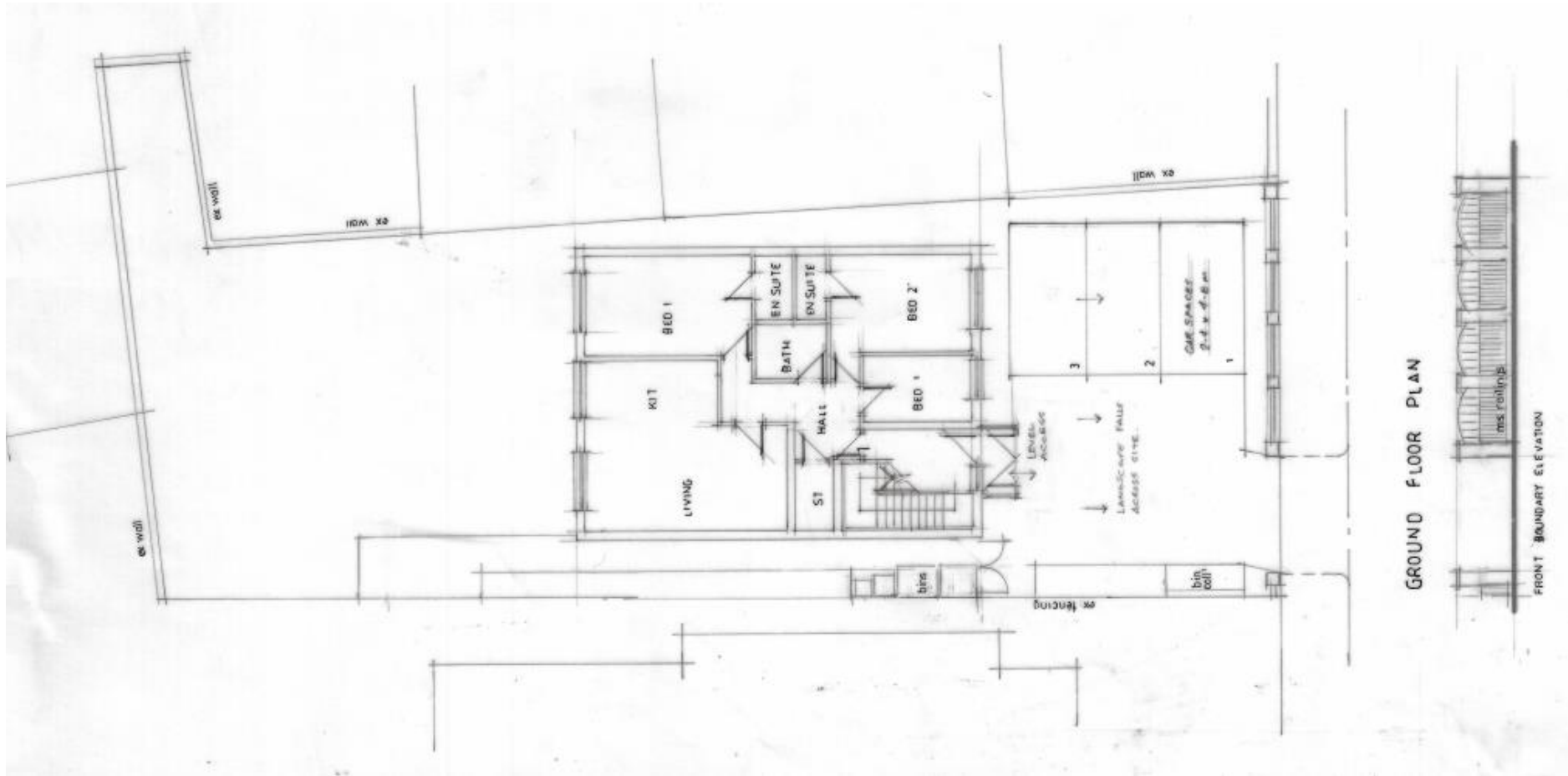




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Existing Site Plan

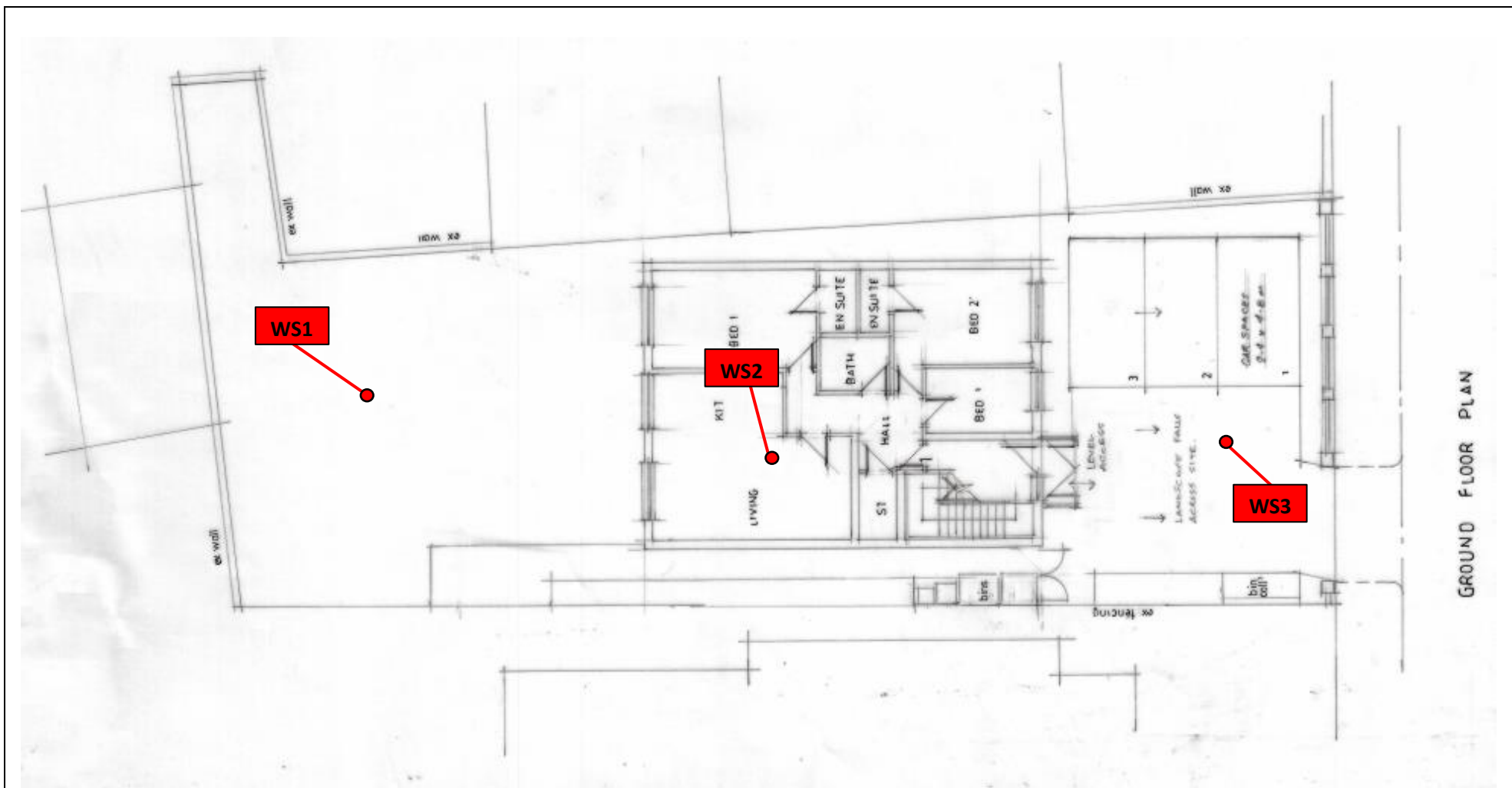
Figure 2



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Proposed Front Extension

Figure 3



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Exploratory Hole Location Plan

Figure 4

Appendix B – Site Photographs



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WS1 soil core



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Infiltration Test



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Soil core from WS3



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Relic wall and standing water



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Infiltration test

Appendix C – Borehole Logs

Job Title: Clarence Road										Client: R Hussain										Borehole No: WS1																		
Location: Clarence Road, Manchester																				Page 1 of 3																		
Borehole Construction		Sample		Soil Vapour (ppm)	Groundwater	Depth (m)	SPT	Drilling Dates: 28.06.21										Drilling Method: Window Sampler																				
								Drilling Contractor: EnviroSolution Ltd										Borehole Diameter: 87mm																				
		Number	Type					Logged by: Tom Craig										Screen Type & Diameter: n/a																				
								Checked by: Gemma Lucas										Screen Slot Size: n/a																				
						0		Description																				Comments										0
								Made Ground: Brown reworked loamy clayey TOPSOIL with brick fragments																														
								Stiff brown slightly gravelly CLAY																														
						1	4																															
								End of borehole at 3.0m																														

[illegible]

Job Title: Clarence Road						Client: R Hussain				Borehole No: WS3					
Location: Clarence Road, Manchester										Page 3 of 3					
Borehole Construction	Sample		Soil Vapour (ppm)	Groundwater	Depth (m)	SPT	Drilling Dates: 28.06.21				Drilling Method: Window Sampler				
							Drilling Contractor: EnviroSolution Ltd				Borehole Diameter: 87mm				
	Number	Type					Logged by: Tom Craig				Screen Type & Diameter: n/a				
							Checked by: Gemma Lucas				Screen Slot Size: n/a				
					0		Description						Comments		0
							Made Ground: Brown reworked CLAY with brick fragments and bricks								
					1	8	Firm brown slightly gravelly CLAY								1
					2	18	Stiff brown slightly gravelly CLAY								2
					3	19	End of borehole at 4.0m								3
					4	20	End of borehole at 4.0m								4
					5		Surrounded by bentonite seal, capped with flush cover and gas valve								5
Non-slotted Install							Surrounded by bentonite seal, capped with flush cover and gas valve								
Slotted Install							Surrounded by 10mm gravel and installed with end cap								
Legend:															
◆ Disturbed Sample † Down Borehole Analysis															
○ Undisturbed Sample ∇ Groundwater Table															
⊘ Headspace Analysis Δ Perched Water Table															

Appendix D – Infiltration Test Data

IF1	
Time	Depth bgl (m)
1	0.40
2	0.40
3	0.40
4	0.40
5	0.40
6	0.40
7	0.40
8	0.40
9	0.40
10	0.40
15	0.40
20	0.40
30	0.40
45	0.40
60	0.40
90	0.40
120	0.40
180	0.40
240	0.40

IF2	
Time	Depth bgl (m)
1	1.0
2	1.0
3	1.0
4	1.0
5	1.0
6	1.0
7	1.0
8	1.0
9	1.0
10	1.0
15	1.0
20	1.0
30	1.0
45	1.0
60	1.0
90	1.0
120	1.0
180	1.0
240	1.0

Appendix E – Tier 1 Human Health Risk Assessment

Sample Location:				WS1	WS1	WS2	WS2	WS3
Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
Top Depth (m):				0.30m	1.50m	0.30m	0.80m	0.30m
Date Sampled:				28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021
Determinand	Units	LOD	GAC					
Moisture	%	0.020		14	18	20	24	21
pH		4.0		8.5	8.3	8.0	8.4	8.3
Heavy Metals								
Arsenic	mg/kg	1.0	37	10	7.9	24	15	11
Cadmium	mg/kg	0.10	11	0.21	0.11	1.6	0.14	< 0.10
Chromium	mg/kg	1.0	910	16	28	25	32	31
Copper	mg/kg	0.50	2400	25	20	79	33	19
Mercury	mg/kg	0.10	1.2	0.19	< 0.10	0.52	0.23	< 0.10
Nickel	mg/kg	0.50	130	15	32	25	34	33
Lead	mg/kg	0.50	200	230	13	310	75	15
Selenium	mg/kg	0.20	250	< 0.20	< 0.20	0.60	0.37	0.23
Zinc	mg/kg	0.50	3700	100	47	370	110	41
TPH CWG								
Aliphatic TPH >C21-C35	mg/kg	1.0	65000	< 1.0	< 1.0	62	< 1.0	< 1.0
Aliphatic TPH >C35-C44	mg/kg	1.0	65000	< 1.0	< 1.0	50	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	mg/kg	5.0		< 5.0	< 5.0	110	< 5.0	< 5.0
Aromatic TPH >C12-C16	mg/kg	1.0	140	< 1.0	< 1.0	41	< 1.0	< 1.0
Aromatic TPH >C16-C21	mg/kg	1.0	260	< 1.0	< 1.0	400	< 1.0	< 1.0
Aromatic TPH >C21-C35	mg/kg	1.0	1100	< 1.0	< 1.0	2300	< 1.0	< 1.0
Aromatic TPH >C35-C44	mg/kg	1.0	1100	< 1.0	< 1.0	110	< 1.0	< 1.0
Total Aromatic Hydrocarbons	mg/kg	5.0		< 5.0	< 5.0	2800	< 5.0	< 5.0
Total Petroleum Hydrocarbons	mg/kg	10.0		< 10	< 10	3000	< 10	< 10
SVOCs								
Acenaphthylene	mg/kg	0.50	170	< 0.50	< 0.50	1.2	< 0.50	< 0.50
Acenaphthene	mg/kg	0.50	210	< 0.50	< 0.50	0.71	< 0.50	< 0.50
Dibenzofuran	mg/kg	0.50		< 0.50	< 0.50	0.67	< 0.50	< 0.50
Fluorene	mg/kg	0.50	170	< 0.50	< 0.50	1.2	< 0.50	< 0.50
Phenanthrene	mg/kg	0.50	95	1.9	< 0.50	15	7.3	< 0.50
Anthracene	mg/kg	0.50	2400	< 0.50	< 0.50	4.4	1.9	< 0.50
Carbazole	mg/kg	0.50		< 0.50	< 0.50	1.2	< 0.50	< 0.50
Fluoranthene	mg/kg	0.50	280	2.3	< 0.50	23	13	< 0.50
Pyrene	mg/kg	0.50	620	2.0	< 0.50	21	12	< 0.50
Benzo[a]anthracene	mg/kg	0.50	7.2	1.1	< 0.50	12	7.1	< 0.50
Chrysene	mg/kg	0.50	15	1.1	< 0.50	12	7.0	< 0.50
Benzo[b]fluoranthene	mg/kg	0.50	2.6	1.2	< 0.50	13	7.8	< 0.50
Benzo[k]fluoranthene	mg/kg	0.50	77	< 0.50	< 0.50	5.2	3.1	< 0.50
Benzo[a]pyrene	mg/kg	0.50	2.2		< 0.50	11	6.9	< 0.50
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.50	27	< 0.50	< 0.50	5.6	3.3	< 0.50
Dibenz(a,h)Anthracene	mg/kg	0.50	0.24	< 0.50	< 0.50	1.6	0.98	< 0.50
Benzo[g,h,i]perylene	mg/kg	0.50	320	< 0.50	< 0.50	5.5	3.2	< 0.50
Notes:								
Only those determinands that have been detected at concentrations in excess of LoD have been included in the table								
GAC = Human health generic assessment								

Appendix F – Laboratory Data



2183

Final Report

Report No.:	21-23160-1		
Initial Date of Issue:	19-Jul-2021		
Client	EnviroSolution		
Client Address:	Suite 5, The Quay No 12 Princes Dock Liverpool Waters Liverpool L3 1DL		
Contact(s):	Tom Craig		
Project	Clarence Road		
Quotation No.:		Date Received:	01-Jul-2021
Order No.:	ES020621	Date Instructed:	06-Jul-2021
No. of Samples:	5		
Turnaround (Wkdays):	5	Results Due:	12-Jul-2021
Date Approved:	13-Jul-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: Clarence Road

Client: EnviroSolution	Chemtest Job No.:				21-23160	21-23160	21-23160	21-23160	21-23160
Quotation No.:	Chemtest Sample ID.:				1235217	1235218	1235219	1235220	1235221
	Sample Location:				WS1	WS1	WS2	WS2	WS3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.50	0.30	0.80	0.30
	Date Sampled:				28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021
	Asbestos Lab:				COVENTRY		COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-		-		-
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected		No Asbestos Detected
Moisture	N	2030	%	0.020	14	18	20	24	21
pH	U	2010		4.0	8.5	8.3	8.0	8.4	8.3
Arsenic	U	2450	mg/kg	1.0	10	7.9	24	15	11
Cadmium	U	2450	mg/kg	0.10	0.21	0.11	1.6	0.14	< 0.10
Chromium	U	2450	mg/kg	1.0	16	28	25	32	31
Copper	U	2450	mg/kg	0.50	25	20	79	33	19
Mercury	U	2450	mg/kg	0.10	0.19	< 0.10	0.52	0.23	< 0.10
Nickel	U	2450	mg/kg	0.50	15	32	25	34	33
Lead	U	2450	mg/kg	0.50	230	13	310	75	15
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	0.60	0.37	0.23
Zinc	U	2450	mg/kg	0.50	100	47	370	110	41
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	62	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	50	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	110	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	41	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	400	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	2300	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	110	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	2800	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	3000	< 10	< 10
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: Clarence Road

Client: EnviroSolution	Chemtest Job No.:				21-23160	21-23160	21-23160	21-23160	21-23160
Quotation No.:	Chemtest Sample ID.:				1235217	1235218	1235219	1235220	1235221
	Sample Location:				WS1	WS1	WS2	WS2	WS3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.50	0.30	0.80	0.30
	Date Sampled:				28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021
	Asbestos Lab:				COVENTRY		COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD					
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: Clarence Road

Client: EnviroSolution	Chemtest Job No.:				21-23160	21-23160	21-23160	21-23160	21-23160
Quotation No.:	Chemtest Sample ID.:				1235217	1235218	1235219	1235220	1235221
	Sample Location:				WS1	WS1	WS2	WS2	WS3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.50	0.30	0.80	0.30
	Date Sampled:				28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021
	Asbestos Lab:				COVENTRY		COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Soil

Project: Clarence Road

Client: EnviroSolution	Chemtest Job No.:				21-23160	21-23160	21-23160	21-23160	21-23160
Quotation No.:	Chemtest Sample ID.:				1235217	1235218	1235219	1235220	1235221
	Sample Location:				WS1	WS1	WS2	WS2	WS3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.50	0.30	0.80	0.30
	Date Sampled:				28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021	28-Jun-2021
	Asbestos Lab:				COVENTRY		COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD					
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.2	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.71	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.67	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.2	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	1.9	< 0.50	15	7.3	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	4.4	1.9	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.2	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	2.3	< 0.50	23	13	< 0.50
Pyrene	U	2790	mg/kg	0.50	2.0	< 0.50	21	12	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	1.1	< 0.50	12	7.1	< 0.50
Chrysene	U	2790	mg/kg	0.50	1.1	< 0.50	12	7.0	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.2	< 0.50	13	7.8	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	5.2	3.1	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	0.92	< 0.50	11	6.9	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	5.6	3.3	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.6	0.98	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	5.5	3.2	< 0.50

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Laboratory:
Unit 4
Rose Lane Industrial Estate
Lenham Heath
Kent ME17 2JN
01622 851176



TEST REPORT

Report No:
Page 1 of 1

XTE 56687

TEST REPORT OF PLASTICITY INDEX

Method: BS 1377-2:1990 Method 4.4 Liquid Limit One Point
Method: BS 1377-2:1990 Method 5.3 Plastic Limit
Method: BS 1377-2:1990 Method 5.4 Plasticity Index

XTRATEC SAMPLE REF | XTE 56687
CUSTOMER/SITE SAMPLE REF | 552515

CLIENT	DETS Ltd
SITE	Clarence Road - 08424
SOIL DESCRIPTION	Dark brown/grey clay with occasional gravel
SUPPLIER/SOURCE	Insitu
SAMPLING LOCATION	WS1 @ 1.5m
SAMPLING METHOD	Unknown
SAMPLED BY	Client
TYPE OF SAMPLE	Disturbed
DATE SAMPLED	Unknown
DATE RECEIVED	02 July 2021
DATE TESTED	05 July 2021
PREPARATION METHOD	Tested by Wet Sieving

TEST RESULTS	
Percentage Retained 425um (%)	2
Liquid Limit	45
Plastic Limit	18
Plasticity Index	27

REMARKS:

ISSUE TO: DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane, Lenham Heath
Maidstone
ME17 2JN

DATE: 07 July 2021

AUTHORISED BY: N Ring Laboratory
Manager

The results reported represents only the material tested supplied to the laboratory or if the material has been sampled by Xtratec the quantity of the material represented by the sample. This report shall not be reproduced except in full without approval of the laboratory

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TEST REPORT

Report No:
Page 1 of 1

XTE 56688

TEST REPORT OF MOISTURE CONTENT OF SOILS

Method: BS 1377-2:1990, Method 3.2.3.3. Oven Drying

XTRATEC SAMPLE REF | XTE 56688
CUSTOMER/SITE SAMPLE REF | 552516

CLIENT	DETS Ltd
SITE	Clarence Road - 08424
TYPE OF MATERIAL	For Classification
SOIL DESCRIPTION	Dark brown/grey clay
SPECIFICATION	For Classification
SUPPLIER/SOURCE	Insitu
SAMPLING LOCATION	WS2 @ 1.5m
SAMPLING METHOD	Unknown
SAMPLED BY	Client
TYPE OF SAMPLE	Disturbed
DATE SAMPLED	Unknown
DATE RECEIVED	02 July 2021
DATE TESTED	05 July 2021
PREPARATION METHOD	BS 1377-1. 7.3.5.2 (Sub dividing)

TEST RESULTS	
Moisture Content (%)	26.1

REMARKS:

ISSUE TO: DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane, Lenham Heath
Maidstone
ME17 2JN

DATE: 07 July 2021


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TEST REPORT

Report No:
Page 1 of 1

XTE 56689

TEST REPORT OF PLASTICITY INDEX

Method: BS 1377-2:1990 Method 4.4 Liquid Limit One Point
Method: BS 1377-2:1990 Method 5.3 Plastic Limit
Method: BS 1377-2:1990 Method 5.4 Plasticity Index

XTRATEC SAMPLE REF | XTE 56689
CUSTOMER/SITE SAMPLE REF | 552517

CLIENT | DETS Ltd
SITE | Clarence Road - 08424
SOIL DESCRIPTION | Dark brown/grey clay with occasional gravel
SUPPLIER/SOURCE | Insitu
SAMPLING LOCATION | WS2 @ 3.0m

SAMPLING METHOD | Unknown
SAMPLED BY | Client
TYPE OF SAMPLE | Disturbed
DATE SAMPLED | Unknown
DATE RECEIVED | 02 July 2021
DATE TESTED | 05 July 2021
PREPARATION METHOD | Tested by Wet Sieving

TEST RESULTS	
Percentage Retained 425um (%)	4
Liquid Limit	50
Plastic Limit	18
Plasticity Index	32

REMARKS:

ISSUE TO: DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane, Lenham Heath
Maidstone
ME17 2JN

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TEST REPORT

Report No:
Page 1 of 1

XTE 56690

TEST REPORT OF PLASTICITY INDEX

Method: BS 1377-2:1990 Method 4.4 Liquid Limit One Point
Method: BS 1377-2:1990 Method 5.3 Plastic Limit
Method: BS 1377-2:1990 Method 5.4 Plasticity Index

XTRATEC SAMPLE REF | XTE 56690
CUSTOMER/SITE SAMPLE REF | 552518

CLIENT	DETS Ltd
SITE	Clarence Road - 08424
SOIL DESCRIPTION	Dark brown/grey clay with occasional gravel
SUPPLIER/SOURCE	Insitu
SAMPLING LOCATION	WS3 @ 1.5m
SAMPLING METHOD	Unknown
SAMPLED BY	Client
TYPE OF SAMPLE	Disturbed
DATE SAMPLED	Unknown
DATE RECEIVED	02 July 2021
DATE TESTED	05 July 2021
PREPARATION METHOD	Tested by Wet Sieving

TEST RESULTS	
Percentage Retained 425um (%)	2
Liquid Limit	55
Plastic Limit	20
Plasticity Index	35

REMARKS:

ISSUE TO: DETS Ltd
Unit 1, Rose Lane Industrial Estate
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Maidstone
ME17 2JN

DATE: 07 July 2021

AUTHORISED BY: N Ring Laboratory
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TEST REPORT

Report No:
Page 1 of 1

XTE 56691

TEST REPORT OF MOISTURE CONTENT OF SOILS

Method: BS 1377-2:1990, Method 3.2.3.3. Oven Drying

XTRATEC SAMPLE REF | XTE 56691
CUSTOMER/SITE SAMPLE REF | 552519

CLIENT	DETS Ltd
SITE	Clarence Road - 08424
TYPE OF MATERIAL	For Classification
SOIL DESCRIPTION	Dark brown/grey clay
SPECIFICATION	For Classification
SUPPLIER/SOURCE	Insitu
SAMPLING LOCATION	WS3 @ 3.0m
SAMPLING METHOD	Unknown
SAMPLED BY	Client
TYPE OF SAMPLE	Disturbed
DATE SAMPLED	Unknown
DATE RECEIVED	02 July 2021
DATE TESTED	05 July 2021
PREPARATION METHOD	BS 1377-1. 7.3.5.2 (Sub dividing)

TEST RESULTS	
Moisture Content (%)	21.3

REMARKS:

ISSUE TO: DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane, Lenham Heath
Maidstone
ME17 2JN

DATE: 07 July 2021

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Tom Craig
Envirosolution Ltd
Suite 5
The Quay
No. 12 Princes Dock
Liverpool Waters
Liverpool
L3 1DL

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 21-08423

Site Reference: Clarence Road

Project / Job Ref: Clarence Road

Order No: ES010721

Sample Receipt Date: 30/06/2021

Sample Scheduled Date: 02/07/2021

Report Issue Number: 1

Reporting Date: 08/07/2021

Authorised by:

A handwritten signature in grey ink, appearing to read "Dave Ashworth".

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.



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Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 21-08423	Date Sampled	None Supplied				
Envirosolution Ltd	Time Sampled	None Supplied				
Site Reference: Clarence Road	TP / BH No	WS1				
Project / Job Ref: Clarence Road	Additional Refs	None Supplied				
Order No: ES010721	Depth (m)	3.00				
Reporting Date: 08/07/2021	DETS Sample No	552514				

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/a	MCERTS	7.8			
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	292			
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.03			
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	69			
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.07			
Total Sulphur	%	< 0.02	NONE	< 0.02			
Ammonium as NH ₄	mg/kg	< 0.5	MCERTS	163			
Ammonium as NH ₄	mg/l	< 0.05	MCERTS	16.30			
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	18			
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	8.9			
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	< 3	MCERTS	< 3			
Water Soluble Nitrate (2:1) as NO ₃	mg/l	< 1.5	MCERTS	< 1.5			
W/S Magnesium	mg/l	< 0.1	NONE	5.2			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



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Rose Lane
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Tel : 01622 850410



Soil Analysis Certificate - Sample Descriptions

DETS Report No: 21-08423	
Envirosolution Ltd	
Site Reference: Clarence Road	
Project / Job Ref: Clarence Road	
Order No: ES010721	
Reporting Date: 08/07/2021	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 552514	WS1	None Supplied	3.00	14.9	Light brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/S}

Unsuitable Sample ^{U/S}

^ no sampling date provided; unable to confirm if samples are within acceptable holding times



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Tel : 01622 850410



Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 21-08423

Envirosolution Ltd

Site Reference: Clarence Road

Project / Job Ref: Clarence Road

Order No: ES010721

Reporting Date: 08/07/2021

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received